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CLE MATERIALS
Table of Contents

PANEL 1: Responding to Individuals Experiencing Serious Mental Health Disorders
• Criminal Justice and the Mentally Ill: Strange Bedfellows
• Understanding Offenders with Serious Mental Illness in the Criminal Justice System
• New York Plan Aims to Divert Mentally Ill People from Jail’s Revolving Door
• The Processing and Treatment of Mentally Ill Person in the Criminal Justice System
• The Enhanced Pre-Arraignment Screening Unit
• Envisioning the Next Generation of Behavioral Health and Criminal Justice Interventions

PANEL 2: Creating Groundbreaking Research on Neuroscience and Law
• Criminal Behavior and the Brain: Implications for Schools
• Adolescent Brain Science and Juvenile Justice Policymaking
• Legal Socialization of Children and Adolescents
• Judging Implicit Bias: A National Empirical Study of Judicial Stereotypes
• The Myth of the Double-Edged Sword: An Empirical Study of Neuroscience Evidence in Criminal Cases
• For the Law, Neuroscience Changes Nothing and Everything

PANEL 3: The Challenge of Malingering: Symptoms Real, Imagined, and Pretended
• Empirically Derived Algorithm for Performance Validity Assessment Embedded in a Widely Use Neuropsychological Battery: Validation among TBI Patients in Litigation
• Clinical Assessment of Malingering and Deception
• Faking Bad: The Neural Correlates of Feigning Memory Impairment
• Neural Correlates of Malingering in Mild Traumatic Brain Injury: A Positron Emission Tomography Study
• Admissability of Evidence of Malingering
• Law, Science and Malingering

PANEL 4: Reconceptualizing Concussion in Law: The Increasing Influence of Neuroscience
• Biomarkers, Concussions, and the Duty of Care
• The Epidemiology and Impact of Traumatic Brain Injury: A Brief Overview
CRIMINAL JUSTICE AND THE MENTALLY ILL: STRANGE BEDFELLOWS

Frank M. Webb*

I. INTRODUCTION .................................................. 818

II. MENTAL ILLNESSES ........................................... 818
A. Schizophrenia ................................................. 818
B. Bipolar Disorder .............................................. 819
C. Psychosis ........................................................ 819
D. Posttraumatic Stress Disorder ............................. 819
E. Depression ....................................................... 820

III. FROM DEINSTITUTIONALIZATION TO CRIMINALIZATION .... 820

IV. TRADITIONAL POLICE TRAINING IS ANTITHETICAL TO RESPONDING TO INDIVIDUALS IN SERIOUS MENTAL HEALTH CRISSES ................................................................. 824

V. THE TEXAS HEALTH AND SAFETY CODE NEEDS TO BE REVISED .... 828
A. Transportation ................................................... 828
B. Medical Clearance .............................................. 829
C. Hospital Security ............................................... 830
D. Case Study ....................................................... 830

VI. THE HOUSTON POLICE DEPARTMENT’S MODEL: MULTIFACETED STRATEGIES FOR RESPONDING TO THE MENTALLY ILL ................................................................. 833
A. The Crisis Intervention Training Program ................. 834
B. The Crisis Intervention Response Team .................... 835
C. The Chronic Consumer Stabilization Initiative ............ 837
D. The Homeless Outreach Team ................................ 838
E. The Boarding Homes Enforcement Detail .................. 839
F. The Crisis Call Diversion Pilot Program ................... 840

VII. RECOMMENDATIONS FOR TEXAS ................................ 842

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I. INTRODUCTION

Law enforcement officers have become the de facto social workers and jails and prisons have become the new asylums of the twenty-first century. This Article explains how and why this has occurred, discusses the ramifications of the oftentimes dysfunctional relationship between criminal justice and mental health, and offers solutions to the many problems facing Texas peace officers grappling with this issue.

The Article makes the following points:

- The deinstitutionalization of the mentally ill did not achieve its intended objectives. Rather, it created the very circumstances it intended to eliminate and resulted in the criminalization of the mentally ill.
- Traditional law enforcement training is antithetical to responding to individuals in serious mental health crises, resulting in one of the most litigious and problematic issues facing law enforcement today.
- Sections 572, 573, and 574 of the Texas Health and Safety Code were written in the 1980s and do not address the issues facing Texas peace officers today, who increasingly respond to individuals in serious mental health crises. These sections need to be revised.
- The Houston Police Department (HPD) has developed state and national model programs for responding to the mentally ill.

II. MENTAL ILLNESSES

Law enforcement officers are increasingly responding to individuals with serious mental illness. The following are examples of these illnesses.

A. Schizophrenia

The most serious and debilitating mental illness, schizophrenia, "affects how a person thinks, feels, and behaves." ¹ People with schizophrenia may

lose touch with reality.\(^2\) They may hear voices other people do not hear and see things other people do not see.\(^3\) Oftentimes, the voices are telling them to hurt themselves or others.\(^4\) "They may think other people are trying to hurt them."\(^5\) Frequently, the people they think are going to harm them are from the government.\(^6\) "Sometimes they [do not] make any sense when they talk."\(^7\)

**B. Bipolar Disorder**

"[A]lso known as manic-depressive illness, [bipolar disorder] is a brain disorder that causes unusual shifts in mood, energy, activity levels, and the ability to carry out day-to-day tasks."\(^8\) People with bipolar disorder may become very angry and agitated.\(^9\)

**C. Psychosis**

"During a period of psychosis, a person's thoughts and perceptions are disturbed and the individual may have difficulty understanding what is real and what is not. Symptoms of psychosis include delusions (false beliefs) and hallucinations . . ."\(^10\) Hallucinations can occur in any sense. People experiencing a psychotic episode may hear voices (auditory), see visions (visual), feel things crawling on them (tactile), and smell things (olfactory).\(^11\) A person having a psychotic episode may also experience depression, anxiety, sleep problems, social withdrawal, lack of motivation, and difficulty functioning overall.\(^12\)

**D. Posttraumatic Stress Disorder**

Posttraumatic stress disorder (PTSD) is a disorder that develops in some people who have experienced a life-threatening event or an event that they
believed to be life threatening. They may overreact to situations by entering fight-or-flight mode. Symptoms commonly associated with PTSD include depression, anxiety, substance abuse, anger, hypervigilance, sleep problems, and alcohol abuse.

E. Depression

"[M]ajor depressive disorder or clinical depression[] is a common but serious mood disorder. It causes severe symptoms that affect how [people] feel, think, and handle daily activities, such as sleeping, eating, or working." Depression is the most common mental illness and a major contributing factor to suicide.

III. FROM DEINSTITUTIONALIZATION TO CRIMINALIZATION

In 1955, at the peak of the institutionalization of the mentally ill, there were 560,000 mentally ill individuals hospitalized in the United States. Today, that number has dropped to about 35,000. How did we get here? In an article in the American Medical Association Journal of Ethics, Daniel Yohanna provided the reasons for the deinstitutionalization of the mentally ill:

Three forces drove the movement of people with severe mental illness from hospitals into the community: the belief that mental hospitals were cruel and inhumane; the hope that new antipsychotic medications offered a cure; and the desire to save money. It has not worked out as well as expected on any of the three fronts. People with severe mental illness can still be found in deplorable environments, medications have not successfully improved function in all patients even when they improve symptoms, and the
institutional closings have deluged underfunded community services with new populations they were ill-equipped to handle.20

Three court cases have made it very difficult to hospitalize the increasing number of individuals with serious and persistent mental illness in society today:

In Lake v. Cameron, a 1966 D.C. Court of Appeals case, the concept of “least restrictive setting” was introduced, requiring hospitals to discharge patients to an environment less restrictive than a hospital if at all possible. In the 1975 case of O'Connor v. Donaldson, the U.S. Supreme Court declared that a person had to be a danger to him- or herself or to others for confinement to be constitutional. The 1999 U.S. Supreme Court decision in Olmstead v. L.C. stated that mental illness was a disability and covered under the Americans with Disabilities Act. All governmental agencies, not just the state hospitals, were . . . required thereafter to make “reasonable accommodations” to move people with mental illness into community-based treatment to end unnecessary institutionalization.21

The result is an increasing number of citizens across the United States with serious, persistent, and untreated mental illnesses. When an individual experiences a serious mental health crisis, law enforcement officers are being called on to respond.22 It is estimated that 7%-10% of all police contacts involve interactions with persons experiencing a form of mental illness.23 What types of encounters are these? Based on 148 contacts between police and individuals believed to have mental illness during one month in 1994 in Honolulu, Hawaii, officers determined that the majority of these individuals had either committed no criminal offense (45.3%) or had exhibited disorderly conduct (27.7%).24

We have law enforcement officers with little or no mental health or medical training increasingly responding to situations involving individuals in serious mental health crises—an emergency medical condition.25 The majority of these individuals have committed either no crime or a petty, nuisance-type offense.26 It should be no surprise officers will utilize the

21. Id. at 887 (footnotes omitted).
23. Id.
25. Id. at 484.
26. Id. at 471 tbl.1.
means they are most familiar with: the criminal justice system. If a mentally ill individual has committed a crime, even a petty crime, it is far easier and more convenient for an officer to arrest that person than subject him to a mental health evaluation.\textsuperscript{27}

A survey conducted by the Treatment Advocacy Center and National Sheriffs’ Association found that “in the United States there are now more than three times more seriously mentally ill persons in jails and prisons than in hospitals.”\textsuperscript{28} Matt Ford, writing in the \textit{Atlantic} about the Cook County Jail, in Illinois, stated that “an estimated one in three inmates has some form of mental illness.”\textsuperscript{29} Ford went on to add that “[t]he overwhelming majority had been arrested for ‘crimes of survival’ such as retail theft (to find food or supplies) or breaking and entering (to find a place to sleep).”\textsuperscript{30}

One objective of deinstitutionalization, as stated above, was to release the mentally ill from facilities that were deemed cruel and inhumane.\textsuperscript{31} Unfortunately, many mentally ill individuals entered other facilities—jails and prisons—with similar, or what many considered worse, conditions.\textsuperscript{32} The following excerpt is from an article in the \textit{New York Times}:

Mentally ill inmates in prisons and jails across the United States are subjected to routine physical abuse by guards, including being doused with chemical sprays, shocked with electronic stun guns and strapped for hours to chairs or beds . . . .

The mistreatment . . . has led to deaths, though the number of casualties is unclear in part because jails and prisons classify them in various ways.\textsuperscript{33}

A four-month investigation by the \textit{New York Times} found that brutal attacks by correction officers on inmates, particularly those with mental health issues, are common occurrences inside Rikers, the country’s second largest jail.\textsuperscript{34}

\textsuperscript{27} Id. at 483–84.
\textsuperscript{29} Matt Ford, America’s Largest Mental Hospital Is a Jail, \textit{ATLANTIC} (June 8, 2015), http://www.theatlantic.com/politics/archive/2015/06/americas-largest-mental-hospital-is-a-ja/395012/.
\textsuperscript{30} Id.
\textsuperscript{31} Id.
\textsuperscript{32} Id.
\textsuperscript{33} Timothy Williams, Mentally Ill Inmates Are Routinely Physically Abused, Study Says, \textit{N.Y. TIMES} (May 12, 2015), https://www.nytimes.com/2015/05/12/us/mentally-ill-prison-inmates-are-routinely-physically-abused-study-says.html?
A second rationale for deinstitutionalization was the belief that new medications offered a cure for serious mental illness. Unfortunately, as stated by Dr. Rex Cowdry, a psychiatrist and director of the National Institute of Mental Health, “We don’t have the methods of ‘curing’ these illnesses yet.”

Inadequate community resources and laws make it more difficult to hospitalize the seriously mentally ill, resulting in many of them not receiving medication.

The third objective of deinstitutionalization was the desire to save money. An article in the New York Times indicated that the costs of treating mental illness in communities, mostly via hospital emergency rooms, are soaring:

Nationally, more than 6.4 million visits to emergency rooms in 2010, or about 5 percent of total visits, involved patients whose primary diagnosis was a mental health condition or substance abuse. That is up 28 percent from just four years earlier, according to the latest figures available from the Agency for Healthcare Research and Quality in Rockville, Md.

By one federal estimate, spending by general hospitals to care for these patients is expected to nearly double to $38.5 billion in 2014, from $20.3 billion in 2003.

The problem has been building for decades as mental health systems have been largely decentralized, pushing oversight and responsibility for psychiatric care into overwhelmed communities and, often, to hospitals, like WakeMed.

The intent of deinstitutionalization was to release patients from mental institutions and treat them in outpatient community facilities. It was believed that this could be accomplished with the advent of new medications and that it would be more cost effective and humane. The community facilities, however, were not adequate to meet the influx of patients. Without supervision and treatment, many now become homeless. Some engage in criminal activity, mostly petty, nuisance-type crimes, such as

36. Swanson, supra note 19.
38. Yohanna, supra note 20.
40. Id. at 2-4.
41. Id. at 3.
42. Ford, supra note 29.
shoplifting (because they are hungry) and trespassing (because they need a place to sleep). Others self-medicate with illegal substances. 43

When an individual goes into a serious mental health crisis, law enforcement officers are often called on to respond. 44 They utilize the system they are familiar with: the criminal justice system. 45 This has resulted in an influx of individuals with mental illness into jails and prisons across the United States. 46

IV. TRADITIONAL POLICE TRAINING IS ANTITHETICAL TO RESPONDING TO INDIVIDUALS IN SERIOUS MENTAL HEALTH CRISES

Police recruits are traditionally trained to be authoritative, physical, and commanding. 47 These traits are appropriate in many of the circumstances an officer finds himself in, such as arresting a suspect, stopping a physical altercation, and taking charge during a catastrophic event. 48 However, this approach has been found to be ineffective in most interactions with individuals in serious mental health crises. 49 Responding with traditional police tactics usually results in an escalation of the interaction, which can lead to a physical altercation and even the use of deadly force. 50

Although most citizens obey the commands given by an officer, individuals in serious mental health crises often do not. 51 The average citizen understands the authority of a law enforcement officer and the ramifications of not obeying him. 52 A person in a serious mental health crisis may not recognize the officer as an officer. 53 The person may be seeing a demon or may hear voices telling him the officer is an imposter out to hurt him. The person in crisis may feel his life is in jeopardy and respond to the officer aggressively, oftentimes in flight-or-flight mode. 54

To counteract these negative outcomes, police executives must subject their officers to crisis intervention team (CIT) training, which is heavily characterized by behavior designed to de-escalate the situation. 55 This

43. Id.
44. See id.
45. See id.
46. Swanson, supra note 19.
48. Id.
49. Id.
50. Id.
52. Id.
54. Id.
55. Id.
relatively new approach can best be implemented by helping officers understand how to interact with individuals experiencing different types of mental illness.\(^{56}\) The ultimate goal is for both the officer and the citizen to emerge from an interaction or confrontation safely.\(^{57}\) To accomplish this, officers must behave differently in most of these instances.\(^{58}\) This becomes exceedingly more difficult if the person in crisis possesses a weapon.\(^{59}\)

The following table\(^{60}\) demonstrates the difference between traditional police training concepts and CIT concepts:

<table>
<thead>
<tr>
<th>TRADITIONAL CONCEPTS</th>
<th>CIT CONCEPTS</th>
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<tbody>
<tr>
<td><strong>TIME</strong></td>
<td></td>
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<tr>
<td>Almost all law enforcement agencies are understaffed. The pressure is put on personnel to handle calls quickly. When an officer makes a request or gives a command, the officer expects the individual to respond quickly. Typically, individuals do respond to a request or command by an officer because they realize the ramifications of failing to respond.</td>
<td>It will usually take longer to interact with a person in a mental health crisis. Because of their mental health problem, the person in crisis may not respond quickly or at all. The officer may have to repeat himself several times. If the person is experiencing a psychotic episode, the frontal lobe of his brain will be shut down due to a chemical imbalance, and his executive decision-making process will be impaired. The person may not understand or care about the ramifications of not responding to a request or command from the officer. If the person is having a psychotic episode, he may not recognize the officer as an officer. Interacting with a person in a mental health crisis takes time and patience.</td>
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</table>

| **DEMEANOR** | |
| The traditional demeanor of an officer is firm, authoritative, and commanding. Officers are taught to project a "commanding presence." This is reflected in their stature, tone, and mannerisms. Most individuals understand this posture and respond respectfully. | The person in a mental health crisis usually does not respond well to an authoritative, firm, or commanding presence. If the person is paranoid, he may believe the officer is there to harm him. A person experiencing a psychotic episode may be having auditory hallucinations telling him the officer is there to kill him. A friendly, conversational, and assuring presence and tone works much better with a person in a mental health crisis. Most of these individuals have committed no crime or a petty nuisance-type crime; they are not hardened criminals and should not be treated as such. |

\(^{56}\) Id.
\(^{57}\) Id.
\(^{58}\) Id.
\(^{59}\) Id.
\(^{60}\) This table is based on the Author's knowledge and experience gained through working closely with HPD's CIT.
<table>
<thead>
<tr>
<th>ACQUIESCENCE</th>
<th>PHYSICAL CONTACT</th>
<th>SUDEN MOVEMENTS</th>
<th>VOICE</th>
<th>COMMANDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Officers are not accustomed to being told to do something by an individual or “giving up ground.” Officers are used to being the ones giving direction and orders. Most individuals do not tell officers what to do.</td>
<td>Officers often make physical contact with individuals. In some instances, making physical contact helps get the full attention of the individual the officer is dealing with. Most individuals do not react negatively to the touch of a shoulder or arm or the officer’s hand on an individual’s back. Many times officers have to apprehend a suspect, requiring physical restraint.</td>
<td>Officers may have to move suddenly. This does not result in a problem with most individuals.</td>
<td>Officers sometimes raise their voices to be heard, get an individual’s attention, or project command presence. Most individuals do not react negatively to this.</td>
<td>Officers are used to giving orders. It is a necessary part of their job in many situations. Most individuals respond appropriately to orders issued by an officer.</td>
</tr>
<tr>
<td>If (a) person is paranoid, he may say, “Back up. You are making me nervous.” It is prudent for the officer to back up a few steps in this situation to demonstrate he is there to help, not hurt the person.</td>
<td>Officers should avoid physical contact unless it is absolutely necessary for safety. The simple touch on the shoulder of a person in a psychotic episode can put that person into fight-or-flight mode and can result in a physical altercation.</td>
<td>Officers should not make sudden, overt movements toward a person in crisis unless necessary for safety. The person in crisis may take this form of movement as a threat and respond by entering fight-or-flight mode.</td>
<td>Officers should not raise their voices unless necessary for safety. Officers should instead talk in a calm, reassuring, and conversational tone of voice. Shouting may “set off” the person in crisis.</td>
<td>Officers should avoid giving orders. A person in crisis will not respond well to orders. In most situations, an officer has to take the time to persuade the person to do what the officer requests.</td>
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</table>

If CIT training is not provided, officers utilize traditional police training when interacting with individuals experiencing serious mental health crises.\(^\text{61}\) This is tantamount to trying to place a round object into a square hole. Even when provided with CIT training, many officers revert back to traditional training because of the emphasis placed on it in training academies.\(^\text{62}\)

The Police Executive Research Forum surveyed law enforcement agencies across the nation and found that “while agencies spend a median of 58 hours of recruit training on firearms and another 49 hours on defensive tactics (much of it state-mandated), they spend only about 8 hours of recruit

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61. Lucas, supra note 53.
62. Id.
training each on the topics of de-escalation, crisis intervention, and Electronic Control Weapons.”

Using traditional police tactics in interactions with the mentally ill can result in catastrophic outcomes, as documented in an article in the Washington Post:

Nationwide, police have shot and killed 124 people this year who . . . were in the throes of mental or emotional crisis . . . . The dead account for a quarter of the 462 people shot to death by police in the first six months of 2015.

The vast majority were armed, but in most cases, the police officers who shot them were not responding to reports of a crime. More often, the police officers were called by relatives, neighbors or other bystanders worried that a mentally fragile person was behaving erratically . . . . More than 50 people were explicitly suicidal.

More than half the killings involved police agencies that have not provided their officers with state-of-the-art training to deal with the mentally ill. And in many cases, officers responded with tactics that quickly made a volatile situation even more dangerous.

The Post analysis provides for the first time a national, real-time tally of the shooting deaths of mentally distraught individuals at the hands of law enforcement. Criminal-justice experts say that police are often ill equipped to respond to such individuals — and that the encounters too often end in needless violence.

“This is a national crisis,” said Chuck Wexler, executive director of the Police Executive Research Forum, an independent research organization devoted to improving policing. “We have to get American police to rethink how they handle encounters with the mentally ill. Training has to change.”

How many law enforcement agencies in the country have CIT programs? USA Today reported that “[o]f the more than 17,000 police agencies in the country, slightly more than 2,700 have established so-called Crisis Intervention Team (CIT) programs.”

63. POLICE EXEC. RESEARCH FORUM, CRITICAL ISSUES IN POLICING SERIES: GUIDING PRINCIPLES ON USE OF FORCE 9 (2016), http://www.policeforum.org/assets/guidingprinciples1.pdf (citation omitted).
64. Wesley Lowery et al., Distraught People, Deadly Results, WASH. POST (June 30, 2015), http://www.washingtonpost.com/sf/investigative/2015/06/30/distraught-people-deadly-results/?utm_term=.122cfd9f805b.
More law enforcement agencies need to be trained, and more emphasis needs to be placed on de-escalation behavior.

V. THE TEXAS HEALTH AND SAFETY CODE NEEDS TO BE REVISED

Much of §§ 572, 573, and 574 of the Texas Health and Safety Code, referred to as the “Mental Health Code,” were written in the 1990s and do not address three significant issues facing Texas peace officers as they increasingly respond to individuals in serious mental health crises.66 These issues are transportation, medical clearance, and hospital security.67

A. Transportation

In some instances, Texas peace officers are transporting mentally ill inmates hundreds of miles for a mental health bed.68 The inmate may be stabilized.69 One example is Sheriff Pat Burnett, who was highlighted in an article in the Texas Tribune:

Sheriff Pat Burnett is fed up, and he’s not going to do it anymore. He’s not going to put two of his deputies on the road for 12 hours each way from Van Zandt County in East Texas to El Paso — paying hundreds of dollars for overtime, gas, lodging and food — just to find a free bed for a mentally ill inmate.70

In other instances, peace officers are called to hospitals and mental health facilities to transport a patient from the hospital or facility to a state hospital.71 Routinely, peace officers are transporting individuals in serious mental health crises long distances to a facility for an emergency mental health evaluation.72 This problem of transportation by peace officers was mentioned in a report by the Texas Department of State Health Services:

A recurring statewide concern was the lack of medical transportation for individuals requiring mental health services, which results in the requirement that law enforcement provide transport for individuals to state hospitals. This has resulted in needless delays in treatment for citizens experiencing mental health crises, unnecessary incarceration, and inconvenience and local expense for already burdened law enforcement.

67. See infra notes 77–96 (discussing the issues of transportation, medical clearance, and hospital security, respectively).
68. See Brandi Grissom, Mental Math, TEX. TRIB. (Dec. 16, 2010, 5:00 AM), https://www.texastribune.org/2010/12/16/sheriffs-worry-over-proposed-mental-health-cuts/.
69. Id.
70. Id.
71. Id.
72. Id.
Lack of readily available, medically appropriate transportation for people experiencing mental health crises contributes to poor consumer outcomes, stigma, and inefficient use of limited public funds.\textsuperscript{73}

The Mental Health Code states:

A peace officer who takes a person into custody under Subsection (a) shall immediately transport the apprehended person to:

(1) the nearest appropriate inpatient mental health facility; or

(2) a mental health facility deemed suitable by the local mental health authority, if an appropriate inpatient mental health facility is not available.\textsuperscript{74}

This is a significant problem because in many parts of Texas, there are not appropriate inpatient mental health facilities in close proximity, and leaving it up to the local mental health authority has not remedied the problem.\textsuperscript{75} The local mental health authority for many law enforcement agencies is miles or even counties away.\textsuperscript{76}

\textbf{B. Medical Clearance}

Many peace officers in Texas have to take a person in a serious mental health crisis to a hospital for routine medical clearance.\textsuperscript{77} Once medically cleared, which may take hours, an officer has to then transport the person to a facility for an emergency mental health evaluation.\textsuperscript{78} This takes officers off the streets for long periods of time and delays the care and treatment for the person in crisis.\textsuperscript{79} In 2009, the acting Kerr County attorney sought an attorney general opinion on this issue.\textsuperscript{80} The following is the summary of the opinion:

An inpatient mental health facility or a mental health facility is not statutorily authorized to require a peace officer to transport a person in custody under Chapter 573, Health and Safety Code, to a medical facility for a medical evaluation prior to taking that person to the mental facility.\textsuperscript{81}

\textsuperscript{74} TEX. HEALTH & SAFETY CODE ANN. § 573.001(d) (West 2015).
\textsuperscript{75} TEX. DEP'T OF STATE HEALTH SERVS., supra note 73, at 4–5.
\textsuperscript{76} Local Mental Health Authorities (LMHAs), TEX. DEP'T ST. HEALTH SERVICES, https://www.dhs.texas.gov/mhsa/lmha-list/ (last updated Jan. 13, 2017).
\textsuperscript{77} TEX. DEP'T OF STATE HEALTH SERVS., supra note 73, at 21.
\textsuperscript{78} Id.
\textsuperscript{79} Id.
\textsuperscript{81} Id.
Because this issue is not addressed in the law, there is nothing that prevents a facility from requiring it. The result is that some Texas agencies have to get routine medical clearance, whereas others do not.

C. Hospital Security

The issue of hospital security is not addressed in the Mental Health Code, and thus, procedures vary widely across the state. Some hospitals and mental health facilities mandate that officers stay with the patient while a psychiatric bed is located. This can take days, as reflected in the following Subsection.

D. Case Study

The following case study exemplifies the problems discussed above. Captain Kristen Williams of the Hereford Police Department provided the information via email:

During summer 2016, it was not uncommon for officers in the Hereford Police Department to remain in a hospital with a mental health consumer in excess of twelve hours. On at least two separate occasions, one in June and one in early August, officers were kept at the emergency room in excess of seventy hours.

During the summer, Hereford Police Department officers made one transport of a mental health consumer to San Angelo, Texas, a roundtrip of over 570 miles (over nine hours). A second transport of a consumer was made from Hereford to Wichita Falls, Texas, a roundtrip of over 520 miles (over nine hours). Two transports were made to Midland, Texas, each a roundtrip of over 400 miles (approximately seven hours).

It was not uncommon for the Hereford Police Department to be operating with the shift strength of three officers. The long stays at hospitals securing consumers, waiting for medical clearance, and waiting for a bed to become available along with the long transports required the Hereford Police Department to bring in off-duty officers to help in providing

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82. See generally TEX. HEALTH & SAFETY CODE ANN. §§ 531–617 (West 2015).
83. E-mail from Kristen Williams, Captain, Hereford Police Dep’t, to Frank M. Webb, Senior Police Officer, Hous. Police Dep’t (on file with author).
84. Id.
85. Id.
86. Id.
87. Id.
88. Id.
89. Id.
90. Id.
minimum city coverage. It was estimated that the two seventy-hour events alone easily cost the city in excess of $5,000.

The solution to these problems, in the Author’s opinion, is to utilize the established federal Emergency Medical Treatment & Labor Act (EMTALA) laws. EMTALA is not mentioned in the current Mental Health Code. An article in the Police Chief magazine explains the basics of EMTALA and how EMTALA laws can be used to help law enforcement when responding to the mentally ill in crises:

In the broadest of terms, the EMTALA requires hospitals—but not private doctor’s offices, clinics, or laboratories—to

- triage and medically screen, including appropriate testing and on-call specialist care, to rule out the presence of an emergency medical condition as defined by the law;
- render medical screening and stabilizing medical care without regard to means or ability to pay, and restrict registration processing to prevent financial discrimination;
- provide evaluation and stabilizing care within the hospital’s capabilities and not transfer unless the hospital is unable to meet the patient’s needs;
- provide a list of on-call specialists to back up the emergency department within the capacity of the hospital staff, and require that they respond in a timely manner to the call; and
- follow detailed standards and requirements for transfers of patients, including the use of medical vehicles staffed with medical personnel and equipped with proper life-support capabilities (discharges fall within the definition of transfers, if the patient’s emergency medical condition has not been completely screened and resolved) . . .

Any person “presenting” at a hospital emergency room with an emergency medical condition must be accepted by that hospital. This applies to all hospitals receiving Medicare funding. Symptoms of psychiatric disturbance (including suicidal gestures or attempts) are considered emergency medical conditions. The hospital must accept, triage, medically screen, stabilize, and transfer utilizing medical vehicles staffed with medical personnel and equipment if the hospital does not have the expertise to treat the patient.

91. Id.
92. Id.
94. See generally TEX. HEALTH & SAFETY CODE ANN. §§ 531–617 (West 2015).
97. Id.
98. Id.
99. Id.
The Florida Mental Health Act, referred to as the Baker Act, utilizes EMTALA and can be an example for Texas. The University of South Florida published a reference guide for the Baker Act and explained how EMTALA is used in the Florida code:

If a person is at a hospital or other receiving facility that [cannot] meet his/her medical or psychiatric needs or if the person's age or financial status requires transfer, the federal EMTALA law and state Baker Act transfer provisions place responsibility on the sending hospital, not on law enforcement personnel.\(^{100}\)

The Baker Act requires the nearest receiving facility to accept anyone brought by a law enforcement officer for involuntary examinations.\(^{101}\)

If the receiving facility believes the person should be “medically cleared,” the facility must arrange appropriate medical transport for this purpose. It would be inappropriate for a law enforcement officer to place a person at medical risk back into the cruiser. . . .

A law enforcement officer does not have to wait at a hospital or other receiving facility for the person to be medically screened, treated, or to have their insurance verified. The officer’s only duties are to present the person and the required completed paperwork and make a responsible handoff to the appropriate staff member.

A law enforcement officer does not have to return to a hospital to transfer the person to another facility following medical clearance. Once the person is taken to the hospital, the state’s Baker Act and the federal EMTALA law require the hospital to arrange for appropriate transfer, when necessary.

The federal Emergency Medical Treatment and Active Labor Act (EMTALA) preempts any state law with which it is in conflict. EMTALA requires that a hospital accept any person who presents or is brought to the emergency room for the purpose of performing a medical screening. If the [Emergency Department] staff determine the person has an emergency medical condition (including psychiatric and substance abuse emergencies), the hospital is then responsible for the person until the emergency has been stabilized, including the person’s discharge or transfer from the hospital to another facility that has the capability and capacity to manage the person’s condition. This includes, among other responsibilities, the duty to arrange a safe and appropriate method of transportation to the destination facility.\(^{102}\)


\(^{101}\) See generally FLA. STAT. ANN. § 394.463(2)(a)(2) (West 2016).

Rewriting the Mental Health Code to utilize federal EMTALA laws, like Florida’s statute does, would solve the three major problems facing Texas peace officers as they respond to individuals in serious mental health crises: transportation, medical clearance, and hospital security.103

Officers could take a person who is in a serious mental health crisis, which is a medical condition, to the local hospital emergency department rather than driving him long distances to state mental hospitals.104

EMTALA would eliminate the need to transfer a mentally ill patient from a jail, prison, hospital, or mental health facility to another facility by a Texas peace officer.105 These individuals would be transported by appropriate personnel and vehicles, such as ambulances.106

EMTALA would eliminate the requirement to obtain routine medical clearance.107 Officers would not be responsible for hospital security unless the patient had criminal charges.108

VI. THE HOUSTON POLICE DEPARTMENT’S MODEL: MULTIFACETED STRATEGIES FOR RESPONDING TO THE MENTALLY ILL

Houston’s success is due, in large part, to the collaboration between the HPD and the Harris Center for Mental Health and IDD (Harris Center), formerly known as the Mental Health Mental Retardation Authority of Harris County.109 This collaboration started in 1991 and continues today.110

The impetus for this relationship was an effort by the HPD to streamline the procedure for obtaining an emergency detention and to increase the number of psychiatric beds in Houston and Harris County.111 The process of completing an emergency detention took on average seven hours.112 The total psychiatric bed capacity in Harris County was twelve.113 After working with the Harris Center, the time to complete an emergency detention was reduced to an average of fifteen minutes, and the bed capacity was increased to sixty-five.114

104. See Mental Health Program Office & Dep’t of Mental Health Law & Policy, supra note 102, at H4.
105. Id.
106. Id. at H2.
107. Id. at H5.
108. Id. at H8.
110. Id.
111. Id.
112. Id.
113. Id.
114. Id.
Today, the Harris Center provides twelve masters-level behavioral health counselors for the department's co-responder program, four case workers for the Homeless Outreach Team (HOT), six case managers as well as one psychiatric technician for the Chronic Consumer Stabilization Initiative (CCSI), and six phone counselors for the Crisis Call Diversion Program. In total, thirty-nine personnel from the Harris Center work with the HPD's Mental Health Division.

Law enforcement cannot address this issue alone. It is necessary to partner with behavioral health professionals and collaboratively develop programs and strategies that work for the specific agency and community.

The HPD was one of the first law enforcement agencies in the state to develop and implement a CIT program. Houston's program was implemented in 1999. Today, Houston has a Mental Health Division that oversees six response strategies.

Houston's strategies are state and national award winning community policing models. Houston was selected to teach all Texas police chiefs a state-mandated sixteen-hour CIT training class through the Law Enforcement Management Institute of Texas at Sam Houston State University and was one of six police departments nationally selected as a learning site by the United States Council of State Governments. As a learning site, Houston provides CIT training to law enforcement and behavioral health personnel across the state and nation, administers training materials, and hosts visitors from across the country. The following Subsections contain a summary of Houston's multi-faceted collaborative response strategies.

A. The Crisis Intervention Training Program

The CIT training program is the foundational program of Houston's multifaceted response strategies. It was implemented in 1999 and was "based on the Memphis model of training veteran volunteer officers and training 25 percent of the patrol force. Houston had an availability problem with having only 25 percent of its patrol force trained"; however, this was because CIT officers were unavailable to respond to the majority of CIT calls.

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115. Id.
116. Id.
117. Id.
118. Id.
119. Id.
120. Id.
121. Id.
122. Id.
124. Id.
To address this problem and because Houston believes this type of training is beneficial to all officers, considering that "the skills can be utilized in many different" situations, Houston began providing CIT training to all police cadets in March 2007,\(^{125}\) The cadets graduate as CIT officers, which is helping to increase the number of CIT calls requiring a response by officers trained in crisis intervention as reflected in the following table:\(^{126}\)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>PERCENTAGE OF CIT CALLS WITH A CIT OFFICER ON SCENE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>42%</td>
</tr>
<tr>
<td>2012</td>
<td>52%</td>
</tr>
<tr>
<td>2013</td>
<td>55%</td>
</tr>
<tr>
<td>2014</td>
<td>59%</td>
</tr>
<tr>
<td>2015</td>
<td>61%</td>
</tr>
</tbody>
</table>

As of August 31, 2016, Houston has provided CIT training to 2,669 officers, of which 1,800 worked as patrol officers.\(^{127}\) All CIT-trained officers assigned to patrol and other specified divisions and assignments must attend an annual eight-hour refresher class, titled "Advanced Crisis Intervention Training."\(^{128}\) The content of the class changes each year.\(^{129}\) Examples of instructional modules over the past few years include schizophrenia, bipolar, autism, personality disorders, youths and adolescents, and posttraumatic stress disorder reviews as well as legislative and psychopharmacology updates.\(^{130}\)

B. The Crisis Intervention Response Team

"Houston’s Crisis Intervention Response Team (CIRT) started as a six-month pilot program in March 2008. The pilot was extremely successful and the program was made permanent later that year. CIRT is Houston’s co-responder program partnering” a uniformed Houston police officer, trained in crisis intervention, “with a masters-level licensed professional clinician from The Harris Center for Mental Health and IDD. The officer and clinician team attend roll-call together and ride together in a patrol

\(^{125}\) Id.


\(^{129}\) Id.

\(^{130}\) See supra Section II.A.
The CIRT is the department’s "highest level response to individuals in serious mental health crises." The following list details the objectives of the program:

- Assist officers with CIT-related calls;
- Conduct pro-active and follow-up CIT investigations;
- Respond to SWAT calls as a resource when available [to help determine whether the subject is a person experiencing a crisis and provide necessary assistance; and]
- Handle the most serious CIT calls.

"CIRT units ride citywide with the sole responsibility of responding to CIT-related calls...." As of August 31, 2016, Houston has twelve full-time units. "Houston has the largest co-responder program with the officer and clinician riding together as partners of any single police department in the nation." The following represent the 2015 statistics for the CIRT:

<table>
<thead>
<tr>
<th>Calls for Service</th>
<th>5340</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-view Investigations</td>
<td>752</td>
</tr>
<tr>
<td>Emergency Detentions</td>
<td>1732</td>
</tr>
<tr>
<td>Offense Reports/Supplements</td>
<td>2338</td>
</tr>
<tr>
<td>Jail Assessments</td>
<td>85</td>
</tr>
<tr>
<td>Referral Follow-ups</td>
<td>211</td>
</tr>
<tr>
<td>Swat Scenes</td>
<td>23</td>
</tr>
</tbody>
</table>

132. Id.
133. Id.
134. Id.
135. Id.
136. Id.
137. See HOUS. POLICE DEP'T MENTAL HEALTH DIV., supra note 126, at 31.
"As with criminal activity, a small percentage of individuals with mental illness account for the majority of police calls-for-service." These are individuals who regularly "go into serious mental health crises requiring repeated police intervention." Rather than continuing this reactionary cycle, CCSI takes a proactive, "collaborative approach to help keep these consumers from going into crisis, thus reducing" the need for police intervention.

Mental Health Division personnel identify the mental health consumers whom officers respond to most frequently. "Case managers from The Harris Center for Mental Health and IDD work with voluntary consumers with the goal of using all available resources to reduce subsequent crises." These resources include "outpatient mental health treatment, housing, primary health care, substance abuse treatment, and social security benefits."

The program was piloted for six months in 2009. For the six months prior to the pilot, the 30 individuals identified... for placement in the program accounted for 396 police calls-for service, 183 emergency detention orders, and 213 [incident] reports. During the pilot, these same individuals accounted for 122 calls-for-service (69% change), 39 emergency detention orders (78% change), and 83 [incident] reports (61% change).

Of the consumers [in] the program in 2014, approximately 70% reduced both their police contacts... and emergency detentions by 50%.

139. Id.
140. Id.
141. Id.
142. Id.
143. Id.
144. Id.
The following is information on client success rates and client cost savings for 2015.145

**CCSI Client Success Rates 2015**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Pre-CSSI 1 Year</th>
<th>Post-CSSI 1 Year</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPC Detentions</td>
<td>156</td>
<td>40</td>
<td>74%</td>
</tr>
<tr>
<td>HPC Bed Days</td>
<td>25</td>
<td>12</td>
<td>52%</td>
</tr>
<tr>
<td>HPD Incidents</td>
<td>449</td>
<td>53</td>
<td>88%</td>
</tr>
</tbody>
</table>

* NeuroPsychiatric Center
** Harris County Psychiatric Center

**CCSI Client Cost Savings 2015**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Pre-CSSI 1 Year</th>
<th>Post-CSSI 18-24 Months</th>
<th>Cost</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPC Admissions</td>
<td>156</td>
<td>10</td>
<td>$132,900*</td>
<td>$121,120</td>
</tr>
<tr>
<td>HPC Admissions</td>
<td>25</td>
<td>3</td>
<td>$93,775**</td>
<td>$79,922</td>
</tr>
<tr>
<td>HPD Incidents</td>
<td>449</td>
<td>26</td>
<td>$70,432***</td>
<td>$70,728</td>
</tr>
<tr>
<td>TOTAL SAVINGS</td>
<td></td>
<td></td>
<td>$371,515</td>
<td></td>
</tr>
</tbody>
</table>

* Based on a cost of $850.00 per day
** Based on a cost of $813.00 per day
*** Based on a cost of $168.00 per incident/interaction

[The CCSI] program won the International Association of Chiefs of Police (IACP) 2010 Community Policing Award and was a Finalist for the 2010 Herman Goldstein Award for Excellence in Problem-Oriented Policing. The program also won the IACP 2015 Michael Shanahan Award that recognizes outstanding achievement in the development and implementation of public/private cooperation in public safety.146

**D. The Homeless Outreach Team**

The HOT began as a pilot program in January 2011.147 It became a permanent department program after a very successful six-month pilot.148 The HOT is comprised of one sergeant, four officers, and three behavioral health professionals from the Harris Center.149 The HOT was named as a

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145. See Hous. Police Dep't Mental Health Div., supra note 126, at 35.
146. See Webb, supra note 138.
148. Id.
149. Id.
finalist for the International Association of Chiefs of Police Community Policing Award in 2015.\textsuperscript{150} The HOT helps the homeless with the following:

- Housing
- Social Security cards
- Passports
- Birth certificates
- Shelter referrals
- Medical equipment
- Employment
- Bus Fare
- Medical care
- Mental health treatment.\textsuperscript{151}

The HOT also works with service organizations. The following are examples:

- SEARCH Homeless Services
- Lord of the Streets
- Bread of Life
- Palmer Way Station
- Star of Hope
- Salvation Army
- Healthcare for the Homeless
- US Vets
- DeGeorge Veterans Housing
- Main Street Ministries
- Goodwill.\textsuperscript{152}

\textit{E. The Boarding Homes Enforcement Detail}

The Houston City Council, on July 24, 2013, passed City Ordinance #2013-674, which regulates “Boarding Homes” in the City of Houston:

A boarding home or boarding home facility means an establishment that:

1. Furnishes, in one or more buildings, lodging to three or more persons with disabilities or elderly persons who are unrelated to the owner of the establishment by blood or marriage; and
2. Provides residents with community meals, light housework, meal preparation, transportation, grocery shopping, money management, laundry services, or assistance with self-administration of medication, but does not

\textsuperscript{150} History, supra note 109.
\textsuperscript{151} Webb, supra note 147.
\textsuperscript{152} Id.
provide personal care services as defined by Section 247.002 of the Texas Health and Safety Code to those persons.

The ordinance requires a registration, fire inspection, records retention, reporting, and criminal background checks of owners and employees. The ordinance was initiated by personnel assigned to the [HPD's] Mental Health Division . . . and [is] enforced by a Boarding Homes Enforcement Detail within the [Mental Health Division].

The following are statistics for the Boarding Homes Enforcement Detail for 2015:

<table>
<thead>
<tr>
<th>2015 Statistics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of reported boarding homes in Houston</td>
<td>618</td>
</tr>
<tr>
<td>Number of boarding homes registered</td>
<td>124</td>
</tr>
<tr>
<td>Site visits</td>
<td>444</td>
</tr>
<tr>
<td>Inspections</td>
<td>298</td>
</tr>
<tr>
<td>Citations issued</td>
<td>571</td>
</tr>
<tr>
<td>Warnings issued</td>
<td>222</td>
</tr>
</tbody>
</table>

F. The Crisis Call Diversion Pilot Program

"The majority of the calls responded to by the [HPD officers] involving individuals in mental health crises involve individuals who have committed no crime." "[HPD officers] believe a percentage of these calls can be handled by professional helpline counselors. This program brings helpline counselors from The Harris Center into the Houston Emergency Center dispatch facility. Callers deemed appropriate for this type of service are connected immediately with a helpline counselor, who attempts to resolve

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154. Id.
155. HOUS. POLICE DEP'T MENTAL HEALTH DIV., supra note 126, at 11.
156. Webb, supra note 138.
157. Id.
The following are examples of calls handled by a helpline counselor the first day of the pilot program:

- A mother called distressed because her son would not get up and go to school. The helpline counselor was able to talk with the mother and provide community referrals for counseling.
- An elderly woman called because she was concerned her children were missing. The helpline counselor was able to trace the call to a senior living home and asked the security guard to check on the caller. The counselor was also able to get the number to the caller’s daughter, who lived locally and said she would check on her mother. The caller had dementia.
- A mother called regarding a disturbance with her adult son with autism. The son was calm at the moment. The helpline counselor brainstormed some de-escalation techniques with the mother. The son is a current client of the Harris Center, and a case worker was sent to the home.
- Parents called because their teenage son with autism spectrum disorder was refusing to go to school. The dad wanted the police to go to the scene to “scare” the son into going to school. The helpline counselor was able to work with the family to provide some basic education on autism spectrum disorder. The counselor was able to de-escalate the son, and the family was able to take him to school. Local resources were provided as well.
- A mother called because her daughter ran away after fighting about going to school. The helpline counselor spoke with the mother about options for services once the daughter got back home.
- A mother called because her teenage daughter was refusing to take her medication due to concerns about side effects. The helpline counselor was able to talk with the mother, who was able to de-escalate the daughter, who took her medication.

The variety of strategies deployed by the HPD validates an important perception about certain types of police work. Its efforts confirm the notion that police simply cannot be expected to always provide adequate service no matter how difficult or complex service demands may be. There are degrees of service specialization that require more than the police are capable of providing independently. Providing services to mental health consumers who may be in crisis and assisting their families to the extent possible requires special skill sets, some of which can be provided by trained police
officers, whereas others require more in-depth, specialized attention. This perception underscores the importance of collaborating with local behavioral health entities that provide the specialized training required to address this issue safely, professionally, and effectively.

VII. RECOMMENDATIONS FOR TEXAS

The purpose of this Article has been to identify issues that if addressed adequately, will improve the quality of life for individual mental health consumers and their families. Doing so will also lessen the burden on a police department’s first responders and will hopefully minimize victimization and associated costs linked to mental health consumers who are experiencing crises. This Part discusses the various areas in which action should be taken.

A. Increase the Number of Public Psychiatric Beds

According to the Treatment Advocacy Center, “[a] minimum of 50 beds per 100,000” people is considered necessary to provide minimally adequate treatment for individuals with severe mental illness. Texas falls far short of this standard.

<table>
<thead>
<tr>
<th>Number of Beds in 2010</th>
<th>Number of Beds in 2005</th>
<th>Number of Beds Lost or Gained</th>
<th>Percent of Beds Gained</th>
<th>2010 Beds/100,000 Total Pop.</th>
<th>Relation to Target Beds per Capita</th>
<th>State Ranking in Beds per Capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,129</td>
<td>2,730</td>
<td>-601</td>
<td>-22%</td>
<td>8.5</td>
<td>19%</td>
<td>41</td>
</tr>
</tbody>
</table>

B. Increase Jail Diversion Programs

Texas incarcerates more individuals with serious mental illness than it hospitalizes.


162. Id. at 23 tbl.1.

163. Id. tbl. 1. For the full table, see id. at 21–23 tbl.1.

164. TORREY ET AL., supra note 28, at 19 tbl.1.
Texas Mentally Ill Inmate Population\textsuperscript{165}

<table>
<thead>
<tr>
<th>Total Number of Prisoners in Jails and State Prisons, June 30, 2005</th>
<th>Estimated Number of Prisoners Seriously Mentally Ill (16% of Total)</th>
<th>Number of Patients in State, Private, and Psychiatric Units in General Hospitals, 2004</th>
<th>Odds of a Seriously Mentally Ill Person Being in Jail or Prison Compared to in Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>223,195</td>
<td>35,711</td>
<td>4,579</td>
<td>7.8 to 1</td>
</tr>
</tbody>
</table>

C. Increase Mental Health Courts and Crisis Intervention Team Training for Texas Peace Officers

Texas received a grade of “C” in these important areas compared to other states in the nation.\textsuperscript{166}

Treatment Advocacy Center Findings for Texas\textsuperscript{167}

<table>
<thead>
<tr>
<th>Percentage of Population Served by a Mental Health Court</th>
<th>Percentage of Population Served by CIT</th>
<th>Average Percentage</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>44%</td>
<td>27%</td>
<td>36%</td>
<td>C</td>
</tr>
</tbody>
</table>

D. Revise § 573.001(d) of the Texas Health and Safety Code

Revise § 573.001(d) of the Mental Health Code to read as follows:

(d) A peace officer who takes a person into custody under Subsection (a) shall immediately transport the apprehended person to:

(1) the nearest hospital emergency department; or

(2) the nearest appropriate inpatient mental health facility; or

(3) a mental health facility deemed suitable by the local mental health authority, if an appropriate inpatient mental health facility is not available.\textsuperscript{168}

EMTALA defines “psychiatric disturbances” as emergency medical conditions, requires all licensed hospitals to accept persons in mental health

\textsuperscript{165} Id. For the full table, see id.


\textsuperscript{167} Id. For the full table, see id.

\textsuperscript{168} TEX. HEALTH & SAFETY CODE ANN. § 537.001(d) (West 2015).
crises for medical screening and stabilization, and makes those hospitals responsible for arranging safe and appropriate secondary transfers to other facilities. Utilizing area emergency departments would eliminate the long transports of individuals in serious mental health crises in the back seats of patrol cars. It would provide emergency evaluations and stabilization in a much more timely, safe, and humane manner.

E. Revise § 573 of the Texas Health and Safety Code

Revise § 573 of the Mental Health Code by adding the following:

*A hospital or mental health* facility cannot require medical clearance as a condition for acceptance when brought by a law enforcement officer. *The* facility must accept any person brought by law enforcement officers for involuntary examination. There is no exception to this — not even medical emergencies. Once the officer arrives at a receiving facility, the staff can call 911 to get an ambulance if they believe the person has an acute medical condition requiring emergency examination or treatment.

The Mental Health Code currently does not address the issue of medical clearance. Because it does not, procedures vary across the state. This is one of the most problematic issues facing Texas peace officers today. Taking consumers in serious mental health crises for routine medical clearance before they can be brought for psychiatric evaluation is unsafe for the officer and consumers, delays necessary evaluation and treatment, and takes officers off the streets for long periods of time.

Section 573 of the Mental Health Code should also be revised by adding the following:

Law enforcement should not be expected to stay with the person while awaiting medical screening or transfer unless the person has criminal charges. The safety of the person while at the hospital is the responsibility of hospital personnel.

Law enforcement agencies are under no obligation to further transport the person after medical clearance. That is the duty of the hospital under EMTALA.

170. See MENTAL HEALTH PROGRAM OFFICE AND DEP’T OF MENTAL HEALTH LAW & POLICY, supra 102, at H5 (proposed language italicized).
171. See supra Part V.
172. See MENTAL HEALTH PROGRAM OFFICE AND DEP’T OF MENTAL HEALTH LAW & POLICY, supra 102, at H8.

After revising these sections of the Mental Health Code, develop a guide to the changes modeled after the 2014 Baker Act reference guide.

These suggestions can be addressed by forming a statewide task force, comprised of law enforcement, behavioral health professionals, mental health consumers, family members, and educators who study these issues and work with legislators to make the necessary legislative changes.
**UNDERSTANDING OFFENDERS WITH SERIOUS MENTAL ILLNESS IN THE CRIMINAL JUSTICE SYSTEM**

Jillian Peterson† and Kevin Heinz‡

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>INTRODUCTION</td>
<td>538</td>
</tr>
<tr>
<td>II</td>
<td>PUBLIC PERCEPTION OF OFFENDERS WITH MENTAL ILLNESS</td>
<td>539</td>
</tr>
<tr>
<td>III</td>
<td>THE INSANITY DEFENSE</td>
<td>541</td>
</tr>
<tr>
<td>IV</td>
<td>REASONS FOR THE OVERREPRESENTATION OF MENTAL ILLNESS IN THE CRIMINAL JUSTICE SYSTEM</td>
<td>544</td>
</tr>
<tr>
<td>A</td>
<td>Defining Mental Illness</td>
<td>544</td>
</tr>
<tr>
<td>B</td>
<td>Mental Illness Directly Causes Crime</td>
<td>546</td>
</tr>
<tr>
<td>C</td>
<td>The Criminalization Hypothesis</td>
<td>548</td>
</tr>
<tr>
<td>D</td>
<td>Difficulty Navigating the Criminal Justice System</td>
<td>550</td>
</tr>
<tr>
<td>E</td>
<td>Offenders with Mental Illness Are Similar to Other Offenders</td>
<td>552</td>
</tr>
<tr>
<td>F</td>
<td>Mental Illness Indirectly Causes Crime</td>
<td>554</td>
</tr>
<tr>
<td>G</td>
<td>Poverty</td>
<td>554</td>
</tr>
<tr>
<td>H</td>
<td>Social Support</td>
<td>555</td>
</tr>
<tr>
<td>I</td>
<td>Substance Abuse</td>
<td>556</td>
</tr>
<tr>
<td>V</td>
<td>REDUCING CRIME AMONG OFFENDERS WITH MENTAL ILLNESS</td>
<td>557</td>
</tr>
<tr>
<td>A</td>
<td>Interventions that Reduce Recidivism</td>
<td>558</td>
</tr>
<tr>
<td>B</td>
<td>Comprehensive Intervention Programs</td>
<td>560</td>
</tr>
<tr>
<td>VI</td>
<td>CONCLUSIONS</td>
<td>562</td>
</tr>
</tbody>
</table>

† Jillian Peterson, Ph.D., is a professor of Criminology and Criminal Justice at Hamline University in Saint Paul, Minnesota. She has worked with people facing the death penalty in Chicago and New York, and has conducted large scale research studies on the relationship between mental illness and crime.

‡‡ Kevin Heinz, J.D., is an immigration attorney in Saint Paul, Minnesota. He is the founder and owner of Heinz Law.
I. INTRODUCTION

Individuals with serious mental illnesses such as schizophrenia, bipolar disorder, and depression are overrepresented in the criminal justice system. This overrepresentation has become a growing concern nationally among mental health workers, corrections departments, lawyers, public policy makers, and human rights advocates. Although estimates vary widely, approximately 14 to 16% of people in the criminal justice system have a serious or persistent mental illness. This translates to over one million people.

The Los Angeles County jail system is one of the largest mental health treatment facilities in the country, treating over 3,000 inmates every day. Though jails and prisons treat hundreds of thousands of inmates each year, they are not adequate treatment centers. The purpose of these jails and prisons is to punish, not to control mental health symptoms, and they are not funded for that task. Due to the lack of consistent mental health resources, minimal mental health treatment staff, and the stressful nature of a corrections setting, people with serious mental illness rarely receive


2. See Steadman et al., supra note 1, at 765.

3. See, e.g., Fazel & Danesh supra note 1, at 543 (finding a 14% prevalence rate of serious mental illness among surveyed detainees); Steadman et al., supra note 1, at 764 (finding, of the detainees surveyed, a 15% prevalence rate of serious mental illness among males and 31% prevalence rate among females); Teplin, supra note 1, at 665–66 (estimating 9% lifetime prevalence of serious mental illness among surveyed detainees).


6. Id.

the treatment that they need in jail and prison. Instead, they often end up getting punished for breaking the rules, which can result in longer prison stays and even solitary confinement.

In addition to having trouble in prison, offenders with serious mental illness have a difficult time when they are released back into the community. In fact, people with mental illness are significantly more likely to fail the terms of their probation and parole. Studies have found that offenders with mental illness are around twice as likely to have their parole suspended than offenders without mental illness. This results in a return to custody, often within a year, further perpetuating the overrepresentation of individuals with mental illness behind bars.

This article examines why people with serious mental illness are overrepresented in jails and prisons, and what can be done to prevent criminal justice involvement among this high-risk population. In order to develop effective and efficient prevention and intervention strategies, it is critical to understand the role of mental health symptoms in causing and perpetuating criminal activity.

II. PUBLIC PERCEPTION OF OFFENDERS WITH MENTAL ILLNESS

Media accounts of violence often reinforce a link in the public’s mind between serious mental illnesses and dangerousness. Many people believe that the reason for the high prevalence rates of people with mental illness in prison is that

9. See, e.g., Metzner & Fellner, supra note 7; Winerip & Schwartz, supra note 8.
11. See generally Messina et al., supra note 10 (finding higher rates of return to custody among mentally ill offenders).
12. Id.
13. Id.
people with mental illness are violent. This perception has been particularly perpetuated by the media coverage of mass shootings over the past decade. For example, Adam Lanza shot twenty children and six adults at Sandy Hook Elementary School in Newton, Connecticut before shooting and killing himself in 2012. He had a diagnosis of an autism spectrum disorder. Earlier that year, James Holmes walked into a packed movie theater in Aurora, Colorado and killed twelve people and injured an additional seventy. The coverage of his murder trial, in which he pled not guilty by reason of insanity, focused on his mental health. In 2011 in Tucson, Arizona, Jared Loughner killed six people and wounded twelve others, including U.S. Representative Gabrielle Giffords. Much of the media coverage focused on Loughner’s mental health history and the extent to which the murders could be attributed to psychosis. A few years earlier, Seung-Hui Cho shot and killed thirty-three people at Virginia Tech University in Blacksburg, Virginia, before shooting and killing himself. His history of psychosis prompted such headlines as, “Help the Ill Before They Kill.”

When people with serious mental illness make headlines for violence, it is often for irrational and unpredictable acts of mass

17. Id.
violence that spark public fear. This is why the belief that mental illness causes unpredictable violence is pervasive. However, these acts of extreme violence account for a very small percentage of the criminal activity carried out by people with serious mental illness. It is important to note that most people with mental illness are not violent. In fact, large-scale studies have found that people with mental illness are actually less likely to be violent than similar individuals without mental illness. For people with mental illness who do engage in criminal activity, many of their crimes are "survival crimes" (e.g., urinating in public), or reactive crimes (e.g., responding to aggression).

III. THE INSANITY DEFENSE

When media-hyped crimes committed by offenders with mental illness go to trial, sometimes there is consideration of an insanity defense. The insanity defense has existed since the 1500s. It was designed to limit criminal culpability for those who were too mentally ill at the time of their crime to be considered guilty of the crime. Despite the attention that the insanity defense receives in the media, it is used in less than 1% of cases, and it is only a successful defense in 25% of those cases. The limited use of

26. Jillian Peterson et al., Analyzing Offense Patterns as a Function of Mental Illness to Test the Criminalization Hypothesis, 61 PSYCHIATRIC SERVS. 1217, 1219 (2010) [hereinafter Offense Patterns].
28. See id.
29. Offense Patterns, supra note 26, at 1217–19.
31. NIGEL WALKER, CRIME AND INSANITY IN ENGLAND 16–17, 25–26 (1968) (indicating that some claim the defense to date back to 1200s and 1300s, however the cases are distinguishable from the insanity defense).
33. Patricia A. Zapf et al., Insanity in the Courtroom: Issues of Criminal Responsibility and Competency to Stand Trial, in 2 PSYCHOLOGICAL EXPERTISE IN COURT
the insanity defense is partially due to public opinion. One study found that 66% of people do not think the insanity defense should "be allowed as a complete criminal defense." Additionally, its minimal use may be due to the fact that, if an individual is found not guilty by reason of insanity, he or she will likely spend a longer time incarcerated (in a hospital) than a person who is convicted of similar offenses.

In addition to being rarely used, the concept of insanity is difficult to define. The definition has varied widely over time, and even varies from state to state. For example, the "wild beast test" only considered a defendant to be insane if the defendant did not have his or her reason and senses at the time of the offense. The M'Naghten Rule, currently used by twenty-five states, defines insanity as a "mental disease which prevents him from knowing the nature or quality of his act, or that it was wrong." The American Law Institute's (ALI) definition is broader and utilized in twenty-one states. The ALI states that "[a] person is not responsible for criminal conduct if at the time of such conduct as a result of

79, 84 (Daniel A. Krauss & Joel D. Lieberman eds., 2009) [hereinafter Insanity in the Courtroom].
35. Id.
37. See, e.g., Insanity in the Courtroom, supra note 33, at 80–82.
38. Id. at 82.
39. See Rex v. Arnold, 16 How. St. Tr. 695, 764 (1724); see also Norman J. Finkel, The Insanity Defense Reform Act of 1984: Much Ado About Nothing, 7 BEHAV. SCI. & L. 403, 408 (1989); Implementation and Clarification of the Durham Criterion of Criminal Irresponsibility, 58 COLUM. L. REV. 1253, 1253 (1958) (explaining that, under the "wild beast test," courts were restrained "from imposing punishment if the accused, at the time of the commission of the act, were totally deprived of understanding and could no more know what he was doing than an infant, a brute, or a wild beast").
40. See, e.g., Reese v. Wainwright, 600 F.2d 1085, 1090 (5th Cir. 1979) ("[T]o be legally insane [under the M'Naghten Rule] the defendant must have been unable to understand the nature of his act or its consequences, or incapable of distinguishing right from wrong."). The M'Naghten Rule maintains that a defendant should not be held accountable for her actions only if she did not: (1) know that her actions would be wrong or (2) understand the nature and quality of her actions. 18 U.S.C. § 17 (2014); see, e.g., Wainwright, 600 F.2d at 1090; see also ARIZ. REV. STAT. ANN. § 13-502 (West, Westlaw through 2015).
mental disease or defect he lacks substantial capacity either to appreciate the criminality [wrongfulness] of his conduct or to conform his conduct to the requirements of the law. The Durham v. United States ruling in 1954 broadened the definition of insanity most of all, including crimes that are the "product of mental disease or mental defect." The Durham definition is currently only used in New Hampshire. Four states do not have the insanity defense.

With these varying definitions, it is no wonder why the insanity defense is so widely misunderstood and rarely utilized. Criminal law exists to deal with people who commit acts that are wrong. Criminal law is based on culpability and assumes that people know the law and choose to disregard it. However, this purpose becomes muddled when mental illness enters the picture. The insanity defense requires judges and juries to evaluate the degree to which a crime was committed by a direct result of symptoms of mental illness. This question is important generally when examining the overrepresentation of people with serious mental illness in the criminal justice system—to what degree is their mental illness responsible for their criminal behavior?

42. Durham v. United States, 214 F.2d 862, 874–75 (D.C. Cir. 1954), abrogated by United States v. Brawner, 471 F.2d 696 (D.C. Cir. 1972). The Durham court went on to clarify the new rule, stating that "disease" means "a condition which is considered capable of either improving or deteriorating" and "defect" means "a condition which is not considered capable of either improving or deteriorating and which may be either congenital, or the result of injury, or the residual effect of a physical or mental disease." Id. at 875.
44. Those states are Idaho, Kansas, Montana, and Utah. Id.
45. See United States v. Barker, 514 F.2d 208, 229 (D.C. Cir. 1975) (Bazelon, C.J., concurring) ("The law in its most demanding view of criminal responsibility establishes that if an individual specifically intends to commit an act and if that act is proscribed by law, therefore the individual freely chose to do wrong.").
IV. REASONS FOR THE OVERREPRESENTATION OF MENTAL ILLNESS IN THE CRIMINAL JUSTICE SYSTEM

A. Defining Mental Illness

To understand why people with serious mental illness are overrepresented in the criminal justice system, it is critical to examine how often symptoms of mental illness directly cause crime. People with mental illness can commit crimes as a direct response to their symptoms, such as attacking a stranger due to one's paranoid delusions. Or people with mental illness can commit crimes unrelated to their symptoms, such as burglarizing a house when one is not experiencing any symptoms. The first step to understanding this high risk population is to define which mental illnesses are usually tracked in the criminal justice system and which symptoms of those illnesses can lead to crime.

The definition of serious mental illness varies between states, but the list often includes schizophrenia (and schizophrenia spectrum disorders such as schizotypal or schizoaffective disorders), bipolar disorder, and major depression. Many other mental illnesses are not considered in measuring and defining serious mental illness in the criminal justice system; for example, many anxiety disorders, autism spectrum disorders, fetal alcohol syndrome, and most personality disorders.

The primary focus of treatment and research has been on the role of schizophrenia in causing crime and violence. Psychosis can

47. See generally Jillian K. Peterson et al., How Often and How Consistently Do Symptoms Directly Precede Criminal Behavior Among Offenders with Mental Illness?, 38 L. & Hum. Behav. 439 (2014) [hereinafter Criminal Behavior] (synthesizing and discussing data examining the purported direct correlation between symptoms of mental illness and subsequent criminal behavior).
48. See id. at 443.
49. See id.
50. Id. at 440 (indicating some jurisdictions also include Post-Traumatic Stress Disorder and Borderline Personality Disorder (i.e., the Hennepin County Mental Health Court)).
directly lead to violence. In particular, command hallucinations are visual or auditory hallucinations that give specific orders. Individuals may act on these hallucinations and inflict violence as a result. Delusions that involve being persecuted (i.e., followed or watched) can also result in violence if individuals act on these delusional belief systems aggressively. A review of nearly 9000 insanity pleas from the early 1980s found that defendants were diagnosed with schizophrenia 43% of the time. Among the cases where the insanity defense was successful, 67.9% of defendants were diagnosed with schizophrenia.

However, it is possible for other mental illnesses to cause crime as well. Some scholars have argued that depression can cause criminal activity when an individual enters a “depressive rage,” (i.e., intense anger during a depressive episode). Suicidality and hopelessness could also conceivably lead to crime if an individual has limited concern about the consequences of their behavior and what happens to them in the future. Similarly, Post-Traumatic Stress Disorder (PTSD) can lead to crime due to the symptom of hyper-arousal (elevated threat response), which can cause aggression. Bipolar disorder can also directly cause crime because impulsivity is a key symptom of mania. Impulsivity, which is a

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53. See Dale E. McNiel et al., The Relationship Between Command Hallucinations and Violence, 51 PSYCHIATRIC SERVS. 1288, 1288 (2000) (“Clinical experience suggests that some patients who have hallucinations commanding them to engage in violent behavior do engage in such behavior.”).
54. See id. at 1290.
55. See id. (“Twenty-three patients (22.3 percent) said they had complied with voices telling them to hurt other people—five said they had complied often, nine sometimes, and nine almost never.”).
56. See Peter Cheung et al., Violence in Schizophrenia: Role of Hallucinations and Delusions, 26 SCHIZOPHRENIA RES. 181, 187-88 (1997).
58. See id.
62. AM. PSYCHIATRIC ASS’N, supra note 52, at 124.
known risk factor for criminal involvement,\textsuperscript{63} is much higher among people with bipolar disorder than the general public.\textsuperscript{64}

\section*{B. Mental Illness Directly Causes Crime}

Although symptoms of schizophrenia, depression, PTSD, and bipolar disorder can directly cause criminal behavior, it is also possible for someone to have these diagnoses and commit crimes for other reasons. In order to understand the role of mental health symptoms in causing crime, whether or not symptoms were present at the time a crime was committed needs to be assessed first.\textsuperscript{65} Additionally, the degree to which these symptoms truly motivated the crime needs to be understood (i.e., was the individual responding to a hallucination or delusion when the crime was committed?). Understanding the role of symptoms can be accomplished by interviewing offenders directly, interviewing police officers or witnesses, or by reviewing arrest records.\textsuperscript{66} A handful of psychological researchers have attempted to study the degree to which offenders are motivated by their mental illness, using a variety of techniques and populations. For example, a group of scholars studied 113 people with serious mental illness who were arrested and sent to a program that sends individuals with mental illness to treatment rather than jail.\textsuperscript{67} Participants were interviewed about their recent offense to examine the influence of psychosis and other symptoms at the time the crime was committed.\textsuperscript{68} Only 4\% of participants reported that symptoms directly caused their crime, and 4\% indicated that their symptoms indirectly caused their offense.\textsuperscript{69}

Another study of 112 parolees with serious mental illness (compared with 109 parolees without mental illness) found similar

\begin{thebibliography}{99}
\bibitem{64} See Esther Jiménez et al., \textit{Impulsivity and Functional Impairment in Bipolar Disorder}, 136 J. AFFECTIVE DISORDERS 491, 492 (2012).
\bibitem{65} See \textit{Criminal Behavior}, supra note 47, at 440.
\bibitem{66} See id. at 442–43.
\bibitem{67} John Junginger et al., \textit{Effects of Serious Mental Illness and Substance Use on Criminal Offense}, 57 PSYCHIATRIC SERVS. 879, 880 (2006).
\bibitem{68} See id.
\bibitem{69} See id. at 881.
\end{thebibliography}
results. Using interviews and records, participants were put into one of the following categories: psychotic symptom-based, poverty/survival-based, impulsive/reactive pattern, emotionally stable/instrumental pattern, and gang or drug-based. Only 5% of participants commit crimes as a direct result of symptoms (i.e., the psychotic group). The most common category was emotionally reactive, for both offenders with and without mental illness. Toch and Adams also created a typology for offenders with mental illness after interviewing 495 offenders in New York. The category of offenders responding directly to symptoms (i.e., acute disturbed exploders) held 10.3% of offenders.

A more recent analysis of 1000 psychiatric patients with repeated incidents of violence over a year (part of the MacArthur Violence Study) showed that psychosis preceded violence for 12% of violent incidents. Finally, a study involving in-depth interviews with 143 probationers about their criminal activity throughout their lifespan found that only 7% of crimes were directly motivated by symptoms of mental illness, with an additional 11% that were “mostly” directly related to symptoms.

These various studies utilize different methodologies, definitions, and populations of offenders. However, they are all consistent in finding that symptoms of mental illness only cause crime in a small minority of cases—between 4% and 12% of cases. This means that 88% to 96% of the time, crimes committed by people with serious mental illness are unrelated to their mental health symptoms. Some researchers have wondered if there is a

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70. Offense Patterns, supra note 26, at 1219-20.
71. Id. at 1218.
72. Id. at 1221.
73. Id.
75. See id.
76. Jennifer Skeem et al., Psychosis Uncommonly and Inconsistently Precedes Violence Among High Risk Individuals, ASS’N PSYCHOL. SCI. 1, 1, 7 (2015) [hereinafter Psychosis].
77. See Criminal Behavior, supra note 47, at 444.
78. See TOCH & ADAMS, supra note 74, at 82 tbl.4.1; Junginger et al., supra note 67, at 879–82; Criminal Behavior, supra note 47, at 446–47; Offense Patterns, supra note 26, at 1217–22; Psychosis, supra note 76, at 7.
79. Psychosis, supra note 76, at 7; see, e.g., Criminal Behavior, supra note 47, at 446.
small group of people who commit crimes consistently related to their symptoms and for whom psychiatric care would prevent their criminal involvement; and another, larger group for whom mental health care would have little impact on criminal activity.  

The question was explored directly in the above-referenced study of 143 probationers with mental illness. Criminal activity throughout the lifespan was examined to understand whether symptoms influenced criminal activity consistently over time. The results demonstrated that two thirds of offenders who committed a crime directly motivated by symptoms later committed an additional crime that was unrelated to their symptoms, demonstrating inconsistency over time. Psychiatric patients in the MacArthur violence study were “fairly” consistent in whether or not they committed violence that was immediately preceded by psychotic symptoms over a one-year period.

C. The Criminalization Hypothesis

Although the public assumes that serious mental illness causes violence, empirical studies have consistently found that people with mental illness rarely and inconsistently commit crimes as a direct result of their symptoms. Why, then, are people with serious mental illness so overrepresented in the criminal justice system? One possible explanation is the “criminalization” of mental illness. According to the criminalization hypothesis, people with serious mental illness become involved in the criminal justice system because they do not have access to the mental health care that they need.

81. Criminal Behavior, supra note 47, at 440–47.
82. Id. at 441.
83. Id. at 446.
84. Psychosis, supra note 76, at 6.
85. See TOCH & ADAMS, supra note 74, at 55–57; Junginger et al., supra note 67, at 882; Criminal Behavior, supra note 47, at 445–46; Offense Patterns, supra note 26, at 1221–22; Psychosis, supra note 76, at 8.
87. Id. at 104.
The criminalization of mental illness is largely blamed on the deinstitutionalization of mental health hospitals in the 1960s and 1970s.\(^8\) Deinstitutionalization resulted after the invention of psychiatric medications, after several legal cases gave people with mental illness more rights,\(^9\) and after new legislation passed that was designed to create community mental health centers.\(^9\) Consequently, psychiatric hospital stays dropped from an average of 421 days to 189 days during this period of deinstitutionalization, and many institutions eventually closed.\(^9\)

Although people were spending less time in the hospital during this period of time, they could not access the care that they needed in their community.\(^9\) According to the criminalization hypothesis, instead of staying in hospitals, people with serious mental illness ended up in jails and prisons.\(^9\) Jail booking for minor crimes can be used by police officers as a way to secure treatment for people that need it.\(^9\) Therefore, the criminalization hypothesis asserts that people with serious mental illness are arrested for minor crimes and funneled through the criminal justice system as a way to access psychiatric care.

However, there is little empirical evidence showing that the criminalization hypothesis adequately explains the overrepresentation of people with mental illness in jails and prisons. One study of psychiatric hospitals and prisons between 1969 and 1978 did not find that the prevalence of mental illness in prisons increased during this time frame.\(^9\) In fact, in three states

\(^8\) Id.; see also Charles A. Kiesler et al., Federal Mental Health Policymaking: An Assessment of Deinstitutionalisation, 38 AM. PSYCHOL. 1292, 1293 (1983).
\(^9\) Abramson, supra note 86, at 105.
\(^9\) See Abramson, supra note 86, at 104.
\(^9\) Torrey, supra note 93, at 1612.
\(^9\) Henry J. Steadman et al., The Impact of State Mental Health Hospital Deinstitutionalization on United States Prison Populations, 1968–1978, 75 J. CRIM. L. &
there was more mental illness in prisons in 1969 than in 1978, calling into question the criminalization hypothesis during this period of deinstitutionalization. So although a lack of mental health resources and treatment options in the community may be a partial explanation of the overrepresentation of mental illness in the justice system, it is not the complete story.

D. Difficulty Navigating the Criminal Justice System

In addition to the direct cause model and the criminalization hypothesis, another explanation for overrepresentation is that once offenders with mental illness enter the criminal justice system, they have a harder time navigating their way through it. For example, offenders with serious mental illness are likely to be poor, meaning they cannot afford to hire their own attorney. People with serious mental illness may have trouble understanding police interrogations and may even be more likely to make false confessions. They may have more difficulty assisting their attorney in their own defense or fully understanding court procedures or plea deals.

Once people with mental illness enter the prison system, they often have a harder time navigating the prison environment than their non-mentally ill counterparts, making it difficult to access

97. Id. at 485.
100. See id. at 553–54.
102. See Andrew D. Reisner et al., Competency to Stand Trial and Defendants Who Lack Insight into Their Mental Illness, 41 J. AM. ACAD. PSYCHIATRY & L. 85, 86–87 (2013). See generally Victoria Harris & Christos Dagadakis, Length of Incarceration: Was There Parity for Mentally Ill Offenders?, 27 INT’L J.L. & PSYCHIATRY 387, 391–92 (2004) (discussing evidence of longer sentences for mentally ill offenders than for non-mentally ill offenders); Amy Watson et al., Mental Health Courts and the Complex Issue of Mentally Ill Offenders, 52 PSYCHIATRIC SERVS. 477, 478 (2001) (indicating that there is also some evidence that mentally ill offenders are typically sentenced to longer prison terms than non-mentally ill offenders).
needed treatment and resources. Stress exacerbates mental health symptoms, and the stress of being in prison is certainly no exception. A study of over 16,000 federal and state inmates found that offenders experiencing psychosis and major depression were more likely to receive infractions involving aggression while incarcerated. In general, they were more likely to break the rules and less likely to receive early parole for good behavior, which resulted in longer sentences. Elaine Lord posits that women with mental illness have a particularly difficult time in prison. Female offenders with mental illness are more likely to break the rules, more likely to act aggressively, and more likely to end up in segregation. Estimates of mental health diagnoses for women in prison vary widely, but some studies have found prevalence rates as high as 75%.

Additionally, offenders with mental illness have a particularly difficult time when they leave prison and are twice as likely to fail their terms of probation and parole. There are a number of reasons why supervision failure can occur, including committing a new offense or a technical violation (e.g., not showing up for a parole appointment or not consistently taking one’s medication). Qualitative interviews were conducted with forty-three offenders with mental illness and twenty-five treatment providers to examine the difficulties of transitioning back into the community after prison. When returning to the community, offenders highlighted the difficulty of finding stable housing, often resulting in a return

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103. See Leah Gogel Pope et al., Transitioning Between Systems of Care: Missed Opportunities for Engaging Adults with Serious Mental Illness and Criminal Justice Involvement, 31 BEHAV. SCI. & L. 444, 450 (2013).
104. Id. at 449.
106. Id.
108. Id. at 932-35.
111. Id. at 334-36.
112. Pope et al., supra note 103, at 446-47.
to substance use and failure to attend treatment.\textsuperscript{113} Treatment providers often stressed the difficulties in coordinating mental health and criminal justice services since the two systems rarely overlap.\textsuperscript{114} Case managers have been found to return people with serious mental illness to custody after a technical violation as a means of securing mental health treatment for them.\textsuperscript{115}

\textbf{E. Offenders with Mental Illness Are Similar to Other Offenders}

Another theory that has gained support in recent years is based on the idea that offenders with mental illness are not very different from offenders without mental illness when it comes to criminal risk factors.\textsuperscript{116} For example, offenders with mental illness are likely to come from poor neighborhoods and have negative life experiences in their background.\textsuperscript{117} These factors place individuals at a higher risk for use of violence, regardless of the fact that they have a mental illness.\textsuperscript{118}

In general, the most salient risk factors for criminal behavior, often referred to as the "central eight" include the following: (1) a history of antisocial behavior, (2) antisocial personality pattern, (3) antisocial cognition, (4) antisocial associates, (5) troubled family and marital relationships, (6) problems with school and/or work, (7) leisure and/or recreation problems, and (8) substance abuse.\textsuperscript{119} In a recent analysis of over two hundred parolees, researchers used the Level of Service Inventory/Case Management Inventory to determine that offenders with a mental illness demonstrated

\begin{itemize}
\item \textsuperscript{113} \textit{Id.} at 451.
\item \textsuperscript{114} \textit{Id.} at 451–52.
\item \textsuperscript{116} See Skeem et al., \textit{supra note} 80, at 117; see also \textit{Offense Patterns, supra note} 26, at 1218.
\item \textsuperscript{118} See \textit{id.} at 691 ("[T]heir likelihood of associating with individuals whose beliefs support the use of violence as a means of conflict resolution is heightened."); \textit{id.} at 692, ("Of the many different types of criminal behavior that have been studied over the past decade, stressful life events and the negative emotions associated with them have shown their strongest effects on the occurrence of interpersonal violence.").
\item \textsuperscript{119} D.A. Andrews et al., \textit{The Recent Past and Near Future of Risk and/or Need Assessment}, 52 Crime & Delinq. 7, 11 tbl.1 (2006).
\end{itemize}
significantly more of these central eight general risk factors than similar offenders who did not have a mental illness.\textsuperscript{120}

One strong predictor of criminal activity is antisocial cognition, also referred to as criminogenic beliefs, which describes moral reasoning and thinking patterns that “rationalize and perpetuate criminal activity.”\textsuperscript{121} A recent study compared criminal thinking among ninety-four people with serious mental illness in prison with ninety-four people with serious mental illness in a psychiatric hospital.\textsuperscript{122} People without past criminal justice involvement had lower levels of criminal thinking than people with a history of criminal justice involvement (whether in prison or the hospital).\textsuperscript{123} Another recent study found that offenders with mental illness demonstrated high levels of criminal thinking, similar to offenders without mental illness.\textsuperscript{124}

General risk factors have been found to predict criminal activity even among individuals with serious mental illness found not guilty by reason of insanity.\textsuperscript{125} Nearly six hundred people found not guilty by reason of insanity were examined in a study that lasted for at least five years after their release from the psychiatric hospital.\textsuperscript{126} Approximately 30\% of people had their conditional

\begin{footnotesize}
\begin{enumerate}
\item[(\textsuperscript{120})] See Jennifer L. Skeem et al., Offenders with Mental Illness Have Criminogenic Needs Too: Toward Recidivism Reduction, 38 L. & HUM. BEHAV. 212, 220–21 (2014); see also MHS PUB. SAFETY, LEVEL OF SERVICE/CASE MANAGEMENT INVENTORY: AN OFFENDER ASSESSMENT SYSTEM (2004); Andrews et al., supra note 119, at 14 (“[T]he major predictors of violence . . . were not mental health variables but the risk factors already well established in general corrections and the psychology of criminal conduct.”).
\item[(\textsuperscript{121})] See June Price Tangney et al., Working at the Social-Clinical-Community-Criminology Interface: The George Mason University Inmate Study, 26 J. SOC. & CLINICAL PSYCHOL. 1, 5 (2007).
\item[(\textsuperscript{123})] Id. at 182.
\item[(\textsuperscript{124})] Robert D. Morgan et al., Prevalence of Criminal Thinking Among State Prison Inmates with Serious Mental Illness, 34 L. & HUM. BEHAV. 324, 332 (2010) (“[T]he results of this study indicated that mentally ill inmates presented with . . . criminal thinking comparable to non-mentally ill inmates.”).
\item[(\textsuperscript{125})] See Lisa A. Callahan & Eric Silver, Revocation of Conditional Release: A Comparison of Individual and Program Characteristics Across Four U.S. States, 21 INT’L J.L. & PSYCHIATRY 177, 184 (1998) (discussing how the revocation of conditional release from civil commitment “is influenced by . . . individual-level characteristics” such as employment and marriage).
\item[(\textsuperscript{126})] Id. at 180.
\end{enumerate}
\end{footnotesize}
release revoked during the study period.\textsuperscript{127} The factors that predicted recidivism were substance abuse and unemployment (similar to offenders without mental illness), not mental health symptoms.\textsuperscript{128} In another study that reviewed records of 125 people found not guilty by reason of insanity, researchers found that substance abuse diagnosis and prior criminal history predicted recidivism, rather than any mental health factors.\textsuperscript{129}

\textit{F. Mental Illness Indirectly Causes Crime}

Although offenders with mental illness have many of the same risk factors for criminal activity as offenders without mental illness, it does not mean that mental illness had nothing to do with the pathway to crime.\textsuperscript{130} Mental illness exerts an influence over one’s life, which may indirectly contribute to criminal activity.\textsuperscript{131} Mental illness causes certain risk factors for criminal activity, which in turn causes criminal behavior.\textsuperscript{132} Psychosis typically develops during late adolescence and early adulthood.\textsuperscript{133} This is the period of time when young people are forming their identity, starting college and careers, and exploring relationships.\textsuperscript{134} As one’s symptoms progress, risk factors such as unemployment, relationship problems, and negative peer groups develop, which can then lead to criminal activity.\textsuperscript{135}

\textit{G. Poverty}

One possible indirect pathway from symptoms to crime is poverty. Some scholars argue that “persons with mental illness sometimes engage in offending and other forms of deviant

\begin{enumerate}
\item Id. at 181.
\item Id. at 185.
\item Id. at 264–65.
\item Skeem et al., supra note 80, at 117–18.
\item Id.
\item Kevin D. Tessner et al., Longitudinal Study of Stressful Life Events and Daily Stressors Among Adolescents at High Risk for Psychotic Disorders, 37 Schizophrenia Bull. 432, 433 (2011).
\item Skeem et al., supra note 80, at 116.
\item See id.; see also Elaine F. Walker & Donald Diforio, Schizophrenia: A Neutral Diathesis-Stress Model, 104 Psychol. Rev. 667, 668 (1997).
\end{enumerate}
behavior not because they have a mental disorder but because they are poor." Serious mental illness makes it harder to finish one's education or establish and maintain a job. Untreated mental illness also strains relationships with friends and family, which can result in fewer financial resources. With fewer resources and options, poverty can lead to criminal activity. In this model, mental illness leads to poverty, which leads to criminal activity. While symptoms may not directly cause crime, they create the conditions in which criminal activity is more likely to occur.

H. Social Support

An additional possible pathway to criminal behavior is a lack of social bonds. Strong social bonds protect one against criminal behavior. Lack of social support is also a contributing factor to violence and criminal activity, particularly among people with mental illness. When serious mental illness takes hold, it can result in the alienation of friends and family who may not understand or detect untreated symptoms. A lack of social support means fewer resources to cope with stress, fewer resources to aid in finding employment or housing, and fewer community ties that protect against criminal activity such as church or community groups. In this way, symptoms of mental illness can lead to impaired social support, which leads to criminal behavior.

137. Id.
139. Id. at 566.
140. See id. at 570.
141. See id.
143. See Hirschi, supra note 142, at 12.
144. See Eric Silver & Brent Teasdale, Mental Disorder and Violence: An Examination of Stressful Life Events and Impaired Social Support, 52 Soc. Probs. 62, 62-65 (2005).
145. Id. at 64.
146. Id.
147. Id. at 64-65.
I. Substance Abuse

An additional indirect pathway from symptoms to crime is through substance abuse. According to Fisher and Drake, "poverty often forces [people with mental illness] to live in neighborhoods, housing projects, homeless shelters, and other settings that are rife with illicit substances." Among psychiatric inpatients, the rate of a co-occurring substance use disorder is around 50%. According to national surveys, the likelihood of having a substance abuse disorder is nearly two times higher among people with serious mental illness than in the general population. People with serious mental illness often "self-medicate" with drugs or alcohol to dull the impact of untreated mental health symptoms, which can ultimately lead to criminal justice involvement.

These indirect pathways are difficult to study since they need to be tracked over the lifespan, and causal direction and ordering are difficult to determine (i.e., people may self-medicate symptoms by using drugs or alcohol, but drugs and alcohol also trigger and exacerbate symptoms of mental illness). One recent study attempted to measure these indirect pathways by focusing on poverty and substance abuse in a sample of 142 offenders with serious mental illness that were recruited through a community corrections department. Each crime committed during a


149. Id. at 546.


151. Darrel A. Regier et al., Comorbidity of Mental Disorders with Alcohol and Other Drug Abuse: Results from the Epidemiological Catchment Area (ECA) Study, 264 JAMA 2511, 2514 (1990).


participant's lifespan was coded according to the degree to which it was influenced by criminal risk factors such as poverty and substance abuse.\textsuperscript{155} Approximately 60% of the total sample consistently committed crimes that were a result of poverty or substance abuse—24% committed crimes related to substance abuse only, 12% committed crimes related to poverty only, and 24% committed crimes related to both poverty and substance abuse.\textsuperscript{156} This early evidence suggests mental illness is connected to crime, but the indirect pathway runs through substance abuse and poverty.\textsuperscript{157}

V. REDUCING CRIME AMONG OFFENDERS WITH MENTAL ILLNESS

There are many reasons why people with mental illness are overrepresented in the criminal justice system. The direct cause model, where symptoms directly cause crime, only applies to a small number of crimes (4 to 12\%).\textsuperscript{158} For people committing direct crimes, the criminalization hypothesis may be an appropriate explanation.\textsuperscript{159} If these crimes occurred because of untreated mental health symptoms, then increased community resources would likely help curb criminal activity in these cases.\textsuperscript{160} Additional ways other offenders with mental illness may have more difficulty navigating the criminal justice system are their lack of ability to assist in their defense, follow the rules in prison, and follow the rules of probation and parole.\textsuperscript{161} These difficulties result in longer

\begin{itemize}
  \item \textsuperscript{155} Id. at 57.
  \item \textsuperscript{156} See id. at 103.
  \item \textsuperscript{157} Id. at 92–93.
  \item \textsuperscript{158} TOCH \& ADAMS, supra note 74, at 82; Junginger et al., supra note 67, at 881; Criminal Behavior, supra note 47, at 446–47; Offense Patterns, supra note 26, at 1220; Psychosis, supra note 76, at 7.
  \item \textsuperscript{159} Abramson, supra note 86, at 104.
  \item \textsuperscript{160} Id. at 101.
  \item \textsuperscript{161} See Fisher et al., supra note 99, at 546–49; see also Harris \& Dagadakis, supra note 102, at 387; Redlich, supra note 101, at 19 ("[T]he probability of arrest was 67 times greater for persons who demonstrate symptoms of mental illness compared with those without such symptoms."); Reisner et al., supra note 102, at 85 ("A defendant's lack of insight could bear significantly on his trial decision-making, including rejection of mental-state defenses or transfer to mental health court. These individuals may, because of mental illness, be unable to have a rational appreciation of the appropriateness of legal strategies that rely on mental illness determinations."); Watson et al., supra note 102, at 478 (indicating there is
\end{itemize}
prison stays and more returns to custody than occur for offenders without mental illness. Additionally, many of the other risk factors for criminal activity are present in the lives of offenders with mental illness. Mental illness may indirectly cause crime because the mentally ill often have risk factors for crime such as poverty, impaired social support, and substance abuse, which in turn causes criminal activity.

A. Interventions that Reduce Recidivism

Since there is more than one reason that people with mental illness become entangled in the criminal justice system, it is unlikely that any one approach will consistently reduce recidivism and prevent criminal activity for this group. At this point, most prevention and intervention programs for offenders with mental illness focus on providing access to mental health treatment or psychiatric medications. However, it is known that symptoms of mental illness cause crime rarely and inconsistently. Mental health treatment may even be mandated as part of the sentence for people with mental illness, which sets up more opportunities for technical violations of probation or parole due to increased mandatory appointments.

There are a number of innovative programs for people with mental illness that attempt to link the criminal justice system to the mental health system. For example, mental health courts try to divert individuals from the justice system, often after they have plead guilty, by having them enter mental health treatment instead. Jail diversion programs have a similar purpose—linking

also some limited evidence that offenders with mental illness may receive longer sentences for similar crimes than offenders without mental illness).

162. Pope et al., supra note 103, at 445; Skeem & Louden, supra note 110, at 333.

163. Silver & Teasdale, supra note 144, at 63–66; Skeem et al., supra note 80, at 116.


165. Criminal Behavior, supra note 47, at 446–47.


168. Roger A. Boothroyd et al., Clinical Outcomes of Defendants in Mental Health
people with mental health treatment—often before their case even goes to trial. Some jurisdictions, such as Dallas, Texas, have implemented late-start jail diversion programs to divert offenders with mental illness to treatment programs rather than facing potential parole revocation. Prison reentry programs try to link offenders with mental illness to treatment programs after their release. And specialty parole and probation agencies help link offenders with mental illness directly to services in their communities.

Unfortunately, there is little evidence that interventions that focus solely on treating symptoms are effective at reducing recidivism for offenders with mental illness. One recent meta-analysis found that high-quality empirical studies of mental health treatment programs for offenders with mental illness demonstrated no significant improvement on criminal justice outcomes. An additional meta-analysis of twenty-six empirical studies found no effect of mental health treatments on criminal recidivism among offenders with mental illness. These programs improve clinical symptoms, which is an important step in the lives of individuals with mental illness, but that does not translate into a reduction in criminal activity.
B. Comprehensive Intervention Programs

Since offenders with mental illness demonstrate many of the same risk factors for criminal activity as offenders without mental illness, it is likely that programs addressing indirect routes to crime such as poverty, employment, housing, social support, and substance abuse will be helpful.\textsuperscript{177} Offenders with mental illness typically leave prison with a one to four week supply of medication and a phone number for community mental health care.\textsuperscript{178} In order to stop the revolving door of criminal justice, involvement with reentry programs that help people successfully make the transition from prison back into the community may be promising.

There are a number of models for reentry programs that help offenders manage their community transition. Transition teams provide needs assessment, release planning, agency coordination (including health, substance abuse, probation, and parole), and help with applications for insurance, disability, and housing.\textsuperscript{179} Transition teams begin meeting with offenders in prison and continue providing services in the community after release.\textsuperscript{180} Community aftercare programs go further than transition teams by providing housing, programming, and resources for offenders following release from prison.\textsuperscript{181} Rather than coordinating with other outside agencies, aftercare programs directly provide services that offenders need to ease their transition into the community.\textsuperscript{182} Specialty parole can also be helpful: it involves specially trained parole agents with caseloads comprised primarily of parolees with mental illness.\textsuperscript{183} A national survey of specialty probation agencies revealed five features: caseloads comprised only of parolees with mental illness, reduced caseload size, ongoing training of officers...

\textsuperscript{177} Peterson, \textit{supra} note 154, at 77.
\textsuperscript{178} HUMAN RIGHTS WATCH, \textit{supra} note 98, at 194–95.
\textsuperscript{179} J. Steven Lambert et al., \textit{Forensic Assertive Community Treatment: Preventing Incarceration of Adults with Severe Mental Illness}, 55 PSYCHIATRIC SERVS. 1285, 1287–88 (2004).
\textsuperscript{180} Id.
\textsuperscript{181} Id.
\textsuperscript{182} Beth Angell et al., \textit{Engagement Processes in Model Programs for Community Reentry from Prison for People with Serious Mental Illness}, 37 INT'L J.L. & PSYCHIATRY 490, 491–92 (2014).
\textsuperscript{183} Id.
in mental health-relevant issues, integration of internal and external resources, and reliance on problem-solving supervision strategies.\footnote{184}

Unfortunately, little is known about whether or not these programs actually work. In order to research these programs, experimentally designed studies that use control groups or matched design and adequate follow-up data are needed. These studies are difficult to carry out and require funding and resources that criminal justice agencies often lack. In one of the only experimental evaluations of reentry programming for offenders with mental illness identified in the literature, researchers randomly assigned over 200 inmates with mental illness to a treatment or control condition.\footnote{185} Half of the people in the treatment group also chose to participate in aftercare in the community, which provided temporary housing in a twenty-bed facility.\footnote{186} One year after their release, returns to prison were significantly lower for the treatment plus aftercare group (5%) compared to the control group (33%).\footnote{187}

Successful re-entry programs like this one will likely need to include features such as vocational training and halfway houses, as well as cognitive behavioral treatments that target the criminal thinking so often seen among offenders with mental illness.\footnote{188} Policies and programs that reflect risk, needs, and responsivity principles are likely to be effective for the majority of offenders with mental illness (i.e., match program intensity to the level of risk, target changeable risk factors, and match services to individuals).\footnote{189} Further studies highlight the need to address the

\footnotesize{\begin{itemize}
\item \footnote{185} Stanley Sacks et al., Randomized Trial of a Reentry Modified Therapeutic Community for Offenders with Co-occurring Disorders: Crime Outcomes, 42 J. SUBSTANCE ABUSE TREATMENT 247, 249–52 (2012).
\item \footnote{186} \textit{Id.} at 249.
\item \footnote{187} \textit{Id.}
\item \footnote{188} See generally Joan Petersilia, What Works in Prisoner Reentry? Reviewing and Questioning the Evidence, 68 FED. PROBATION 4 (2004) (analyzing how to improve the current effectiveness of prison reentry programs).
\item \footnote{189} See generally Sacks et al., supra note 185 (analyzing through a national survey the effectiveness of specialty parole systems).
\item \footnote{190} See \textit{Using Social Science to Reduce Violent Offending: A Briefing Paper for Public Policymakers} (Joel A. Dvoskin et al. eds., 2011), http://static1.sqspcdn.com/static/f/1013495/26048233/1426528574393
\end{itemize}}
lack of education, unemployment, homelessness, substance abuse, and prosocial attachments seen among offenders with mental illnesses.  

VI. CONCLUSIONS

Successful programs for offenders with mental illnesses that effectively prevent or break the cycle of criminal justice involvement are possible, but these programs need to be comprehensive—addressing the holistic needs of this high-risk population, rather than a sole focus on mental health symptoms and treatment. Early programming may also be critical for intervention. Emerging adulthood is the key point at which both symptoms develop and criminal justice involvement usually begins. Resources for high school students, such as mental health services and social workers, may help young adults manage this difficult period of time. Longitudinal experimental research is needed to know whether early intervention programs for at-risk adolescents result in reductions in future criminal activity.

It is unlikely that any one-size-fits-all program will work for this population. Instead, examining the individual needs among each offender (e.g., untreated symptoms, unemployment, homelessness, criminal peers, and drug or alcohol abuse) will be critical for preventing future criminal activity. Designing comprehensive programs involves cooperation among the criminal justice, social services, and medical systems. While these programs are expensive, they will ultimately save costs. A study by the Urban Institute...
found that a 5.6% drop in arrest rates resulted in a savings of $7.2 million for the state. A cost-benefit analysis showed that the state received a return of $3 for every $1 spent on the program. While comprehensive programs that cross system boundaries sound difficult to coordinate and implement, they are certainly worth the investment in terms of saving costs, preventing victims, reducing recidivism, and improving the lives of people with serious mental illnesses.

194. *Id.*
195. *Id.*
New York Plan Aims to Divert Mentally Ill People From Jail’s Revolving Door

By JAMES C. MCKINLEY JR.  DEC. 2, 2014

It is hard to walk the halls of the Criminal Courts Building in Manhattan without encountering stories of crimes committed by people with mental illnesses. On Monday, two separate murder cases were being tried against men who had presented evidence they were psychotic when they stabbed their victims to death.

In a third courtroom, a homeless man with a history of mental illness, who had been jailed several times before for minor crimes, was scheduled to be arraigned on attempted murder charges after being accused of stabbing a street vendor in the chest with a pair of scissors.

Those are the nightmare cases, defense lawyers and prosecutors say, horrific situations in which people who never received effective treatment for mental illnesses ended up committing violent crimes.

But every day, dozens of people with fragile psyches are arraigned in Manhattan for minor crimes. Many cannot make bail and are remanded to Rikers Island, where they seldom receive the medical care they need, criminal justice experts said. These defendants often leave jail with a weaker hold on sanity than when they entered. A few go on to commit worse offenses.
“What we have been doing to try to keep mentally ill offenders from cycling in and out of the system has not worked well enough,” the Manhattan district attorney, Cyrus R. Vance Jr., said.

Mayor Bill de Blasio has announced an ambitious $130 million plan to break that pattern, to screen out nonviolent defendants with mental illnesses before arraignment and divert many more of them to supervised release programs or to treatment programs, rather than holding them in jail.

Many parts of Mr. de Blasio’s plan have yet to be fully developed or put into effect, and will take shape over the next year, possibly in the form of pilot projects. Some of his proposals will build on existing diversion programs and a supervised release system.

More than a decade ago, the judiciary established mental health courts to handle cases in which both sides agree treatment is a better outcome than incarceration. Those courts have dealt with 2,900 defendants in the city since 2002.

Still, Chief Judge Jonathan Lippman said the mayor’s plan would bring more resources to bear on identifying mentally ill people earlier during their encounter with the criminal justice system, and then taking steps to prevent them from being arrested repeatedly.

“The key is the early screening,” Judge Lippman said. “If you don’t deal with their mental problems, you are exposing the public to great harm, because these people are unbalanced.”

Mr. Vance said one important provision in the plan was the training of police officers to spot signs of mental illness, which his office is underwriting with $15 million in forfeiture funds. The officers will then have the option, without booking them, to take people accused of minor crimes to newly established community drop-off centers, where they can receive treatment and counseling, rather than putting them through the court system.

Another important plank of the plan is the expansion of a supervised release program to 3,400 slots, from 1,100, Mr. Vance said. Under that program, defendants
can avoid jail if social workers stay in close touch with them while a case is pending and they agree to go to mental health services and drug treatment. The additional 2,300 slots will be made available to mentally troubled people.

The city also plans in January to begin systematic screening in Manhattan by sending health care workers into the central booking office at 100 Centre Street, armed with diagnostic questionnaires for defendants before they are arraigned.

At present, medics from the Fire Department do a brief health screening of defendants during the booking process. But it is generally left to public defenders and social workers in the arraignment courts to identify people who might be candidates for diversion to mental health treatment, and to make a proposal to a judge.

Elizabeth Glazer, the mayor’s criminal justice coordinator, said Mr. de Blasio’s aim was to begin systematically flagging people with a history of mental illness or other signs of a disordered mind.

“We are not reinventing the wheel,” Ms. Glazer said. “We are taking the tried and true and trying to make that wise decision making more systemic.”

Seymour W. James Jr., attorney in chief of the Legal Aid Society, said the current efforts to identify mentally ill people before arraignment were spotty at best. People with undisclosed mental problems often appear risky to judges and have bails imposed upon them that they cannot pay, he said.

“To have someone screening individuals early can make a world of difference,” he said. “They deteriorate in Rikers Island.”

The mayor’s plan also aims to persuade judges to reduce the use of bail. New York judges can consider **only the risk of flight** in setting bail. As a result, bail is often imposed on mentally ill defendants, who often have vague work histories, little money and a record of minor arrests, defense lawyers said.

But the mayor’s plan calls for the development of some scientific guidelines over the next year to help judges weigh defendants’ risk of flight if they enter a supervised
release program. That approach has worked in Washington, and in some jurisdictions in Kentucky, officials said.

A version of this article appears in print on December 3, 2014, on Page A30 of the New York edition with the headline: Mayoral Plan Aims to Divert Mentally Ill People From Jail’s Revolving Door.
ABOUT THE URBAN INSTITUTE
The nonprofit Urban Institute is dedicated to elevating the debate on social and economic policy. For nearly five decades, Urban scholars have conducted research and offered evidence-based solutions that improve lives and strengthen communities across a rapidly urbanizing world. Their objective research helps expand opportunities for all, reduce hardship among the most vulnerable, and strengthen the effectiveness of the public sector.
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledgments</td>
<td>iv</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>v</td>
</tr>
<tr>
<td>I. Introduction</td>
<td>1</td>
</tr>
<tr>
<td>II. Research Objective and Focus: Severe Mental Illness among Individuals Involved in the Criminal Justice System</td>
<td>3</td>
</tr>
<tr>
<td>III. Data and Methodology</td>
<td>5</td>
</tr>
<tr>
<td>1. Scan of Practice</td>
<td>5</td>
</tr>
<tr>
<td>2. Research Synthesis</td>
<td>5</td>
</tr>
<tr>
<td>IV. Findings</td>
<td>8</td>
</tr>
<tr>
<td>1. Scope of the Problem</td>
<td>8</td>
</tr>
<tr>
<td>2. Costs Associated with Managing Mentally Ill Individuals in the Criminal Justice System</td>
<td>10</td>
</tr>
<tr>
<td>4. Criminal Justice Programs and Interventions for Mentally Ill Individuals</td>
<td>26</td>
</tr>
<tr>
<td>V. Research and Policy Recommendations</td>
<td>39</td>
</tr>
<tr>
<td>VI. Conclusion</td>
<td>41</td>
</tr>
<tr>
<td>Appendix. Statutory Sources of Information</td>
<td>42</td>
</tr>
<tr>
<td>Notes</td>
<td>44</td>
</tr>
<tr>
<td>References</td>
<td>46</td>
</tr>
<tr>
<td>About the Authors</td>
<td>50</td>
</tr>
<tr>
<td>Statement of Independence</td>
<td>51</td>
</tr>
</tbody>
</table>
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Executive Summary

Mentally ill offenders possess a unique set of circumstances and needs. However, all too often, they cycle through the criminal justice system without appropriate care to address their mental health. According to the Bureau of Justice Statistics, individuals with mental health needs make up a large proportion of the US correctional population. An estimated 56 percent of state prisoners, 45 percent of federal prisoners, and 64 percent of jail inmates have a mental health problem. These individuals often receive inadequate care, with only one in three state prisoners and one in six jail inmates having received mental health treatment since their admission (James and Glaze 2006). Offenders with severe mental illness place even more strain on the criminal justice system as a whole, in terms of their unique case-processing requirements and treatment needs and their increased risk of recidivism (Baillargeon et al. 2009; Cloyes et al. 2010; Feder 1991). Housing mentally ill offenders in the criminal justice system is costly. In addition to high health care costs, mentally ill inmates tend to have higher rates of prison misconduct and recidivism (Fellner 2006; Toch and Adams 2002).

Despite the evidence that mental illness in the criminal justice system is a pressing concern, our comprehensive effort to identify cost-effective, evidence-based programs and policies for managing and treating mentally ill persons in the criminal justice system brought to light how limited current knowledge is on this topic. There have been only a few rigorous evaluations of criminal justice programs and policies targeted at mentally ill offenders. This limitation, in and of itself, is a notable finding, as it shows what more needs to be done to better understand how to effectively alleviate the costs and challenges of treating and processing offenders with mental illness in the criminal justice system. Given these challenges and their financial consequences for society and governments, it is important to understand how to identify and provide early intervention for those who suffer from mental illness in the criminal justice system.

This report focuses on the societal and economic costs of holding mentally ill offenders in jails and prisons. It also presents a detailed discussion of how mentally ill offenders are processed in the criminal justice system, highlighting the diversity of protocols and practices outlined in state statutes to address these challenges. Further, it discusses several promising criminal justice interventions and policies for mentally ill offenders, including the following:

- Diversionary mechanisms, such as mental health courts, that route mentally ill offenders to community-based mental health treatment programs instead of prison or jail
- Community-based reentry programs providing coordinated services and case management for mentally ill offenders transitioning into the community

- Policies that provide mentally ill offenders with increased access to medical and mental health care

After reviewing these promising interventions, the background analysis finishes with suggestions for future research and a discussion of the implications of our findings.
I. Introduction

Individuals with mental illness are overrepresented in the US criminal justice system. Severe mental illness afflicts nearly one-quarter of the US correctional population, including individuals in prisons, in jails, and on probation (Ditton 1999; Lurigio and Fallon 2007). Epidemiological studies place between 15 and 24 percent of prison inmates in this category (Baillargeon et al. 2009; Diamond et al. 2001; Ditton 1999), and the most recent report from the Bureau of Justice Statistics (BJS) on the mental health of prison and jail populations in the United States indicates that more than 700,000 inmates reported symptoms or a history of a mental health disorder at midyear 2005 (James and Glaze 2006). These numbers represent a substantial need for mental health treatment in the criminal justice system. However, given that many prisons and jails are not equipped to handle this growing population with special needs, these numbers raise concerns about the well-being of mentally ill individuals involved in the criminal justice system, as well as the safety in correctional facilities and communities in general.

At the request of Janssen Pharmaceuticals Inc., this background analysis examines how individuals with mental illness are processed and treated in the criminal justice system and discusses the implications of insufficient or inadequate care for these individuals. In particular, the main objectives of this paper are to review current practice in the processing of mentally ill offenders, assess societal and economic costs associated with recidivism and insufficient care for this population, and highlight promising strategies to tackle challenges involved in the reintegration of mentally ill offenders into society.

This paper is organized as follows. First, we review the operational definition of mental illness as used in this paper as well as in the literature and legislative documents. Second, we provide an overview of the methodology used in this study to conduct a comprehensive review of current practice related to the treatment and management of mentally ill individuals in the criminal justice system. The paper outlines procedures used for collecting and synthesizing prior research and legislative documents regarding mental health treatment in the criminal justice system. Third, we present findings on the current landscape of mental health care for criminal justice populations, including a review of the costs associated with managing mentally ill persons in the criminal justice system, followed by a state-by-state scan of relevant statutes and codes that provide a framework for the definition and treatment of mentally ill offenders in each state. On the basis of prior research on reentry and diversionary programs for mentally ill offenders, we also identify evidence-based strategies to manage and treat mentally ill offenders in the criminal justice system. Finally, we identify gaps in empirical research on this topic and
discuss societal and economic implications of inadequate mental health care in the criminal justice system.

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**Research Questions Presented by Janssen Pharmaceuticals**

- **State-by-state analysis:** How are mentally ill offenders defined, processed, and treated differently across states, and what are the implications for recidivism?

- **National trends:** What are the national trends regarding individuals with mental health problems in the criminal justice system and associated costs related to recidivism?

- **Costs:** What are the societal and economic costs associated with managing and treating mentally ill persons in the criminal justice system?

- **Promising criminal justice policies and programs:** What does research say about effective strategies to address mental health needs of individuals involved in the criminal justice system?
II. Research Objective and Focus: Severe Mental Illness among Individuals Involved in the Criminal Justice System

One objective of this background analysis is to shed light on how the criminal justice system recognizes the status of being mentally ill and addresses the mental health needs of individuals diagnosed with mental illness. These findings provide the framework for an analysis of the costs associated with mental illness in the criminal justice system. As such, we are most interested in the extent to which mentally ill individuals are held liable for criminal acts; on what basis claims of mental incompetence can be made; how the mental health needs of individuals involved in the criminal justice system are addressed; and what criminal justice interventions or policies have proven effective in improving mental health outcomes, as well as in reducing criminal behavior, among known offenders who have mental health issues. Thus, it seems relevant to focus on severe mental illness that significantly impairs mental functioning rather than more minor symptoms such as anxiety or sleep disorders. Severe mental illness is distinct from general mental health maintenance. Nonetheless, it is notable that neither exists in a vacuum, and the two cannot be completely separated from each other. This is especially true in jails and prisons, where many inmates have multiple diagnoses and co-occurring disorders, and where preexisting mental health conditions are often exacerbated by prison environments, causing the escalation of mental illness among those who are predisposed (Angelotti and Wycoff 2010).

Given the vast array of terminology used to describe mentally impaired conditions, we will refer to these impairments collectively as mental illness in this report unless otherwise noted. Also worth noting is that most of the literature examined for this report, explicitly or implicitly, focuses on severe mental illness among incarcerated populations. This working definition of mental illness generally fits the established categories of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) as stated below:

A mental disorder is a syndrome characterized by clinically significant disturbance in an individual’s cognition, emotion regulation, or behavior that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning. Mental disorders are usually associated with significant distress or disability in social, occupational, or other important activities. An expectable or culturally approved response to a common stressor or loss, such as the death of a loved one, is not a mental disorder. Socially deviant behavior (e.g.,
political, religious, or sexual) and conflicts that are primarily between the individual and society are not mental disorders unless the deviance or conflict results from a dysfunction in the individual. (American Psychiatric Association 2013)

Occasionally, criminal justice research examines mental health problems broadly. For example, the most comprehensive correctional mental health data from BJS show “a recent history or symptoms of a mental health problem,” defined as a clinical diagnosis or treatment by a mental health professional (James and Glaze 2006, p. 1). Our report makes a distinction when the focus of prior research is broadly directed at mental health problems.

In addition to distinguishing between serious mental illness by the DSM-5 standards and other definitions of mental illness or mental health problems, we also distinguish between jail and prison populations frequently in this study. Jails are generally short-term city- or county-level facilities housing inmates who are awaiting trial or sentencing, as well as those who are serving relatively brief sentences (usually less than one year). Prisons, in contrast, are generally longer-term correctional facilities operated at the state or federal levels. It is important to note that these two terms are not interchangeable, especially in descriptions of correctional treatment programs, which tend to be more extensive in prisons because of their longer-term nature.
III. Data and Methodology

This paper highlights how mentally ill persons are managed and treated in the criminal justice system by synthesizing information about policies and programs in place for such individuals. Recognizing the potential for state-level similarities and differences in the management and treatment of mentally ill offenders, we conducted a thorough review of the current state of policies and practice. Given the extensive body of literature surrounding mentally ill offenders, this study presents two targeted research initiatives: (1) a state-specific scan of practice, identifying how mentally ill offenders are defined and handled by the criminal justice system in each state, and (2) a literature review and synthesis on the treatment of mentally ill offenders and their reentry into society and the costs associated with this treatment or, in some cases, lack of treatment. In the following subsections, we describe the research protocols and procedures used in each of these initiatives.

1. Scan of Practice

In order to capture how mentally ill offenders are managed and treated in prisons throughout the United States, we conducted a state-by-state scan of practice. Systematically gathering information about how mentally ill offenders are handled by the criminal justice system in each state allowed us to uncover patterns and trends, as well as variations, regarding how such individuals fit into each state’s criminal justice system.

The state-specific scan of practice targeted information about how mentally ill individuals are handled in several stages of the criminal justice system, with special attention to the legal status and rights of mentally ill offenders. We used LexisNexis and Westlaw to examine statutory provisions and the rules made under these provisions to determine how the status of mental illness or other mental health impairments is recognized in each state’s criminal justice system and how the legal rights of mentally ill offenders are recognized in court proceedings.

2. Research Synthesis

In addition to the state scan of practice, we reviewed the current body of literature surrounding mentally ill offenders in the criminal justice system to identify promising practices in the treatment and supervision of these individuals. All 50 states and the District of Columbia have some statutory
language in their codes that refers to the mental health needs of individuals involved in the criminal justice system. While the state scan provides information about the policies in place for recognizing the legal status and rights of mentally ill individuals involved in the criminal justice system, the comprehensive research synthesis identifies promising and cost-effective programs and policies for those with mental illness. Below, we describe the procedures we used to search and sort through relevant empirical studies on such criminal justice interventions targeted at mentally ill offenders.

**Literature Search Protocols**

We made a comprehensive search of rigorous, quantitative criminal justice interventions and programs for mentally ill offenders conducted in the past 25 years, as well as their ability to alleviate societal and economic costs associated with managing mentally ill offenders. In conducting our search, we used three types of sources to identify these studies: (1) digital libraries and databases, including ProQuest Criminal Justice, National Criminal Justice Reference Service, JSTOR, Ebsco, Google Scholar, and SAGE Publications; (2) citations in other systematic reviews of criminal justice interventions and programs for mentally ill offenders; and (3) websites of criminal justice agencies (e.g., departments of corrections) or research organizations cited in relevant studies. We systematically searched those sources by first targeting publications broadly focused on mentally ill individuals in the criminal justice system and then narrowing our search to studies about specific policies, interventions, or programs. To ensure that our search comprehensively covered the scope of literature, we cross-referenced the citations in relevant studies for other potentially relevant publications. Many of the studies identified through the databases were published in peer-reviewed academic journals. Because peer-reviewed publications may be biased to show positive program effects (Lipsey and Wilson 2001), we also included non-peer-reviewed yet high-quality studies, such as government reports or policy briefs. This approach ensured that our search yielded a wide variety of empirical reviews, data publications, and policy briefs.

**Study Selection**

Relevant studies were carefully reviewed for methodological rigor. We required empirical analyses to use advanced statistical analyses and techniques appropriately, limiting the potential for confounding factors or biases. Additionally, meta-analyses needed to have clear, targeted search strategies and rigorous selection criteria so as to capture a complete picture of current research. A high-quality study is defined as meeting Level 3 or above on the Maryland Scientific Methods Scale, which requires the use
of a comparison group in quasi-experimental or experimental settings (Sherman et al. 1998). Studies that suffer from substantial deficiencies (e.g., selection bias, reporting bias, data attrition, and other sources of bias) in their ability to identify the causal effect of criminal justice interventions were not included in our review.
IV. Findings

1. Scope of the Problem

BJS periodically conducts a survey on inmates in local, state, and federal correctional facilities. As of this writing, the most recent reliable survey data of national scope available to the public were collected in 2004 for state and federal prisoners and in 2002 for jail inmates. These interview data provide the most representative estimates for the prevalence of mental health problems among individuals involved in the criminal justice system, and they indicate that 56 percent of state prisoners, 45 percent of federal prisoners, and 64 percent of jail inmates had a mental health problem at the time of the interviews (James and Glaze 2006). As shown in figure 1, at the time of the survey, 49 percent of state prisoners, 40 percent of federal prisoners, and 60 percent of jail inmates had a symptom of a mental disorder, such as developmental and personality disorders, as well as clinical symptoms as specified in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV).

**Figure 1**
Percentage of Inmates with Mental Health Problems

[Bar chart showing percentages of state prisoners, federal prisoners, and jail inmates with any mental problem, recent history of symptoms, and symptoms individually.]

Regarding particular symptoms and disorders, the *Survey of Inmates in State and Federal Correctional Facilities, 2004* reported that one in five state and federal prisoners suffered from depressive disorder. As shown in figure 2, a substantial proportion of state and federal prisoners had also been diagnosed with mania symptoms (12 percent), schizophrenia or another psychotic disorder (5 percent), post-traumatic stress disorder (7 percent), another anxiety disorder (8 percent), or a personality disorder (6 percent).

**FIGURE 2**

*History of Mental Disorders among State and Federal Inmates*

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressive Disorder</td>
<td>21%</td>
</tr>
<tr>
<td>Manic-Depression, Bipolar Disorder, Mania</td>
<td>12%</td>
</tr>
<tr>
<td>Schizophrenia or Another Psychotic Disorder</td>
<td>5%</td>
</tr>
<tr>
<td>Post-Traumatic Stress Disorder</td>
<td>7%</td>
</tr>
<tr>
<td>Another Anxiety Disorder</td>
<td>8%</td>
</tr>
<tr>
<td>Personality Disorder</td>
<td>6%</td>
</tr>
</tbody>
</table>

*Source: US Department of Justice, Bureau of Justice Statistics 2007.*

These data also indicate that, among state prisoners who reported a mental health problem, 49 percent had a violent offense as their most serious offense, followed by property crimes (20 percent) and drug offenses (19 percent). With respect to gender differences, female inmates had higher rates of mental health problems than male inmates (73 percent of female inmates and 55 percent of male inmates in state prisons).

The prevalence of mental illness among offender populations indicates a substantial need for mental health treatment. Today, the largest US jails and prisons hold more people with mental illnesses and co-occurring substance use disorders than many inpatient psychiatric facilities (McCuan, Prins, and Wasarhaleley 2007). Almost three-quarters of state prisoners with mental health problems reported co-occurring substance dependence (James and Glaze 2006). Further, inmates with mental illness often have additional social and criminogenic needs. Prisoners suffering from mental illness are more likely to have experienced homelessness, prior incarceration, and substance abuse than those without mental illness.
illness (Cloyes et al. 2010), and, cyclically, these factors common among offenders also predispose them to mental illness (Chiu 2010).

However, many prisons and jails are not equipped to handle this population with special needs. Prison conditions often exacerbate preexisting mental illness, especially as a result of fear of victimization, which can particularly affect older prisoners (Angelotti and Wycoff 2010). Older prisoners generally have higher rates of mental illness than their younger peers, and the present “graying” of the prison population is well documented in the corrections literature, indicating that, as prison populations grow older, the percentage of mentally ill inmates will increase as well (Chiu 2010; Sterns et al. 2008).

In spite of these needs for mental health care, only one in three state prisoners and one in six jail inmates who suffer from mental health problems report having received mental health treatment since admission, and although the use of prescribed medications for a mental health problem by state prisoners rose slightly between 1997 and 2004 (from 12.3 to 15.1 percent), the percentage of those who received professional mental health therapy showed little change (from 12.3 to 12.7 percent) (James and Glaze 2006). This situation is further complicated by prison overcrowding: The US prison population has quadrupled over the past 25 years, and correctional institutions are now responsible for meeting the health care needs of approximately 2.3 million US inmates (Wilper et al. 2009). As a result, prisons often struggle to adequately provide basic services and security, not to mention to address special medical and mental health needs.

In the next section, we further describe how individuals with mental health needs are processed in the criminal justice system; specifically, we focus on the implications of this treatment—or lack thereof—by analyzing the costs associated with holding mentally ill offenders in jails and prisons and treating them in community-based settings.

2. Costs Associated with Managing Mentally Ill Individuals in the Criminal Justice System

Mental health care is expensive for any population, and the range of mental health treatment services is broad. However, little empirical research exists to directly quantify the costs of mental health problems and severe mental illness in the criminal justice system. Where prison health care cost estimates exist (e.g., Kinsella 2004; McNeil, Binder, and Robinson 2005; Project Link 1999), they are often anecdotal and outdated and do not focus specifically on mental health costs as opposed to physical health costs.
Despite these shortcomings, several studies indicate that prisons today need to spend more on prisoner health care, including expenditures on mental health care specifically (Kinsella 2004; Office of the Inspector General 2008; Stephan 2004; Sterns et al. 2008). This is in large part because of the aging of prisoner populations. Data from the National Association of State Budget Officers, synthesized by the Council of State Governments, indicate that, from 1998 to 2001, state corrections budgets grew an average of 8 percent each year, and during that same three-year period, correctional health care costs grew by 10 percent annually. Mental health care costs are listed as one of the major contributors to this growth: in 1998, states spent between 5 and 43 percent of their health care budgets on mental health (Kinsella 2004).

In addition to direct mental health care costs, mentally ill prisoners have higher rates of misconduct and accidents in prisons (Fellner 2006; Toch and Adams 2002), thereby incurring higher indirect or collateral costs in prisons. According to BJS’s 2006 report (James and Glaze 2006), about 24 percent of state prisoners with mental health problems, compared with 14 percent of those without, had been charged with a physical or verbal assault on a prison staff member or fellow inmate since admission. Among federal prisoners, the same trend held: 15 percent of federal prisoners with mental health problems, compared with 7 percent without, had been charged with assault during incarceration. Among state and federal prison inmates and local jail inmates, the percentage of those who reported being injured in a fight was more than double among those with mental health problems than among those without mental health problems (James and Glaze 2006). Rule violations and fights have economic costs for corrections facilities, including staff time spent on discipline, physical and pharmaceutical resources spent on subduing violent prisoners, and treatment associated with injuries incurred in fights.

Further, prior research indicates that prisoners with mental health problems have higher recidivism rates than those without mental health problems, thereby resulting in higher societal costs (Baillargeon et al. 2009; Cloyes et al. 2010; Feder 1991). Although little research has been done to directly quantify the cost of recidivism among prisoners with mental illness, several studies of specific state prison systems have examined recidivism rates within this population. These state-specific studies provide some idea of the costs of recidivism among mentally ill offenders, and in this report they serve as a starting point for further discussion and research.

For example, one study of the nation’s largest state prison system, that of Texas, examined the likelihood of returning to prison during a six-year period among recently released inmates with major psychiatric disorders, including major depressive disorder, bipolar disorder, schizophrenia, and nonschizophrenic psychotic disorders. The researchers found that formerly incarcerated persons
suffering from any of these disorders were substantially more likely to be reincarcerated, especially inmates with bipolar disorder (Baillargeon et al. 2009). Specifically, inmates with any major psychiatric disorder were found to be 2.4 times more likely to have four or more repeat incarcerations than inmates with no major psychiatric disorder, and this same number rose to 3.3 for inmates with bipolar disorder (Baillargeon et al. 2009). Another study of Utah’s state prison population found that offenders with severe mental illness returned to prison an average of 358 days—nearly one full year—sooner than offenders without diagnosed mental illness, and 77 percent of offenders with severe mental illness were reincarcerated within 36 months, compared with 62 percent of offenders without severe mental illness (Cloyes et al. 2010).

Similarly, a longitudinal multistate study on returning prisoners by the Urban Institute, Returning Home: Understanding the Challenges of Prisoner Reentry, found higher rates of criminal involvement after release from prison among individuals with mental health conditions (Mallik-Kane and Visher 2008). The Returning Home study was an in-depth examination of the reentry process through a series of interviews with a representative sample of returning prisoners from Maryland, Illinois, Ohio, and Texas before and after their release. The study is among just a few multistate sources that can shed light on reentry challenges and the risk of recidivism. Mallik-Kane and Visher (2008) also found that respondents with mental health conditions reported poorer housing, employment, and to some extent, family support outcomes than returning prisoners without mental health conditions.

All in all, substantial criminal justice costs, broadly defined as all costs incurred by justice agencies (such as the police, courts, jails, parole, probation, and prisons), and societal costs, defined as the sum of societal loss in value (such as victimization and reduced educational or employment opportunities), arise from the offender population with mental illness. It is feasible to some extent to quantify these costs, despite the lack of rigorous research on this topic. For example, based on published research and agency budgets, the operating cost per day or per case for each criminal justice agency can be roughly estimated, as shown in figure 3. There is also an established research domain that focuses on how to estimate the costs of crime, which can also shed light on the social costs associated with mentally ill offenders (Cohen 2000; Cohen, Miller, and Rossman 1994; Roman and Harrell 2001). The primary question for many policymakers and researchers is whether or not these costs, which can be averted if mentally ill offenders are adequately treated and supervised, exceed the costs of treatment and supervision.
However, existing knowledge about these costs is prohibitively fragmented, making it difficult to generate system-level inferences about the cost-effectiveness of current policy and practice in the management of mentally ill individuals involved in the criminal justice system. In particular, we know relatively little about the total resources used in processing and treating mentally ill offenders. Insomuch as emphasis is placed on a multidisciplinary team approach to addressing the needs of mentally ill offenders (see subsection 4, “Criminal Justice Programs and Interventions for Mentally Ill Individuals,” for a discussion of such approaches), typically a large number of individuals and organizations is involved in any intervention targeted toward mentally ill offenders. Thus, it is often impractical even for a single intervention or prevention program to maintain a centralized records management system that reliably tracks all services provided to mentally ill offenders. Therefore, it is a much greater challenge at the system level (i.e., local or state criminal justice systems) to quantify the total resources actually spent on mentally ill offenders.

That said, Farabee and colleagues (2006) and Mayfield (2009) present good examples of how cost analysis can be conducted on a criminal justice program for mentally ill offenders and how useful such
an analysis may be for planning and policymaking. In their evaluation of the Mental Health Services Continuum Program (MHSCP)—a multidisciplinary approach to delivering treatment services before and after release from state prison to parole—Farabee and his colleagues found that receiving one or more contacts with the parole outpatient clinic yielded averted costs (savings) of $4,890 per parolee in one of the aspects of the program in question. Similarly, Mayfield (2009) examined the cost-effectiveness of the Dangerous Mentally Ill Offender (DMIO) program in Washington, whose primary goals were to identify mentally ill prisoners who pose a threat to public safety and to provide them with services and treatment up to five years after their release from prison. Mayfield estimated the averted costs of crime to be in excess of $20,000 per program participant—costs that would have been incurred by taxpayers and crime victims. As elaborated by Rossman and colleagues (2012), considerable challenges are associated with collecting cost data from mental health service providers and criminal justice stakeholders, but analysis of the costs and benefits of processing and treating mentally ill offenders is critical to effective planning and program development.

3. Current Practice and Policy

After examining the costs associated with treating mentally ill offenders, we moved on to conduct a state-by-state scan of practice to understand how the criminal justice system in the United States processes these individuals, which could in turn have implications for the associated costs and vice versa. This scan of practice focuses on how the legal system identifies the status of being mentally ill and recognizes the rights of mentally ill offenders in all 50 states and the District of Columbia. We also conducted a comprehensive search for information regarding protocols for identifying, classifying, and treating mentally ill offenders in correctional facilities, but such information is not consistently available for all 50 states. Thus, a few key examples are presented following the discussion on how mentally ill offenders are defined and processed in courts, to provide a more complete picture of this stage of treatment in the criminal justice system without attempting to make broad, national-level generalizations where specific data or policies are not systematically available.

Scan of Practice in Court Proceedings

To understand the nature of the policies and practices in place regarding how mentally ill individuals are processed in court, we need first to examine how states define who these individuals are and what characterizes mental health needs, mental illness, or both. Every state’s statutes stipulate procedures
for processing individuals whose mental competency is in question, thus providing a context for understanding how mentally ill individuals are defined and recognized. Mental health disorders and illnesses manifest themselves in various ways, thus leaving room in their definition for interpretation. The second column of table 1 provides information about the terminology used to refer to mental health impairments in state statutes. Our scan focused on the specific language provided in each statute regarding individuals with mental health issues, including whether these impairments are referred to as illnesses, diseases, disorders, or disabilities. As discussed previously, we refer to these impairments collectively as *mental illness* for the purpose of this review.

Mentally ill individuals in the criminal justice system have a unique set of circumstances, which raises the question of their criminal responsibility. Because mentally ill individuals could have had an unstable or disordered state of mind at the time of the offense, each state is tasked with determining whether they should be held liable for their criminal acts. In doing so, states call upon a variation of one of three specific methods to determine the sanity of an individual at the time of the offense: the M’Naghten Rule, the Model Penal Code Rule, or the Durham Rule.

Under the M’Naghten Rule, an individual is presumed sane unless the defense proves that “at the time of committing the act, the accused was labouring under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing or, if he did know it, that he did not know what he was doing was wrong.”\(^2\) The Model Penal Code Rule also emphasizes whether an individual is able to distinguish right from wrong. This rule specifies that a defendant suffering from a mental disease or defect is not responsible for criminal actions during which he or she lacked “substantial capacity either to appreciate the criminality of his conduct or to conform his conduct to the requirements of the law” (American Law Institute 1962, sec. 4.01(1)). Both of these rules leave substantial room for interpretation on behalf of the jury, though they are more specific than the Durham Rule. The Durham Rule, the most liberal approach of all three, states “an accused is not criminally responsible if his unlawful act was the product of mental disease or mental defect.”\(^3\) The rule that each state uses to determine the sanity of a defendant is presented in columns three through five of table 1.

Column seven of table 1 indicates whether a verdict of not guilty by reason of insanity is permissible in each state. The final column of the table provides information about whether or not a test or clinical assessment for insanity is required for all cases in which the mental competency of an individual is in question. In some states, the clinical assessment is provided only at a party’s request. In the latter case, a state, court, or defense counsel, for example, may request an examination to determine the defendant’s competency.
A. DEFINITION OF MENTAL HEALTH IMPAIRMENTS PROVIDED IN THE STATUTES

All 50 states and the District of Columbia provide a definition for a mental health impairment in criminal proceedings, including mental illness, mental disease or defect, mental or psychiatric disorder, and mental or psychiatric disability. The language used to describe these mental conditions varies greatly from state to state and often includes some degree of subjectivity, because most states craft a definition that functions for them procedurally, rather than focusing on clinical definitions. Many states approach defining mental illness from a behavioral or symptomatic perspective, whereas others focus on specific abnormalities or treatment requirements. Despite this variation, it is these definitions that establish the basis for classifying and treating individuals whose mental competency is in question.

The most common term used to describe individuals with mental health needs is “mental illness,” for which 36 states list a definition. Although there is much inconsistency in the thoroughness of these definitions, most states’ definitions share the common themes of psychological impairment and inability to meet the demands of daily life. There is also great variation in the level of specificity within each state’s definition. Whereas the District of Columbia defines mental illness simply as “a psychosis or other disease which substantially impairs the mental health of a person,” Michigan defines mental illness as “a substantial disorder of thought or mood that significantly impairs judgment, behavior, capacity to recognize reality, or ability to cope with the ordinary demands of life” (DC Code Ann. § 21-50; MCLS § 330.1400).

Most of these 36 states list vague or generic definitions of mental illness, though a few cite specific manifestations of and treatment protocols for the impairment. Both Hawaii and Minnesota, for example, reference specific disorders indicative of mental illness directly in their statutes, with Hawaii stating that mental illness is inclusive of schizophrenia, severe depression, bipolar disorder, severe panic disorder, obsessive-compulsive disorder, and post-traumatic stress disorder (Cor.10.1G.04). Minnesota’s definition of mental illness is uniquely thorough, referencing the vast scope of symptoms, conditions, and diagnostic criteria associated with mental illness (see box 1).
BOX 1

Minnesota’s Definition of Mental Illness: Subd. 20. Mental Illness

a) “Mental illness” means an organic disorder of the brain or a clinically significant disorder of thought, mood, perception, orientation, memory, or behavior that is detailed in a diagnostic codes list published by the commissioner, and that seriously limits a person’s capacity to function in primary aspects of daily living such as personal relations, living arrangements, work, and recreation.

b) An “adult with acute mental illness” means an adult who has a mental illness that is serious enough to require prompt intervention.

c) For purposes of case management and community support services, a “person with serious and persistent mental illness” means an adult who has a mental illness and meets at least one of the following criteria:

1) the adult has undergone two or more episodes of inpatient care for a mental illness within the preceding 24 months;

2) the adult has experienced a continuous psychiatric hospitalization or residential treatment exceeding six months’ duration within the preceding 12 months;

3) the adult has been treated by a crisis team two or more times within the preceding 24 months;

4) the adult:

   i. has a diagnosis of schizophrenia, bipolar disorder, major depression, schizoaffective disorder, or borderline personality disorder;
   
   ii. indicates a significant impairment in functioning; and
   
   iii. has a written opinion from a mental health professional, in the last three years, stating that the adult is reasonably likely to have future episodes requiring inpatient or residential treatment, of a frequency described in clause (1) or (2), unless ongoing case management or community support services are provided;

5) the adult has, in the last three years, been committed by a court as a person who is mentally ill under chapter 253B, or the adult’s commitment has been stayed or;

6) the adult (i) was eligible under clauses (1) to (5), but the specified time period has expired or the adult was eligible as a child under section 245.4871, subdivision 6; and (ii) has a written opinion from a mental health professional, in the last three years, stating that the adult is reasonably likely to have future episodes requiring inpatient or residential treatment, of a frequency described in clause (1) or (2), unless ongoing case management or community support services are provided; or

7) the adult was eligible as a child under section 245.4871, subdivision 6, and is age 21 or younger. (Minn. Stat. § 245.462)
Although other states provide less comprehensive definitions, some include conditions that are not necessarily associated with mental illness—such as intellectual or developmental disabilities—in their definitions of mental illness. Mental illnesses and intellectual or developmental disabilities are separate conditions, though they may co-occur in some cases. Most notably, intellectual and developmental disabilities refer to sub-average intelligence or intellectual development, and generally, they can be expected to be permanent. On the other hand, people with mental illness may have average or even above-average intelligence, and mental illnesses, unlike intellectual disabilities or developmental disabilities, are medical diseases that can be treated or even overcome with medication, psychotherapy, and the like (Burke et al. 2012). Additionally, several states reference the need for treatment and specialized care for individuals with mental illness. For example, Massachusetts’s and Wisconsin’s definitions of mental illness are nearly identical and hinge on the need for care: “Mental illness’ means mental disease to such extent that a person so afflicted requires care and treatment for his or her own welfare, or the welfare of others, or of the community” (ALM GL ch. 123 App. § 1-1; Wis. Stat. § 51.01). Although most states allude to the severity of mental illness in their definition, three states—Nebraska, South Dakota, and California—refer to this specifically by defining “mentally ill and dangerous person,” “severe mental illness,” and “severe mental disorder,” respectively.

The remaining states that provide a definition for mental health impairment use slightly different terms to refer to similar phenomena. For example, Alaska is one of eight states that defines “mental disease or defect,” listing it as a “disorder of thought or mood that substantially impairs judgment, behavior, capacity to recognize reality, or ability to cope with the ordinary demands of life” (AS § 12.47.130). However, unlike the states that provide definitions for mental illness, states that provide a definition for “mental disease” or “mental deficiency” incorporate intellectual or developmental disabilities into their definitions differently: Alaska, Arkansas, and Wyoming consider intellectual disabilities to be a mental disease or defect, whereas Montana excludes them from its definition (AS § 12.47.130; Ark. § 5-2-301; MCA § 46-14-101; Wyo. Stat. § 7-11-301).

Six states, including Connecticut, Maryland, Nevada, Rhode Island, South Carolina, and Washington, use different terminology to reference mental health impairments, specifically, “mental disorder,” “psychological disorder,” “mental disability,” and “psychological disability.” Again, these terms reference some sort of psychological impairment and need for care. However, in addition to encompassing psychological disorders, they may incorporate emotional disorders and disturbances into their definitions by referencing disturbed moods or impaired emotional functioning (Ala. Code 1975 § 22-52-1.1; Md. Crim. Proc. Code Ann. § 3-101).
B. CRIMINAL RESPONSIBILITY OF MENTALLY ILL INDIVIDUALS

The protocol for determining the criminal responsibility of mentally ill defendants also varies from state to state (see figure 4). The key question here is whether the mental state of an individual at the time of a crime dictates whether he or she should be held legally responsible for the offense. It is thus necessary for each state to assess the mental capacity at the time of the crime for individuals whose competency is in question. This review of criminal responsibility is not merely a summary of legal technicalities; it can also provide a sense of which states are more open or amenable than others to recognizing the needs of mentally ill individuals in the criminal justice system. Recognizing the needs of this population is essential to the development of effective policies for intervention, treatment, and legal processing.

In determining the mental state of an individual at the time of offense, the majority of states appeal to a variant of either the M’Naghten Rule or the Model Penal Code Rule to test for insanity. Twenty-five states have adopted a variant of the M’Naghten Rule in some form and thus emphasize in their statutes the importance of the defendant being able to distinguish right from wrong at the time of the offense. For example, Georgia’s code states that a “person shall not be found guilty of a crime if, at the time of the act, omission, or negligence constituting the crime, the person did not have mental capacity to distinguish between right and wrong in relation to such act, omission, or negligence,” alluding to how the criminal responsibility of mentally ill individuals depends on whether they could determine the morality of their conduct (O.C.G.A. § 16-3-2).

Twenty-one other states appeal to the Model Penal Code Rule in determining the liability of mentally ill defendants, emphasizing their ability to appreciate the illicit nature of a criminal act or abide by the law. Maryland’s statute regarding criminal responsibility targets these principles: “a defendant is not criminally responsible for criminal conduct if, at the time of that conduct, the defendant, because of a mental disorder or mental retardation, lacks substantial capacity to: (1) appreciate the criminality of that conduct; or (2) conform that conduct to the requirements of law” (Md. Crim. Proc. Code Ann. § 3-109).

New Hampshire is the only state that uses the Durham Rule and states that “a person who is insane at the time he acts is not criminally responsible for his conduct” (RSA 628:2). New Hampshire’s approach to determining criminal responsibility is more liberal and broader than other states, and notably, it does not directly address the definition of insanity as it affects criminal liability but rather simply states that a person who is deemed insane, presumably by any measure, therefore lacks criminal liability.
Four states do not appeal to any of these rules: Idaho, Kansas, Montana, and Utah. These states consequently do not allow for a verdict of not guilty by reason of insanity, and the mental condition of a defendant cannot be used as a direct defense to a criminal charge. However, in Montana, evidence of a mental disease can be used during the trial to determine the appropriate sentence, and Utah allows mental illness to "be evidence in mitigation of the penalty" (MCA § 46-14-102; Utah Code Ann. § 76-2-305).

**FIGURE 4**

*Number of States Using Different Rules to Determine Criminal Responsibility*

![Chart showing the number of states using different rules to determine criminal responsibility.](chart)

*Source:* See appendix.

**C. CLINICAL ASSESSMENTS OF INSANITY**

All 50 states and the District of Columbia use some sort of clinical assessment or test to assess the culpability of an individual. Such an assessment is either required by law in all cases in which the person’s sanity is in question or needs to be requested by a particular party. Nineteen states require clinical assessments for defendants whose mental state is in question. In the remaining 32 states, mental health evaluations are called for only by the request of a particular party. Thirteen of these states perform clinical assessments by request of the court, and 11 allow these evaluations at the request of any party. The remaining states perform such assessments at the request of the state, the defendant, or a detention facility.
<table>
<thead>
<tr>
<th>State</th>
<th>Term defined in statute</th>
<th>Specific severe mental illness or diseases mentioned?</th>
<th>M’Naghten Rule</th>
<th>Model Penal Code Rule</th>
<th>Other rule</th>
<th>Not guilty by reason of insanity verdict allowed</th>
<th>Test/clinical assessment of insanity specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>Mental illness</td>
<td>N</td>
<td>√</td>
<td></td>
<td></td>
<td>Y</td>
<td>Required for all cases where sanity/competence at issue</td>
</tr>
<tr>
<td>Alaska</td>
<td>Mental disease or defect</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td>Required for all cases where sanity/competence at issue</td>
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<tr>
<td>Arizona</td>
<td>Mental disease or defect</td>
<td>N</td>
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<td></td>
<td></td>
<td>Y</td>
<td>By any party’s request</td>
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<td>Arkansas</td>
<td>Mental disease or defect</td>
<td>N</td>
<td></td>
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<td></td>
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<tr>
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<td>Severe mental disorder</td>
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<td></td>
<td></td>
<td></td>
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<td>By state or detention facility’s request</td>
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<td>N</td>
<td></td>
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<td>Required for all cases where sanity/competence at issue</td>
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<tr>
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<td>Psychiatric disability</td>
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<td></td>
<td></td>
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<td>By any party’s request</td>
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<tr>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>District of Columbia</td>
<td>Mental illness</td>
<td>N</td>
<td></td>
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<td>By any party’s request</td>
</tr>
<tr>
<td>Florida</td>
<td>Mental illness</td>
<td>N</td>
<td></td>
<td></td>
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<td>Required for all cases where sanity/competence at issue</td>
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<tr>
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<td>Mental illness</td>
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<td>Y</td>
<td>By court’s request</td>
</tr>
<tr>
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<td>Mental illness</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>N</td>
<td>Required for all cases where sanity/competence at issue</td>
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<td>Illinois</td>
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<td>Specific severe mental illness or diseases mentioned?</td>
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<td>--------------------------------------------</td>
</tr>
<tr>
<td>Indiana</td>
<td>Mental illness</td>
<td>N</td>
<td>√</td>
<td></td>
<td>Y</td>
<td>No insanity defense</td>
<td>Required for all cases where sanity/competence at issue</td>
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<td>Iowa</td>
<td>Mental illness</td>
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<td></td>
<td></td>
<td>Y</td>
<td>By court’s request</td>
<td>By court’s request</td>
</tr>
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<td>Mental illness</td>
<td>N</td>
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**Note:** N = No; Y = Yes.
Classification and Treatment of Mentally Ill Offenders in Correctional Facilities

Every state corrections department has policies for how to classify prisoners with mental illness and maintains programs or facilities for prisoners with mental health needs. However, internal policies and program descriptions are not consistently available for all states, making state-level comparisons difficult to conduct. We thus present a few examples below, describing how mentally ill offenders are commonly classified and treated in prison.

Maintaining one of the largest corrections systems in the United States, New York state can serve as a useful example because it has an elaborate diagnosis and treatment system for mentally ill inmates. Approximately 54,700 prisoners are held in 58 state facilities (NYS DOCCS 2014). New York state classifies correctional facilities by the level of mental health service capacities and assigns prisoners to an appropriate facility based on their mental health needs (NYS DOCCS 2011). As summarized in box 2, there are five mental health service levels:
**BOX 2**

**New York State Mental Health Service Levels**

**Level 1**: Office of Mental Health (OMH) staff is assigned on a full-time basis and able to provide treatment to inmate-patients with a major mental disorder. The array of available specialized services include residential crisis treatment, residential/day treatment, case management, medication monitoring by psychiatric nursing staff, and potential commitment to the Central New York Psychiatric Center.

**Level 2**: OMH staff is assigned on a full-time basis and able to provide treatment to inmate-patients with a major mental disorder, but such disorder is not as acute as that of inmate-patients who require placement at a Level 1 facility.

**Level 3**: OMH staff is assigned on a part-time basis and able to provide treatment and medication to inmate-patients who either have a moderate mental disorder or who are in remission from a disorder, and who are determined by OMH staff to be able to function adequately in the facility with such level of staffing.

**Level 4**: OMH staff is assigned on a part-time basis and able to provide treatment to inmate-patients who may require limited intervention, excluding psychiatric medications.

**Level 5**: Not used.

**Level 6**: No assigned staff from OMH.

Notably, the classification of prisoners is centered around the mental health service capacities of each facility. Although the department specifies criteria for seriously mentally ill inmates, who are to be assigned to Level 1 facilities, no other mental health service levels designate specific mental disorders or conditions. Further, as shown in box 3, the operational definition of serious mental illness used by the New York State Department of Corrections and Community Supervision generally follows the DSM-IV Axis I diagnosis. The California Department of Corrections and Rehabilitation Mental Health Services Delivery System also has similar protocols to classify inmates and define their mental health status (California Department of Corrections and Rehabilitation 2014).
BOX 3
Definition of Seriously Mentally Ill in New York State Department of Corrections and Community Supervision

- Inmates determined by the OMH to have a current diagnosis or a recent significant history of any of the following types of DSM-IV Axis I diagnoses:
  - Schizophrenia (all subtypes); Delusional Disorder; Schizophreniform Disorder; Schizoaffective Disorder; Brief Psychotic Disorder; Psychotic Disorder Not Otherwise Specified; Major Depressive Disorders; Bipolar Disorder I and II; Substance-Induced Psychotic Disorder (excluding intoxication and withdrawal)
- Inmates who are actively suicidal or who had a recent, serious suicide attempt
- Inmates diagnosed with serious mental illness, organic brain syndrome, or a severe personality disorder that is manifested in significant functional impairment, such as acts of self-harm or other behaviors, that has a serious adverse effect on life or on mental or physical health

When it comes to the classification of mentally ill prisoners, internal policies tend to describe administrative procedures by which clinical assessment and screening should be performed but do not typically specify decision-making heuristics from clinicians (e.g., Michigan Department of Corrections 2014; Texas Department of Criminal Justice 2014). Overall, it seems evident that considerable state-level variation exists in the ways correctional departments identify and treat mentally ill offenders. Moreover, it is worth noting that a particular focus in the clinical assessment of prisoners is not merely on their mental status but also on their risk of incidents in prison (e.g., suicide, violence, substance dependence).

4. Criminal Justice Programs and Interventions for Mentally Ill Individuals

We conducted a comprehensive review of research on criminal justice programs and policies, as well as diversionary policies, for mentally ill individuals. These policies and programs addressing the needs of mentally ill offenders are implemented at all stages of the criminal justice system, from the arrest stage
to the post-release stage, and effective interventions have the potential to mitigate societal and economic costs associated with the processing of mentally ill defendants. Because numerous such policies and programs exist in local, state, and federal justice systems and in nonprofit and private sectors, a state-by-state comparison of those policies and programs would not be feasible within the scope of this research synthesis. Instead, we identify promising programs based on prior research on criminal justice interventions for mentally ill individuals and synthesize research findings in this section. These interventions, ranging from mental health courts and pretrial diversion programs to discharge planning and in-prison and community-based treatment programs, have the potential to mitigate the social and economic costs associated with the recidivism of mentally ill offenders.

Mental Health Courts

A. OVERVIEW

One way jurisdictions can alleviate the strain on resources caused by incarcerating the mentally ill and providing treatment for them in prison is to divert them to community-based mental health treatment programs. Mental health courts (MHCs) are one such diversionary mechanism that relies on community justice partnerships, involving mental health treatment and social services providers. MHCs are specialized court dockets for individuals with mental health problems. In place of traditional court processing, in which the judge reviews the culpability of a case and imposes a sentence, MHCs offer problem-solving solutions for mentally ill offenders.

Similar to other types of problem-solving courts, such as drug courts and reentry courts, MHCs are viewed as an analogous application of therapeutic jurisprudence. They identify eligible participants through mental health screenings and assessments and place them in a judicially supervised treatment plan developed jointly by a team of court staff and mental health professionals (Rossman et al. 2012). When an offender successfully completes the program, MHCs may vacate an alleged charge or modify the original sentence.

On the premise that mental health treatment and ongoing judicial monitoring provided through MHCs improve mental health outcomes and reduce criminal behavior and associated costs, MHCs have become increasingly popular in the United States. As of 2011, the Criminal Justice/Mental Health Consensus Project listed more than 240 court-based mental health interventions within its Local Programs Database. MHCs are located primarily in the western (37 percent) and southern (37 percent)
regions, with fewer courts in the Midwest (15 percent) or Northeast (11 percent) (Council of State Governments 2005).

B. MHC OPERATIONS

Because local priorities and contexts vary across jurisdictions, the operation of MHCs varies substantially in each jurisdiction. Generally, there are two types of MHCs: (1) the pre-adjudication model, in which prosecution is deferred until the defendant completes the mutually agreed-upon program, and (2) the post-adjudication model, in which the defendant is required to submit a guilty plea to participate in the program. The split between the pre-adjudication and post-adjudication models within the 240 MHCs that exist today is unknown.  

MHCs also operate differently in terms of eligibility criteria. Largely, two types of eligibility criteria are considered: clinical eligibility and legal eligibility. Courts vary with respect to which mental health problems are acceptable for participation in MHC programs. Some MHCs use a legal definition of mental illness, whereas others specify a clinical definition, which often encompasses Axis I disorders, to establish program eligibility (Rossman et al. 2012). Legal eligibility typically defines what types of offenses are eligible for participation in MHC programs. Some MHCs accept more serious and violent cases, whereas others only accept non-violent misdemeanors.

In addition to those key functional variations, several aspects of MHCs create substantial variation in how they operate, including screening procedures, program services, court supervision and monitoring protocols, and the range of sanctions used for non-compliance. It would be of great significance to understand the extent to which these variations explain the effectiveness of MHCs. However, our current understanding of MHCs is rather limited in terms of its ability to inform how to optimize program settings for MHCs, let alone how much MHCs vary in terms of their focus, size, and operations.

C. EFFECTIVENESS OF MHCS

The popularity of MHCs in recent years has outgrown empirical evidence on their effectiveness. Our knowledge base around MHCs has steadily grown in recent years, but studies with a strong evaluation design are still rare. The effectiveness of any intervention can be assessed through a counterfactual question; that is, what outcomes would have been observed had MHC participants not participated in the MHC program? The most unequivocal way to answer this question is through a randomized controlled trial (RCT), in which study subjects are randomly allocated to receive treatment or no (or alternative) treatment. Because the random assignment, if implemented properly, ensures equivalence
between those who did and did not receive treatment, any difference in outcomes between the two groups can be attributed to treatment. We have identified only two RCT studies to date that evaluate the effectiveness of MHCs. Based on 50 individuals who received MHC treatment and 43 control individuals in Butte County, California, Gary Bess Associates (2004) found a statistically significant improvement in clinical outcomes for the treatment group but no measurable improvement in recidivism rates. Similarly, Cosden and her colleagues (2005) found no measurable difference in recidivism between 137 MHC participants and 98 nonparticipants in their RCT.

All other evaluations of MHCs that we identified rely on quasi-experimental or non-experimental designs. The research findings in these evaluations are less reliable because of the potential for selection bias, a threat to internal validity. Studies at risk for selection bias are those in which participants could have self-selected to participate in MHC treatment because of personal attributes and motivations. In other words, those who received treatment might show an improvement in outcomes not because of treatment effect but because they were more motivated to improve upon themselves in the first place than those in the comparison group. One notable quasi-experimental evaluation substantially minimizes this selection bias and presents plausible analyses of the impact of two MHCs on recidivism. Based on propensity score matching techniques, which mimic features of an RCT, Rossman and her colleagues (2012) examined the effectiveness of the Bronx and Brooklyn MHCs. They found that MHC participation was effective at reducing recidivism in both MHCs, although the degree of reduction in recidivism rates differed between the programs. Contrary to findings of the two RCT studies, those who participated in these MHC programs had significantly lower recidivism rates than nonparticipants by 6 to 17 percentage points.

When evaluations use weaker research designs that do not adequately address potential threats to validity, such as selection bias and attrition bias, they complicate our ability to interpret the results of existing research on MHCs. The extent to which MHCs improve clinical outcomes and reduce criminal recidivism can be explained by the efficacy of MHC programs, as well as the fidelity of treatment delivery. Put differently, when MHCs fail to yield an expected outcome, it could be the underlying MHC model that is not effective or the inadequate quality and manner in which the model was implemented. Poorly designed or executed evaluations make those differences difficult to discern because the failure to detect anticipated outcomes can also be attributed to methodological issues germane to such research designs.

In their meta-analyses examining empirical studies on the effectiveness of MHCs, Cross (2011) and Sarteschi, Vaughn, and Kim (2011) both recognize that the existing research on MHCs suffers from considerable methodological shortcomings. In particular, Sarteschi, Vaughn, and Kim (2011) remark
that most quasi-experimental evaluations did not use statistical controls for differences between MHC participants and nonparticipants. They also note that prior research lacks the external validity (i.e., generalizability) of research findings, because most studies were based on non-representative samples, and MHC models vary greatly.

Despite these challenges, the two meta-analyses suggest that MHCs can be a moderately effective intervention in reducing recidivism. Sarteschi, Vaughn, and Kim (2011) report that the overall mean effect for recidivism outcomes was statistically significant (effect size = −54.95, \( p < .001 \)). Whether MHCs can improve clinical outcomes, however, remains to be seen. Most evaluations reviewed by Cross (2011) and Sarteschi, Vaughn, and Kim (2011) failed to detect a significant effect of MHC treatment on clinical outcomes. Griffin and Dematteo (2009) also suggest that the mixed evidence on the efficacy of MHCs does not provide a clear indication of whether the provision of MHC treatment leads to measureable reductions in clinical symptoms. Overall, MHCs seem to be a promising approach to diverting mentally ill offenders from the criminal justice system, and the success of MHCs is cautiously suggested by several evaluation studies; however, again, further research is needed.

**Other Criminal Justice Programs and Policies**

Numerous mentally ill offenders do not qualify for diversionary programs at the pretrial or adjudication stage for a variety of different reasons, such as jurisdiction or type of crime. Thus, these men and women may find themselves in a local or state correctional facility, and if they do not receive adequate mental health treatment and discharge planning while incarcerated, their risk of recidivism may increase because they fall back into the revolving cycle of incarceration (Baillargeon et al. 2009; Mallik-Kane and Visher 2008; Walters 2005). We evaluated a number of studies that measure post-release outcomes for mentally ill offenders who participated in various programs while incarcerated and shortly after incarceration (see section III, “Data and Methodology,” for an explanation of the criteria for studies to be included in our analysis). A few programs and policies targeted toward mentally ill offenders stood out for having been rigorously evaluated and for demonstrating evidence of beneficial mental health and criminal justice outcomes for mentally ill offenders. Below, we describe these programs and policies, as well as their evaluative findings, followed by a discussion of more recent legislative policy reforms that may deserve careful attention for future research and practice.
A. RIGOROUSLY EVALUATED PROGRAMS

Given the high rates of recidivism in the United States, offender reentry has garnered considerable attention from researchers and practitioners alike. Returning to the community from incarceration is an uphill battle for former prisoners, complicated by struggles with substance abuse, lack of adequate education and job skills, limited housing options, and mental health issues (Travis 2000). This situation gave rise to strategic system changes that involve developing an individualized reentry plan before release from incarceration and mobilizing an interdisciplinary, collaborative team approach to guiding returning prisoners through the reentry process (Baer et al. 2006; Mallik-Kane and Visher 2008). Much of what we found promising for mentally ill offenders can be understood within this reentry framework. Several programs that focus on multidisciplinary, collaborative planning and risk management have shown positive results.

One such program is the Mentally Ill Offender Community Transition Program (MIOCTP), which was implemented in 1998 in Washington state as a collaboration between the Department of Corrections and the Department of Mental Health. Under this program, corrections and mental health staff work together to provide mentally ill prisoners with care management and coordinated services, including risk assessment, treatment planning, service referrals, and applications for entitlements, before their release from state prison (Arnold-Williams, MacLean, and Vail 2008). MIOCTP aims to provide seriously mentally ill inmates with proper treatment and stabilization while they are in prison so they are able to transfer this stability to their lives outside the prison walls, thus reducing their risk of recidivism. The program defines serious mental illness as “a major thought or mood disorder that produces substantial distress, impairs normal functioning, and requires continuing treatment” (Theurer and Lovell 2008, p. 391). Candidates are referred to the program by mental health risk management specialists based on a variety of factors, including willingness to participate in the program, the presence of a major mental illness that influenced previous criminal activity, and a judgment by Department of Corrections staff that the individual would be less likely to recidivate if provided with ongoing mental health treatment (Theurer and Lovell 2008).

The post-release stage of the program takes a highly multidisciplinary approach, with a community-based team including a mental health case manager, psychiatrist, nurse practitioner, registered nurse, substance abuse counselor, community corrections officer, and residential house manager (Arnold-Williams, MacLean, and Vail 2008). This team works together to ensure that seriously mentally ill offenders continue their psychotherapy and pharmaceutical course of treatment; have access to housing, drug treatment, and other basic services; and report as required to their parole officers. The post-release program includes structured programming, access to daily contact with team members,
bimonthly home visits, and 24-hour crisis response plans. Housing subsidies and onsite housing management and monitoring are provided as part of the residential support services offered by the program (Theurer and Lovell 2008).

Based on a quasi-experimental design, Theurer and Lovell (2008) examined the effectiveness of this program, with a sample consisting of a high percentage of women (44 percent) and drug offenders (47 percent). Primary diagnoses among sample members included 56 percent with psychotic disorders, 20 percent with severe depression, 20 percent with bipolar disorder, and 3 percent with other conditions. Nearly 90 percent of the sample had co-occurring chemical dependency issues, and 52 percent suffered from a personality disorder. The treatment group was matched to a comparison group (N = 64 in each group) based on a number of factors, including past felonies, past misdemeanors, whether the individual was a first-time sex offender, infraction rate, mental health residential time, age at release, ethnicity, and gender. During a two-year follow-up period, program participants showed a recidivism rate of 19 percent, measured as felony conviction for any new offense, compared with 42 percent for matched controls.

Another notable multidisciplinary program, the Connections program, targets mentally ill probationers released from jail in San Diego, California. The Connections program is a case management initiative based on the principles of assertive community treatment, a model of intensive services that revolves around a multi-disciplinary team with 24-hour availability to clients in a non-institutional setting. The Connections program provides pre-release treatment planning, referrals to community-based services and mental health clinics, substance abuse monitoring and intervention, and coordinated involvement of family and partners in the reentry process (Council of State Governments 2012). Each program team consists of a social worker, a deputy probation officer, and a correctional deputy probation officer, and no team serves more than 30 clients at a time. After program clients have received services for nine months following their release, they are evaluated for discharge or continuation of services with a new probation officer from the program (Burke and Keaton 2004).

The effectiveness of this program was assessed through an RCT (Burke and Keaton 2004). All individuals in the study (N = 548) had a DSM-IV Axis I Psychiatric Diagnosis and a Global Assessment of Functioning Axis V score equal to or less than 50. The treatment group was 55 percent male and 45 percent female, and the control group was 63 percent male and 36 percent female. Both groups had a similar racial and ethnic makeup, and the only identified statistically significant difference between groups was age.
During the 12-month treatment phase, program participants were significantly less likely than nonparticipants to return to jail on a new charge, with 35 percent and 46 percent of each group returning, respectively (p < .05). The treatment group also spent significantly less time in jail on average than the control group (20.2 and 34.6 days, respectively; p < .01). This program impact continued even after treatment ended but decreased in size to a level that was not statistically significant. These findings are promising yet underscore the challenges involved in producing an enduring treatment effect on criminal behavior and mental health outcomes.

The final intervention we highlight is the Mental Health Services Continuum Program in California. Much like MIOCTP and the Connections program, MHSCP takes a multidisciplinary approach, including both social workers and parole officers, and delivering services both before and after release from state prison to parole. Within 90 days of a program participant’s release, transitional case managers assess the inmate’s mental health needs and send the assessment to the participant’s parole officer. Then, within one week of the date of release (or three days for clients with more severe mental illnesses), the parolee attends a prescheduled appointment at a parole outpatient clinic, which ensures continuity of care for the client’s mental health needs. All parolees with qualifying mental health issues have access to the parole outpatient clinics, but only those in the MHSCP program have an initial appointment scheduled by the care management program (Farabee et al. 2006).

Farabee and his colleagues (2006) conducted a quasi-experimental evaluation to assess the program impact of MHSCP for mentally ill parolees and found that the program had a beneficial effect on a number of post-release outcomes. Both the treatment group (N = 32,322) and the comparison group (N = 28,590) had diagnosed mental health problems and were eligible for pre-release assessments and the parole outpatient clinics, but the comparison group did not receive the pre-release assessments and service referrals. Key findings include that receiving a direct referral and assessment from the transitional case management program was associated with a higher rate of seeking treatment at the parole outpatient clinics and that attending parole outpatient clinics was in turn associated with lower recidivism rates over 12 months post-release.

In addition to underscoring the importance of continuity of care from pre-release to post-release stages through a multidisciplinary team, this program’s success highlights the value of direct, structured referrals as opposed to mere eligibility for care in getting mentally ill ex-offenders the help they need. Once offenders with mental illness leave jail or prison, even if they remain on probation or parole, they may become overwhelmed by the stresses and challenges associated with reentry into society and lose track of treatment goals or ideations that they formed while receiving treatment within the highly
structured environment of prison. Thus, as this study demonstrates, it is helpful for them to be discharged with an already scheduled appointment at a comprehensive mental health treatment clinic.

B. POLICY EVALUATIONS

There are numerous policies pertaining to the treatment and management of mentally ill individuals involved in the criminal justice system. This report focuses on only those that have been subjected to rigorous evaluation. Below, we discuss two examples of such efforts that were found to reduce recidivism rates among mentally ill offenders as well as associated societal and economic costs. We then discuss several recent, notable policies that intersect with mental health and criminal justice issues.

First, the Washington state legislature created programs in the late 1990s to reduce recidivism among persons with mental illness after release from prison, including Washington’s DMIO program, also referred to as the Community Integration Assistance Program, and encompassing the aforementioned MIOCTP. A series of these policy directives in Washington instructed staff from the Washington State Department of Social and Health Services, Department of Corrections, Regional Support Networks, and treatment providers to plan and deliver transitional support services to offenders classified as “dangerously mentally ill,” with a goal of improving their access to community-based services post-release (Council of State Governments 2012; Lovell, Gagliardi, and Phipps 2005; Mayfield 2007). A number of evaluative assessments of the policy’s effectiveness were embedded in the policy directives.

In particular, the Washington State Institute for Public Policy has conducted several evaluations over time of the DMIO program and found a beneficial program impact on the timing and extent of service receipt (Lovell 2007). Moreover, using a matched comparison group analysis, Mayfield (2009) reports that participation in the DMIO program is associated with significant decreases in felony recidivism and violent felony recidivism over a period of four years after release from prison. Furthermore, the study calculates the estimated benefits of the DMIO program by applying the reductions in recidivism attributable to the DMIO program to the lifetime distribution of criminal offenses expected from those released from prison. This cost-benefit analysis concludes that the state spends $33,866 (in 2007 dollars) per DMIO participant over four years and that the DMIO program returns $1.64 in benefits for every dollar spent.

Another policy that research has found to be effective is Medicaid enrollment at the time of jail release for offenders with severe mental illness. The policy has become common practice in a number of jurisdictions across the country (Koyanagi and Blasingame 2006; Morrissey 2004), but many others still do not typically offer eligible jail inmates the opportunity to apply for Medicaid before or at release. It is
important to understand that this discussion strictly refers to the policy of allowing mentally ill offenders to apply for Medicaid at release; it does not evaluate or recommend specific interventions that promote access to Medicaid or ease the enrollment process.

Morrissey (2004) employed a quasi-experimental design to assess the impact of Medicaid enrollment in two sites: Pinellas County, Florida, and King County, Washington. The treatment groups in each jurisdiction were inmates diagnosed with severe mental illnesses who left jail with Medicaid benefits ($N = 1,877$ in Pinellas County; $N = 3,346$ in King County), and the comparison groups were inmates diagnosed with severe mental illnesses who were eligible for Medicaid but who left jail without benefits ($N = 542$ in Pinellas County; $N = 1,843$ in King County). Notably, Medicaid benefits and services vary in every state, and the study’s findings apply only to individuals who enroll in Medicaid while in jail or retain their Medicaid benefits during their jail sentence, which is less likely for those serving longer sentences in prisons (Council on State Governments 2012). Thus, Morrissey (2004, v, 20) warns:

Caution must...be exercised in drawing conclusions about state prison populations from the jail data reported here. What is generalizable to mentally ill prisoners from these data is that having Medicaid on the day of release will likely help them obtain needed services in the community just as they helped the jail detainees in this study....What is not generalizable to prisons is the high rate of Medicaid enrollment at release for detainees with severe mental illness. Prisons are long stay institutions (the average length of incarceration for prisoners is over five years) so 100% of those who enter prison with Medicaid lose it before they are released....Jails, in contrast, are short stay institutions. Detainees in this study only spent an average of 16–32 days in jail so virtually all those with severe mental illness who had Medicaid at jail entry (about 65–78% in the two counties) also had it upon release. [Emphasis in original.]

With these cautions noted, the study found that accessing services through Medicaid significantly reduced jail detention among severely mentally ill offenders during a 12-month follow-up period.

**New Bills Enacted in 2013**

Rigorous evaluation of policies is scarce but much needed. It thus seems worth noting several recently enacted state bills that intersect criminal justice and mental health issues and deserve careful consideration for evaluation in future research. These legislative changes are discussed in a comprehensive state legislation report released by the National Alliance on Mental Illness (NAMI) at the end of 2013. We highlight those that could be effectively evaluated in the future to measure their potential to improve public safety and criminal justice outcomes.
A. PRE-CONVICTION AND COURT POLICIES

Most of the relevant legislation related to pre-conviction and court policies enacted in 2013 relates to either MHCs or the evaluation and processing of mentally ill defendants whose sanity or fitness to proceed is in question. In Arizona, House Bill 2310 institutes standards for the design, training, and procedures necessary to establish effective mental health courts in the state.\(^9\) In its 2013 state legislation report, NAMI notes that this bill has notable promise to serve the interests of mentally ill individuals in the criminal justice system. Louisiana also enacted legislation authorizing mental health court treatment programs in 2013 (Senate Bill 71).\(^10\)

Additionally, South Dakota, Oklahoma, and North Dakota all updated their policies with regard to clinical examinations and assessments of defendants whose sanity or capacity to proceed is in question. In South Dakota, Senate Bill 70 stipulates that magistrate and circuit court judges should be trained on behavioral health assessments, as well as other evidence-based principles.\(^11\) Oklahoma’s House Bill 1109 provides that after a person charged with a felony offense makes his or her initial court appearance, the individual may be required to submit to an approved mental health and substance abuse assessment, as well as a general risk assessment.\(^12\) Finally, North Dakota’s recently enacted House Bill 1116 effectively disallows human services centers from serving as the evaluators of a mentally ill defendant’s fitness to proceed, unless an inquiry has already been made into the facility which confirmed that the facility has the appropriate resources to conduct the evaluation.\(^13\)

Tennessee and North Carolina both enacted bills in 2013 that address the release of defendants who lack the mental capacity to proceed with trial. In North Carolina, the bill stipulates that the charges against a defendant who lacks the capacity to proceed should be dismissed as soon as the defendant has been held pending the regaining of his or her capacity for the maximum term of imprisonment or involuntary commitment. Before discharge from the custody of his or her incarceration or commitment, the defendant must be evaluated, and a report of that evaluation must be filed with the court (Senate Bill 45/House Bill 88).\(^14\) In Tennessee, Senate Bill 180 and House Bill 174 set a time limit of 11 months and 29 days from the date of arrest on the amount of time any misdemeanor charge can remain pending against a defendant found incompetent to stand trial.\(^15\)

B. SENTENCING AND INCARCERATION POLICIES

Two important bills were enacted in 2013 in Maine and North Carolina that relate to the processing of mentally ill offenders during sentencing and while incarcerated, and these legislative changes could affect recidivism rates and public safety. In Maine, Legislative Document 1433/HP 1022 instructs that an incarcerated person found not criminally responsible by reason of insanity for a second offense must
finish serving his or her current prison term before the commitment proceedings as part of the second offense can be commenced. NAMI suggests that this legislation could pose potential threats to the interest of mentally ill offenders, presumably because it lengthens their time in prison and puts off their access to treatment under civil commitment (National Alliance on Mental Illness 2013).

North Carolina enacted Senate Bill 45/House Bill 88 in 2013, which provides that a district or superior court judge who orders a clinical examination of a defendant at trial must also order the release of the defendant’s confidential mental health records to the examiner to aid the examiner in the clinical assessment. The bill also revises the holding protocol for a defendant who lacks the capacity to proceed in court. Once the defendant has been held in any court-ordered confinement (including jail, prison, or involuntary commitment to an inpatient facility) for the maximum term of imprisonment permissible for a prior record Level VI for felonies or prior conviction Level II for misdemeanors (considering only the most serious offense charged), the court must dismiss the charges against that defendant and proceed according to standard procedures following dismissal of charges against defendants found unfit to proceed.

C. RELEASE, PROBATION, AND PAROLE POLICIES
A number of state bills were enacted in 2013 in the areas of release, probation, and parole for seriously mentally ill offenders who were either sentenced directly to probation or were released to probation or parole following a period of incarceration. In Montana, Senate Bill 11 and House Bill 68 were enacted to reduce recidivism rates among mentally ill ex-offenders. Senate Bill 11 makes a number of revisions to the parole and probation systems to better serve mentally ill probationers and parolees, and House Bill 68 creates a pilot reentry task force and requires the Department of Corrections to consult with the task force to develop contracts with community-based organizations that provide mental health services to ex-offenders. The community-based organizations provide other services which are intended to reduce recidivism among mentally ill offenders as well, including substance abuse treatment, employment and housing services, general health care, and faith-based services.

In Nevada and Virginia, two bills were enacted that involve access to mentally ill offenders’ medical records and evaluations related to their care. Nevada’s Senate Bill 519 authorizes the state’s Department of Corrections to apply for a determination of Medicaid eligibility on behalf of a currently incarcerated mentally ill offender. This practice may have the potential to speed up the Medicaid application process of offenders upon their release. In Virginia, House Bill 2148/Senate Bill 1217 authorizes the Department of Corrections to exchange offenders’ mental health records and reports with any local department of social services, including the Department for Aging and Rehabilitative
Services and the Department of Social Services, for reentry planning and coordination of post-release programs and services.\textsuperscript{20}
V. Research and Policy Recommendations

In light of the findings discussed in this report, any definitive guidance on how to change the current practice and policy regarding mentally ill offenders and mitigate associated costs would be premature. With genuine interest in improving mental health and criminal justice outcomes, practitioners, policymakers, and researchers alike strive to understand issues related to the treatment and management of mentally ill offenders. New statutory changes and programs are implemented every year for offenders diagnosed with mental health issues to provide them with improved access to services and justice. However, existing knowledge on the effectiveness of such approaches is very limited. The scarcity of rigorous evaluation studies, further complicated by the mixed findings of these studies, prohibits a consensus on effective strategies and policy options, as well as the circumstances under which the impact of such strategies and policy options can be optimized. Much evaluative research is needed to inform sound policy and practice with a higher degree of certainty.

Nonetheless, our comprehensive review did uncover some important lessons that deserve careful consideration. Challenges of reintegrating into society have been well documented (Baer et al. 2006; Mallik-Kane and Visher 2008). Returning prisoners with mental illness will face exacerbated challenges if their needs for mental health services are not adequately addressed. In particular, the continuation of care from prison to community settings is a core principle of prisoner reentry (Baillargeon et al. 2009; Cloyes et al. 2010) and is critical for individuals with mental health issues. Given that many mentally ill individuals already have difficulty managing their basic needs without substantial distress (Theurer and Lovell 2008), it is important to ensure that offenders leaving prison are given structured guidance and support to maintain a healthy, crime-free lifestyle in the community. As suggested by Theurer and Lovell’s evaluation of the MIOCTP, a multidisciplinary team approach can be potentially effective at mitigating such challenges, thereby reducing recidivism rates and associated societal and economic costs. Further, there is a great potential in expanding Medicaid eligibility and enrollment for this population. Implementation of the Affordable Care Act permits the expansion of Medicaid coverage to nearly all childless adults with incomes up to 138 percent of the federal poverty level (Kenney et al. 2012). Coverage will be extended to millions of low-income people, many of whom have been involved with the criminal justice system, in states that move forward with the expansion (Community Oriented Correctional Health Services 2011).
As evidenced by the sheer number of MHCs in operation in the United States today, another promising practice in the criminal justice system would be to expand diversion programs and mechanisms for mentally ill offenders. Social stigma for individuals with a criminal record can have a detrimental impact on subsequent criminal justice involvement, as well as on such individuals’ well-being (Pager 2003; Weiman 2007; Western 2002). By facilitating early intervention and diverting mentally ill individuals from potentially harmful experiences in the criminal justice system, MHCs provide a practical platform to decrease the number of mentally ill offenders in correctional facilities while linking defendants to effective treatment and supports (Almquist and Dodd 2009).

Much of the debate over MHCs is not about whether we should promote diverting mentally ill offenders through MHCs but about how we can optimize settings and practices for MHCs. For example, little is known about what types of offenders should be focused on as a target population of MHC treatment. Future research should address the extent to which court settings, treatment programs, and offender profiles can contribute to the effectiveness of MHCs.
VI. Conclusion

The goals of this background analysis were to summarize and synthesize the state of mental health care for seriously mentally ill individuals in the criminal justice system, and to examine the societal and economic costs associated with recidivism and insufficient care for this population. Through a comprehensive scan of policy and practice at the state level and a rigorous review of national-level data and studies that focus on the processing of mentally ill defendants, we extracted estimates of the costs of managing and treating offenders with mental illness from a fractured body of research that requires significant expansion in quantity and rigor. The lack of reliable research on the incarceration of mentally ill defendants, as well as the paucity of cost-benefit analyses on this topic, is an important finding in and of itself.

We also reviewed a number of general policy recommendations, including the expansion of multidisciplinary treatment teams, continuity of care, and MHCs, as well as early Medicaid enrollment for incarcerated individuals with serious mental illness. New policies and practices for offenders with mental illness should be implemented and evaluated, and those few programs that have been shown to be successful through rigorous evaluation should be considered for expansion both in scope and in application as we move forward.

Although a number of important gaps in the current literature and, particularly, in rigorous quantitative evaluations of the success of programs and their costs have limited our ability to arrive at more concrete conclusions, the data remain clear about one thing: individuals with mental illness are still largely overrepresented in the criminal justice system. With such high numbers, their care and treatment is not just a humanitarian concern; it is a critical economic, societal, and public safety issue.
# Appendix. Statutory Sources of Information

<table>
<thead>
<tr>
<th>State</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>Ala. Code 1975 § 15-16-20, § 22-52-1.1</td>
</tr>
<tr>
<td>Alaska</td>
<td>AS § 12.47.070, § 12.47.130</td>
</tr>
<tr>
<td>Arizona</td>
<td>A.R.S. § 13-502, § 13-4503</td>
</tr>
<tr>
<td>Arkansas</td>
<td>A.C.A. § 5-2-301, 305</td>
</tr>
<tr>
<td>California</td>
<td>CA PENAL § 28, § 2962, § 4011.6</td>
</tr>
<tr>
<td>Colorado</td>
<td>C.R.S. 16-8-101, 101.5, 103.7, 106</td>
</tr>
<tr>
<td>Connecticut</td>
<td>C.G.S.A. § 54-56D, L</td>
</tr>
<tr>
<td>Delaware</td>
<td>Del. C. § 11-401 et seq.</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>DC ST § 21-501, § 24-531.03, DC Code Ann. § 21-50</td>
</tr>
<tr>
<td>Florida</td>
<td>Fla. Stat. § 916.12, 106, 115, 145</td>
</tr>
<tr>
<td>Georgia</td>
<td>O.C.G.A. § 16-3-2, 17-7-130.1, 131, § 37-1-1</td>
</tr>
<tr>
<td>Hawaii</td>
<td>HRS § 334-1, § 704-404, Cor.10.1G.04</td>
</tr>
<tr>
<td>Idaho</td>
<td>Idaho Code § 18-207, 211, § 66-317</td>
</tr>
<tr>
<td>Illinois</td>
<td>§ 720 ILCS 5/6-2, 5/6-4, § 725 ILCS 5/104-13</td>
</tr>
<tr>
<td>Indiana</td>
<td>IC 12-7-2-111.6, 35-36-2-2</td>
</tr>
<tr>
<td>Iowa</td>
<td>Iowa Code § 229.1, § 701.4, § 812.3</td>
</tr>
<tr>
<td>Kansas</td>
<td>K.S.A. 22-3302, 59-2946</td>
</tr>
<tr>
<td>Kentucky</td>
<td>KRS § 431.2135, § 504.020, § 504.060, § 504.090</td>
</tr>
<tr>
<td>Maine</td>
<td>15 M.R.S. § 101-D, 17-A M.R.S. § 39</td>
</tr>
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<td>Massachusetts</td>
<td>ALM GL ch. 123 § 15-16, 123 App. § 1-1</td>
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<td>Michigan</td>
<td>MCLS § 330.1400, § 768.20, § 768.21a, § 768.36</td>
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<td>Minnesota</td>
<td>Minn. Stat. § 245.462, § 611.026; Minn. R. Crim. P. 20.01, P. 20.04</td>
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<td>Missouri</td>
<td>R.S. Mo. § 552.010, § 552.020</td>
</tr>
<tr>
<td>Montana</td>
<td>MCA § 46-14-101 – 103</td>
</tr>
<tr>
<td>Nebraska</td>
<td>R.R.S. Neb. § 29-1823, § 71-908</td>
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<td>New Hampshire</td>
<td>RSA 135-C:2, 135:17, 628:2</td>
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<td>N.J. Stat. § 2C:4-1, § 2C:4-4, § 2C:4-5, § 30-4-27.2</td>
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<td>New Mexico</td>
<td>N.M. Stat. Ann. § 24-7B-3, § 31-9-1.1, § 31-9-1.4</td>
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<td>NY CLS CPL § 220.15, § 330.20, § 730.20</td>
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<td>N.D. 12.1-04.1, 25-03.1</td>
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<td>Oklahoma</td>
<td>22 Okl. St. § 152, 1161, 1175.3; 43A Okl. St. § 1-103</td>
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<tr>
<td>Oregon</td>
<td>ORS § 161.095, § 161.295, § 161.315, § 426.005</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>R.I. Gen. Laws § 40.1-5.3-3, 4, 6</td>
</tr>
<tr>
<td>South Carolina</td>
<td>S.C. Code Ann. § 17-24-10, 20, 30, 40; § 44-22-10</td>
</tr>
<tr>
<td>South Dakota</td>
<td>S.D. Codified Laws § 23A-10-3, 4, 7, § 23A-10A-2, § 27A-1-1</td>
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<td>Texas</td>
<td>Tex. Code Crim. Proc. art. 16.22, art. 46B.001, art. 46C.051</td>
</tr>
<tr>
<td>Utah</td>
<td>Utah Code Ann. § 76-2-305, § 77-16a-103</td>
</tr>
<tr>
<td>Vermont</td>
<td>13 V.S.A. § 4801, 4814; 18 V.S.A. § 7101</td>
</tr>
<tr>
<td>Washington</td>
<td>§ 10.77.010, 030, 060, 110, § 71.05.020</td>
</tr>
<tr>
<td>West Virginia</td>
<td>W. Va. Code § 27-1-2, § 27-6A-4</td>
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<td>Wisconsin</td>
<td>Wis. Stat. § 51.01, § 971.15, 16</td>
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Notes

1. In 1996, federal legislation mandated that the US Attorney General provide Congress with an independent review of the effectiveness of state and local crime prevention assistance programs funded by the US Department of Justice. In evaluating the scientific rigor of evaluations on such interventions, a cadre of researchers developed a standardized scoring system known as the Maryland Scientific Methods Scale, ranging from Level 1, referring to correlational analysis between a crime prevention program and crime at a single point in time, to Level 5, referring to causal analysis based on high-fidelity randomized controlled trials (Sherman et al. 1998). This scale (and its modified versions) has been used widely to screen for quality research in systematic reviews in the field of crime and criminal justice (e.g., Farrington 2003; Gill and Spriggs 2005).


4. See appendix for full list of state statutes cited in this section and in table 1.

5. The notion of therapeutic jurisprudence refers to ways in which the practice of the law can be used to support and enhance beneficial outcomes beyond the immediate case disposition (Wexler and Winick 1996). It thus seeks to achieve therapeutic outcomes through the legal system without compromising due process and other justice values. In other words, it aims to practice law in a way that supports the health and well-being of those being tried in a court of law (Rottman and Casey 1999).

6. A 2003 survey of 20 MHCs across the country reported that approximately half required a “guilty” or “no contest” plea to participate in the MHC program (Bernstein and Seltzer 2003).

7. BJS reports that among nearly 300,000 prisoners released in 15 states in 1994, 67.5 percent were rearrested within three years (Langan and Levin 2002).

8. Although the particular intervention of interest in Morrissey (2004) did not result from a policy change regarding the Medicaid eligibility of offenders, the expansion of Medicaid benefits among offenders is much discussed in the context of offender reentry and can be implemented through a policy reform.


12. Mental Health; Peer Recovery Support Specialists; Effective Date, Oklahoma HB 1109, 54th legislature, 1st sess. (May 24, 2013).


15. An Act to Amend Tennessee Code Annotated, Title 33, Chapter 7, Part 3, Relative to Competency to Stand Trial Reports and Retirement of Misdemeanor Charges for Individuals Incompetent to Stand Trial, Tennessee SB 180/HB 174 (2013).


17. See note 14.
18. An Act Generally Revising Criminal Justice System Laws Related to Offenders with Mental Illness; Revising Requirements for Parole and Probation Officers and Members of the Board of Pardons and Parole; Revising Laws Related to Conditions of Release, Bail, and Parole of Offenders with Mental Illness; Revising the Definition of "Mental Disease or Defect"; Amending Sections 2-15-2302, 46-9-108, 46-9-301, 46-14-101, 46-23-201, and 46-23-1003, MCA; and Providing an Applicability Date, Montana SB 11, 63rd legislature (2013); An Act Establishing a Statewide Multiagency Reentry Task Force for Paroled Offenders at High Risk of Recidivism; Specifying Department of Corrections Duties; Providing an Appropriation; and Providing and Effective Date, Montana HB 68, 63rd legislature (2013).

19. An Act relating to Medicaid; Authorizing the Director of the Department of Corrections to Apply on Behalf of a Prisoner for a Determination of Medicaid Eligibility; and Providing Other Matters Properly Relating Thereto, Nevada SB 519 (May 24, 2013).

20. An Act to Amend and Reenact § 53.1-40.10 of the Code of Virginia, Relating to the Department of Corrections; Exchange of Medical Records with the Department of Aging and Rehabilitative Services and with Departments of Social Services, Virginia HB 2148/SB 1217 (2013).
References


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KiDeuk Kim is a senior research associate in the Justice Policy Center of the Urban Institute, where he leads research teams to examine an array of issues related to criminal justice policies involving vulnerable populations. He is also a visiting fellow at the US Department of Justice, Bureau of Justice Statistics. His current research interests focus on understanding decision-making in the criminal justice system and evaluating criminal justice programs. His work has been published in prominent scholarly journals and cited by several media outlets.

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The Enhanced Pre-Arraignment Screening Unit
Improving Health Services, Medical Triage, and Diversion Opportunities in Manhattan Central Booking

David Cloud, Anne Siegler, Michelle Martelle, Leah Pope, and Jim Parsons

September 2017
The Pre-Arraignment Screening Unit initiative and Vera’s process evaluation were supported by the Jacob and Valeria Langeloth Foundation (Project #2693). The foundation’s grant-making program is centered on the concepts of health and well-being. The foundation’s purpose is to promote and support effective and creative programs, practices and policies related to healing from illness, accident, or physical, social or emotional trauma, and to extend the availability of programs that promote healing to underserved populations.
From the Director

The New York City jail system—with more than 60,000 annual admissions and an average daily population of 9,400 people in 12 facilities citywide—is among the largest in the nation.

A high percentage of people incarcerated in this vast correctional system have serious behavioral and physical health issues that require monitoring and treatment—often most effectively addressed outside of a jail. Yet historically, the criminal justice agencies entrusted with deciding which arrested people wind up in the city’s jails have had little health history information to consider when making decisions about whom they should divert from jail to community-based treatment programs.

Since the early 1990s, the city has assessed arrested people at pre-arraignment screening units (PASUs) for health conditions prior to arraignment at its central booking facilities. But the process has been limited by the cursory nature of the evaluation and the absence of staff trained to detect and treat common medical conditions prevalent among the population of arrested people. As a result, the police routinely take anyone with the appearance of an active behavioral or physical health problem to a city hospital’s emergency room for assessment and, if necessary, treatment. These hospital evaluations eat up hours of police officers’ time spent in ER waiting rooms and often prove to be unnecessary. Furthermore, the PASUs collect information in paper records that are unconnected to the rest of the city’s public health infrastructure, including jail medical facilities. This fragmented process has led to missed opportunities to triage people appropriately as they travel through the criminal justice system.

The financial and human cost of the inefficient, inadequate PASU system led New York City’s Correctional Health Services (CHS) to partner with the Vera Institute of Justice (Vera) in creating and launching a pilot program in Manhattan Central Booking, known as the Enhanced Pre-Arraignment Screening Unit (EPASU). CHS, a division of NYC Health + Hospitals, the country’s oldest and largest public health care delivery system, provides medical and behavioral health care, dental care, social work services, discharge planning, and re-entry services in the city’s jails. The goals were to increase the capacity to deliver medical care to people pre-arraignment, improve coordination across correctional and community health providers, and bolster diversion efforts for people with behavioral health needs.

This report examines the EPASU’s first year, identifying its successes and challenges in performing more rapid, accurate health assessments of people prior to arraignment, delivering needed treatment, communicating with correctional healthcare providers, providing defense attorneys with health screening summaries that aid them in arguing for their clients, and when appropriate, diverting arrested people from jail. The lessons learned suggest that the EPASU is one important tool for eliminating health disparities across the justice continuum and reducing the overrepresentation of people with behavioral and physical health disorders in New York City’s jails.

Leah G. Pope
Acting Director,
Substance Use and Mental Health Program
Vera Institute of Justice
Introduction

In the United States, people involved in the criminal justice system have higher rates of chronic, infectious, and behavioral health problems than the general population. As a result, police, criminal courts, and correctional agencies routinely function as default providers of primary care and behavioral health services for some of society’s most underserved, uninsured, and impoverished members. Each year, correctional health providers working in New York City jails contact incarcerated people approximately 750,000 times to provide medical and mental health services. More than 40 percent of people in the city’s jail system receive some type of behavioral health service, of which 23 percent meet diagnostic criteria for a serious mental illness and 47 percent have a diagnosable substance use disorder. People in the city’s jails experience higher rates of chronic and communicable diseases than other New Yorkers.

In response, policymakers in New York City have adopted strategies to improve the quality and coordination of correctional health care and reduce the overrepresentation of people with mental illnesses and substance use problems in custody. For example, in 2011, the city implemented an electronic health record system to enhance healthcare services for people receiving care while incarcerated and promote care continuity for those transitioning between correctional and community settings. In recent years, public health and criminal justice agencies in New York City have been collaborating to increase diversion opportunities for people with physical and behavioral health issues. For instance, in 2014, the NYC Mayor’s Office of Criminal Justice developed a citywide action plan that included a range of strategies to steer people with substance use and mental health disorders away from jail and facilitate access to psychiatric services, treatment for addiction, and social services in community settings.

Diversion opportunities at various stages in the criminal justice process—before or after arrest, at first court appearance (known as arraignment), or as part of or in lieu of formal sentencing—can contribute to downsizing correctional populations and promoting access to community-based health and social services. Yet, in New York City
and elsewhere, diversion efforts have not traditionally taken advantage of a standard component of booking protocols, in which a healthcare professional screens newly arrested people to determine if they require immediate medical attention or transfer to a hospital prior to consulting a defense lawyer and proceeding to arraignment.\(^8\)

Arraignment is a critical juncture in the adjudication process. Following a brief consultation with a lawyer—a public defender, for those who cannot afford a lawyer—defendants must quickly decide how to plead to the charge or charges just moments before their arraignment. Arraignments generally result in a defendant’s release to the community—for example, when a judge dismisses the charges; releases the person on his or her own recognizance; assigns time served or issues a community-based sanction if the person pleads guilty for minor crimes; sets bail that the person pays; or adjourns the case in contemplation of dismissal with the consent of the prosecution.\(^9\) Less frequently, an arraignment results in jail confinement. People may be held in custody because they lack the financial means to post bail, because the judge determines that they are unlikely to appear at the next court date and denies bail, or because they plead guilty at arraignment and receive a jail sentence. While timing varies by jurisdiction, New York law requires arraignments to occur within 24 hours of an arrest, unless there is an "acceptable explanation" for a delay.\(^10\)

In 2014, recognizing the potential to build upon existing pre-arraignment booking procedures, New York City Health + Hospitals’ Division of Correctional Health Services (CHS), in partnership with the Vera Institute of Justice (Vera), began planning the Enhanced Pre-Arraignment Screening Unit (EPASU) pilot with support from the Jacob and Valeria Langeloth Foundation. The EPASU pilot launched in May 2015.\(^11\) The screening unit is based in Manhattan and has introduced a new approach and set of resources in the borough’s central booking facility, including an electronic screening tool, connection to electronic health records, and a designated diversion liaison. The EPASU aims to: (1) increase Manhattan’s capacity to deliver medical care to people moving through the arrest-to-arraignment process; (2) improve coordination of health services between correctional and community providers; and (3) bolster diversion efforts for people with behavioral health needs.

This report describes the results of a process evaluation—covering the period between May 2015 to November 2016—conducted by Vera and CHS to assess the EPASU’s implementation and successes as well as the challenges in meeting these aims.
The arrest-to-arraignment process in New York City

In 2016, the New York City Police Department (NYPD) arrested more than 22,000 people each month, including a disproportionate number with mental illness and a range of other chronic and acute health needs. If an arrested person reports or displays a health problem, the arresting officer immediately takes him or her to a hospital emergency room. There, physicians evaluate the person’s health to determine whether he or she is stable enough to proceed to the central booking facility or requires admission to the hospital. Barring any immediate sign of a health problem, police bring newly arrested people to the precinct station house. Unless the arresting officer issues a desk appearance ticket (meaning that the arrested person is ordered to appear in court at a later time), the officer confirms arrest charges with a supervisor and then takes the person to the central booking facility in the precinct basement or adjacent to the courtroom in the borough of arrest to await arraignment. It generally takes about four to six hours at the precinct station before the arrested person goes to central booking.

There are four central booking facilities in New York City—in Manhattan, Brooklyn, Queens, and the Bronx—where most people are held prior to arraignment. Once a person arrives at central booking, he or she is searched, fingerprinted, photographed, and undergoes an iris scan. The arresting officer next takes the person to the booking facility’s pre-arraignment screening unit (PASU), where an emergency medical technician (EMT) screens him or her for a variety of health needs. Then staff from the Criminal Justice Agency, a pretrial service provider, conducts an interview to collect information on family and community ties, housing, employment status, and any other information that informs recommendations for bail and pretrial release.

The city originally established the screening units after a 1993 settlement (Grubbs v Brown) required the city to assess and treat the acute and chronic health needs of arrested people passing through booking facilities. Responding to overcrowded and dank conditions in the city’s booking facilities, with poor air flow that turned holding cells into vectors for spreading tuberculosis and other communicable diseases, the settlement
ordered city agencies to create a process for screening the health needs of all people awaiting arraignment.\textsuperscript{16}

The original PASU model, still operating in Brooklyn, the Bronx, and Queens, has several limitations. First, the EMTs who staff these units are neither credentialed nor equipped to diagnose or treat the most common ailments that people present in central booking, such as asthma, alcohol withdrawal, and hypertension. They cannot prescribe or administer prescription drugs, and can give patients aspirin and Tylenol only on request. As a result, EMTs typically ask police to transport anyone reporting a health problem to a hospital emergency room.\textsuperscript{17} Police officers taking patients to the hospital frequently spend their entire shift in the hospital waiting room, which reduces the department’s ability to respond to 911 calls. Because officers frequently stay at the hospital with the arrested person awaiting evaluation after their shift has ended, the practice also results in significant overtime costs to the NYPD. And in extreme cases, the central booking facilities’ minimal medical capacity has had tragic consequences. For example, in 2013, Kyam Livingston, a mother of two, died from alcohol-related seizures in Brooklyn’s central booking facility, after reportedly complaining of stomach cramps and requesting medical attention for more than seven hours. The incident spurred public protests and a wrongful death lawsuit against the city.\textsuperscript{18}

Second, the PASUs’ paper-based medical screening protocol is outdated, limited in scope, and requires EMTs to quickly determine people’s health needs based solely on self-reports, with no access to health records. This system lacks a process for detecting the full range of health problems that are common among people encountering the justice system.

Third, the PASU clinics are isolated from the rest of the city’s public health infrastructure, including jail medical facilities. There is little or no communication between EMTs screening patients, clinicians conducting medical intakes on Rikers Island, and community providers. As a result, medical information the PASU EMTs collect is not typically used to ensure that people with health problems who are incarcerated after arraignment are swiftly triaged to the appropriate medical settings within the jail system. In the worst-case instances, failure to communicate with city jails’ medical intake staff about serious health conditions such as chest pains or signs of heart failure gathered during pre-arraignment screening has resulted in otherwise preventable deaths within the first few days of incarceration. Finally, the PASUs have untapped potential as settings for gathering comprehensive health information about defendants that could
be used to advocate for diversion or to link people with chronic physical and behavioral health needs to community mental health care, primary care, housing, and harm-reduction services.

### Rethinking Manhattan Central Booking

To address these shortcomings and missed opportunities, Vera and New York City Health + Hospitals’ Division of Correctional Health Services (CHS) established a pilot program to test an enhanced pre-arraignment screening unit (EPASU) model, designed to improve the ability of the courts to identify health needs, facilitate diversion, and triage healthcare services. After a 12-month planning process, the EPASU was launched in the Manhattan Central Booking facility in May 2015. The NYC Task Force for Behavioral Health and Criminal Justice, spearheaded by the Mayor’s Office of Criminal Justice, played an instrumental role in the pilot’s launch, by adopting EPASU as part of a citywide action plan for addressing the overrepresentation of people with behavioral health needs in the city’s criminal justice system. Since its launch, the EPASU pilot has operated from 6 a.m. to 2 p.m., Monday through Friday. In November 2016, CHS received additional support to expand the EPASU model to operate around the clock in Manhattan. The principal components of the EPASU are as follows:

- **A new electronic screening tool.** The EPASU’s health-screening tool is more comprehensive than the PASU model in several ways. It includes a wider range of questions for detecting the physical and behavioral health needs of people awaiting arraignment in central booking, notably additional questions to identify signs of psychosis and withdrawal from alcohol, opiates, or other narcotics. The new screening tool is also web-based, which allows EPASU staff to more easily share information with healthcare providers in the jail or the community.

- **Increased clinical capacity and care coordination.** A patient care associate (PCA) a nurse practitioner (NP), and a licensed social worker staff the EPASU, giving it a greater capacity to detect, diagnose, and respond to common medical problems than the PASU. Each person entering the EPASU
receives a preliminary health screening from a PCA—a caregiver who works under the direct supervision of a registered nurse or nurse practitioner and is trained and certified to assess vital signs, collect health history information, and assist in delivering care. The purpose of this Level 1 screen is to ascertain acute medical and behavioral health needs and identify anyone who may require a more thorough assessment. PCAs refer those patients to the NP for a more in-depth Level 2 screen. NPs are licensed to diagnose and treat a range of common medical conditions and trained to make informed judgments about whether it is necessary to transfer patients to a hospital for further evaluations or care prior to arraignment. They can also prescribe medications for medical conditions common among patients in central booking.

**Access to electronic health records.** EPASU clinicians can access two electronic health databases that include detailed information on prior symptoms and diagnoses for people coming through booking: e-Clinical Works (ECW), the jail’s electronic health record system, which includes information on prior diagnoses, prescriptions, radiology images, and allergies for any patients who have been through the city jail system in the past five years, and the New York State Office of Mental Health’s Psychiatric Services and Clinical Knowledge Enhancement System (PSYCKES) database, which provides historical and current information on diagnoses and service use among Medicaid beneficiaries. With the patient’s consent, EPASU staff can search PSYCKES to learn about any recent hospitalization for a psychiatric condition and find contact information for current outpatient service providers. The health data in ECW and PSYCKES allow EPASU clinicians to make informed treatment choices, triage medical services with community and correctional providers, and decide who is a candidate for diversion.

**A diversion liaison.** The EPASU’s licensed social worker (known as the “diversion liaison”) identifies people with behavioral health needs and, with the person’s consent, shares the relevant information with defense counsel prior to arraignment. While each person meets with the nursing staff, the social worker searches ECW and PSYCKES for any evidence of a behavioral health problem. Evidence of a psychiatric need triggers a conversation between the diversion liaison and the patient about current or past treatment contacts, the patient’s desire for treatment, current housing status, health insurance, and other indicators of psychosocial instability. The liaison then prepares a clinical summary and, with the patient’s consent, shares a paper copy with the relevant public defender agency prior to arraignment (in Manhattan, these agencies include Legal Aid, New York County Defenders, and the Harlem Neighborhood Defenders). By the pilot’s design, the public defender is the gatekeeper of the
clinical summary. In consultation with their clients, defenders have the discretion to use the information in the summary to advocate for the client at arraignment or at a later stage in the case.

**Systematic medical triage.** Routine, rapid communication between the EPASU and jail medical intake personnel is critical for preventing illness and death among people sent to city jails. Thus, a main objective of the EPASU is to promptly share important medical information collected in central booking with clinicians on Rikers Island or the other city jails. Whenever a patient discloses or a clinician detects symptoms of an underlying chronic illness or warning signs of an adverse health event, such as a heart attack or stroke, that requires follow-up assessments, the clinician enters a triage flag in the jail’s electronic health record (ECW). The aim is to alert healthcare providers to expedite medical intake for any jail-bound person who needs immediate attention. Additionally, with a patient’s permission, the diversion liaison or NP can contact community health and social service providers to inform them that their client has been arrested and to make post-release referrals. Communicating with community providers can be especially important for people who live in homeless shelters and are at risk of losing their bed if they fail to arrive or notify the shelter of their incarceration. For people actively enrolled in a Medicaid health home, the diversion liaison may also be able to contact their care manager, who can reestablish adherence to previously prescribed medication, counseling, and symptom-management regimens for chronic health conditions.22

### Aims and methods

Vera and New York City Health + Hospitals’ Division of Correctional Health Services (CHS) conducted a process evaluation of the EPASU pilot from May 2015 through November 2016 to assess its implementation and understand whether it achieved its principal aims: increasing the capacity to assess and treat health problems in central booking, improving medical triage and care coordination, and facilitating diversion opportunities. As described in more detail below, Vera and CHS used a mixed-methods
## Table 1

**PASU limitations vs. EPASU components**

<table>
<thead>
<tr>
<th>PASU limitations</th>
<th>EPASU components</th>
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<tbody>
<tr>
<td>EMTs not trained or credentialed to diagnose or administer medications for common ailments.</td>
<td>Employs a patient care associate and a nurse practitioner who is able to diagnose and prescribe medications for common ailments.</td>
</tr>
<tr>
<td>Relies on hospital emergency room to prescribe and administer medication.</td>
<td>Avoids unnecessary hospital runs by prescribing commonly needed medications on-site.</td>
</tr>
<tr>
<td>Relies on paper-based screening that includes cursory assessment of behavioral health needs.</td>
<td>Uses revamped, electronic health screening instrument that includes a new instrument for assessing mental health and substance use symptoms.</td>
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<tr>
<td>EMTs have no accessibility to city’s electronic health database systems and must rely solely on self-report.</td>
<td>Clinicians have access to many people’s health histories in the jail’s electronic health record system (ECW) and Medicaid claims database (PSYCKES).</td>
</tr>
<tr>
<td>No process for facilitating jail diversion.</td>
<td>Employs a social worker (diversion liaison) to identify people with behavioral health needs, conduct outreach to community providers, and compile clinical summaries. With consent, clinicians can share clinical summaries on clients’ behavioral health needs with public defenders in advance of arraignment.</td>
</tr>
<tr>
<td>No systematic process for coordinating care with medical intake staff in the jail system.</td>
<td>Uses electronic system for creating a triage notification in a patient’s medical record, when necessary, to expedite medical intake at jail admission.</td>
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approach that combined quantitative and qualitative research strategies, drawing on analyses of administrative data, in-depth interviews, surveys, and focus groups with key stakeholders to answer the following questions related to the pilot’s aims:

1. **Increasing clinical capacity**

   > How many patients did EPASU clinicians screen over an 18-month span?
   > What were the most prevalent physical and behavioral health problems reported, identified, or diagnosed?
   > What medical treatments and services did nurse practitioners deliver most frequently on-site in the EPASU?
   > How many unnecessary hospital trips did the EPASU prevent through its expanded capacity to prescribe medications for common medical ailments in Manhattan central booking?
   > How did NYPD officers and hospital emergency room physicians view increasing the capacity to assess and treat health problems in central booking?

2. **Improving triage and care coordination**

   > How frequently did the NP flag patients for triage and what were the most common reasons for doing so?
   > Did EPASU clinicians successfully connect patients to healthcare and social services in the community?

3. **Facilitating jail diversion**

   > How many EPASU patients were identified as potential diversion candidates?
   > How many clinical summaries did the diversion liaison share with public defenders prior to arraignments?
   > Did the pilot help public defenders divert people with behavioral health needs from jail at arraignment or later stages in their criminal case?
   > What suggestions did public defenders and social workers offer for improving the EPASU’s ability to facilitate jail diversion?
Administrative data analysis

The research team compiled administrative data from EPASU health screens, weekly performance metrics, and the jail electronic health record system to describe the first 17.5 months of program operations, from May 18, 2015 through October 31, 2016. The health screening data included self-reported information on people’s physical and behavioral health symptoms, diagnoses, and treatment histories. Vera and CHS developed a performance metrics database for monitoring a range of outputs, such as weekly volumes of patient encounters, arrest charges, people identified as potential diversion candidates based on the diversion liaison’s assessment, and clinical summaries shared with public defenders. As described above, CHS’s electronic health records system (ECW) provided supplemental health information on all EPASU clients with a history of incarceration in New York City. The research team matched EPASU screening records with ECW data to describe services provided upon jail entry, diagnostic information, and previous jail-based care.

Interviews, surveys, and focus groups

Researchers conducted interviews, surveys, and focus groups with key stakeholders to monitor the pilot’s progress in achieving its objectives and address challenges arising during implementation. These included semi-structured interviews with nine stakeholders: a patient care associate; a nurse practitioner; the diversion liaison; psychiatrists from the Comprehensive Psychiatric Emergency Program at Bellevue Hospital; and supervising attorneys from the Legal Aid Society, New York County Defenders, and Neighborhood Defender Services. Interviews focused on the features of the EPASU compared to the PASU system; the challenges experienced during start-up; how public defenders use the information EPASU clinicians collect; and recommendations for improvements.

In the first few months of implementation, the research team also conducted structured interviews with a convenience sample—a sample drawn from those on hand—of 45 police officers using the EPASU to assess their perspective on how the pilot procedures affected the booking process. Vera and CHS distributed 417 surveys to public defenders working in the court arraignment parts during the hours that the pilot was operating. A total of 145 public defenders completed surveys, a response rate of 35 percent. These short, paper-based surveys were attached to each clinical summary defenders
received at arraignment. The survey included a combination of closed-response and open-ended questions. It sought to document how frequently and in what ways public defenders used the information in the clinical summaries to advocate for their clients at arraignment and at later stages in a case.

In August 2016, Vera researchers conducted two focus groups, one with public defenders from the Legal Aid Society and one with those from the New York County Defenders offices. Working with supervising attorneys, they recruited focus group participants who were familiar with the pilot and had received clinical summaries from the EPASU diversion liaison prior to arraignment. Vera researchers asked participating public defenders to discuss a range of topics, including examples of receiving clinical summaries on their client’s behavioral health needs that helped with advocacy strategy and outcomes at arraignment and post-arraignment stages, as well as instances of the information not helping clients. The researchers also asked for general feedback and assessments of the pilot, including suggestions for improvement. The research team asked defense attorneys about their experiences working with an EPASU diversion liaison and the utility of the information that the liaison provided.

Findings

Vera’s analysts distilled the EPASU’s successes and challenges in achieving its principal aims.

Identifying the physical and behavioral health needs of EPASU clients

Prior to the EPASU, New York City lacked a system for collecting and reporting data on the health profiles of people held at central booking pending arraignment. Creating a more comprehensive, electronic screening instrument, coupled with access to historical medical records, gave the city’s public health administrators a vital resource for monitoring the prevalence of symptoms, diagnoses, and health service needs among the pre-arraignment population. As the findings below describe in more detail, this data revealed that people passing through Manhattan’s central
booking experience a significant burden of physical and behavioral health needs. They also demonstrate that people who were identified as having a behavioral health need experienced more frequent negative health and criminal justice outcomes than people without a behavioral health need.

**EPASU screenings found high levels of medical needs**

EPASU clinicians saw 10,796 patients during the first 18 months of the pilot’s operation. Patient care associates and nurse practitioners (NPs) screened an average of 149 patients a week. Only 1 percent (n=101) refused to answer any screening questions or engage in a clinical assessment. The pilot’s clinicians completed a total of 10,695 Level 1 screens and 3,053 Level 2 screens. A Level 1 screen is the initial questionnaire that all people passing through the EPASU receive. If a person discloses a behavioral health issue or a medical condition that requires a more thorough evaluation, then he or she is referred to a nurse for a Level 2 screen. The Level 2 screen contains more detailed questions about a person’s substance use and mental health needs. The Appendix contains a complete summary of self-reported health needs from all 10,695 people who were screened by the EPASU during the 18-month pilot.

The most commonly reported physical illnesses and symptoms included breathing problems, mostly related to asthma (772, or 7 percent of all patients screened); heart problems (422, 4 percent); diabetes (260, 2 percent); and seizure disorders (147, 1 percent), as shown in the Appendix. Patients reported high rates of recent hospital or emergency room treatment, measured as police-escorted visits prior to their arrival at central booking or any encounter in the week prior to arrest. In the week prior to arrest, 1,532 patients (14 percent of all patients screened) reported having been in the hospital or emergency room; 71 percent (1,087) of those visits arose from medical complaints, 16 percent (240) from psychiatric concerns, and 13 percent (202) from both medical and psychiatric concerns.
EPASU patients reported significant behavioral health needs

EPASU screening data revealed high frequencies of self-reported substance use and mental health needs among patients. Table 2 summarizes self-reported indicators of a behavioral health need from Level 1 screens, including frequency of alcohol use, use of benzodiazepines, use of prescribed psychiatric medication, enrollment in substance use treatment, and enrollment in mental health treatment. Of all screened patients, 3.9 percent (n=418) reported having a prescription for a psychiatric medication in the past three months. Additionally, 3.3 percent (n=352) reported current enrollment in drug or alcohol treatment, and 1.5 percent (n=164) reported current enrollment in mental health treatment. Nearly 9 percent of patients reported daily alcohol consumption (n=951). Risk of drug or alcohol withdrawal was common, with one quarter of daily alcohol drinkers reporting withdrawal symptoms when ceasing alcohol use (24 percent or 224/951), and over half of patients on anxiety medications (such as Xanax, Ativan, and Klonopin) reporting withdrawal symptoms upon cessation (55 percent or 170/311).
A subset of patients received Level 2 screens and provided more in-depth information on their behavioral health needs. More than 600 of these patients reported currently being in mental health or substance use treatment (n=601 or 5.6 percent of all patients seen). When asked if patients have “ever done anything, started to do anything, or prepared to do anything” to end their life, 181 patients responded affirmatively (1.7 percent of all patients seen), with nearly one-third (n=57) of this group indicating suicidal behavior within the prior three months. Forty-eight patients reported current suicidal thoughts (0.4 percent), and 46 patients reported currently hearing voices (0.4 percent).

Information-sharing and continuity of care

Increasing the capacity to share information between clinicians working in correctional and community settings was a primary goal of the EPASU pilot. NPs working in the EPASU used existing patient health information in ECW and PSYCKES to confirm self-reported symptoms, diagnoses, and medications; uncover preexisting health problems that may have otherwise gone undetected; and create triage flags to expedite medical intake procedures in the event that the patient was sent to jail post-arraignment. However, although ECW and PSYCKES are critical sources of information for diversion liaisons in identifying people who may be appropriate for diversion, challenges remain in using this information to successfully link EPASU patients to health and social service providers in community settings.

Access to health databases enabled EPASU clinicians to verify self-reported symptoms or preexisting diagnoses and identify undisclosed health needs.

EPASU clinicians looked at ECW for all patients screened and found that 31 percent had an existing ECW record (meaning they had been in jail in New York City since 2011). Among those with records in ECW, 23 percent (n=771) had previously received mental health services while in New York City jails, which is representative of the overall level of identified mental health need for people entering city jails. Moreover, 12 percent of patients with an ECW record had a prior diagnosis of a serious mental illness, such as schizophrenia, bipolar disorder, and major depression (n=393 patients). Two-thirds of patients with an ECW record had a prior substance use disorder diagnosis (66 percent, n=2,210).
Nearly a quarter of EPASU patients received medical triage flags in their electronic health record to alert physicians conducting jail medical intake.

Nurses entered a triage flag into CHS’s database for 15 percent (n=1,577) of all EPASU patients, and for 52 percent of those who received a Level 2 screen.26 Nearly a quarter (23.7 percent, n=545/2,298) of people sent to jail post-arraignment received a triage flag in their health record. The researchers could not determine whether patients with triage flags in fact received expedited intakes or recommended treatment upon incarceration.

**Behavioral health conditions were the most common reason that NPs entered triage flags in the records of patients sent to jail post-arraignment.**

Over two-fifths of triage flags (43 percent, n=236) indicated a need for a mental health status assessment, and another 37 percent (n=200) indicated needs related to alcohol withdrawal. The third most common reason for applying a triage flag was for diabetes (13 percent, n=72), indicating the need for an immediate finger-stick test upon arrival at jail.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>EPASU triage flags assigned to released patients vs. jailed patients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Patients released to community (n=3,053)</td>
</tr>
<tr>
<td>Any triage flag</td>
<td>1,577 (52%)</td>
</tr>
<tr>
<td><strong>Triage flag type</strong></td>
<td></td>
</tr>
<tr>
<td>Mental health assessment</td>
<td>909 (29.8%)</td>
</tr>
<tr>
<td>Alcohol withdrawal</td>
<td>552 (18%)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>226 (7.4%)</td>
</tr>
<tr>
<td>Initiate suicide watch</td>
<td>41 (1.3%)</td>
</tr>
<tr>
<td>Other</td>
<td>395 (13%)</td>
</tr>
</tbody>
</table>
Having access to electronic databases in EPASUs provides social workers with valuable information on patients’ behavioral health histories and social service needs used to facilitate diversion.

Having the option to query ECW and PSYCKES provides diversion liaisons with timely information on patients’ diagnoses, medications, and service used for facilitating diversion decisions. During the pilot’s first 18 months, liaisons searched ECW a total of 9,625 times (or for 90 percent of all EPASU patient encounters) to identify people with behavioral health needs who might benefit from diversion and to supplement health screening information with historical information on diagnoses and service use. They identified an existing patient health record from a prior incarceration in ECW for 35 percent of these queries (n=3,333). Among patients with an existing health record in ECW from a prior incarceration, nearly half had a mental health diagnosis (47 percent, n=1,576) in their medical file, 12 percent (n=393) had a serious mental illness, such as schizophrenia, bipolar disorder, and major depression, and 66 percent (n=2,210) had a substance use disorder diagnosis. During health screenings, approximately 8 percent of people (n=664) reported being homeless, and on average, each week social workers encountered 28 people reporting that they were homeless. The liaisons were also able to verify patients’ recent or current engagement with community-based health and social services using ECW and PSYCKES. For example, they identified 386 people as actively or recently enrolled in Medicaid health homes—12 percent of all patients with an existing ECW health record.

Retrieving patient information from PSYCKES requires a different, more stringent informed consent process than ECW. Therefore, during the first six months of the pilot’s implementation, CHS was unable to retrieve information from PSYCKES unless there was an existing documentation of patient consent.
in ECW. This requirement limited social workers’ ability to retrieve important information on patient diagnoses, medications, hospitalizations, health home status, and participation in outpatient psychiatric services. Therefore, in January 2016, the diversion liaison was trained to ask patients who reported or displayed behavioral health needs for consent to access PSYCKES. Over a six-month period (January 4 to June 30, 2016), the diversion liaison asked 76 people who reported significant symptoms of a mental illness for their consent to query PSYCKES, of which 62 percent (n=47) gave authorization. They located psychiatric information from Medicaid claims for 79 percent (n=37) of patients who authorized them to search PSYCKES for health records.

**Diversion liaisons had trouble communicating with community-based providers and expressed a need for additional social workers to focus on connecting patients to healthcare and social services.**

Community-based treatment providers can help facilitate pre-arraignment diversion by responding to requests from the EPASU diversion liaison to verify a patient’s prior or current enrollment and by confirming their commitment to providing supports in the community. However, establishing effective communication between the EPASU diversion liaison and community providers was challenging. The EPASU liaison, with patients’ permission, contacted community behavioral health providers 178 times during the pilot’s first year (existing providers for 28 percent of patients who self-disclosed receiving community-based treatment were contacted). EPASU staff said that additional social workers were needed to focus mostly on health promotion and referring people to community-based health and social services providers. One staff member stated:

> There are some days where I think that it would be great to have another social worker down there or a case manager or something whose job it was to just make referrals and connections to actual programs.... I can say, ‘Oh, this person would be a good fit for Phoenix House or Odyssey House or whatever’ and name a program but it doesn't mean that anything’s going to happen ... I went to the midtown community court and they have a resource coordinator who sits in the courtroom and can make referrals right there and I think that would be really helpful.
During the evaluation period, EPASU clinicians identified 17 patients currently enrolled in an assertive community treatment (ACT) program, which is an evidence-based, recovery-based approach for delivering case management, care coordination, rehabilitation, and support services, for people diagnosed with a serious mental illness. But, during the pilot’s first 18 months, liaisons had limited success in engaging ACT teams. EPASU clinicians and ACT team case workers do not have a history of working together or established channels of communication for coordinating care or making referrals; many EPASU patients were currently disengaged from ACT team services at the time of their arrest; and most of the city’s ACT teams are not formally involved in jail diversion.

To gain more perspective on this challenge, Vera researchers asked the Comprehensive Psychiatric Emergency Program (CPEP) psychiatrist about city emergency rooms’ experiences trying to identify and reengage people in need of care with their ACT team, which may be analogous to the challenges of coordinating care with ACT teams from the EPASU. He said:

I can’t think of cases for us where somebody has come in and we have kind of been the one that reconnected them with the ACT team, and sometimes it’s serving the end of putting pressure on the ACT team to do some more or come to the ER to see them and make another effort to kind of manage the situation. That’s more commonly what we can do, but again usually in that case for us, we’re kind of holding them overnight and making a plan for the ACT team to come in the morning, and it takes some time.

Expanding access to treatment

Another goal of the EPASU pilot was to increase the capacity to deliver basic medical care in Manhattan Central Booking, by hiring more credentialed medical staff licensed to diagnose, prescribe, and administer medications for common ailments. It was hoped that expanding the array of medications and services available in central booking would result in significant reductions in the number of unnecessary visits to city emergency rooms. As reported below, the pilot succeeded in cutting ER visits among patients whose medical ailments were addressed by an EPASU NP.
The EPASU facilitated timely treatment for patients who previously would not have received care while in central booking and would be transferred to the emergency room.

NPs treated EPASU patients for common ailments with prescription and over-the-counter-drugs. Over the first 18 months of the EPASU’s operations, about 7 percent of its patients, or 26 percent of those referred to the NP (n=794), received some type of clinical treatment (such as prescription or over-the-counter drugs) in central booking, with NPs administering a total of 931 doses of medication. The most common type of care was the distribution of inhalers (Albuterol and Ventolin) to treat asthma, which comprised 45 percent of total treatments (n=414). About 13 percent of on-site treatments involved prescription drugs for patients with high blood pressure. Approximately 4 percent of medications administered were for the treatment of HIV (n=37) and 3 percent for the treatment of seizures (n=26). NPs also routinely distributed over-the-counter pain relief (33 percent of all medications administered, n=308).

The EPASU’s increased capacity to deliver medical care prevented an estimated 601 trips from central booking to a hospital emergency room from May 2015 to October 2016.

NPs working in the EPASU sent less than 1 percent (n=90) of all patients screened directly from central booking to the hospital. Prior to the EPASU, prescription drugs were only administered in central booking facilities if the person had the bottle with valid labeling in their possession at the time of arrest. If a patient reported a need for a medication, then he or she would be immediately sent to the hospital. Thus, researchers used the quantity of prescription drugs administered in the EPASU as a proxy for the number of avoided hospital runs. This measure is a conservative indicator because it only captures hospital visits averted directly from central booking, and does not count instances in which police with knowledge of EPASU medical services decided to bring a person directly from the police precinct to central booking, rather than escorting the person to the hospital for clearance, or situations where EPASU nurses perform basic psychiatric evaluations that previously would have taken place in a hospital. Using this proxy, researchers estimated that by increasing the capacity to treat patients for common ailments on-site, during the lowest volume, eight-hour tour, Monday through Friday, the
EPASU pilot prevented 601 unnecessary hospital visits in its first 18 months of operation—an average of 6.5 hospital runs averted each week.

Preventing unnecessary hospital runs also reduces burdens on city emergency rooms. A senior CPEP psychiatrist explained that the presence of defendants and police officers in crowded hospital emergency rooms can cause discomfort and insecurity among patients and medical staff. As one emergency room physician explained, “We get many patients sent to us—who are in police custody—for reasons like a patient has taken antidepressant medications or some type of psychiatric medication in the past. These types of cases would be flagged for a hospital run. That’s when a [EPASU] nurse practitioner may intervene and say, no, that’s not an acute hospital run-level need. Those are the kind of examples, and that’s not a small volume—we have many, many, many, patients like that.”

Police officers’ perceptions of EPASU

As mentioned, during the pilot’s planning stages, NYPD leaders offered their support for the EPASU based mainly on its potential for reducing the time officers spend escorting people to emergency rooms between arrest and arraignment. While some police officers were concerned that implementing the EPASUs comprehensive health screening procedures would interrupt booking procedures, significant delays attributable to the EPASU did not materialize. Police officers interviewed for the research and completing the officer survey mentioned a number of benefits of the EPASU, with some officers advocating for its expansion.

Overall, police officers expressed favorable views of the EPASU.

During the early stages of implementation, Vera administered a semi-structured survey to 45 NYPD officers to assess their perspective on the advantages and disadvantages of the EPASU pilot compared to the PASU model. About 61 percent of police officers reported being “very satisfied” with the pilot. The most common reason for this response (cited by 59 percent of respondents) was the EPASU’s ability to avert police-escorted trips to hospital emergency rooms for minor medical ailments (see Table 4).31

Describing the benefits of treating minor medical conditions on-site in central booking, one officer stated: “It’s quicker. It prevents us [from going] to the hospital, which is often for a minor concern . . . way better than going to [the] hospital for a headache.” Another officer described his first experience with the EPASU: “It saved me four to eight hours. They treated him right
During interviews, NPs observed the positive experiences for police as well. “So far the NYPD have been very cooperative and appreciative. They like the program...because it saves them time, it saves them hospital runs, and many of the prisoners, they love it too.”

Officers specifically noted the advantage of the EPASU in averting emergency room trips with asthmatic patients. One officer stated that having the ability to prescribe and administer patients inhalers on-site in central booking is “much faster in any scenario where they need [an] inhaler... it avoids five-to-six-hour trips to the emergency room, which is definitely a plus.”

**Police officers said EPASU health assessments took too long, but also recommended expanding its hours and the number of medical treatments.**

While most officers spoke favorably about the pilot, others highlighted its limitations and made suggestions for improvements. For example, about 13 percent of survey respondents noted the pilot’s limited hours of operation, and about 22 percent flagged the need for the EPASU during higher-volume shifts, especially on nights and weekends. For instance, one officer noted: “If they could do 4-10 and midnights, it would help... cops on all tours should get it... it makes us feel better knowing we’re going to be dealing with the nurses. It’s less likely [patients will] get turned away [and sent to the hospital].” About 27 percent (n=12) of officers responding to the survey expressed discontent with the lengthier EPASU assessments. For example, one interviewee said, “The

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**Table 4**

<table>
<thead>
<tr>
<th>Survey response</th>
<th>Percent of NYPD officers endorsing response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allows police to avoid hospital runs</td>
<td>59</td>
</tr>
<tr>
<td>Saves time/is faster</td>
<td>36</td>
</tr>
<tr>
<td>Can distribute medications</td>
<td>36</td>
</tr>
<tr>
<td>Can treat minor medical problems</td>
<td>20</td>
</tr>
<tr>
<td>Collects more thorough health history</td>
<td>16</td>
</tr>
</tbody>
</table>

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here. Hospital trips are a long process.”
process needs to be sped up. If I bring someone to the unit, it sometimes takes 15-20 minutes to complete the interview. If they already went to hospital, then they do not need to go through program [EPASU]”. Additional suggestions for improvement included increasing the staffing levels, treatments, and medications available on-site. One officer suggested that the EPASU should offer methadone or other medication-assisted therapies to alleviate discomfort and prevent withdrawals for people with opioid dependencies.

Gauging the value of EPASU clinical summaries for public defenders and facilitating jail diversion

A principal aim of this process evaluation was assessing the utility of providing clinical summaries of people's diagnostic, medication, treatment, and/or housing information to public defenders prior to arraignment. In surveys, in-depth interviews, and focus groups, public defenders described the benefits and limitations of using the clinical summaries to advocate for the health and fundamental rights of clients, both at arraignments and later stages in a criminal case. As the findings below demonstrate, defense attorneys largely found value in having reliable background information on their clients' health prior to arraignment and, although their decision to use that information in court depended on multiple factors, they viewed it to be an effective advocacy tool in certain circumstances at both arraignment and at later stages of adjudication.

Most EPASU patients with behavioral health needs were arrested for misdemeanors, nonviolent felonies, or noncriminal violations.

Diversion liaisons documented the top arrest charge for each EPASU patient considered for a health-related diversion based on health screen information and any supplemental information found in ECW or PSYCKES. The charging patterns for EPASU patients with substance use or mental health symptoms reflected citywide trends, with most of this group facing charges for low-level offenses: Most arrests for this group were for misdemeanors (55 percent), nonviolent felonies (17 percent), and violations (10 percent). About 14 percent of these arrests (n=235) were drug-related. Unfortunately, information on district attorneys' charges was not available in the data.
People with identified behavioral health needs experienced negative health and criminal justice outcomes more often than those without these problems.

For a subset of EPASU patients (n=3,968), researchers matched EPASU health screening records with ECW data, using arrest identification numbers, to compare criminal justice involvement of EPASU patients with and without indications of a behavioral health need (BHN). As Table 5 shows, people with a BHN experienced higher frequencies of negative health and criminal justice outcomes, compared to those without a BHN. EPASU patients with a BHN had more prior contacts with the New York City criminal justice system on average and experienced worse outcomes compared to those without an identified BHN. For instance, patients with a BHN went to jail at nearly double the rate of patients without a BHN: Thirty-five percent of patients identified as having a BHN went to jail after arraignment, compared to 18 percent of those without a BHN, which includes people who could not afford bail and those receiving a jail sentence. A quarter of EPASU patients with a BHN had been in jail within the past 12 months, and had an average of 10.1 arrests in the past five years. By contrast, only 7 percent of patients without a BHN were incarcerated in the past year and had an average of 3.7 prior arrests in the previous five years.

Slightly less than half of potential diversion candidates consented to share their clinical summaries with a public defender prior to arraignment.

Diversion liaisons must obtain informed consent before sharing patients’ clinical summaries with a public defense agency. During the pilot, liaisons approached 24 percent of the patients they researched in health screening, ECW, and PSYCKES to interview as potential diversion candidates (n=2,113). About 44 percent (n=924) of patients approached were interviewed and agreed to share their information with defense attorneys prior to arraignment. Social workers shared an average of 19 clinical summaries with public defenders each week.

Defense attorneys reported that clinical summaries gave them insights into clients’ behavior and helped to establish trust and rapport with their clients.

As part of interviews, surveys, and focus groups, the research team asked defense attorneys about their experiences working with an
### Table 5
Comparison of health and criminal justice indicators: people with and without behavioral health needs identified in EPASU screenings (October 2015 to June 2016)

<table>
<thead>
<tr>
<th>Behavioral health need</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total N</td>
<td>%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3,968</td>
<td>2,879</td>
</tr>
<tr>
<td>Male</td>
<td>3,384</td>
<td>2,405</td>
</tr>
<tr>
<td>Female</td>
<td>584</td>
<td>474</td>
</tr>
<tr>
<td>Mean age</td>
<td>34.2 years</td>
<td>39.3 years</td>
</tr>
<tr>
<td>Refused EPASU screen</td>
<td>53</td>
<td>38</td>
</tr>
<tr>
<td>Sent to jail</td>
<td>901</td>
<td>517</td>
</tr>
<tr>
<td>Incarcerated in past 12 months</td>
<td>471</td>
<td>203</td>
</tr>
<tr>
<td>Mean number of arrests in past five years</td>
<td>3.7 arrests</td>
<td>10.1 arrests</td>
</tr>
<tr>
<td>Currently reported being sick or injured</td>
<td>189</td>
<td>115</td>
</tr>
<tr>
<td>Has been in the hospital or ER in past week including since arrest</td>
<td>513</td>
<td>252</td>
</tr>
<tr>
<td>In hospital since arrest</td>
<td>480</td>
<td>241</td>
</tr>
<tr>
<td>Received Level 2 screen</td>
<td>1,088</td>
<td>582</td>
</tr>
<tr>
<td>Sent to hospital from EPASU prior to arraignment</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>Received triage flag (any kind)</td>
<td>569</td>
<td>200</td>
</tr>
<tr>
<td>Treatment administered in EPASU</td>
<td>288</td>
<td>168</td>
</tr>
</tbody>
</table>
EPASU diversion liaison and the utility of the information that the liaison provided. Participating attorneys said that receiving background information on a client’s diagnosis, clinical history, and acute needs yielded valuable insights into the person’s state of mind prior to arraignment and informed how they approached their clients, helped build trust, and strengthened their legal strategy. One survey respondent remarked, “Although bail was set, aspects of your report [clinical summary] did prove helpful in allowing me to get background information about the client before sitting down and speaking with him. At the time of my interview, he was in an agitated state and just having some familiarity with his issues helped me to connect with him at the outset.” Similarly, another attorney noted: “It [clinical summary] gives us background. It gives us a perspective. It helps definitely with the interviews, in terms of the services they’ve received, and that helps with the bail application if we think we should mention it to the judge.”

Defense lawyers said that knowing whether a client is currently taking or has stopped taking prescribed psychotropic medications can help them prepare when conducting an initial interview or discussing legal strategy. If necessary, such information provides defense attorneys grounds for arguing that the court should allow a client to receive medication before arraignment to ensure that he or she can communicate and participate in the proceedings in his or her own best interest. As one supervising defender explained:

When you walk into the interview booth, it’s very hard to tell and sometimes... the clients don’t trust you right away. Is this client off his meds, is he on meds, or is he just belligerent? Is he just angry because of the system and the process? And depending on their mindset, of course, it varies your approach. If a client needs their medication, I refuse to interview them and I tell NYPD, you need to take him to the hospital, he needs to get medicated because he’s not going to be able to speak to me or tell me what’s going on.

**Public defenders found EPASU clinical summaries to be useful for helping their client at arraignment and later stages of adjudication.**

Public defenders described how the usefulness of clinical summaries at arraignments and later stages of adjudication depended on a range of factors, such as the severity of the client’s current charges, criminal history, and current
or recent engagement with substance use and mental health treatment. More than half of the attorneys who responded to the survey (53 percent) reported that the clinical summaries were useful in post-arraignment stages, while more than a quarter (28 percent) found them useful at arraignments. Fifteen percent found them useful at both stages. Only one respondent found the summary to have no value in the defense process. In that case, the defender reported using the clinical summary at arraignment, but indicated that it didn’t succeed in improving the client’s outcome.

**At arraignment, public defenders used clinical summaries to improve arraignment outcomes.**

Based on available data, researchers could not determine frequencies of specific arraignment outcomes for all people screened in the EPASU during the pilot’s first year. However, approximately 45 percent of defenders who completed surveys \(n=65\) reported using the clinical summaries at arraignment. Among this group, 62 percent \(n=40\) said the information in the summaries improved their clients’ arraignment outcomes. The most frequent arraignment outcomes in these cases involved defendants pleading guilty and being released to complete a program or community services (35 percent, \(n=14\)); having bail set (20 percent, \(n=8\)); receiving time served (17.5 percent, \(n=7\)); and being released on their own recognizance (17.5 percent, \(n=7\)).

**Defense lawyers suggested that having information on contacts with community-based health or social services was particularly important.**

Defense attorneys interviewed for this research, focus group participants, and survey respondents commented on the value of having timely, validated information on a client’s recent or current participation in community-based treatment programs. They said that giving a judge evidence of the client’s recent or current enrollment in a mental health or drug treatment program can be pivotal in successfully advocating for bail, diversion, or dismissal to help clients avoid going to jail, while helping ensure that they are connected to appropriate supports. For example, one attorney stressed the importance of having EPASU clinicians verify treatment engagement:

> If we have background information on programs that the client was involved in, we can use that to show ties to the community, that the client is familiar with certain programs, he has participated or successfully completed certain programs. It shows a sense of responsibility. We can use
this [clinical summary] to argue for community service or for another program. Usually these programs are lifelines for the client. It’s their connection to their housing, it’s their connection to their public assistance, it’s their connection to getting their medication. That’s how it usually helps us.

Survey respondents described cases in which they helped clients reconnect to alternative-to-incarceration programs in lieu of jail by using information from the clinical summaries. One defense attorney said, “For the client, the specific program recommendation (Bridge Back to Life) in the clinical summary was very helpful. It became part of the CD [conditional discharge] the client received in lieu of 30 days in jail.” Another defense lawyer who used the clinical summary at arraignment said that her “client took a plea to CASES [an alternative-to-incarceration program].”

Without corroborating information, judges are less likely to trust defendants’ own statements that they are in treatment or participating in a program. A clinical summary issued by NYC Health + Hospitals staff that is based on detailed clinical records of a person’s recent or current engagement in treatment can ease a judge’s reservations about releasing a person to the community. One focus group participant stated:

...in an arraignment situation where everything’s happening fast, it’s night time, we’re not in a position to be able to figure out where [a client is in treatment]. And then you go in front of a judge, and you say, ‘Judge, my client is in a drug program.’ [And the judge replies] ‘Well, who told you that?’ [The defense attorney answers] ‘My client.’ Well...you know the judges aren’t putting a lot of faith in that. Really what the clinical summary provides is the ability for you get up there and say, ‘The Department of Health has confirmed [client’s self-reported information]’ and it absolutely made a difference.

Public defenders also said that in cases that resulted in a conviction, clinical summaries mitigated sentencing decisions. One defender recounted that she had used the clinical summary when advocating for a conditional discharge to show that the client could quickly reconnect with a community treatment program, despite the prosecutor’s argument for jail time. The “DA [district attorney] would offer jail time on a case, but if we can convince the judge that the client is actively participating in a program and this has
been verified by an independent agency, the judge sometimes takes that into consideration and may release the client on a conditional discharge.”

Another attorney described an instance when she used information from a clinical summary to help influence the arraignment outcome:

I had a misdemeanor case where basically all I had to do was reiterate what was in the clinical summary... that my client has participated in this program, successfully completed this program, he's dealing with these issues, he's on these medications, he goes to counseling ...and I was able to present that to the judge to show that he's trying to stabilize his life, and he does have human connections and people...and people are there to help him.

Most defense attorneys who completed surveys (53 percent) reported that clinical summaries were especially useful at later stages in a case. As one supervising attorney put it:

At arraignments, they're [prosecutors] pretty much reading a script. Either the recommendation is already written down in the file or they have their guidelines. If you have a more experienced prosecutor, they could vary the offer if they hear something compelling, but I would say that happens a minority of the time. Now at post-arraignment you are dealing with the prosecutor who is now in charge of that case for the next several months, and so certainly I think that it should have an impact on them and certainly it can't hurt.

Another public defender said that information from clinical summaries saves defense agencies time and resources otherwise expended to gather background information on the clinical needs and treatment service histories of their clients for post-arraignment negotiations with prosecutors:

And if you're talking about a case where a person's held on bail and you have to go back to court five days later for the [Criminal Procedure Law Section] 170.70 date, or the [Criminal Procedure Law Section] 180.80 date [for a preliminary hearing], having that information already identified, now you're using it to negotiate with the prosecutor, you know... now you're one leg up in terms of being able to identify and get more records. So, it's absolutely useful information.
A different public defender reported a case in which the information in the clinical summary helped mitigate a jail sentence for a client with a lengthy criminal record and created an opportunity to connect him with mental health services:

This person had a horrible record, long criminal record... and the prosecutor, on a misdemeanor, was offering a year in jail. It was a judge who was not the most defense-oriented judge. This was a case where without the summary, they thought the judge would have offered about 90 days in jail... and instead got 15 days in jail. And it was 100 percent based on being able to say, 'The Department of Health has confirmed...' that despite the person's long history of drug use and long misdemeanor criminal record that the person was trying. That the person as recently as a week earlier was still trying to get help.... And it had an impact.

**Defenders’ use of clinical summaries depends on a number of factors.**

In cases involving minor misdemeanors or low-level offenses that are likely to be disposed at arraignment, public defenders said they rarely introduced information from the clinical summaries. In some situations, bringing the client's mental health problems to a judge's attention at arraignment makes it more likely that the person will be denied bail or detained post-arraignment. For example, a supervising attorney overseeing large numbers of arraignments for low-level offenses said, “Lots of times, I handle minor cases that get disposed of at arraignments, like consumption of alcohol or walking between the train cars, things like that. Those cases get dismissed or dismissed and sealed in six months, and having the information [clinical summaries] served really no purpose.” In contrast, another lawyer stated, “In the assault context, the criminal contempt context, maybe if it's a sex-related misdemeanor... lawyers are gonna be very careful about sharing that kind of information. So I think it's driven more by the charge.”

A supervising attorney described a situation where it is not useful to raise mental health issues contained in the clinical summaries to judges during arraignment:

If we have a transitional homeless person, charged with assault of a stranger and the write up is talking about his mental health
problems, that’s probably something that my lawyers aren’t going to want to use at arraignment, because quite frankly the judge may say ‘Oh, so not only did he get into a fight with a stranger but he’s mentally ill. I think I’m gonna send him to jail.’

Another lawyer described how evidence of a client seeking treatment for a substance use disorder is more likely to mitigate sanctions for property crimes than for violent crimes:

These things are very charge-specific. A substance abuse history, or a documented effort of trying to get help for your addiction goes a long way toward the property crimes and toward drug crimes. [But] in the context of a domestic violence case, probably not.

Furthermore, several attorneys said that they were reluctant to bring up a client’s mental health issues to prosecutors or judges without evidence of a viable option to connect a client to community treatment services. One defense attorney stated, “Having a written-down diagnosis so early on is very helpful if the case is going to go forward. But if you bring up mental health as a mitigating circumstance [at arraignment] but don’t have a solution, that can actually be problematic.”
Conclusion and future directions

Each day, hundreds of people with acute and chronic behavioral and physical health conditions are arrested and booked into the city’s justice system, often for low-level, quality-of-life offenses. Whereas traditional procedures in the city’s central booking facilities result in cursory assessments of health needs and overreliance on emergency rooms to treat common medical ailments, this evaluation demonstrates that the EPASU has created new opportunities to meet the health needs of people passing through Manhattan criminal court. In particular, creating

Connecting the city’s and state’s health information technology infrastructure allows nurse practitioners to confirm self-reported health issues, uncover undetected health problems, and triage medical care with providers in other community and correctional settings.

new capacity to identify, diagnose, and treat common ailments in central booking helps ensure that people who are arrested receive thorough clinical assessments and timely access to care prior to arraignment. Connecting the city’s and state’s robust health information technology infrastructure, ECW and PSYCKES, allows nurse practitioners (NPs) to confirm self-reported symptoms, diagnoses, and medications, uncover health problems that may otherwise go undetected, and triage medical care with providers in other community and correctional settings. Having NPs in central booking who are licensed to dispense medications for prevalent chronic conditions, such as asthma and high blood pressure, allows them to promptly alleviate patients’ symptoms and discomfort and reduces the burden on police and city hospitals associated with unnecessary
hospital visits. And having social workers on-site to identify people with a mental illness or substance use disorder and transmit summaries of their diagnostic, treatment, and social service information to their attorneys prior to arraignment is one tool that can help divert people with behavioral health problems away from jail and into community-based treatment.

However, the findings also revealed a few strategies for city officials to consider that could improve the model in the future. First, although the EPASU was envisioned as an intervention to connect people to community-based care and supports, including primary care, mental health and substance use treatment, and housing services, more can be done to make the EPASU an effective outlet for health-promotion interventions and to strengthen linkages between the EPASU and community providers. Increasing the number of staff devoted to these goals may be a necessity. EPASU NPs, diversion liaisons, emergency room physicians, and public defenders alike stressed that having more social workers or community health workers based in central booking would translate into greater success in helping people to access health care, housing, and other vital social services regardless of the outcome of their case. Currently, the social worker’s focus is identifying people who are candidates for jail diversion. Employing another social worker or community health worker devoted to strengthening EPASU capacities for outreach, communication, and referrals from central booking to healthcare and social service providers in New York City neighborhoods could improve other outcomes.

Second, there is work to be done to increase the EPASU’s ability to serve as an effective conduit for diversion opportunities. Public defenders widely endorsed the usefulness of having clinical summaries on their clients with a mental health or substance use problem. Further research could determine why only half of people identified as having a behavioral health disorder consented to sharing a clinical summary with their public defender prior to arraignment. It could also shine light on whether there are significant differences between people who consent to share their information and those who do not.

Third, given the many benefits associated with expanding the capacity to diagnose and treat common ailments, such as asthma, alcohol withdrawal, and hypertension in central booking, the EPASU is limited by its inability to treat certain medical conditions that high numbers of EPASU patients report, such as diabetes and opioid dependencies. However, the EPASU as currently structured is still not equipped to treat such medical conditions. NPs and police officers voiced strong support for continuing to expand the types of
treatments and medications available in central booking to alleviate patient suffering and further reduce unnecessary transports to hospital emergency rooms. More specifically, they stressed the importance of investing in equipment and medication for treating symptoms of diabetes, and the potential benefits of being able to continue patients on medication assisted therapies such as methadone and buprenorphine to alleviate discomforts associated with opioid withdrawal. Relatedly, another area of potential growth for the EPASU is to forge partnerships with harm-reduction organizations to develop strategies for distributing educational materials and making referrals to people who use drugs on where to find syringe access programs, drug treatment, naloxone, HIV and Hepatitis C testing and treatment, and assistance with housing, employment, and health insurance enrollment. Continuing to expand the array of clinical services, medications, diagnostic tools, and technological options (such as telemedicine) will further enhance the improvements introduced in the pilot.

Eliminating health disparities across the justice continuum and reducing the overrepresentation of people with physical and behavioral health needs in city jails requires unwavering commitment from public health and justice leaders. The EPASU is one important tool for advancing this mission and exemplifies the benefits of focusing on the mutually reinforcing goals of health promotion and jail diversion in the pre-arraignment setting.

Indeed, until recently, the time a person spent pre-arraignment in Manhattan had largely been overlooked as an opportunity to increase access to healthcare despite the fact that thousands of people pass through the city's central booking facilities—gateways to both jail and the community—every year. By prioritizing the physical and mental health needs of people swept into the city's criminal justice system before first court appearance, policymakers can change the trajectory for people who would otherwise languish in jail without alleviation of their suffering or return to the community without connection to needed services and supports. Continuing to strengthen the capacity of the EPASU will not only improve outcomes for many people but can also ultimately help reduce the harmful use of the city's jail system as a de facto holding area for some of the city's most vulnerable residents.
## Appendix

### Table 6

**Summary of EPASU self-report data May 18, 2015 to October 31, 2016**

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total number of patients seen</strong></td>
<td>10,796</td>
<td></td>
</tr>
<tr>
<td>- Weekly average number of patients seen</td>
<td>149</td>
<td></td>
</tr>
<tr>
<td>- Refused any screening</td>
<td>101</td>
<td>1%</td>
</tr>
<tr>
<td>- Total number of Level 1 screens</td>
<td>10,695</td>
<td>99%</td>
</tr>
<tr>
<td>- Total number of Level 2 screens</td>
<td>3,053</td>
<td>29%</td>
</tr>
<tr>
<td>- Currently sick or injured</td>
<td>727</td>
<td>7%</td>
</tr>
<tr>
<td><strong>In hospital in past week or prior to booking</strong></td>
<td>1,532</td>
<td>14%</td>
</tr>
<tr>
<td>- for medical reason</td>
<td>1,087</td>
<td>71%</td>
</tr>
<tr>
<td>- for psychiatric reason</td>
<td>240</td>
<td>16%</td>
</tr>
<tr>
<td>- for medical and psychiatric reason</td>
<td>202</td>
<td>13%</td>
</tr>
<tr>
<td>- reason missing</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Current medical problems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Breathing problems</td>
<td>772</td>
<td>7%</td>
</tr>
<tr>
<td>- Dialysis</td>
<td>2</td>
<td>0%</td>
</tr>
<tr>
<td>- Hepatitis C</td>
<td>88</td>
<td>1%</td>
</tr>
<tr>
<td>- Seizures</td>
<td>147</td>
<td>1%</td>
</tr>
<tr>
<td>- Diabetes</td>
<td>260</td>
<td>2%</td>
</tr>
<tr>
<td>- HIV/AIDS</td>
<td>108</td>
<td>1%</td>
</tr>
<tr>
<td>- Heart problems</td>
<td>422</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Behavioral health questions in Level 1 screening</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Prescribed psychiatric medications in past three months</td>
<td>418</td>
<td>5.0%</td>
</tr>
<tr>
<td>- Drink alcohol every day or most days</td>
<td>951</td>
<td>8.9%</td>
</tr>
<tr>
<td>- Withdrawal symptoms when stop drinking alcohol</td>
<td>224</td>
<td>23.6%</td>
</tr>
<tr>
<td>- Use antianxiety medications every day or most days</td>
<td>311</td>
<td>2.9%</td>
</tr>
</tbody>
</table>
## Behavioral health questions in Level 1 screening (continued)

<table>
<thead>
<tr>
<th>Question</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal symptoms when stop taking antianxiety medications</td>
<td>170</td>
<td>54.7%</td>
</tr>
<tr>
<td>Currently in drug or alcohol program</td>
<td>352</td>
<td>4.0%</td>
</tr>
<tr>
<td>Currently in mental health program</td>
<td>164</td>
<td>2.0%</td>
</tr>
<tr>
<td>Currently living in supportive housing or residential program</td>
<td>687</td>
<td>9.0%</td>
</tr>
<tr>
<td>Ever treated for alcohol or benzodiazepine withdrawal</td>
<td>389</td>
<td>3.6%</td>
</tr>
<tr>
<td>Suicidal thoughts within past three months</td>
<td>197</td>
<td>1.8%</td>
</tr>
<tr>
<td>Behavioral health assessment conducted</td>
<td>2,788</td>
<td>26.1%</td>
</tr>
</tbody>
</table>

## Behavioral health questions in Level 2 screening

<table>
<thead>
<tr>
<th>Question</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Currently taking any psychiatric medications</td>
<td>760</td>
<td>7.1%</td>
</tr>
<tr>
<td>Ever done anything to end life</td>
<td>181</td>
<td>1.7%</td>
</tr>
<tr>
<td>Ever done anything to end life in past three months</td>
<td>57</td>
<td>0.5%</td>
</tr>
<tr>
<td>Current suicidal thoughts</td>
<td>48</td>
<td>0.4%</td>
</tr>
<tr>
<td>Currently hearing voices</td>
<td>46</td>
<td>0.4%</td>
</tr>
<tr>
<td>Currently in treatment</td>
<td>601</td>
<td>5.6%</td>
</tr>
</tbody>
</table>

## Triage information

<table>
<thead>
<tr>
<th>Information</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of people sent to jail</td>
<td>2,298</td>
<td></td>
</tr>
<tr>
<td>Total number who received triage flag</td>
<td>545</td>
<td>24%</td>
</tr>
</tbody>
</table>

## Type of triage flag:

<table>
<thead>
<tr>
<th>Type</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>72</td>
<td>13%</td>
</tr>
<tr>
<td>Alcohol withdrawal</td>
<td>200</td>
<td>37%</td>
</tr>
<tr>
<td>Stat mental health assessment</td>
<td>236</td>
<td>43%</td>
</tr>
<tr>
<td>Intent to hurt someone</td>
<td>6</td>
<td>1%</td>
</tr>
<tr>
<td>Initiate suicide watch</td>
<td>16</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>148</td>
<td>27%</td>
</tr>
</tbody>
</table>
Endnotes


8 Medical clearance procedures are a standard component of booking procedures that take place after an arrest and before an arraignment. Depending on the jurisdiction, nurses, technicians, or law enforcement officers administer a brief screen to determine whether a person has an urgent health problem that requires transfer to a hospital prior to their first court appearance.

9 New York Criminal Procedure Law Section 170.55.

10 Criminal Procedure Law 140.20 requires police to present arrestees to the courts “without unnecessary delay”; see People ex rel. Maxian v Brown, 77 N.Y. 2d 422 [N.Y.1991]. Hospital escorts, especially for people experiencing psychosis, are a common “acceptable explanation” for a delay in the arrest-to-arraignment process. Police routinely escort people who are exhibiting signs of psychosis or emotional stress to a comprehensive psychiatric emergency program (CPEP) for an evaluation. NYC Health + Hospitals have reported that 5 to 10 percent of people escorted to CPEP by law enforcement for an evaluation are ultimately determined too sick and unable to proceed through central booking to arraignment. Typically, male patients are civilly committed to the Bellevue Jail Psychiatry Service (BJPS) in Manhattan and women are admitted to Elmhurst Hospital in Queens for treatment. While hospitalized, these patients fall under the legal supervision of the public hospital and the Department of Correction, rather than the NYPD prior to arraignment. Eventually, these people are arraigned in one of three ways: hospital arraignments, video arraignments, or discharge from BJPS custody to the NYPD (in which case they return to central booking and are arraigned in the courtroom). See Susan M. Gray, Christopher W. Racine, Christopher W. Smith, and Elizabeth B. Ford, “Jail Hospitalization of Pre-arraignment Patient Arrestees with Mental Illness,” Journal of the American Academy of Psychiatry and the Law Online 42, no. 1 (2014): 75-80.


13 In Staten Island, most people are held in a pen at the police station house. During some hours, police bring people arrested in Staten Island to Brooklyn Central Booking Facility.
All New York City boroughs except for Staten Island have central booking facilities.

People waiting in central booking are legally under the jurisdiction of the NYPD until they are arraigned. At that time, if they are detained, they are transferred into the legal custody of the Department of Correction (DOC). However, in all central booking facilities except for Brooklyn, DOC officers supervise people waiting to see the judge after the arresting NYPD officer escorts them through fingerprinting, the health screen, and an interview with pre-trial services. Often, DOC refuses to supervise a person if he or she is known to have a psychiatric problem or other medical condition. In these instances, these people are held in cells that are overseen by the NYPD until arraignment. People arrested in Staten Island are booked and held in custody at a police station prior to arraignment, or at times taken to Brooklyn’s central booking facility.

Grubbs v Brown, No. 92 Civ. 2132 (S.D.N.Y.); cited by Legal Aid, who brought the case, https://perma.cc/FPR5-5PAE. Note that the final legal settlement does not list Brown as a party. Eran Y. Bellin, David D. Fletcher, and Steven M. Safyer, “Association of tuberculosis infection with increased time in or admission to the New York City jail system,” JAMA 269, no. 17 (1993): 2228–2231.

During the planning stages for the EPASU, Vera and CHS learned that most patients brought to the emergency room are not admitted or discharged. Everyone cleared to proceed is subsequently returned to central booking, where they provide PASU clinicians with documentation of their hospital clearance.


This period of the day was selected because it is a lower-volume tour when there are fewer arrests. At the outset, it was imperative to ensure that more thorough health screening procedures would not cause delays in the arrest-to-arraignment timeline. During the planning stage, Vera and CHS analyzed average arrest-to-arraignment times for different tours using data derived from the Court-Stat System—a tool that allows the judicial system to monitor daily averages in the timing from arrest to arraignment. This system was spearheaded by Judge George A. Grasso as a measure to address systemic problems in court processing in recent years.

Patients not disclosing any health problems to the PCA are cleared to proceed and escorted to a holding cell overseen by the DOC until arraignment. When the volume of people being booked into the facility is high, then the NP and PCA may both conduct Level 1 screens. Only the NP conducts Level 2 screens.

Under New York law, NPs must be a registered professional nurse who has completed graduate training and is certified by the New York State Education Department. NPs are licensed to diagnose medical conditions, prescribe medications, and deliver certain treatments.

Health homes, created through the Affordable Care Act (ACA), are virtual entities comprised of multidisciplinary professionals across the healthcare field to deliver personalized, comprehensive care to Medicaid beneficiaries with chronic and acute physical and mental health problems. Health home care managers coordinate tasks and referrals among provider networks and community institutions to help Medicaid beneficiaries navigate the complexities of the healthcare system. See Patient Protection and Affordable Care Act, Section 2703.

CHS received additional funding to expand the EPASU pilot to 24 hours, seven days a week in Manhattan. Therefore, this process evaluation includes analysis of the pilot up until the program expansion on November 1, 2016.

Defenders completed and returned 145 of the 417 surveys (a 35 percent response rate). Seventeen respondents who completed surveys reported not receiving a clinical summary for a client. Three public defense agencies represent indigent defendants at arraignments in Manhattan’s criminal courts: The Legal Aid Society (LAS), New York County Defender Services (NYCDS), and the Neighborhood Defender Services of Harlem (NDS). Our sample is representative of the percentage of defendants that each agency represents on average: 79.3 percent LAS (n=115), 13.8 percent NYCDS (n=20), 4.1 percent NDS (n=6), 2.7 percent (n=4) unknown or missing.

Focus group participants stated that eight out of 50 attorneys handling arraignments for one of the agencies reported having received or used the clinical summaries. At the outset of the process evaluation, the researchers had difficulty getting survey responses from attorneys regarding the utility of the clinical summary in advocating for their clients.

NPs are not able to determine who will be sent to jail, and therefore enter a triage flag for anyone who would benefit from expedited medical intake or has a medical condition that needs follow-up if sent to jail post-arraignment.

Diversion liaisons did not begin collecting data on patients’ housing status until July 2016. The reported estimate of homelessness is an average that includes data from 43 weeks out of the year.

In March 2016, diversion liaisons began searching PSYCKES in addition to ECW to identify health-home patients. With patient consent, liaisons can contact care managers. Otherwise, the liaison enters health home status into the EPASU database.

CHS is not legally required to ask permission of people seen in the EPASU before searching ECW for existing health records from a prior incarceration, because CHS oversees medical services in all city jails and in the EPASU, and accessing patient records is necessary for care coordination. In contrast, unless CHS can confirm that a patient provided its clinicians with prior authorization to access their information in PSYCKES, EPASU clinicians must obtain each person’s consent before querying that database.
During the planning stages for the pilot, CHS and Vera learned that approximately 60 percent of patients escorted to a hospital prior to arraignment do not receive any care and are quickly discharged.

As described earlier, in the traditional PASU system, police officers frequently spent an entire shift waiting for the person they arrested to be evaluated and cleared to proceed through arraignment; this often diminished the capacity of the police department to respond to other 911 calls and also resulted in overtime pay.

While planning the pilot, Vera and CHS examined data from E-Arraignments, a citywide data system that measures the average time from arrest to arraignment in each borough to ensure that increasing the length of health screening procedures would not lead to significant delays in court process times. This database includes time stamps for events that take place from the time of arrest through arraignment. Using this system, the researchers conservatively estimated that people spend about eight to 10 hours in a holding cell after being screened in the PASU, waiting to be arraigned. Therefore, expanding the length of the health screening process will not breach legal requirements that arraignments occur within 24 hours of arrest.

This reflects the arrest charge and not the prosecutor’s filed charge.

As the result of changes in data collection protocols, we did not collect arrest charge information on every patient identified as a potential diversion candidate. These distributions are based on a subsample of 1,506 cases.

EPASU patients included in this subset included a convenience sample of those with an existing record in ECW, which meant they had at least one prior incarceration in New York City since 2011. Every person admitted to New York City jails receives a medical intake and therefore has a record in ECW. Moreover, ECW includes data on individual arrest and jail incarceration histories, in addition to health-related information. Thus, for this analysis, CHS researchers compared all EPASU patients with an ECW record who could be successfully matched using the current arrest identification number.

This was derived from ECW jail admissions.

There were several weeks from May 15, 2015 to October 31, 2016 where a diversion liaison was not present in the EPASU because of staff vacations and temporary staff vacancies. For instance, diversion liaisons did not conduct interviews with EPASU patients from December 7, 2015 through January 4, 2016 because of personnel changes.

Diversion protocols began approximately one month after the pilot launched in May 2015. Additionally, for a five-week period at the end of 2015, there were no diversion activities as the result of personnel changes among the liaison staff.
The authors thank Ram Subramanian, Mary Crowley, Alice Chasan, Erika Turner, and Karina Schroeder for their insightful feedback and meticulous editing on this report.

Thanks also to Scott Moyer and Andrea Fionda at the Jacob and Valeria Langeloth Foundation for their unwavering commitment to supporting initiatives seeking to address complex issues at the interface of mass incarceration and public health.

Many New York City agencies and individuals played a vital role in this project that deserve recognition, including the Mayor’s Office of Criminal Justice, the New York City Police Department, New York City Fire Department, the Legal Aid Society, New York County Defender Services, the Neighborhood Defender Service of Harlem, CASES, and the physicians leading the Comprehensive Psychiatric Emergency Program at Bellevue Hospital. Several leaders and veterans of these agencies were instrumental in helping Correctional Health Services (CHS) and Vera plan and implement the pilot project, and advocate for its expansion in Manhattan.

Thanks to everyone who served on New York City’s Mayoral Task Force on Behavioral Health and Criminal Justice, with a special thanks to Trish Marsik, Ann-Marie Louison, and Judge George A. Grasso for their leadership and support for the project.

Vera and CHS thank NYPD Lt. Robert Corbett for his countless contributions. The authors are indebted to Justin Barry, chief clerk of the New York City Criminal Court, for his commitment to the project in its earliest stages, and guidance creating a reliable and efficient process for sharing clinical summaries with defense attorneys in advance of arraignment. Thanks to Chelsea Davis, formerly of Vera’s Substance Use and Mental Health program, for her contributions to the planning and evaluation stages of the project.

Vera and CHS leadership are especially grateful to the EPASU nurse practitioners, patient care associates, and diversion liaisons who carry out the mission of the program each day.

Finally, the authors extend their special gratitude and admiration to Dr. Homer Venters. Without his vision, devotion, and advocacy, the EPASU would not exist.
About Citations

As researchers and readers alike rely more and more on public knowledge made available through the Internet, “link rot” has become a widely-acknowledged problem with creating useful and sustainable citations. To address this issue, the Vera Institute of Justice is experimenting with the use of Perma.cc (https://perma.cc/), a service that helps scholars, journals, and courts create permanent links to the online sources cited in their work.

Credits

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For more information about this report, contact Ram Subramanian, editorial director, at rsubramanian@vera.org.

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Envisioning the Next Generation of Behavioral Health and Criminal Justice Interventions

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Abstract

The purpose of this paper is to cast a vision for the next generation of behavioral health and criminal justice interventions for persons with serious mental illnesses in the criminal justice system. The limitations of first generation interventions, including their primary focus on mental health treatment connection, are discussed. A person-place framework for understanding the complex factors that contribute to criminal justice involvement for this population is presented. We discuss practice and research recommendations for building more effective interventions to address both criminal justice and mental health outcomes.

Keywords

Behavioral health; criminal justice; serious mental illnesses; intervention

1. Introduction

Over the past two decades in the United States, there has been a systematic effort to develop and implement interventions to address the needs of persons with serious mental illnesses...
who are involved in the criminal justice system. The need for these interventions was driven in part by the overrepresentation of adults with mental illnesses in the criminal justice system and in part by the pervasive belief that it is socially and clinically inappropriate for most people with SMI to be enmeshed in that system. These factors motivated both federal legislation and state and local policies and mandates to develop targeted responses to reduce the prevalence of justice-involved persons with SMI. These interventions included jail diversion programs, mental health courts, specialized probation and parole caseloads, and forensic mental health services emphasizing psychiatric rehabilitation.

We refer to this collection of interventions by the term “first generation” for two reasons. The first is to acknowledge that these interventions are united by a common philosophy and theme: criminal justice involvement of people with SMI is reduced primarily by providing mental health treatment to these individuals. Correspondingly, the principal objective of first generation interventions was to create or strengthen linkages to effective mental health services. The treatment emphasis of first generation interventions, while laudable, has overshadowed a growing body of research suggesting that people with SMI have encounters with the criminal justice system for many of the same reasons as people without SMI (Fisher, Silver, & Wolff, 2006). Limiting the focus of intervention to treatment engagement may account for the weak performance of first generation interventions. To date, empirical research on first generation interventions has demonstrated limited effectiveness in terms of improving both criminal justice and clinical outcomes for justice-involved persons with SMI (Martin, Dorken, Wamboldt, & Wootten, 2011). Practice confirms this research: over the past 20 years that these interventions have proliferated, there has been no meaningful decrease in the prevalence of persons with SMI in the criminal justice system (Fazel & Danesh, 2002; Steadman, Osher, Robbins, Case, & Samuels, 2009; Teplin, 1990; Torrey, Kennard, Eslinger, Lamb, & Pavle, 2010).

The second reason, then, for classifying these interventions collectively as “first generation” is to draw attention to the need for a more nuanced and evidence-based foundation for the next generation of interventions. To be effective, research is suggesting that these interventions need to be reframed to more directly account for the multitude of factors contributing to the criminal justice involvement of persons with SMI. These factors are supported by research showing that people with SMI, in general, display many of the same risk factors for criminal involvement as the broader offender population. Effective mental health treatment will be an important response to their unique needs, but focusing primarily on treatment is likely to be insufficient for most persons with SMI in the criminal justice system.

The purpose of this paper is to cast a vision for the next generation of behavioral health and criminal justice interventions by presenting a set of empirically informed individual and environmental factors that directly and indirectly contribute to criminal justice involvement.

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1We use the term “serious mental illnesses” (SMI) to describe major Axis I diagnoses, including schizophrenia spectrum disorders, bipolar spectrum disorders, and major depressive disorders. We also use the term “mental illnesses” to refer to a broader category of any diagnosed mental health condition.
for individuals with SMI and are, therefore, critical targets for intervention. Although justice-involved persons with SMI bear unique stressors attributable to their mental illness, they also have many “normal” risk factors for criminal behavior. Attending to these shared risk factors, when combined with those associated directly with mental illness, provides a richer, more nuanced foundation for the next generation of interventions, which will likely improve their performance in reducing recidivism and psychiatric relapse. Finally, we present practice recommendations for developing the next generation of interventions and suggest a research agenda for the future.

2. First Generation Mental Health and Criminal Justice Interventions

The first generation of mental health and criminal justice interventions emerged over growing concern regarding the overrepresentation of persons with SMI involved in the criminal justice system. The first rigorous study to measure the prevalence of SMI in the criminal justice system was conducted by Teplin and colleagues in Chicago's Cook County Jail (Teplin, 1990; Teplin, Abram, & McClelland, 1996). Using then state-of-the-art epidemiologic techniques, they estimated a prevalence of SMI of 6.4% for men and 15% for women (Teplin, 1990; Teplin et al., 1996). These rates of SMI and co-occurring substance abuse substantially exceeded the general population rates obtained in the Epidemiologic Catchment Area study (Robins & Regier, 1991). Although prevalence estimates in subsequent studies have varied, a meta-analysis of 62 surveys from 12 countries indicates roughly 14% of persons in the criminal justice system suffer from one or more SMI (Fazel & Danesh, 2002). Some of the most recent research in U.S. jails estimates the rate of SMI to be approximately 14% and as high as 31% for female inmates (Parsons & Sandwick, 2012; Steadman et al., 2009). Based on this body of research, it is estimated that over one million adults with SMI in the U.S. are under correctional supervision, with most living in the community while being supervised (Ditton, 1999; Glaze & Parks, 2012).

In response to the overrepresentation of persons with SMI in the criminal justice system, numerous first generation interventions were planned, developed, and implemented. These interventions have been situated in a variety of mental health and criminal justice settings, and were predicated on the “criminalization” hypothesis. Psychiatrist David Abramson first used this term in 1972 to describe the “criminalization of mentally disordered behavior,” by which he was referring to the increasing numbers of former state hospital patients who were now found in jails and prisons (Abramson, 1972). It was reasoned, at the time, that the solution to the problem of criminalization resided within the mental health system. That is, it was assumed that untreated symptoms of mental illness caused criminal justice involvement. As a result, the first generation of interventions was grounded in two related beliefs. The first was that the justice system entanglement of persons with SMI was caused either by ineffective access to mental health services or disconnection from services. The second was that developing mechanisms for connecting or reconnecting persons with SMI to mental health treatment would prevent further criminal justice involvement (Fisher et al., 2006).

Federal legislation and state and local policies responded to the growing concern about the criminalization of persons with SMI. In 1997, the Jail Diversion Knowledge Development Application initiative was launched by the U.S. Department of Health and Human Services,
Substance Abuse and Mental Health Services Administration, Center for Mental Health Services (Case, Steadman, Dupuis, & Morris, 2009). The Center for Mental Health Services later supported jail diversion programs through several Targeted Capacity Expansion funding projects. America’s Law Enforcement and Mental Health Project was signed into law by President Bill Clinton in 2000, which established the Mental Health Courts Program within the U.S. Department of Justice, and provided grants to develop continuing judicial supervision and the coordinated delivery of services to persons with SMI in the criminal justice system (Litshge & Vaughn, 2009). Even more influential was a second piece of federal legislation: the Mentally Ill Offender Treatment and Crime Reduction Act (MIOTCRA), signed by President George W. Bush in 2004, which has authorized over $50 million in grants to promote the development of first generation interventions (Council of State Governments, 2012). The MIOTCRA, informed by President Bush’s New Freedom Commission’s 2004 report, recommended diversion from jails and prisons to mental health treatment programs for persons with SMI as an emerging best practice and cost-saving measure (Litshge & Vaughn, 2009). The MIOTCRA offered incentives for state and local governments to create policies and programs that would foster an environment that was supportive of and hospitable to interventions focusing on mental health service linkage for justice-involved persons with SMI. For example, both California and Florida have developed formal grant programs geared toward crime reduction and reinvestment for persons with SMI (Case et al., 2009).

Guided by the belief about the criminalization of persons with SMI and the effectiveness of existing treatment and services, the first generation of interventions was designed and implemented primarily to divert justice-involved people with SMI to the mental health system, with the goal of establishing an enduring treatment connection between people with SMI and mental health providers. First generation “connecting” interventions were implemented at various intercept points in the justice system, beginning with police, proceeding through the courts, and ending at the point of reentry to the community following a spell of incarceration and/or supervision (Munetz & Griffen, 2006). (For a detailed review of these intervention types, see Epperson et al., 2011; Skeem, Manchak, & Peterson, 2011). These interventions may be situated within criminal justice or mental health settings. Criminal justice interventions generally expand police, court-based, and mandatory supervision practices in ways that use legal means at their disposal to divert persons with SMI to the mental health system. Mental health interventions, on the other hand, are traditionally case management-based services that have been altered to enhance mental health treatment access and adherence for persons with SMI entangled in the criminal justice system.

### 2.1. Criminal justice interventions

Energized by federal funding and cooperative state and local policies, a range of first generation interventions flourished. Focusing primarily on diversion of non-dangerous offenders with SMI from jails and, to a lesser extent, prisons to mental health treatment, these interventions are classified as either “pre-booking” or “post-booking.” Pre-booking diversion refers generally to training police officers to recognize symptoms of SMI and, if possible, transport of persons with SMI to a designated mental health portal in lieu of
criminal arrest. In the U.S., the most common pre-booking diversion model is the Crisis Intervention Team (CIT), with over 1000 police departments nationwide indicating they are implementing this model or have already done so. CIT entails a cadre of specially trained officers who are designated first responders to any call involving a person known or suspected to have a serious mental illness, with the goal of diverting persons with SMI to mental health services (Cochran, Deane, & Borum, 2000; DuPont & Cochran, 2000; Watson, Morabito, Draine, & Ottati, 2008). Post-booking diversion programs divert persons with SMI to mental health treatment after the individual has undergone processing within the justice system. This type of diversion typically takes place at the point of a court hearing. Mental health courts are the most widely implemented form of post-booking diversion; there were over 250 mental health courts in operation or development as of 2010 (Steadman, Redlich, Callahan, Robbins, & Vesselinou, 2011). Like drug courts, mental health courts place a priority on treatment goals over punitive sanctions, with compliance with mental health treatment being a mandated condition of graduation from these courts (Epperson, Canada, & Lurigio, in press; Wolff, 2003).

Another form of post-booking diversion is specialized probation. Some people with SMI who are found guilty of criminal charges are sentenced to a “specialized probation” officer or unit. While under specialized probation, mental health treatment compliance is a common condition of supervision and a requirement for satisfactory completion of probation (Lurigio, Epperson, Canada, & Babchuk, in press). Features of specialized mental health probation programs include reduced caseloads consisting only of clients with mental disorders, sustained officer training on behavioral health problem management, and active integration of community resources (Skeem & Eno Loudon, 2006).

Several reentry assistance interventions have been developed to assist people with SMI after a period of incarceration. An early model, the Forensic Transition Team, brings case workers into correctional settings to identify persons who might be eligible for mental health services and works with them and community providers to create a more seamless transition from treatment in the correctional setting to the community (Hartwell & Orr, 1999). A more recent model, Critical Time Intervention, uses time-limited case management services during the transition period of reentry to enhance engagement with mental health services and supports in the community (Draine & Herman, 2007).

2.2. Mental health interventions

First generation interventions located in the mental health system are typically variants on evidence-based mental health services available in the community. Two types of services in particular have gained prominence. They are: Forensic Assertive Community Treatment (FACT), based on the Assertive Community Treatment (ACT) model and Forensic Intensive Case Management (FICM), based on Intensive Case Management (ICM). ACT is a well-established evidence-based practice that has achieved broad success in, among other things, reducing the use of psychiatric hospitalization (Stein & Santors, 1998). Like ACT, FACT uses a multidisciplinary team that includes psychiatrists, nurses and case managers, and grafts onto it a forensic specialty component. This may include receiving referrals for FACT services directly from the criminal justice system or having a probation officer as a member
of the FACT team. The purpose of these relationships is to facilitate jail diversion and assure linkage to mental health treatment (Lamberti, Weisman & Faden, 2004). Building on Intensive Case Management, which responds to the needs of high service users and delivers assertive outreach on an indefinite basis, FICM programs focus on justice-involved clients and employ case managers with specialized training in forensics. FICM programs emphasize linking to and coordination of services over direct service provision. Both FACT and FICM programs occasionally work in conjunction with local probation departments to coordinate both the mental health and criminal justice systems' expectations for engagement in mental health treatment (Lamberti, Deem, Weisman, & Laduke, 2011).

2.3. Limitations of first generation interventions

The outcome research on first generation interventions is quite thin, but is beginning to build. Least is known about FICM, specialized probation caseloads, and critical time intervention, which are relatively new intervention models. But even where the intervention research is somewhat more robust, such as with CIT, mental health courts, and FACT, the evidence base is fraught with methodological problems that compromise generalizability. Some of the more significant methodological issues include: the lack of appropriate comparisons to competing alternatives; non-randomization of clients to intervention or interventions to setting; and limited follow-up periods to measure psychiatric and criminal justice outcomes. In a recent review of first generation efforts, Dvoskin and colleagues (2011) assert that the evaluations of first generation interventions have not been rigorous enough to ascertain whether they are more than minimally effective.

Several recent research reviews have been conducted on first generation interventions. Martin and colleagues (2011) conducted a meta-analysis of 25 studies of diversion and institutional interventions, slightly less than half of which would fall under our designation of first generation interventions (i.e. mental health court, jail diversion, and forensic case management services). The authors found that all but one study demonstrated some effectiveness in the area of reducing subsequent arrests and days spent in jail. However, there were no significant effects of these interventions on mental health service utilization or medication use, and the authors note the absence of mental health outcome data in many of the studies reviewed (Martin et al., 2011). While these programs may have shown modest results in reducing recidivism, it is not clear that these improved outcomes were achieved by improving psychiatric symptoms.

In a separate study, Skeem and colleagues (2011) reviewed some of the most rigorous studies of first generation interventions to date, including jail diversion, mental health courts, specialized probation, re-entry programs, FACT, and FICM. Of the studies reviewed, several criminal justice-based models demonstrated mixed effectiveness on recidivism reduction, and FACT and FICM showed little to no effect on reducing criminal recidivism. None of the six jail diversion programs examined in this review demonstrated a reduction in

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2Detailed reviews of the research evidence for the specific interventions can be found elsewhere (see: http://www.cbhs-cjr.rutgers.edu/intervention_fact.html).
3Two studies of critical time intervention focusing on reentering prisoners are currently underway (see: http://www.cbhs-cjr.rutgers.edu/pdfs/Fact_Sheet_CTI_1_2009.pdf).
arrests, although two showed some reduction in days incarcerated. Most interesting was their finding of no relationship between the reduction of symptoms of SMI and reduced recidivism across the interventions (Skeem et al., 2011). Watson and colleagues (2008), reviewing the numerous studies on CIT, found that, while CIT training improves officer knowledge and attitudes regarding SMI, all but one study showed no reduction in arrests of persons with SMI (Watson et al., 2008).

These studies highlight two important deficiencies of first generation interventions and their evaluation. First, many studies of first generation interventions focus primarily on criminal justice outcomes, such as re-arrest, jail days, or injuries to officers occurring during “mental health calls” to the exclusion of mental health outcomes. Second, those studies that do evaluate both types of outcomes find little to no relationship between mental health outcomes (i.e., symptom reduction or increased service utilization) and reduced criminal justice involvement. In fact, only one rigorous study of a first generation intervention (FACT) has found the “connecting” intervention to significantly increase outpatient mental health utilization and reduce arrests (Cusack, Morrissey, Cuddeback, Prins, & Williams, 2010).

While over the past two decades, states and localities have been resoundingly successful in implementing first generation interventions, these interventions, in sharp contrast, have been less successful in demonstrating their effectiveness or efficiency in reducing recidivism or increasing psychiatric recovery, which was their two-pronged objective. Indeed a recent report by the Treatment Advocacy Center entitled More Mentally Ill Persons in Jails and Prisons than Hospitals: A Survey of the States (Torrey et al., 2010) describes a persistent overrepresentation of persons with SMI in the criminal justice system in spite of the proliferation of targeted interventions. This conclusion is substantiated by numerous studies that, when viewed over a 20-year period, show no meaningful decrease in the proportion of persons with SMI in the criminal justice system (Teplin, 1990; Teplin et al., 1996; Fazel & Danesh, 2002; Parsons & Sandwick, 2012; Steadman et al., 2009).

This, then, begs the question: Why have first generation interventions been so impotent? What explains their lack of ability to depopulate the nation's jails and prisons of persons with SMI? Here there is more speculation than evidence. Some argue that first generation interventions have not reduced the justice involvement of persons with SMI, despite their goal, because they have failed to provide adequate mental health treatment to their clients (Boothroyd, Poythress, McGaha, & Petrila, 2003; Broner, Lattimore, Cowell, & Schlenger, 2004). That is, they argue for more mental health services to achieve the goals of first generation interventions. While this may explain some of the lackluster performance of evaluated interventions, the argument is not compelling in general. In a review of ACT services, less than 20% of reviewed studies found that ACT (which is well-established as an evidence-based mental health treatment) reduced time incarcerated (Bond, Drake, Mueser, & Latimer, 2001). That is, even one of the mental health system’s most effective evidence-based interventions, ACT, has performed poorly on criminal justice outcomes. Similarly, a recent study of administrative data for persons with SMI with previous criminal justice involvement, receiving outpatient services was associated with a modest reduction in
subsequent arrests, though receiving inpatient or emergency services was associated with an increase in arrests (Constantine, Robst, Andel, & Teague, 2012).

Others might argue that first generation interventions have not achieved their macro-goal of depopulating the nation’s prisons and jails because they have not adequately addressed the need for intervention within the criminal justice system. Indeed the limited penetration of the broader offender population by first generation interventions has been previously noted (Epperson et al., 2011; Wolff & Pogorzelski, 2005). This suggests that if the number of locales implementing first generation interventions was simply doubled or tripled, a meaningful decline would be expected in the prevalence of incarcerated people with SMI. But this has not been empirically observed. Over the past 20 years, as first generation interventions have proliferated and received significant structural and financial support, there has been no evidence of depopulation. This result makes sense in light of the effectiveness research. The overall effectiveness of first generation interventions is determined by the marginal change in key outcomes (e.g., recidivism, psychiatric recovery) yielded by the intervention multiplied by their number. If the marginal change per intervention is small or null, increasing the number of these programs within a state will do very little to change the prevalence of people with SMI who are incarcerated.

Another more plausible explanation is that the fundamental beliefs underpinning the first generation interventions are faulty. First generation interventions have strongly coalesced around a singular objective – to link offenders with SMI to mental health treatment, and they are predicated on the criminalization hypothesis, which asserts that offenders with SMI are engaging in criminal behavior mainly because of their mental illness. But what if, generally speaking, the driving force behind the justice-involvement of persons with SMI is more than the symptoms of mental illness? This is not to say that some portion of people with SMI may be tangled in the criminal justice system solely because of untreated symptoms. But, more generally, there is a growing consensus that this explanation does not account for the majority of persons with SMI under correctional supervision (Draine, Salzer, Culhane, & Hadley, 2002; Fisher et al., 2006). In fact, a recent estimate suggests that the symptom-based criminalization explanation accounts for only one in ten offenders with SMI (Skeem et al., 2011).

With persistently high rates of incarcerated persons with SMI and the requirements of the 8th Amendment, it has been incumbent on correctional facilities to respond to the treatment needs of this population. Jails and prisons have responded by importing community-based mental health services, such as crisis intervention, medication monitoring, suicide prevention, and symptom management into incarceration settings. A meta-analysis of 26 studies by Morgan and colleagues (2011) yielded inconclusive results for these types of correctional mental health services on criminal and psychiatric recidivism, though some individual studies demonstrated promise in improving these outcomes. Unlike first generation interventions, correctional mental health services were not systematically developed, but resulted from correctional facilities responding individually to local institutional needs and constitutional requirements. What also separates these programs from our classification of first generation interventions is that the reason for providing mental health services was not diversion but rather safe management of incarcerated persons with
SMI. These programs, like their first generation counterparts, focused primarily on treating mental illness at the cost of more holistic services (Bewley & Morgan, 2011). It is not surprising, then, that the combined efforts of first generation interventions and correctional mental health services have not systematically or incrementally reduced the prevalence of SMI in the criminal justice system.

3. The Next Generation of Behavioral Health and Criminal Justice Interventions

To efficiently achieve the objective of depopulating prisons and jails of people with SMI, more potent interventions are in order. Getting from here to there requires learning from the successes and limitations of first generation programs. Two lessons are most prominent. First, effective and accessible mental health treatment will be an active component of any intervention for this population but mental health treatment alone, or as traditionally designed, is not sufficient (Frank & McGuire, 2011; Skeem et al, 2011). Second, a richer, more refined understanding of the multiple and complex factors, in addition to mental illness, that place persons with SMI at risk for criminal justice involvement, and the defining of modifiable risk factors as targets for intervention are vital. The incorporation of these lessons into new or adapted intervention models would notably shift the field from first generation interventions and ad hoc correctional programming to the “next generation” of behavioral health and criminal justice interventions.

In this section, we lay the foundation for the next generation of interventions, which is based on a more open and nuanced perspective on what underpins the justice involvement of persons with SMI. Foundationally, we begin to address the issue of justice-involved persons with SMI not from the perspective of what is the desired outcome (e.g., diversion to treatment) and then working backwards to develop interventions that achieve this a priori outcome; but rather, by beginning with a general understanding of factors that contribute to criminal behavior, and by assuming that the experiences of people with SMI are “normal” with respect to many of the factors that place them at risk for criminal justice involvement. Thus, we developed a person-place framework, informed by research that identifies a set of factors known to contribute to criminal behavior, which is then stylized to persons with SMI. These person and place-level risk factors for criminal justice involvement are targets for next generation interventions. We conclude by making practice and research recommendations for the building the next generation of interventions for justice-involved people with SMI.

3.1. Person-place framework: Attributes of criminality

Relevant empirical and conceptual research from numerous disciplines was synthesized to formulate a person-place framework that identifies changeable risk factors for criminal justice involvement among persons with SMI. This framework is informed by the coping-relapse model, developed by Zamble and Quinsey (1997), which describes a complex series of cognitive, emotional, and environmental factors that interact to influence the criminal recidivism process (Jones, Brown, & Zamble, 2010). The coping-relapse model emphasizes the relationship between an individual's coping behaviors, which are influenced by criminal
cognitions, values, attitudes and external factors, such as stressful precipitating events. While the coping-relapse model focuses primarily on dynamic individual-level factors, we build on this model to suggest that both person and place-level factors can be conceptualized as targets for intervention.

In this framework (Figure 1), two levels of factors are identified: person (individual) and place (environment). Person-level factors include mental illness, criminogenic risk, addictions, and trauma exposure, which will be discussed in greater detail below. These factors work separately, additively, and interactively to affect the risk of criminal justice entanglement. In addition, individuals with SMI often live within environments that increase their risks of criminal justice involvement, as indicated by the outer ring depicting the social and community context or “place” factors, including forms of social and environmental disadvantage. Stress is conceptualized as the interaction of person and place risk factors, which increases the likelihood of behaviors that are harmful to individuals and the community. This catalytic process produces pressure toward criminal justice entanglement for persons with SMI.

As the figure illustrates, for most persons with SMI in the criminal justice system, their path to criminal involvement is not simply explained by a lack of mental health treatment; but rather, by a complex interplay of individual and environmental factors and resulting stress. This is not to say that all people with SMI have identical risk factors. However, it is important to acknowledge the full complement of risk factors to form a general risk model that can then be used to identify which factors are relevant to particular individuals in specific locations. As such, in order for the next generation of behavioral health and criminal justice interventions to effectively reduce the overrepresentation of people with SMI in the criminal justice system, these risk factors must be understood and incorporated as targets for intervention. We will describe person- and place-level factors that have, to varying degrees, not been fully incorporated into first generation interventions, and we suggest ways in which these concepts can inform the next generation of interventions.

3.2. Person-level factors

3.2.1. Mental illness—A confluence of person and place factors, including mental illness, directly and indirectly places persons with SMI at risk of criminal justice involvement (Frank & McGuire, 2011). In general, two pathways have been identified to explain how people with SMI become involved in the criminal justice system (Skeem et al., 2011). The first is direct; untreated symptoms of mental illness directly cause criminal behavior. Examples might include violence, stealing, or public urination. In these scenarios, the person may be experiencing delusions that motivate fear and compel behaviors to save self or others from harm, or the person may hear voices that advocate or compel behavior that is antisocial or be so removed from “reality” that behavior is driven more by impulse than rational processes. Symptoms of mental illness, such as cognitive and functional impairments, may hamper decision making skills and foster impulsivity, or a lack of behavioral inhibition (Najt et al., 2007), causing antisocial behaviors. Elevated rates of general impulsivity and aggression have been found in mood phases for those diagnosed with SMI.
with bipolar disorder, particularly in the presence of substance abuse (Swann, Anderson, Dougherty, & Moeller, 2001; Swann, Pazzaglia, Nicholls, Dougherty, & Moeller, 2003).

While the propensity of those with SMI toward violence is greatly exaggerated (Pescosolido, Monahan, Link, Stueve, & Kikuzawa, 1999), research shows that persons with SMI display somewhat higher rates of violent behavior than those without SMI (Monahan et al., 2001; Swanson, Holzer, Ganju, & Jono, 1990). One symptom in particular, psychosis, has been found to be associated with violence (Douglas, Guy, & Hart, 2009). However, experts on this subject estimate that positive symptoms of mental illness (i.e. delusions, hallucinations) actually cause only 5 to 8 percent of violent and criminal acts committed by persons with SMI (Junginger, Claypoole, Laygo, & Cristiani et al., 2006; Monahan et al., 2001; Peterson, Skeem, Hart, Vidal, & Keith, 2010).

If the untreated symptoms of mental illness are treated, an individual will not be compelled by mental illness to act criminally. However, many people with SMI, whether or not they are symptomatic, may engage in criminal behavior for the same reasons that people without mental illness engage in crime, which leads to the second pathway into the criminal justice system. This way is more indirect, whereby mental illness is mediated by criminogenic risk factors – factors known to predict antisocial behavior, such as how people think, who they associate with, and what they do with their time (Walters, 2011). For example, a high proportion of violence committed by people with SMI is attributed to concurrent abuse of alcohol or other drugs (Fazel, Gulati, Linsell, Gesddes, & Grann, 2009; Steadman et al., 1998). Moreover, historical and contextual factors for persons with SMI, such as past victimization, lower income, and recent unemployment are stronger predictors of violence than severe mental illness alone (Elbogen & Johnson, 2009; Monahan & Steadman, 2012). As such, treatment of symptoms related to SMI, concurrent to addressing other factors presented below, is of primary clinical importance for justice-involved persons with SMI. Direct provision or connection to evidence-based treatment of SMI will be a critical component of the next generation of behavioral health and criminal justice interventions.

3.2.2. Criminogenic risk—Over the past 20 years, researchers have identified a variety of individual-level factors that elevate risk of offending behavior. Factors that are most predictive are called the “Central Eight” because, when considered individually, they are most likely to accurately and reliably predict the risk of criminal behavior (Andrews & Bonta, 2006). These factors, or criminogenic needs, include: history of antisocial behavior; antisocial personality patterns; criminal thinking and antisocial attitudes; antisocial associates; family and/or relationship circumstances; school and/or work functioning; leisure and/or recreational activities; and substance abuse (for a full description of these factors, see Andrews & Bonta, 2006). Most of these risk factors are dynamic (i.e., fluid and changeable) and, as such, have been identified as targets for interventions in an effort to reduce criminal recidivism in the general offender population. Although some first generation interventions, such as FACT programs, focused on substance abuse, employment, and family relationships, the factors considered the “Big Four:” history of antisocial behavior, antisocial personality patterns, criminal thinking, and antisocial associates, were largely neglected by first generation interventions. By ignoring these more traditional predictors of criminality, it was
implicitly assumed that people with SMI were not “normal” in their criminal behavior, an assumption that has not been supported by empirical inquiry.

Over the past few years, researchers have begun investigating the prevalence of general criminal risk variables among people with SMI. Of particular interest has been criminal thinking and antisocial attitudes among offenders with and without SMI. Two studies are noteworthy. Based on a sample of 416 inmates with SMI, Morgan and colleagues (2010) found that inmates demonstrated similar patterns of criminal thinking and antisocial attitudes, regardless of the presence of SMI. More specifically, inmates with SMI, like their counterparts without SMI, endorsed styles of thinking that supported a criminal lifestyle – i.e., they were “normal” in their criminal thinking compared to offenders without SMI. Similar results were found by Wolff, Morgan, Shi, Fisher, & Huening (in press) based on a sample of 3986 male inmates and 218 female inmates. In this study, inmates with SMI, as well as other mental illnesses (depression, anxiety), displayed antisocial attitudes that were comparable to inmates without mental illnesses, suggesting that these criminogenic risks are prevalent among offenders both with and without SMI.

Just as offenders with SMI possess cognitive styles that are supportive of criminal behaviors, they may share other important risk factors with their non-mentally ill peers. For example, it seems reasonable to suggest, due to downward drift (described below) that persons with SMI are likely to forge relationships with antisocial peers. We know that antisocial peer groups increase the likelihood of criminal involvement (Andrews & Bonta, 2010), and it is possible that antisocial peer groups are even more influential with people with SMI who frequently lack healthy familial supports (Young et al., 2005). That is, with loss of meaningful, prosocial supports, people with SMI may be more likely to socially interact with those involved in crime, and be susceptible to manipulation by these associations (Padgett & Drake, 2008). We also know that reduced educational and occupational opportunity is a central risk factor for crime, and, unfortunately, these limited opportunities are often a reality for people with SMI (Department of Health and Human Services, 1999). Consequently, limited academic and work opportunities are likely to place people with SMI at greater risk for criminal involvement. This is especially true when other primary risk factors, such as antisocial attitudes or substance abuse, are present. As is true for the general offender population, the greater number of these risk factors, the greater the risk of people with SMI to engage in future criminal acts.

If the Central Eight factors are, to varying degrees, relevant to all justice-involved people, i.e., those with and without mental illnesses, then it is prudent to incorporate them into the next generation of interventions. Failure to address these criminogenic risk factors may continue to limit the effectiveness of mental health treatment on both mental health and criminal justice outcomes. More specifically, for people with SMI, ignoring their co-occurring criminogenic needs may constrain treatment effectiveness in ways analogous to ignoring their co-occurring substance abuse problems. From this perspective, the challenge becomes how to address criminogenic risks within a behavioral health orientation, not simply on rerouting mechanisms that channel justice-involved persons with SMI into mental health treatment.
3.2.3. Addictions and behavioral patterns—Substance abuse is a central risk factor for criminal involvement and is pervasive among justice-involved persons (Chandler, Fletcher, & Volkow, 2009; James & Glaze, 2006). Not only is drug use in and of itself criminal behavior, but effects on the individual’s neurochemistry, paired with secondary offending in support of drug habits (i.e., theft, prostitution, etc), render drug use a significant contributor to criminal justice involvement. According to a national survey conducted by the Bureau of Justice Statistics, about 75% of prison and jail inmates with a mental health problem met criteria for substance dependence or abuse, and drug use prior to arrest was more common among state prisoners with mental health problems than those without (James & Glaze, 2006). Because of the co-morbidity of mental illness and substance disorders, researchers have been exploring the relative impact of these disorders on recidivism. In a large study of Texas parolees, those with a dual diagnosis of SMI and a substance use disorder were at greatest risk of parole revocation (Baillargeon et al., 2009). By contrast, no increased risk of parole revocation was found among parolees with singularly occurring SMI or a substance use disorder. Similarly, jail detainees with co-morbid SMI and substance use disorders demonstrated increased levels of arrests for property crimes (Swartz & Lurigio, 1999). In an Australian study, psychiatric patients with co-morbid schizophrenia and substance abuse had higher rates of criminal conviction when compared to patients with schizophrenia alone (Wallace, Mullen, & Burgess, 2004). Lastly, Steadman and colleagues (1998) found co-occurring substance abuse to be a significant predictor of self-reported violent behavior among persons in the community following psychiatric hospitalization.

Justice-involved persons with and without SMI struggle with a variety of other behavioral patterns and personality traits that increase the risk of criminal justice involvement, including addictive personalities, novelty seeking, and tendencies toward instant gratification. Problematic behavioral patterns and addictions may arise in many areas including gambling (Clark & Walker, 2009), eating disorders (Messina & Grella, 2006), sexual risk behaviors (Epperson, El-Bassel, Gilbert, Orellana, & Chang, 2008; Meade & Sikkema, 2005), and other compulsive behaviors. To varying degrees, these thought and behavior patterns may be related to impulsivity or behavioral decision making styles that contribute to criminal involvement. The interaction of these behavioral patterns presents an important factor in criminogenic risk for people with SMI. Incorporating treatment for substance abuse and other compulsive behavioral patterns in the next generation of interventions is likely to enhance the effectiveness of mental health treatment and lead to reduced criminal behavior as well.

3.2.4. Trauma exposure—Although trauma exposure alone is not predictive of criminal justice involvement (see Andrews & Bonta, 2012), sexual or physical victimization is a highly relevant issue for people with SMI who are involved in the criminal justice system. A significant association exists between trauma history and addictive behaviors and criminal justice involvement (Wolff & Shi, 2009). While lifetime exposure to a traumatic event is fairly common in general populations, severe physical and sexual victimization are more prevalent among criminal justice populations, particularly those with SMI (Teplin, McClelland, Abram, & Weiner, 2005). Incarcerated adults, especially those with SMI, report extremely high lifetime rates of physical and sexual trauma, often occurring during their...
formative childhood years through adulthood (Wolff & Shi, 2010; Wolff et al., 2011). In one study, a majority of 209 female inmates interviewed reported experiencing at least one type of crime-related (58%), general disaster (98%), and/or interpersonal (87%) trauma, and most (74%) reported a childhood history of sexual or physical trauma (Wolff et al., 2011). Timing and type of trauma among incarcerated people also significantly predicts interpersonal problems (e.g., having stormy relationships, not getting along with family members, not having any friends), problems with self regulation (e.g., doing things impulsively, not being able to keep track of money or keep a job, gambling), aggression, and hopelessness (Wolff & Shi, 2012).

Incarceration heightens the risk for further victimization. For example, Wolff and colleagues (2007) found that male inmates with SMI, compared to those without SMI, were roughly three times more likely to report incidents of sexual victimization by another inmate. Similar results were also found for physical victimization (Blitz, Wolff, & Shi, 2008). These findings parallel the finding among psychiatric populations; involuntarily committed adults with SMI have been found to experience high levels of trauma as well as a wide range of indignities in controlled institutional environments (Frueh et al., 2005).

The psychological consequences of sexual or physical trauma are potentially severe and include fear, anxiety, depression, anger, guilt, somatic symptoms (e.g., gastrointestinal symptoms), substance abuse, suicidal ideation, and post-traumatic stress disorder (PTSD) (Breslau, Davis, Andreski, & Peterson, 1991; Bryant, 2010). It is not surprising that while rates of PTSD have been estimated at 8% of the adult U.S. population (APA, 2000), among adults with SMI the rates of PTSD are considerably higher, ranging from 13 to 46% (Grubaugh, Zinzow, Paul, Egede, & Frueh, 2011). Recent attention has been drawn to the importance of trauma-informed care, but first generation interventions have generally not addressed this critical issue among persons with SMI.

3.3. Place-level factors

As noted in Figure 1, place factors contribute to the involvement of persons with and without SMI in the criminal justice system. The environmental or “place” context includes not only the mental health treatment system, but also community characteristics such as high levels of violence, law enforcement presence, homelessness, unemployment, and other forms of disadvantage. More broadly, people with SMI who are enmeshed in the criminal justice system often lack employment and other prosocial skills, contributing to an overall sense of desperation when struggling to address their daily needs. These challenges often occur within disorganized communities, in which discrimination and stigma toward people with SMI further exacerbate risk.

3.3.1. Social disadvantage—Criminologists have repeatedly highlighted the effects of environment and social class on offending. Nearly 80 years ago, Faris and Dunham (1939) coined the term “downward drift” to describe the process by which individuals with SMI move to ever-poorer neighborhoods; this pattern was re-confirmed in a more recent study of people with SMI in four urban areas (Silver, Mulvey, & Swanson, 2002). Drifting into communities with higher levels of social and economic disadvantage increases exposure to
crime, violence, drug use, and police supervision, and may be seen as a source of
 criminogenic risk. Although the causal relationship between SMI symptoms and crime is
 relatively weak, issues of poverty, under-education, unemployment, and paucity of positive
 social relationships typically accompany SMI and are likely to contribute more strongly to
 crime than psychiatric symptomatology (Draine et al., 2002). First generation interventions
 implemented among populations with high levels of social disadvantage were likely
 hampered by the effects of these place-level factors on criminal justice involvement.

3.3.2. Environmental disadvantage—In general, having a serious mental illness
 exposes individuals to high crime environments. People with SMI, who are
 disproportionately homeless and unemployed, as well as those receiving residential services
 from mental health agencies or local housing authorities, often reside in areas shared with
 other persons of low socioeconomic status (Fisher et al., 2006). The economic circumstances
 of persons with SMI combined with the limits of state mental health agency residential
 program budgets and other stressors associated with poverty, such as limited or no insurance
 coverage, trap many of these individuals in low-income, high crime areas (Lurigio, 2011).
 Characteristic of these neighborhoods, particularly those in inner cities, is the prominence of
 drug users and dealers as well as others who have significant criminal histories. Crowding
 people with SMI into these communities increases their exposure to crime, criminal
 elements, and opportunities for criminal activity, including but not limited to substance use
 and distribution. Findings from the Massachusetts Mental Health - Criminal Justice Cohort
 Study indicate that many drug arrests among persons with SMI involve not only possession,
 but drug trafficking and manufacturing (Fisher et al., 2007). The fact that persons with SMI
 take on the level of antisocial behavior characteristic of their surroundings is further
 reinforced by data from the MacArthur Risk Study, which found that the likelihood of such
 individuals engaging in acts of interpersonal violence was roughly the same as those of
 persons without SMI living in the same neighborhoods (Monahan et al., 2001). These
 environmental disadvantages place individuals with SMI at risk of developing antisocial
 relationships and attitudes, which are person-level risk factors for criminality.

Failure to consider these issues suggests an additional disconnect between the designers of
 specialized criminal justice interventions for persons with SMI and what is known about
 criminal offending in general. A vast body of criminological research identifies these factors
 as predictors and correlates of offending. The fact that this body of work has been
 overlooked in first generation interventions reflects the narrow, psychiatric driven view of
 causality that guided their development.

3.4. Stress as a mediating catalyst

Life is stressful, especially for many persons with SMI who struggle to meet their basic
 needs, such as food, housing, work, and personal safety. Chronic stress and an overactive
 autonomic nervous system, stimulated by the body's fight, flight, or freeze response, can
 have unintended effects on mental, physical, and emotional well-being, in addition to
 hindering prosocial functioning. Criminal behavior has also been associated with the
 inability to regulate severe stress, emotional discomfort, and deprivation (Samuelson,
 Carmody, Kabat-Zinn, & Bratt, 2007). Whether people can successfully cope with stressful

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ambient external conditions depends on a host of factors. Research on coping suggests that the ability to manage stress is shaped by a combination of cognitive and affective states, prior adaptive behavior, as well as the availability of coping and response mechanisms, which are influenced by values and attitudes (Zamble & Quimsey, 1997). Unmanaged and persistent stress exposure, which is often a consequence of living in chaotic communities and in poverty, may develop into serious health-related problems as well as coping strategies that include aggression, suppression, and obsession (Kabat-Zinn, 1990). Negative affect may also manifest as a consequence of stress in part as a coping mechanism and in part as a response to feelings of hopelessness and helplessness (Ong, Bergeman, Bisconti, & Wallace, 2006).

Reacting in unhealthy ways to stress, including acting out frustration through violence, self-medication through drugs, alcohol, sex, or gambling, or giving up and becoming more reckless, can result in encounters with the justice system. People with SMI may be more susceptible to unhealthy stress reactions if they have weak or undiversified coping abilities and social support systems. A person with SMI already challenged by frustrations caused by having a chronic illness and by living and work conditions that are bleak may be less able to cope with additional stresses associated with an environment that is discriminatory, disorganized, chaotic, hostile, disrespectful, and suspicious. Greater sensitivity to environmental stressors may trigger relapse of symptoms associated with SMI, addictive behaviors, or other maladaptive coping strategies. For instance, living in neighborhoods with high levels of stress and drug use may create a “perfect” environment for maladaptive coping among people with SMI: the “place” stress adds to “person” stress and creates the need for self-medication as well as easy access to drugs. Similarly, an individual with SMI who demonstrates aspects of criminal thinking or antisocial attitudes may be particularly susceptible to the stress produced by poverty, unemployment, and living in a social environment with high levels of criminal activity and antisocial associates.

Place factors of social and environmental disadvantage produce stress on individuals that can exacerbate person-level risk factors for criminal involvement. The stress produced from the interaction of risk factors thus becomes an important target for intervention. Although effective mental health treatment may incorporate aspects of stress management through skill-building, the first generation of interventions has not fully responded to the unique stress of justice involvement or the interaction between person and place factors on persons with SMI. What is needed, then, is a collective shift toward the new generation of interventions which will attend to both person and place-level risk factors for criminality.

3.5. Identifying “Intervenable” Risk Factors

We offered a conceptual framework that better represents the set of factors and pressures likely to predict the criminal behavior of people with and without SMI. One objective of this framework was to move our collective thinking away from the uncomplicated notion that mental illness is the sole cause of criminal behavior and towards a more open view that people with SMI share criminal risk factors with justice-involved people without SMI (Morgan, Fisher, Duan, Mandracchia, & Murray, 2010; Wolff et al., in press). Our model turns attention to the relative predictive effects across a set of “intervenable” risk factors.
This perspective does not ignore mental illness. Rather, it puts mental illness within a set of person and place risk factors and identifies these factors in ways that allows for targeted intervention, while also recognizing that some factors may be more strongly predictive of criminal behavior than others, that persons vary in the extent of their exposures to risk factors, and that some risks may not be addressable until others are managed through therapeutic intervention (suggesting sequential intervention). For example, intervening to change antisocial cognitions would not make sense if the justice-involved person is actively psychotic, experiencing a seizure, or intoxicated, even though criminal thinking is a stronger predictor of criminal behavior than mental illness, physical illness, or addiction.

By focusing more broadly on the constellation of risks associated with person and place, we have proffered a more realistic and informed framework for building the next generation of interventions and for sequencing the steps within these interventions to achieve better outcomes for individuals with SMI and their communities. Some exemplary first generation interventions have already begun to incorporate a broader perspective beyond mental illness in identifying targets for intervention (e.g., criminal thinking). While anecdotal examples of such programs do exist, the preponderance of first generation models do not systematically target the range of risk factors discussed in our person-place framework. Moreover, this broader perspective has been largely absent in the existing literature on first generation interventions. The degree to which the next generation of behavioral health and criminal justice interventions can address this array of person and place factors, as well as the stress produced by their interaction, will determine their success in serving those persons with SMI who are at risk of criminal justice involvement.

4. Recommendations for developing the next generation of interventions

Herein we provide practice and research recommendations for the evolution of the next generation of behavioral health and criminal justice interventions.

4.1. Practice recommendations

We recommend the modularization of interventions for justice-involved persons with SMI, regardless of whether the intervention is delivered in a criminal justice location, a mental health agency, a hybrid setting, or multiple service locations. Problem-specific modules would reflect evidence of what works for people with and without SMI who are justice-involved. There is emerging research evidence to guide module development. Morgan and colleagues (2011) identified a handful of comprehensive treatments in correctional settings addressing trauma, stress, medication compliance, and skill building that showed promise for reducing criminal justice involvement of offenders with SMI. Other interventions were found to reduce distress, improve coping, and reduce behavioral problems. Another example of a modularized intervention is the Connecticut Offender Reentry Program, which entails a life skills reentry curriculum that is being piloted for persons with SMI discharging from state prisons (Kesten et al., 2012). Drawing on this evidence and with a unified protocol, problem-specific modules would be structured to address key person and place risk factors, in addition to evidence-based mental health treatment. Developing specific intervention modules could also help fill gaps in existing first generation interventions, broaden their potential to influence both mental health and criminal justice outcomes. The modules would
draw heavily on psycho-educational approaches and would be developed for particular risk areas but would integrate other risks into skill building exercises and discussions, and would include a:

4.1.1. Medication adherence module—To address the symptoms of SMI, the medication adherence module would seek to build an understanding of how medications regulate and improve the body’s functioning, with recognition of the presence of co-occurring medical and psychiatric disorders. Medication treatment would be oriented first to chronic medical conditions and then to psychiatric conditions. The effects of substance use would be addressed as part of this discussion. The focus of this module is on educating people with SMI on the biological mechanisms of schizophrenia, bipolar disorder, and major depressive disorder, the importance of treating these disorders pharmacologically, and the benefits and side effects of various types of medications. Skill building exercises would empower clients to engage clinicians in an open dialogue on topics relating to medications, specifically side effects encountered, as well as build coping strategies that respond to undesirable side effects.

4.1.2. Criminogenic risks module—In a recent survey of mental health and criminal justice staff who work directly with offenders with SMI, it was reported that most of the clients of these respondents had criminogenic risks, such as criminal thinking, lack of family support, and limited opportunities for prosocial activities (Wolff et al., in press). The aim of the criminogenic risks module is to help justice-involved persons with SMI develop an understanding of factors contributing to criminal behavior and promote skill development such as social and problem-solving skills, as well as anger management to counter personality attributes of impulsivity and weakened self-control. One goal of this module is to reduce criminal thinking and connections with criminal associates. This criminogenic risk module would be informed by and coordinated with modules seeking to increase psychiatric stabilization and recovery, decrease substance abuse, build environmental supports for prosocial living, improve skills that support healthy interpersonal relationships, and increase participation in prosocial activities such as employment, education achievement, volunteering, and recreational activities. Given that cognitive-behavioral therapy (CBT) interventions have proven to effectively reduce criminal recidivism (Gendreau, 1996; Henning & Frueh, 1996; Landenberger & Lipsey, 2005; MacKenzie, 2000; Wilson, 2005), CBT programs would be incorporated into multi-component interventions designed for the treatment of SMI (see below for one example of this).

4.1.3. Addiction risk module—An addiction risk module would focus on various forms of addictive behavior. Addictive behaviors may be (a) caused by genetic predispositions triggered by environmental circumstances or (b) a coping response to environmental circumstances that cannot be tolerated in healthy ways. In either case, addictive behavior is connected to experiences in the environment. Focusing only on substance use and addiction is problematic in correctional settings because it is often assumed that without the availability of substances, the substance abuse problem is addressed. However, when substance use is a coping strategy for feelings that are intolerable, people often substitute other addictive behaviors to manage these feelings in correctional settings, such as gambling.
and romantic relationships. For this reason, the addiction risk module would assess type and level of addiction, examine antecedents to addictive behavior, and identify the circumstances (including thoughts and feelings, as well as “place” factors) that trigger addictive behavior. This module would examine the client's life goals and how reducing addictive behavior can assist the client in reaching them. It would also develop knowledge and build healthy coping skills for changing addictive patterns. Mindfulness-based relapse prevention for addictive behaviors is one promising intervention for this module (Bowen, Chawla, & Marlatt, 2011).

4.1.4. Trauma risk module—The trauma risk module would incorporate a “trauma-informed” care approach, which focuses on increasing staff awareness of trauma exposure prevalence and its consequences, and how best to engage clients who have experienced trauma. Staff would be trained to ask clients about past traumatic experiences and to respond to their clients in ways that are respectful, reassuring, and hopeful about the possibility of recovery. Clients would be guided through a process of understanding how trauma has impacted them and about the connection between trauma and related responses (e.g., depression, anxiety, addictions, criminal behavior). The Institutes of Medicine has identified exposure therapy as the evidence-based treatment with the most empirical support for treating PTSD (Institute of Medicine, 2007). However, exposure therapy, while potentially effective for some prisoners, is quite narrowly focused on the cardinal symptoms of PTSD, and it may not be appropriate for prisoners who are currently living within a highly stressful or potentially traumatic prison context. Two promising interventions that could provide additional content for this module are Seeking Safety (Najavits, 2002) and Trauma Recovery and Empowerment Model (Fallot & Harris, 2002). More broadly, a transdiagnostic treatment approach, combining treatment elements to target different symptoms and behavioral problems, has been gaining traction (Barlow et al., 2010; Gros, Magruder, Ruggiero, Shaftman, & Frueh, in press). In the PTSD field, investigators have combined exposure-based practices with behavioral activation, anger management, emotion regulation training, or other relevant components common in the treatment of other mood and anxiety disorders to treat patients with PTSD (Beidel, Frueh, Uhde, Wong, & Mentrikoski, 2011; Ford, Steinberg, & Zhang, 2011). These multi-component treatments incorporate a range of strategies to target specific aspects of the clinical syndrome associated with PTSD. Many believe this is likely to be the future of clinical services for a large percentage of people with PTSD, and this approach could be integral to next generation interventions.

4.1.5. Stress risk module—The stress risk module would build skills for managing stress in healthy ways. It would focus on building an understanding of stress proliferation and how decision-making skills can decrease the accumulation of stress and increase healthier responses. A growing body of evidence shows mindfulness-based techniques to be effective in reducing levels of stress, anxiety, and depression (Baer, 2003). Mindfulness-based approaches have been increasingly incorporated into treatment for a range of medical and psychological disorders, including chronic pain, depression, anxiety, eating disorders, substance abuse, and smoking cessation (Baer, 2003). This module holds promise both for managing the stress associated with the effects of incarceration or correctional supervision and living in socially disadvantaged communities, as well as the management of thought and...
emotional processing that can trigger relapse of mental illness, addiction, and criminal behavior.

4.1.6. Social and environmental disadvantage risk module—Interventions geared towards the individual are not effective at changing systemic layers of disadvantage. The social and environmental disadvantage risk module would build skills on how to identify and avoid high risk situations, to distinguish between “good friends” and persons who are interested in causing harm, to establish intra-and interpersonal boundaries to avoid being manipulated by others, and to avoid people and places that increase the risk of victimization or criminalization (Drake & Wallach, 1989; Drake, Wallach, & McGovern, 2005).

Additionally, this module would assess needs related to social disadvantage, including housing, education, and job training, and would provide linkages to services to address these needs. Existing evidence-based multi-leveled interventions, such as multisystemic therapy (MST) – a family and home-based intervention for juvenile offenders, could be considered as models to guide this module (Butler, Baruch, Hickley, & Fonagy, 2011). Moreover, communities that have high concentrations of justice-involved persons with SMI could be identified as key targets of community-level interventions, such as agencies and programs (i.e. supportive housing) that build and strengthen both formal and informal support systems.

Collectively, we outline an intervention program that targets multiple issues, including co-occurring issues of mental illness and criminality. Managing multiple co-occurring problems of this population is of utmost importance (Wolff et al., in press). Unfortunately, minimal progress has been made on addressing mechanisms of change to reduce criminal recidivism, improve psychiatric status, or enhance quality of life (Wilson & Draine, 2006). We found only two programs exemplifying this approach. Project Link is a consortium of community based agencies which collaboratively work to reduce both psychiatric hospitalizations and incarceration (Lamberti et al., 2001). The program includes healthcare, social service, and criminal justice systems and features a mobile treatment team including a forensic psychiatrist and dual diagnosis treatment. Another treatment program, Changing Lives and Changing Outcomes (Morgan, Kroner, Mills, & Bauer, 2012) has been developed specifically to respond to the co-occurring issues of mental illness and criminality. This program includes 77 sessions and nine therapeutic modules developed to target treatment needs of individuals suffering from SMI (mental illness awareness, medication adherence, and coping with mental illness) and criminality (criminal attitudes and cognitive processes, criminal associates, and emotions management), as well as overlapping problem areas (preparing for change, skill development including social skills, vocational skill development, and housing skills, and substance abuse). The uniqueness of this intervention is in the integration of best mental health practices (psychiatric rehabilitation) and correctional rehabilitative practices. While this program remains in the early phases of development, preliminary findings are promising. These innovative programs exemplify the possibilities of next generation interventions.

4.2. Research recommendations

As the next generation of behavioral health and criminal justice interventions is developed, it will be important to learn from the pitfalls of research on first generation interventions and
to develop a clear and meaningful research agenda. The extant research on first generation interventions typically focuses on outcomes of greatest interest to the systems that fund or deliver the interventions. As such, interventions situated in justice settings (e.g., courts, probation or parole offices, prisons) often measure changes in recidivism specifically and changes in psychiatric relapse generally. By contrast, interventions located in the behavioral health system reverse the order of specificity, with more rigorous measurement of treatment outcomes than recidivism outcomes. If, however, second generation interventions are to effectively address both mental illness and criminal justice involvement, it will be critical to standardize the outcome measurement for psychiatric relapse and recidivism across interventions. Further, global outcomes of recidivism, relapse, and treatment compliance, assume that change occurs either as a linear or binary process, which it does not. For this reason, we recommend the development of outcome measures that are specific to areas of risk and that capture the process of change towards outcomes associated with prosocial living, including symptom and harm reduction, healthy relationships, stable housing, vocational and avocational involvement, community living, compliance with treatment and supervision conditions, and improvements in quality of life. Actors in the justice and mental health systems need to be attuned to the full spectrum of outcome measures and develop mechanisms for information sharing; all must be reading from the same playbook. This attention to more comprehensive outcomes would allow for the calculation of outcome to cost ratios that measure the change in risk to program expenditures to evaluate the cost effectiveness of interventions.

The impact of next generation interventions will rely, in part, on the identification of persons with SMI at early stages of involvement in the criminal justice system. However, with nearly 13 million admissions to local jails annually, current efforts to provide timely and efficient screening of SMI in the criminal justice system are not sufficient (Ogloff et al., 2007; Steadman et al., 2009). Brief, accurate, and cost-effective SMI screening instruments are needed that can be implemented along the criminal justice continuum in order to identify appropriate targets for next generation interventions.Lastly, we recommend a research agenda for next generation interventions that adheres to the highest levels of scientific inquiry, including randomized controlled trials, selection of alternative treatment models as comparison conditions (and not simply “treatment as usual”), and rigorous analyses of mediating and moderating effects.

5. Conclusions

The development of first generation interventions for justice-involved persons with SMI has spanned over two decades and resulted in the vast expenditure of resources. However, to advance the ultimate goal of these interventions, which is to alleviate the overrepresentation of people with SMI in the criminal justice system, significant changes are required that entail more than simple adjustments to existing interventions. In this paper, we offer a conceptual framework, key components of effective interventions, and recommendations for the content and study of these interventions. The comprehensive changes that we suggest will prefigure a “next generation” of behavioral health and criminal justice interventions that, we believe, will yield significantly improved outcomes at multiple levels. While some existing first generation interventions may be amenable to adaptation, the need for second-
generation philosophical and practical approaches will also likely require entirely new and innovative intervention models.

Building the next generation of interventions will not be an easy task. There are many individual, organizational, and structural factors that resist change. But just as we advocate for an orientation that views individual change as a continuum, so must we expect a similar process of change within systems, organizations, programs, and interventions. Change, at any level, is a process that moves in small, often non-linear increments, not in leaps, bounds, or straight lines. It is time, however, to actively engage in this process; there is simply too much at stake to continue to rely solely on first generation interventions. The framework presented herein is a step in that process and we hope that it will inspire additional steps to be taken toward better outcomes for individuals and the society of which they are a part.

Acknowledgments
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Figure 1. Person-place framework of factors contributing to criminal justice involvement
Neuroscience and adolescence.

- One of the most important developments in juvenile law has been the influence of advances in neuroscience.
How are adolescents different?

- Frequently mentioned issues:
  - Trouble with impulse control.
  - Poor emotional regulation.
  - Susceptibility to peer influence.

- Less mentioned:
  - Greater perceived social threat.
  - Evolving social identity.

Legal implications.

- Key takeaway: Adolescents lack the capacity to act as adults.
- Policy implications.
  - No adolescent death penalty.
  - No LWOP sentences for adolescents.
  - Raise the age laws.
  - Separate juvenile jails and prisons.
We want to speak to the broader implications.

- Steinberg. 2017. Neuroscientists are already beginning to recognize that there are broader issues.
  - Criminality and recidivism are not the only relevant metrics of concern.
  - Juveniles in CJS not the only issue.
  - We should also focus on how the juvenile justice system interferes with high school graduation and other outcomes of juveniles drawn in CJS.

Our suggestion.

- Neuroscience has broader implications for the way that the law interacts with all adolescents, not just those who are drawn into the criminal justice system.
Broader framework.

- Beyond just crime and punishment toward a broader set of outcomes: well-being; success in life; effective legal socialization.
- Beyond marginal adolescents to all adolescents (and therefore from formal to informal contact and climate created by law).
- Beyond the courtroom and into the school environment.

Adolescent features may be benefits, not limits.

- Features:
  - Malleable social identity.
  - Evolving attitudes and values.
  - Openness to peers.
- Under the right conditions these are desirable features. Not diminished adolescent; developing adolescent.
Schools as a focus.

- Schools are especially important now because schools have taken on law-like features.
- We suggest that this has influenced all adolescents irrespective of whether they become involved in criminal proceedings.

Goals for schools.

- General socialization of all adolescents into healthy and functioning adults who are productive and law-abiding.
  - This is impacted by school’s climate (Tyler & Trinkner, 2018) Why Children Follow Rules.
What shapes orientation?

- Key factor. How is authority exercised.
  - Autocratically (coercive).
  - Through fair procedures. Builds a consent based relationship with authority.

What is the situation now?

- Experiences lead to declines in legitimacy over adolescence.
Legitimacy by Age (Fagan, Tyler, 2005).

Procedural justice.

- This downward trend is not inevitable.
- It depends upon the nature of the experiences adolescents have.
  - Procedural justice matters to everyone. But we want to argue it is particularly important to adolescents.
- PJ impact enhanced by the less cited features of this developmental period, as revealed by neuroscience research.
Meaning of procedural justice.

- Make decisions fairly. Voice; neutrality; explanation; follow rules.
- Treat people justly. With respect; courtesy and politeness. Seen as benevolent; sincere; caring; concerned.

Our focus. School climate.

- School resource officers.
- Criminalize misconduct that used to be managed informally.
- Legalize the culture and climate of schools.
- In this talk we will be concerned with SROs.
School climate.

- How does the experience of the school influence adolescents?
  - What is the impact of law like systems (ex: SROs).

The adolescent experience.

- How does climate interact with the features of juveniles that lead them esp. open to positive impact.
  - Malleable identity/ developing attitudes and values. Open to change.
  - Peer influence. Open to school climate.
School Resource Officers (SROs)

- SRO program began in the mid-1950s
  - Grew exponentially in the 1990s
  - 2/3 of high schools have SRO (Cox et al., 2012)
- Duties
  - Visible and active patrolling
  - Educating students and staff about safety
- Unsystematically regulated. Few rules beyond general rules of legal system.

Impact of SROs on Behavior

- Reducing Criminal Behavior
  - Middle and high schools with SRO had fewer arrests for weapons and assaults (Theriot, 2009)

Vs.

- Criminalizing Behavior
  - 11% of juvenile arrests "avoidable", 23% questionably necessary (Connecticut Voices for Children, 2013)
  - Racial disparities in juvenile arrests
  - School arrests → lower graduation rates, unemployment, adult incarceration
Survey Study (Granot & Tyler, 2018)

- Participants: ~500 10-12th graders from a Northeastern high school.
- Metrics.
  - Procedural justice of SRO/local police.
  - Feel safe (low threat; low anxiety).
  - Academic and social outcomes.
  - Generalization to legitimacy of police in the community.

Concern.

- Influence of frequency and nature of experience with SRO.
  - In particular, how procedurally just was the SRO?
### SROs and Perceived Safety

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### SROs and Academic Success

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SROs and Belonging

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Learning about the police.

- Do adolescents generalize from their views about SROs to their views about the police in their community?
SROs and Perceptions of Local Non-school Police

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Summary: Impact of SRO.

- It is not the frequency of contact with SRO that matters.
  - What matters is whether the SRO is viewed as acting fairly with students.
What about marginal students?

- Although our focus is on the general student body; there are many reasons to be particularly concerned with poor or minority students.
  - More likely to be drawn into the CJS.
  - How are they impacted by SROs?
- Generally find similar impact. One exception: identification with school.
Implications.

- The features of the adolescent that we have discussed lead adolescents to be highly sensitive to how they are treated.
- You can see that in the metrics we have shown.

Policy implications.

- SROs exist. Our goal is to talk about how the legalization of schools by their presence can impact on all students.
- The climate created is key.
  - SROs are not intrinsically good or bad.
  - The question is how they interact with students.
Neuroscience.

- Tells us why adolescence is a period of special vulnerability.
- Also tells us that adolescence is a period of particular importance due to socialization that is going on.
  - How law is experienced is crucial to whether legitimacy is created, as well as to other desirable outcomes.

Thank you.
Adolescent Brain Science and Juvenile Justice Policymaking

Laurence Steinberg
Temple University

The American legal system’s thinking about the criminal culpability of juveniles has been radically transformed over the past 12 years, largely as a result of the introduction of developmental science into the United States Supreme Court’s deliberations about the appropriate sentencing of adolescents who have been convicted of the most serious crimes. The author examines the role that developmental science, and, especially, developmental neuroscience, has played in this policy transformation. After a brief overview of the Court’s rulings in 4 landmark cases decided between 2005 and 2016, he summarizes the relevant psychological and neurobiological evidence that likely guided the Court’s rulings. The author concludes with suggestions for future research and policy analysis, including (a) the study of developmental differences between adolescents and adults that have implications for their differential treatment under criminal law, with a particular focus on the neural underpinnings of these differences; (b) the study of the impact of variations in juvenile justice policy and practice on outcomes other than recidivism; and (c) the study of the financial costs and benefits of juvenile justice policy alternatives.

Keywords: juvenile justice, adolescent brain development, Supreme Court

This article describes what I believe has been a genuine success story, one of those rare cases in which scientific research has been used to create a foundation on which a radical transformation in social policies affecting children and youth has been set in motion. When this work began, in the late 1990s, juvenile offenders were being demonized as “super-predators,” and our nation’s response to juvenile crime was growing increasingly harsh. That trend has clearly reversed, however, and several landmark cases decided by the United States Supreme Court in the past 12 years have ensured that numerous aspects of this shift will be more than fleeting changes of opinion. The transformation is ongoing, to be sure, and much work remains to be done, but remarkable progress has been made in reforming juvenile justice policy and practice over the past two decades.

Historical Background

Few issues challenge a society’s ideas about both the nature of human development and the nature of justice as much as serious juvenile crime. Because we neither expect children to be criminals nor expect crimes to be committed by children, the unexpected intersection between childhood and criminality creates a dilemma that most people find difficult to resolve. Indeed, the only ways out of this problem are either to redefine the offense as something less serious than a crime or to redefine the offender as someone who is not really a child (Steinberg, 2009).

For most of the 20th century, American society has most often chosen the first approach—redefining the offense—treating most juvenile infractions as matters to be adjudicated as delinquent acts within a separate juvenile justice system designed to recognize the special needs and immature status of young people and to therefore emphasize rehabilitation over punishment. States believed that the juvenile justice system was a vehicle to protect the public by providing a system that responds to children who are maturing into adulthood. They recognized that conduct alone—that is, the alleged criminal act—should not be dispositive in deciding when to invoke the heavy hand of the adult criminal justice system. By providing for accountability, treatment, and supervision in the juvenile justice system—and in the community whenever possible—the juvenile justice system promoted short-term and long-term public safety.

In the latter decades of the 20th century, as violent youth crime rates rose, attacks on the juvenile court intensified (Scott & Steinberg, 2008). Critics railed at the depiction of young criminals as children, a characterization that was discordant with media images of teenage street gangs spreading fear in urban neighborhoods. By the 1990s young offenders became “super-predators” in the popular imagination, teenage criminals without moral inhibitions who were eager to kill and maim those who came in their paths. Under the mantra of “adult time for adult crime,” young offenders became subject to increasingly harsh punishments, many of them administered by adult criminal courts and sometimes carried out within correctional facilities that had been previously reserved for individuals 18 and older.
Although the United States today continues to punish juveniles who commit serious crimes more harshly than does the rest of the industrialized world, research has played a role in pushing the pendulum back toward a more progressive position, in which legislators, practitioners, and judges have become more likely to acknowledge that juveniles differ from adults in important ways that warrant their differential treatment under criminal law (Steinberg, 2012). This trend has been manifested in numerous ways, including increased awareness that normally developing adolescents may lack the competence necessary to be tried in criminal court (and that some minimal level of competence is also necessary for a fair hearing in juvenile court), that minors need special protections during police interrogations, and that the transfer of juvenile offenders into the adult system is harmful both to the juveniles and their communities.

The American legal system’s thinking about the criminal culpability of juveniles has been radically transformed over the past 12 years, largely as a result of the introduction of developmental science into the United States Supreme Court’s deliberations about the appropriate sentencing of adolescents who have been convicted of the most serious crimes. Although this transformation is best seen in the Court’s decisions about the constitutionality of capital punishment and life without the possibility of parole as sentences for individuals under the age of 18, the Court’s logic in these cases reaffirmed the idea that adolescents are fundamentally different from adults in ways that warrant their differential treatment under the law. This “revelation” may strike some readers who are unfamiliar with the topic of this article as little more than common sense, but during the second half of the 20th century, courts across the country had lost sight of this and had increasingly come to treat juveniles convicted of serious crimes in harsh and punitive ways, departing from the principles that had guided the development of a separate juvenile justice system at the turn of the 20th century. That system was founded on the premise that juveniles are different from adults, and that these differences have important implications for the way in which we view and respond to juvenile crime. Although the American justice system has not fully returned to the rehabilitative ideal that was widely accepted when the juvenile justice system was founded, there is no question that the last 12 years has been a period of progressive reform.

My purpose in this article is to examine the role that developmental science, and, especially, developmental neuroscience, has played in this policy transformation. The logical starting point for such a discussion is the landmark U.S. Supreme Court case that abolished the juvenile death penalty, Roper v. Simmons (2005; from here on referred to as Roper), which was decided in 2005, because the logic that shaped the Court’s decision in this case has had a far-reaching effect on juvenile justice policy and practice, extending well beyond death penalty jurisprudence. Indeed, many experts consider Roper to be the single most important case in the history of the American legal system’s treatment of juveniles. Given the fact that the decision in Roper affected only a handful of individuals—in the modern history of the United States, very few people have been sentenced to death for crimes committed before the age of 18—the significance of Roper inheres not in what the Court’s opinion says about the juvenile death penalty, but in what it says about adolescence.

Prior to 2005, in the United States, 16- and 17-year-olds who were convicted of homicide could receive the death penalty, and until 2010, individuals under the age of 18 could be sentenced to life without the possibility of parole for homicide and other crimes. Although, as I noted above, few Americans under the age of 18 have been sentenced to death in recent history, several thousand have nevertheless received life sentences, and as of 2012, there were about 2,500 individuals serving sentences of life without parole for crimes they committed when they were teenagers (Elias, 2012).

In a series of cases decided during the past dozen years (see Table 1), the Supreme Court issued rulings that have banned the use of capital punishment and limited the use of life without the possibility of parole in cases involving juveniles who have been convicted of serious crimes and, more recently, opened the possibility for reconsidering the sentences of adults who are presently serving life sentences for crimes they committed as juveniles. The Court’s decisions were increasingly influenced by findings from studies of brain development to support the position that adolescents are less mature than adults in ways that mitigate their criminal culpability, and that adolescents’ diminished blameworthiness makes it inappropriate to sentence them in ways that are reserved for individuals who are deemed fully responsible for their criminal acts. These cases were not the first ones in which the Court acknowledged that adolescents and adults are different in legally relevant ways, but they were the first to look to developmental science for confirmation of what “any parent knows,” as Justice Kennedy put it in his majority opinion in Roper. We tend to think of Roper as the case in which adolescent brain science was first referenced by the Supreme Court, but in actuality, no mention of the brain appears in Justice Kennedy’s majority opinion. Brain science did make an appearance in the case’s oral arguments, however, in a way that foreshadowed the increasingly influential role it would come to play.

Direct references to neuroscience in the Supreme Court’s opinions about adolescent culpability became increasingly more frequent after the Roper decision, just as neuroscience became more influential in legal policy and practice more generally, referenced in legal opinions about such varied topics as lie detection, malingering, the accuracy of eyewitness testimony, the criminal culpability of addicts, and the reliability of memory (Jones, Schall, & Shen, 2015). Before Roper, neuroscience had not played a role in decisions about developmental differences between adolescents and adults—understandably, given how little published research there was on adolescent brain development prior to 2000. In Roper, the Court’s opinions emphasized behavioral differences between adolescents and adults. In the 2010 case Graham v. Florida (2010; from here on referred to as Graham), which banned the use of life without parole for juveniles convicted of crimes other than homicide, adolescent brain development was mentioned in the opinion, but mainly in passing, in a remark about the maturation in late adolescence of brain regions important for “behavior control.”

By the time the Court decided Miller v. Alabama (2012) and Jackson v. Hobbs (2012), the 2012 cases in which the Court found it unconstitutional for states to mandate life without parole for juveniles (these two cases were joined, and the ruling, which concerned both of them, is henceforth referred to as Miller), neuroscience warranted an entire paragraph in the majority opinion. (This may not sound like much, but most Supreme Court opinions are devoted to matters of law, not science.) The justices...
The Supreme Court’s Rationale in Several Cases Concerning Adolescents

<table>
<thead>
<tr>
<th>Case</th>
<th>Year decided</th>
<th>Ruling</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thompson v. Oklahoma</td>
<td>1988</td>
<td>Capital punishment is found unconstitutional for individuals under the age of 16</td>
<td>“Contemporary standards of decency confirm our judgment that such a young person is not capable of acting with the degree of culpability that can justify the ultimate penalty.”</td>
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<td>Roper v. Simmons</td>
<td>2005</td>
<td>Capital punishment is found unconstitutional for individuals under the age of 18</td>
<td>“As any parent knows and as the scientific and sociological studies . . . tend to confirm, [a] lack of maturity and an underdeveloped sense of responsibility are found in youth more often than in adults and are more understandable among the young.”</td>
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<tr>
<td>Graham v. Florida</td>
<td>2010</td>
<td>Life without parole is found unconstitutional for individuals under the age of 18 convicted of crimes other than homicide</td>
<td>“No recent data provide reason to reconsider the Court’s observations in Roper about the nature of juveniles. . . . Developments in psychology and brain science continue to show fundamental differences between juvenile and adult minds. For example, parts of the brain involved in behaviour control continue to mature through late adolescence.”</td>
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<td>Miller v. Alabama</td>
<td>2012</td>
<td>States may not mandate life without parole for individuals under the age of 18, even in cases of homicide</td>
<td>“The evidence presented to us . . . indicates that the science and social science supporting Roper’s and Graham’s conclusions have become even stronger . . . It is increasingly clear that adolescent brains are not yet fully mature in regions and systems related to higher-order executive functions such as impulse control, planning ahead, and risk avoidance.”</td>
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<tr>
<td>Montgomery v. Louisiana</td>
<td>2016</td>
<td>Individuals sentenced to life without parole as juveniles prior to Miller are entitled to resentencing or a parole hearing</td>
<td>“In light of what this Court has said in Roper, Graham, and Miller about how children are constitutionally different from adults in their level of culpability, however, prisoners like Montgomery must be given the opportunity to show their crime did not reflect irrevocable corruption; and, if it did not, their hope for some years of life outside prison walls must be restored.”</td>
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noted that the behavioral science had become even stronger since Roper and Graham, pointed out that the Court’s conclusions in those earlier cases continued to be strengthened by neuroscience, and went into greater detail about the findings from neuroscience, specifically mentioning adolescent immaturity in higher-order executive functions such as impulse control, planning ahead, and risk avoidance. In all three cases—Roper, Graham, and Miller—the justices cited amicus curiae briefs filed by scientific organizations, including the American Psychological Association, which summarized the literature on adolescent brain development and connected it to the legal issues facing the Court (e.g., American Psychological Association, 2004). In 2016, in Montgomery v. Louisiana (referred to hereafter as Montgomery), the Supreme Court once again affirmed the importance of developmental differences between juveniles and adults and ruled that the Miller decision applied retroactively, thereby allowing individuals who are now serving life sentences for crimes they committed as juveniles to request that their sentences be reconsidered or that they be evaluated for parole.

The Legal Issue

The central legal issue in Roper, Graham, Miller, and Montgomery was whether the application of a particularly harsh sentence to a juvenile—such as the death penalty or life without the possibility of parole—violates the Eighth Amendment of the U.S. Constitution, which prohibits “cruel and unusual” punishment, even if the same sentence is not a constitutional violation when applied to an adult.

How can it be that a punishment is cruel when applied to a juvenile but not when applied to an adult? The answer is found in what is referred to as a “proportionality analysis,” in which a punishment is considered cruel if it is judged to be excessive given the nature and circumstances of the crime. According to a core principle of the American justice system known as “penal proportionality,” fair criminal punishment is based not only on the harm caused by the crime, but also on the blameworthiness of the perpetrator (Stinnesford, 2011). To take an extreme example, imagine that an individual drops a stone from an overpass, and that the stone shatters the windshield of a car, causing the driver to lose control, crash, and suffer a severe injury. Now consider the individual’s age in deciding how he or she ought to be punished. Few of us would conclude that an 8-year-old and a 28-year-old should be held equally responsible for this act, and few would think it fair to punish an 8-year-old to the same degree that we might punish a young adult, despite the fact that the crime and the resultant harm are the same in each case. A proportionality analysis would likely
conclude that a severe punishment for a young adult who committed such an act of reckless endangerment might be entirely appropriate, but that the same sanction would be disproportionate and excessive—in the language of the Eighth Amendment, “cruel”—when applied to a young child.

That there are important differences in psychological functioning between elementary school-age children and fully grown adults is uncontroversial, but whether such differences are also apparent between older teenagers and adults is not. The four Supreme Court cases (Roper, Graham, Miller, and Montgomery) all involved juveniles who ranged in age from 14 to 17. At issue in each of them was whether the developmental immaturity of someone this age mitigates his blameworthiness to the extent that the punishment under consideration is disproportionate and, as such, a violation of the Eighth Amendment. Importantly, the question in these cases was not whether a juvenile’s criminal act should be completely excused because of immaturity—nor could it be, because under common law, normally developing individuals are assumed to be capable of forming criminal intent by age 7 (Kaban & Orlando, 2007). Rather, the issue before the Court was whether the sentence the juvenile received was excessive relative to the degree of responsibility he had for his behavior (Steinberg & Scott, 2003).

Two rulings laid much of the legal groundwork for Roper and the cases that followed. The first was Thompson v. Oklahoma, a 1988 case that prohibited capital punishment in cases involving individuals younger than 16; the second was Atkins v. Virginia, a 2002 case in which the Court found the imposition of capital punishment on individuals with mental retardation to be unconstitutional, on the grounds that even if a person knows the difference between right and wrong, mental retardation compromises his decision-making in ways that make him less than fully responsible for his conduct.

Although the ultimate conclusion that was reached in Roper was not logically different from the conclusions reached in Thompson or Atkins, Roper was important because here, unlike in the prior cases, the Court grounded its reasoning in developmental science and not just in common sense. In Graham, Miller, and Montgomery, which built on Roper, the Court similarly looked to science for guidance. This was partly because much more relevant science was available by then than had been available in 1989 (the last time the Court similarly looked to science for guidance). This was partly because much more relevant science was available by then than had been available in 1989, and partly because advocates for the abolition of the juvenile death penalty made a concerted effort to bring the relevant research to the Court’s attention through the numerous amicus briefs that were filed.

How did behavioral and brain science figure into the Court’s initial analysis, in Roper, of whether the developmental immaturity of adolescents is sufficient to diminish their criminal responsibility? Writing for the Court’s majority, Justice Kennedy explicated three characteristics of adolescents that distinguish them from adults in ways that mitigate their culpability (Roper v. Simmons, 2005). First, citing evidence of adolescents’ overinvolvement in reckless behavior, Kennedy concluded that adolescents are characterized by immaturity and an underdeveloped sense of responsibility, which leads them to make impetuous and ill-considered decisions. Second, he noted that adolescents are more susceptible than adults to external influences, especially peer pressure, which makes it difficult for them to extricate themselves from “crimino-genic” situations. Finally, referencing theories of identity development, Kennedy wrote that the personality traits of adolescents are less fixed than they are in adults, and that this makes it difficult to infer that even heinous criminal behavior during adolescence is evidence of an “irretrievably depraved” character, and he stressed the fact that adolescents are better candidates for rehabilitation. In response to arguments that the death penalty serves a deterrent function, Kennedy reasoned that the same characteristics that diminish adolescents’ blameworthiness make it less likely that people this age will be deterred by the possibility of capital punishment: individuals who commit crimes impulsively do not pause to consider the consequences they might face if they were to be arrested and convicted.

Graham, Miller, and Montgomery extended the logic of Roper to noncapital cases. In all three cases, the Court’s majority opinion explicitly referenced the arguments made in Roper and the three defining features of adolescence that formed the basis for Kennedy’s opinion. The Court’s majority argued that the scientific evidence in support of Justice Kennedy’s characterization of adolescents had become stronger over the ensuing years and, importantly, that there was growing neuroscientific evidence that patterns of brain development supported the conclusions drawn from psychological studies.

The Relevant Developmental Science

There is strong scientific support for Kennedy’s characterization of juveniles. In general, adolescents and individuals in their early 20s are more likely than either children or somewhat older adults to engage in risky behavior; most forms of risk-taking follow an inverted U-shaped curve with age, increasing between childhood and adolescence, peaking in either mid- or late adolescence (the peak age varies depending on the specific type of risky activity), and declining thereafter (Defoe, Dubas, Figner, & van Aken, 2015; Shulman et al., 2016; Willoughby, Good, Adachi, Hamza, & Tavernier, 2013). Involvement in violent and nonviolent crime also follows this pattern, referred to as the age-crime curve (Sweeten, Piquero, & Steinberg, 2013). Even though crime rates fluctuate from one historical era to another and differ between countries, the relationship between age and crime has remained the same over time is virtually identical across both violent and nonviolent crimes, and is seen around the world (Piquero, Farrington, & Blumstein, 2007; Snyder, 2012).

I have argued that, from a psychological perspective, it is useful to view adolescents’ involvement in criminal activity as a specific instance of risk-taking more generally (Steinberg, 2008), both because patterns of age differences in criminal activity are similar to those of many other types of risky behavior (Centers for Disease Control & Prevention, 2016)—including those that have nothing to do with crime, such as self-inflicted injury or accidental drowning—and because many of the hallmarks of juvenile offending are similar to those that characterize adolescent recklessness more generally. Most juvenile crimes, like most forms of adolescent risk taking, are impulsive acts that are committed without full consideration of their likely long-term consequences (Scott & Steinberg, 2008).

In recent years, several psychologists have theorized that the relationship between age and risk-taking, including criminal activity, is best understood by considering the developmental trajectories of sensation-seeking and self-regulation (Harden & Tucker-Drob, 2011).
Sensation-seeking—the tendency to pursue novel, exciting, and rewarding experiences—increases substantially around the time of puberty and remains high well into the early 20s, when it begins to decline. Self-regulation—the capacity to deliberately modulate one’s thoughts, feelings, and actions in the pursuit of a planned goal—is low during childhood and improves gradually overall the course of adolescence and early adulthood. Mid-adolescence, therefore, is a time of high sensation-seeking but still developing self-regulation—a combination that inclines individuals toward risky behavior. Before adolescence, individuals are typically impulsive, but they are not especially prone toward sensation-seeking. In young adulthood, sensation-seeking is still relatively high, but by then individuals have developed a more mature level of impulse control (Chase-Lansdale, Mott, Brooks-Gunn, & Phillips, 1991). In a recently completed study, my colleagues and I have demonstrated that this combination of heightened sensation seeking and immature self-regulation is not limited to adolescents in the United States and Western Europe, where the bulk of relevant research has been conducted but is seen across countries that vary considerably in their economic circumstances and cultural heritage (Steinberg et al., 2017).

Scientific data in support of this account formed part of the basis for Justice Kennedy’s characterization of adolescents in the Roper decision, and research findings that were consistent with this perspective have become even more extensive over the past decade. Numerous self-report and behavioral studies from our lab, as well as others, have showed that, compared to adults, adolescents are more impulsive (Steinberg et al., 2008), less likely to consider the future consequences of their actions (Steinberg, Graham, O’Brien, Woolard, Cauffman, & Banich, 2009), more likely to engage in sensation-seeking (Steinberg et al., 2008), and more likely to attend to the potential rewards of a risky decision than to the potential costs (Cauffman et al., 2010). Other studies have provided support for the contention that adolescents are indeed more vulnerable to coercive pressure than adults (Steinberg & Monahan, 2007); that the presence of peers makes adolescents more sensitive to rewards (Chein, Albert, O’Brien, Uckert, & Steinberg, 2011; Silva, Chein, & Steinberg, 2016) and especially attentive to immediate rewards (O’Brien, Albert, Chein, & Steinberg, 2011; Silva, Shulman, Chein, & Steinberg, 2016; Weigard, Chein, Albert, Smith, & Steinberg, 2014); and that the presence of peers increases risky decision-making among adolescents but not older individuals (Chein et al., 2011; Gardner & Steinberg, 2005; Smith, Chein, & Steinberg, 2014). The evidence with respect to the relatively uniformed character of adolescents is more limited, although numerous reviews had been published showing that more than 90% of all juvenile offenders desist from crime by their mid-20s (Farrington, 1986), and that the prediction of future violence from adolescent criminal behavior, even serious criminal behavior, is unreliable and prone to error (Moffitt, 1993). There is a good deal of evidence, moreover, of considerable stability in personality traits like self-control and conscientiousness after late adolescence (for a discussion, see Scott, Bonnie, & Steinberg, 2016).

Adding Neuroscience to the Mix

Over the period that spans Roper, Graham, Miller, and Montgomery, several amici assembled and summarized the scientific evidence showing differences between adolescents and adults in psychological capabilities and capacities that are relevant to judgments of blameworthiness (Scott & Steinberg, 2008; Steinberg, 2009). Importantly, they incorporated more and more neuroscience into their briefs, as evidence of significant structural and functional brain maturation during adolescence began to accumulate (Engle, 2013; Luciana, 2010). Scientific organizations have differed somewhat in the extent to which they have made neuroscience a central part of their briefs, with some organizations, such as the American Medical Association (2005), putting neuroscience at the forefront, whereas others, such as the American Psychological Association (2004), using neuroscience mainly to supplement an argument that was primarily grounded in behavioral evidence.

Regardless of whether the neuroscience played a leading or supporting role, the relevant evidence that was brought to the Court’s attention in the amicus briefs described a maturational imbalance during adolescence that is characterized by relative immaturity in brain systems involving self-regulation during a time of relatively heightened neural responsiveness to appetitive, emotional, and social stimuli (Casey, Getz, & Galvan, 2008). With respect to self-regulation, structural imaging studies using diffusion tensor imaging indicate immaturity in connections within a fronto-parietal-striatal brain system (localized primarily in the lateral prefrontal cortex, inferior parietal lobe, and anterior cingulate cortex) that supports various aspects of executive function (Olesen, Nagy, Westerberg, & Klingberg, 2003; Schnithorst & Yuan, 2010; Vincent, Kahn, Snyder, Raichle, & Buckner, 2008). These connections become stronger over the course of adolescence as a result of both maturation and experience, and the strength of these connections is positively correlated with impulse control (Liston et al., 2006). Maturation of structural connectivity (the extent to which different brain regions are interconnected) in this brain system is paralleled by increases in functional connectivity (the extent to which different regions coactivate during particular tasks; Dosenbach et al., 2010; Ernst, Torrisi, Balderston, Grillon, & Hale, 2015; Sherman et al., 2014) and by changes in patterns of activation during tasks that measure working memory, planning, and response inhibition (all of which are important for impulse control and thinking ahead), as revealed by functional MRI (fMRI; Casey, 2015; Luna, Padmanabhan, & ‘O’Hearn, 2010; Stevens, Kiehl, Pearlson, & Calhoun, 2007).

By contrast, numerous fMRI studies show relatively greater neural activity during adolescence than in childhood or adulthood in a brain system, located mainly in the ventral striatum and ventromedial prefrontal cortex, that is known to play an important role in the processing of emotional and social information and in the valuation and prediction of reward and punishment (Galván et al., 2006; Hare et al., 2008; Luciana & Collins, 2012). According to what has been referred to as a “dual systems model” (Steinberg, 2010), the heightened responsiveness of this socioemotional incentive-processing system is thought to overwhelm, or at the very least, tax, the capacities of the self-regulatory system, compromising adolescents’ abilities to temper strong positive and negative emotions and inclining them toward sensation-seeking, risk-taking, and impulsive antisocial acts (Casey et al., 2010; Shulman et al., 2016). A smaller, but growing, literature on the development of the “social brain” (Burnett, Sebastian, Cohen Kadosh, & Blakemore, 2011), which was presented to the Court in Miller, provides evidence of functional changes that are consistent with heightened attention to the thoughts of others, which may be linked to adolescents’ greater susceptibility to peer influence. Although the dual systems model has been criticized as an over-
simplification that ignores occasional inconsistencies in the literature (e.g., Pfeifer & Allen, 2012) it was, and continues to be, a useful heuristic that conveys to nonscientists the basic story of adolescent brain development in a fashion that helps to explain many important differences between juveniles and adults that are relevant to our treatment of young people under the law. Indeed, one recent review of evidence on the dual systems model has reaffirmed its utility (Shulman et al., 2016).

How Important Was Neuroscience to the Supreme Court Decisions?

Because the Supreme Court justices’ deliberations are never made public, it is impossible to know just how much neuroscience findings influenced the Court’s decision-making above and beyond the impact of the behavioral evidence. But a close reading of the transcripts of the oral arguments and opinions makes it clear that the attorneys and justices involved in these cases certainly paid attention to the neuroscience. At times they even insinuated that it was somehow more compelling than the behavioral evidence (as one attorney stated during oral arguments in Roper, “I’m not just talking about social science here, but the important neuropsychological science”; U.S. Supreme Court, 2004, p. 40), that it was the fundamental driver of the development of maturity (“as the years go by and neurological development occurs, [adolescents’] ‘deficiencies will be reformed’”; Miller v. Alabama, 2012, p. 22) or at the very least, that neuroscience added validity to an argument based solely on common sense and developmental psychology.

For better or worse, neuroscience may have played a role in persuading the justices that the psychological differences between adolescents and adults as described in Roper were genuine and indisputable. There was a decrease, over the course of the series of cases, in the amount of time during oral arguments that was devoted to discussions of where to draw the legal line between adolescents and adults. Indeed, this issue occupied a fair amount of time during oral arguments that was characterized as too immature to be exposed to capital punishment, had taken the stance some 15 years earlier, in Hodgson v. Minnesota (1990), that adolescents should be able obtain abortions without parental involvement on the grounds that psychological research showed that adolescents were just as mature as adults—the implication being that the developmental immaturity argument advanced by social scientists in Roper was just a convenient fabrication concocted by soft-hearted child psychologists to suit their political aims.

By the time Miller was decided, things had clearly changed. In his dissenting opinion, Chief Justice John Roberts noted that “[Roper and Graham] undoubtedly stand for the proposition that teenagers are less mature, less responsible, and less fixed in their ways than adults—not that a Supreme Court case was needed to establish that” (Miller v. Alabama, 2012, J. Roberts, dissenting, p. 7, italics added for emphasis). We do not know whether the Court’s ultimate acceptance of this characterization of adolescents was influenced by neuroscience. Nevertheless, there is a good chance that it was, as the only substantive change in the argument that adolescents are less mature than adults that had taken place between Roper and Miller involved an increased reliance on neuroscience. The period between these two cases also was characterized by growing coverage of research on adolescent brain development in popular media.

Whether neuroscience should have influenced the justices’ reasoning is a different question. In some regards, neuroscience was used as a blunt instrument. As most scientists know, neuroscientific evidence doesn’t make the behavioral differences between adolescents and adults any more real. It only makes them seem more real to nonscientists who view psychological research on children as little more than the confirmation of “what every parent knows,” and who, like most of us, are more easily impressed by science we do not understand well enough to critique than by science whose methods are more familiar. Several studies (e.g., Weisberg, Keil, Goodstein, Rawson, & Gray, 2008), including a recent one in which judges were the subjects (Aspinwall, Brown, & Tabery, 2012), showed that adding just one or two sentences referring to the brain to a description of behavioral findings makes the behavioral findings that much more compelling. A cynical reader may conclude that the introduction of the neuroscience of adolescence into the Supreme Court’s deliberations about the juvenile death penalty or juvenile life without parole did little more than exploit the scientific ignorance of laypersons. I think it did more than this, however.

The contribution of neuroscience to discussions of adolescent blameworthiness lies not in what neuroscience tells us about differences in the ways in which adolescents and adults act, but in what it implies about the source of these differences (Steinberg, 2012). For example, findings of structural and functional differences between adolescent and adult brains that are plausibly linked to differences in individuals’ ability to control their impulses and to stand up to peer pressure suggest that these aspects of adolescent immaturity are not merely reflective of juveniles’ poor choices or different values, but that they are at least partly due to factors that are not entirely under an individual’s control, which makes immaturity a more convincing mitigator. Identifying the neural underpinnings of age differences in legally relevant capabilities and capacities does not indicate that these differences are immutable (indeed, adolescence is thought to be a time of heightened neuroplasticity, a period during which the brain is especially malleable in response to experience). However, to the extent that brain maturation during adolescence follows a specific and predictable pattern that is consistent with predictable patterns of behavioral changes, the neuroscientific evidence bolsters the basic argument that adolescents are inherently less mature than adults.

The knowledge that individuals will almost always become more deliberate and self-possessed as they gain experience and as their brains mature, without any special interventions designed to facilitate this process, adds strength to the argument that adolescent offending is unlikely to reflect irreparable depravity. This last point is important, because it provides justification for distinguishing between adolescents, whose immaturity is by definition transient, and fully developed but callow adults, whose immaturity undoubtedly also has neural correlates but is more likely to be an
enduring part of their character. This logic helps counter arguments that, if immaturity ought to be viewed as a mitigating factor when sentencing juveniles, it therefore should be used in similar fashion when sentencing immature adults, many of whom, especially those who are genetically inclined toward sensation seeking or impulsivity—both of which have strong genetic components (Mann et al., 2017)—are no more responsible for their immaturity than are teenagers. Ironically, the reason adolescents’ immaturity ought to mitigate their culpability is that we can confidently depend on the fact that the vast majority of them will grow out of it. Thus, it is the transient nature of adolescents’ immaturity, rather than its neurobiological basis, that warrants their more lenient treatment under the law.

Looking Forward

As I noted earlier, we have made great strides over the last two decades toward the ultimate goal of aligning our juvenile justice policies and practices with a scientifically based understanding of adolescent development. Over the coming decades, we can continue to make progress toward this aim by pursuing three specific research foci, all of which have the potential to generate new knowledge that will resonate with policymakers and opinion leaders: (a) the study of developmental differences between adolescents and adults that have implications for their differential treatment under criminal law, with a particular focus on the neural underpinnings of these differences; (b) the study of the impact of variations in juvenile justice policy and practice on outcomes other than recidivism; and (c) the study of the financial costs and benefits of juvenile justice policy alternatives.

Research on Brain Development and Adolescents’ Criminal Responsibility

By all indications, the influence of neuroscience on legal decision-making is growing rapidly, and references to adolescent brain development are appearing regularly in lower court decisions. As psychologists, we should welcome the use of scientific evidence in important legal deliberations. But in discussions of where we should draw legal boundaries between adolescents and adults, neuroscience should continue to play a supporting role, and behavioral science should continue to carry the weight of the argument. Ultimately, the law is concerned with how we behave and not with how our brains function. As a concrete example, it makes far more sense to rely on a driving test than on a brain scan to decide whether someone should be issued a driver’s license.

Further neuroscience research on three specific issues would be especially helpful to future discussions of adolescents’ criminal responsibility. First, as critics of the use of neuroscience in recent court cases have pointed out, few studies have linked changes in brain structure or function between adolescence and adulthood to changes in the legally relevant behaviors, especially as they play out in the real world. Just because adolescents’ and adults’ brains differ doesn’t necessarily mean that they differ in ways that have legal relevance. It is certainly reasonable to speculate that adolescents who commit crimes make more impulsive decisions than their adult counterparts because their prefrontal lobes are less fully developed, or because their ventral striatum is more responsive to rewards or emotional stimuli. However, this remains largely a matter of what I would characterize as sensible conjecture. More research that directly links age differences in brain structure and function to age differences in legally relevant capacities and capabilities is needed. In light of recent developments in neuroscience, researchers will need to focus on age differences in brain systems (e.g., structural and functional connectivity) rather than differences in brain regions or structures considered independently (for a good example of this sort of approach, see Rudolph et al., 2017). Moreover, although it is often assumed that adolescents are more amenable to rehabilitation than are adults (in part because adolescence is thought to be a time of heightened neuroplasticity; Galván, 2014; Kays, Hurley, & Taber, 2012; Selemon, 2013; Steinberg, 2014), there is very little neurobiological research that has examined this proposition directly (cf. Fuhrmann, Knoll, & Blakemore, 2015).

Second, there is growing interest in whether neurobiological data, either alone or in combination with other types of data, can improve the prediction of future behavior at the individual level, either with respect to recidivism or responses to intervention. Although there are studies that have compared juvenile offenders’ brain structure or function with that of nonoffenders (e.g., Shannon et al., 2011), using neuroscience to predict individuals’ future behavior is a different (and more difficult) matter. And, of course, the key question is not what the individual’s brain is like at the time of a trial (although perhaps this may be relevant in the identification of individuals with callous-unemotional traits, presuming that we will be able to reliably identify patterns of brain structure or function that reflect this), but what we expect it to be like at some later point. Furthermore, it is not clear whether using neuroscientific data to foretell individuals’ future offending improves our prediction models by a significant enough degree over standard psychological assessments to warrant the added time and expense. A reliable risk assessment questionnaire can be administered and interpreted quickly and at little cost. This cannot be said, at least at present, with respect to a structural, much less, functional, brain scan.

Finally, it is not yet clear whether or how recent discoveries about continued brain maturation during the early 20s should lead us to rethink how we treat young adults who come into contact with the justice system (Scott et al., 2016). Some writers (generally, nonscientists) have pointed to this research as grounds for raising the age of legal adulthood, at least under criminal law, to age 21 or even 25 (e.g., Schiraldi, Western, & Bradner, 2015). This proposition, although intuitively appealing, is potentially problematic for several reasons. First, it is not clear how rethinking the upper boundary of adolescence to 21, much less 25, on the basis of brain science can be easily reconciled with existing laws that draw the boundary between adolescence and adulthood at 18. Criminal law is not the only legal realm for which 18 is used as a chronological dividing line. If the age of legal adulthood is raised for purposes of criminal adjudication, does it necessarily follow that a similar change is in order with respect to other legal boundaries, such as those concerning contracts, medical decision-making, voting, and so forth? If people in their early 20s are to be viewed as too immature to be held to adult standards of criminal responsibility, might they not also be portrayed as too immature to have the right to vote? I have argued elsewhere that there is no inherent reason that the same chronological age boundary must be used for all legal purposes.
(Steinberg, 2012), but not all policymakers agree. For example, soon after the Supreme Court abolished the juvenile death penalty, on the grounds that adolescents are less mature than adults, some policymakers argued that the same science supported their position in favor of reinstating requirements that parents be notified when their daughters seek abortions.

Second, discussions of brain development that do not distinguish among the developmental timetables of different brain regions and systems are insufficiently nuanced. It is true that some aspects of neurobiological immaturity that have been cited as grounds for the more lenient treatment of teenagers—mainly, the incomplete development of brain systems that govern self-regulation—also are characteristic of people in their early 20s (Cohen et al., 2016). But other aspects of immaturity that are also commonly invoked in defense of adolescents’ diminished culpability, such as their heightened sensitivity to appetitive and emotional stimuli, do not apply to young adults. Research on brain maturation in young adulthood is not yet extensive enough to warrant raising the age of majority.

Finally, as my colleagues and I have pointed out, processing and sanctioning young adults in the juvenile justice system may threaten the viability of an institution designed to meet the needs of teenagers (Steinberg, Grasso, Scott, & Bonnie, 2016). Because people between 18 and 21 commit a disproportionate number of serious crimes, transferring young adults to the juvenile justice system could easily overwhelm it. One alternative that we have proposed is a shift from the binary classification system now used, which distinguishes between minors and adults, to a tripartite model with an intermediate category designated for late adolescents and/or young adults (Scott et al., 2016).

**Research on Juvenile Justice Policy Outcomes Other Than Recidivism**

Studies of various justice system interventions find surprisingly few effects on rates of reoffending. The vast majority of juvenile offenders reoffend within a few years of their first offense (Snyder & Sickmund, 2006), regardless of whether they have been treated in the community or in an institutional setting, and regardless of the specific intervention to which they have been exposed. This absence of effects can be looked at through very different lenses. A pessimistic interpretation is that very little works. A somewhat more positive view is that if less expensive interventions are just as effective (or as ineffective) as more costly ones, resources can be saved by opting for the less expensive ones and reallocating the savings elsewhere, perhaps to prevention efforts. A third perspective, and one to which I subscribe, is that perhaps recidivism is not the only metric along which we should evaluate juvenile justice policies.

A major limitation of research on the consequences of juvenile system involvement is that it has focused almost exclusively on a single outcome—recidivism (e.g., Cuellar, McReynolds, & Wasserman, 2006; Patrick & Marsh, 2005), ignoring other important developmental and behavioral outcomes. Yet, adolescents’ experiences with the justice system have the potential to substantially influence their life courses in both direct and indirect ways. For example, the few studies that have examined consequences of juvenile justice experiences other than recidivism has found that juvenile court involvement has a negative impact on educational outcomes, such as high school completion (Bernburg & Krohn, 2003; Hjalmarsson, 2008; Sweeten, 2006). However, it stands to reason that involvement with the juvenile justice system could affect adolescents’ lives in a range of domains. Adolescence is a critical period with regard to many aspects of development, not only academic achievement, such as social relationships, mental health, vocational preparation, and psychosocial maturity. Life events (such as incarceration) that disrupt functioning in one or more of these areas may have greater long-term consequences for adolescents than they do for adults. Apart from its impact on subsequent offending (whether positive or negative), justice system involvement may engender considerable human costs and/or benefits that have gone unrecognized and unaccounted for due to an exclusive focus on recidivism as the outcome of interest. Moreover, an absence of research on outcomes such as education, adjustment, employment, and family formation limits our ability to determine just what it is about incarceration that increases, rather than diminished, the odds of reoffending.

Research on the full array of outcomes of alternative responses to juvenile offending is sparse. Our tendency is to think of juvenile offenders as young criminals, rather than as adolescents who have broken the law but who nevertheless have developmental capacities and needs that are characteristic of all people at this age, regardless of their history of antisocial behavior. As a consequence, research on the success or failure of alternative responses to offending (e.g., whether transferring juveniles to the adult system is good policy) is nearly exclusively focused on how the policy affects reoffending. But two policies may have equivalent effects on recidivism but may vary markedly in their impact on juveniles’ psychological development, mental health, social relationships, progress in school, and plans for the future. A policy that facilitates healthy psychological development and increases the chances of an adolescent graduating from high school is obviously superior to one that has a comparable impact on recidivism but that stunts psychological development, contributes to mental health problems, or encourages dropping out. If these other, noncrime outcomes are not included in juvenile justice research, however, we have no way of knowing how the policies differ in these respects.

**Benefit-Cost Analyses of Alternative Juvenile Justice Policies**

Many of the relatively more progressive juvenile justice policies are also less costly than their harsher alternatives. For example, the price difference varies from state to state, but it costs five times less to treat an offender in the community than in an institutional placement (Scott & Steinberg, 2008). Providing accurate benefit-cost analyses of various juvenile justice policy alternatives is an important component of any large-scale effort to improve policy and practice.

Benefit-cost analysis can help policymakers and voters assess policy alternatives by “monetizing” their costs and benefits, thus permitting the options to be compared along a common metric (Roman & Butts, 2005). The monetization of juvenile justice policy alternatives requires more than an accounting of the dollars spent on the intervention and its measured impact on recidivism, however, for reasons discussed in the previous section. On the expenditure side of the ledger, the intervention might be monetized...
with respect to the direct costs of providing the service (e.g., per diem costs of an institutional placement or the cost of providing treatment in the community) as well as the intervention’s indirect costs (e.g., the costs of processing the case within the justice system). These expenditures then can be compared with the benefits gained as a result of the intervention, most obviously, a reduction in crime. Reductions in crime have both easily monetized benefits (e.g., reduced emergency room costs for injured victims, reductions in expenditures for arresting and processing suspects), but they also have benefits that, although very real, are much more difficult to quantify (e.g., improvements in perceptions of public safety yield mental health benefits for residents). In addition, a full assessment of the net cost of an intervention involves estimating the impact of the intervention on noncrime outcomes as well. These outcomes, many of which can be monetized directly, might include positive or negative impacts on truancy, grade retention, and graduation; mental health and substance abuse service utilization; nonmarital childbearing; and physical health and development.

There have been vast improvements in benefit-cost analysis methodologies in the past decade, but by and large these improvements have not been applied to the analysis of juvenile justice policy, because the details of any such analysis vary across jurisdictions, where expenditures and costs are usually region-specific (which makes it difficult to generalize the findings of one jurisdiction’s benefit-cost analysis to another jurisdiction), and because the actual methods remain unfamiliar to justice system practitioners. The Washington State Institute for Public Policy uses benefit-cost analysis effectively to inform the state legislature about justice system policy alternatives (e.g., Chein et al., 2010), but this is a rarity. And at least one study found that communicating to the public the potential for possible cost savings associated with rehabilitation, as opposed to punishment, can be effective in changing public opinion (Piquero & Steinberg, 2010).

Concluding Comment

It is astonishing to acknowledge that it took more than a decade of concerted effort to persuade policymakers, practitioners, and the public that “kids are different,” but juvenile justice policy and practice are much more aligned with developmental science today than they were 15 years ago, in no small way because research on adolescent development was used as the foundation upon which to mount this effort. This is no time to rest on our laurels, however, for it can take only one high-profile crime or a temporary uptick in the crime rate to derail the progress of the past 15 years. Over the coming decades, we will need to shore up empirical support for the view that young people’s developmental immaturity demands that they be treated differently under the law, drawing on both behavioral and brain science; show how the way we respond to juvenile offending affects not only the crime rate, but the mental health, schooling, and long-term prospects of our most vulnerable young people; and demonstrate to policymakers that the most sensible juvenile justice policy is often the most cost-effective. This three-pronged strategy will help ensure that momentum generated by the reforms that have been put into place in the last decade will not abate.

Although neuroscience appears to have been an influence on the Supreme Court’s deliberations, it is important to recognize that the essential logic of these decisions is based primarily in a description of the ways in which adolescents’ behavior and thinking differs from that of adults, and only secondarily in differences in their brain structure and function. And, that is as it should be. The neuroscience complements and corroborates the behavioral science, but it doesn’t make the behavioral findings any more real. In some regards, the most convincing evidence that adolescents are different from adults is “what every parent knows.” Indeed, the neuroscientific evidence likely was persuasive to the Court not because it told us something new, but precisely because it aligned with common sense and behavioral science.

References


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Legal Socialization of Children and Adolescents

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Research on children and the law has recently renewed its focus on the development of children's ties to law and legal actors. We identify the developmental process through which these relations develop as legal socialization, a process that unfolds during childhood and adolescence as part of a vector of developmental capital that promotes compliance with the law and cooperation with legal actors. In this paper, we show that ties to the law and perceptions of law and legal actors among children and adolescents change over time and age. We show that neighborhood contexts and experiences with legal actors shape the outcomes of legal socialization. Children report lower ratings of legitimacy of the law and greater legal cynicism when they view interactions with legal actors as unfair and harsh. We show that perceived legitimacy of law and legal authorities shapes compliance with the law, and that these effects covary with social contexts including neighborhood. We identify neighborhood differences in this relationship that reflect differential experiences of children with criminal justice authorities and other social control agents. The results suggest that legal actors may play a role in socialization processes that lead to compliance with or rejection of legal and social norms.

\textbf{KEY WORDS:} development; law; adolescence; socialization; legitimacy.

\section*{INTRODUCTION}

Recent studies on child and adolescent development have focused new interest on children's behavior toward law. Research on psychosocial maturity, temperament, and cognition has shown that differences in developmental

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trajectories and pathways are precursors of antisocial behavior, delinquency, and other problem behaviors (Lahey et al., 2003; Rutter et al., 1998; Steinberg and Cauffman, 1996). Development is not only important in explaining how often and perhaps why children will break the law, but also their behavior in interactions with legal actors (Burnett et al., 2004; Grisso et al., 2003).

Most attention has focused on psychosocial development and maturation as processes that promote compliance with the law and cooperation with legal actors. For example, deficits in psychosocial maturity often are cited as indicia of reduced culpability when young people run afoul of the law (Scott and Steinberg, 2003). In this framework, law and social rules are externalities to adolescent development. Compliance with the law is characterized as the outcome of a developmental process involving intra-individual characteristics. Law seems to have very little to do with it.

These contemporary developmental theories segregate legal socialization from other dimensions of child development, and seek explanations for delinquent behavior that leave out experiences with the law. This separation of law from other domains of development is orthogonal to the notion of socialization toward the law itself, or at least socialization toward law’s underlying moral bases and social rules. In this paper, we propose that there is a developmental process of legal socialization, and that this process unfolds during childhood and adolescence as part of a vector of developmental capital that promotes compliance with the law and cooperation with legal actors.

In an earlier era, there was extensive research on childhood legal socialization (see, for example, Tapp and Levine, 1977). Psychologists studying the development of moral values and orientations toward the legal system emphasized the crucial role of this childhood socialization process on subsequent adolescent and adult behavior. For this reason, a great deal of attention has been focused by psychologists and other social scientists on the importance of developing and maintaining moral values in children (Mussen and Eisenberg-Berg, 1977), as well as on the childhood antecedents of a positive orientation toward political, legal, and social authorities (Easton, 1965; Hyman, 1959; Krislov et al., 1966; Melton, 1985; Parsons, 1967; Tapp and Levine, 1977). This earlier focus on developing a positive social and moral orientation has led to a new set of studies of childhood socialization (Hoffman, 1977, 2000).

These earlier studies provided evidence suggesting that the roots of social values lie in childhood experiences (Cohn and White, 1990; Easton and Dennis, 1969; Greenstein, 1965; Hyman, 1959; Merelman, 1986; Niemi, 1973; Torney, 1967). In particular, early orientations toward law and government were found to be affective in nature, and characterized by idealized and overly benevolent views about authority. These early views shaped the later views of adolescents, views that were both more cognitive and less idealized in form (Easton and Dennis, 1969). In other words, each stage of the socialization process influenced later, more complex, views.
This core argument underlying the legal socialization literature is that children develop an orientation toward law and legal authorities early in life, and that this early orientation shapes both adolescent- and adult-law-related behavior. Similarly, the psychological literature on the development of moral values suggests that values develop early in life, and similarly shape adolescent and adult behavior (Blasi, 1980). The studies within this literature support this argument by showing that both social orientations toward authority and moral values play a role in shaping the law-related behavior of adolescents and of adults (Tyler, 1990).

This Paper

In this paper, we examine evidence of developmental transitions in legal socialization among children and adolescents. We identify a developmental process of legal socialization, and suggest that this process unfolds during childhood and adolescence as part of a vector of developmental capital that promotes compliance with the law and cooperation with legal authorities. We translate these adolescent evaluations of law and legal authorities into specific measures of legitimacy of the law, and trace their development through early and middle adolescence. We consider how those evaluations change over time concurrent with important stages of cognitive and moral development. We explore the influence of adolescent experiences with legal authorities on views about their legitimacy.

Similar to other developmental processes, legal socialization is likely to be moderated by its social contexts, including peers, families, and especially neighborhoods. Given differential patterns of law enforcement and crime across neighborhoods, we assume that there are differences in patterns of legal socialization by race and neighborhood. Accordingly, we examine whether children’s exposure to the law through personal experiences and the experiences of others will vary by neighborhood. We then analyze the concurrent influence of neighborhood and other social contexts on adolescents’ compliance with the law. Finally, we test whether adolescent social experiences, in particular their interactions and experiences with the police, influence the trajectory of legitimacy by enhancing or undermining adolescent views that the law is fair and morally authoritative. We explore these questions by comparing samples of adolescents from two neighborhoods that differ in their racial composition, social structure, and patterns of crime and law enforcement.

LEGAL SOCIALIZATION

Because socialization processes in childhood bear on subsequent adolescent behavior, researchers have devoted considerable attention to the importance of developing and maintaining moral values in children (Hoffman, 2000; Mussen and Eisenberg-Berg, 1977). This developmental dimension includes the antecedents
of a positive orientation toward political, legal, and social authorities (Easton, 1965; Krislov et al., 1966; Melton, 1985; Parsons, 1967; Tapp and Levine, 1977). Thus, childhood orientations toward law and morality are part of the more general argument that early childhood predispositions toward the law and its normative underpinnings play an important role in shaping adolescent and adult antisocial behavior (Niemi, 1973; Caspi and Moffitt, 1993).

Drawing from recent studies on children’s behavior toward the law and legal actors, we assume that legal socialization is a critical part of adolescent development that shapes adolescents’ attitudes and behaviors in a variety of legal tasks (Flanagan and Sherrod, 1998; Grisso, 2000; Grisso et al., 2003; Steinberg and Cauffman, 1996). This certainly is true among adults, where there is consistent evidence across studies with diverse populations in a wide range of tasks and settings showing that both moral values and orientations toward legal authority—such as perceived legitimacy—shape two dimensions of adult behavior with respect to the law: compliance and cooperation (Tyler, 1990; Tyler and Huo, 2002). Recent research has not, however, explored this relationship among adolescents.

The legitimation of the law is the central dynamic in this socialization process. Research on legitimacy and the law is premised upon three assumptions: (1) that people have views about the legitimacy of authorities; (2) that those views shape their behavior; and (3) that those views arise out of social interactions and experiences. These assumptions have been tested under a variety of sampling and measurement conditions, with consistent evidence supporting the basic claims that link legitimacy and legal behaviors (Tyler and Huo, 2002). Less well understood are the origins of legitimacy and its elasticity over time and across stages of the life course.

We identify this legitimation process as part of adolescent development, a process of legal socialization. Legal socialization is a developmental capacity that is the product of accumulated social experiences in several contexts where children interact with legal and other social control authorities. In this framework, what adolescents see and experience through interactions with police and other legal actors subtly shapes their perceptions of the relation between individuals and society. These experiences influence the development of their notions of law, rules, and agreements among members of society, and the legitimacy of authority to deal fairly with citizens who violate society’s rules.

Accordingly, in this study, we focus on youth’s understanding of and participation in legal processes that express societal norms, their assessments of the fairness of these processes, and their views of the legitimacy of the law and the institutions that enforce it. Individuals’ notions of the fairness and morality of legal rules may influence their subsequent behavior in interactions with legal actors, in turn invoking mutual responses in a recurring pattern over time. Through these reciprocal interactions, adolescents can learn both from their experience as participants in, and observers of, the law-in-action the importance and value of those behaviors that most people prize and expect.
Dimensions of Legal Socialization

Research on legal socialization among children and adults has identified three dimensions that may shape or sustain adolescent criminal behavior: institutional legitimacy; cynicism about the legal system; and moral ambiguity. Institutional legitimacy refers to feelings of obligation to defer to the rules and decisions associated with legal institutions and actors. It is assessed by measuring the degree to which people feel that they “ought to” obey decisions made by legal authorities, even when those decisions are viewed as wrong or not in their interests. Studies typically find that adults express strong feelings of obligation to obey the law, the police, and the courts (Tyler, 1990; Tyler and Huo, 2002).

Legal cynicism reflects general values about the legitimacy of law and social norms. It is based upon work on anomie (Srole, 1956), but has been modified to reflect subgroup norms concerning minority urban communities (Sampson and Bartusch, 1998). “The common idea is the sense in which laws or rules are not considered binding in the existential, present lives of respondents...[legal cynicism] taps variation in respondents’ ratification of acting in ways that are ‘outside’ of law and social norms” (Sampson and Bartusch, 1998, p. 786). Instead, respondents feel that acting in ways that are outside the law and community norms of appropriate conduct is reasonable.

Moral disengagement involves the separation of conduct from moral standards relevant to that conduct (Bandura et al., 1996). Adolescent behavior typically is shaped by moral values, which typically define illegal conduct as inconsistent with moral values. These values act as an internal control system, which inhibits immoral behavior. To the degree that people disengage from that system of internal controls, their behavior becomes more open to engaging in illegal conduct. The measurement of moral disengagement involves assessing eight distinct aspects of disengagement, each reflecting the tendency to justify engaging in conduct inconsistent with moral standards (Bandura et al., 1996).

The Production of Legal Socialization Through Procedural Justice

Research with adults suggests that experiences with the law contribute to evaluations of its legitimacy. Although we know less about children’s evaluation of the law, an important factor influencing the development of adults’ views about legitimacy are their judgments about the fairness of the manner in which the police and the courts exercise their authority. Fair treatment allows people to attribute legitimacy to authorities and creates a set of obligations to conform to their norms. It communicates to participants directly and vicariously to people in contact with other participants in legal interactions that laws are both legitimate and moral. Fair treatment also may reduce feelings of anger that lead to rule breaking (Agnew, 1992, 1994; Sherman, 1993). It strengthens
ties to the law, a pivotal antecedent of delinquency (Hirschi, 1969). It counteracts labeling processes that are marginalizing and stigmatizing (Braithwaite, 1989). Tyler (1990) and several other studies report that fair treatment was positively related to law abiding behavior among both younger and older adults (see Paternoster et al., 1997, for a review). In developmental terms, fair treatment strengthens ties and attachments to the laws and social norms, as well as group membership among like-minded people.

Such procedural justice judgments are found to both shape reactions to personal experiences with legal authorities (Paternoster et al., 1997; Tyler, 1990; Tyler and Huo, 2002) and to be important in assessments based upon the general activities of the police (Sunshine and Tyler, 2003; Tyler, 1990). In both cases, adults view the police and courts as less legitimate when they personally experience or vicariously become aware of instances of procedural injustice. These same studies further indicate that adults usually define the fairness of procedures by considering four factors: the degree to which they have voice and can express their opinions and concerns; the neutrality and factuality of the decision-making procedures used; the politeness and respectfulness of their interpersonal treatment; and the degree to which they believe that the authorities are acting with benevolent and caring motives (Tyler, 1990; Tyler and Huo, 2002).

Hypotheses

As a developmental process, legal socialization should manifest differences by age in how children and adolescents experience and internalize their “legal” worlds. With age comes increasing exposure to rules, norms, and legal controls across multiple contexts of social control, and the accumulation of these experiences can influence the development of children’s notions about law and legal actors. Several studies show that children understand the law and its moral norms relatively early in adolescence (Tapp and Levine, 1977), but there have been no studies examining how their evaluations of the law and its legal actors change over time as experiences accumulate.

Direct experiences with social control are unlikely to be the sole mediators of legal socialization: children are exposed vicariously to evaluations of law through the attitudes and “factual” claims of their friends, neighbors, and family members about the law and legal institutions. Accordingly, legal socialization is likely to be an integrative process that internalizes information derived from children’s own experiences, their exposure to affective messages from others in response to their own experiences, and the cognitive frames that are prevalent within their neighborhood and peer group. That is, legal socialization is a process that is embedded in a set of interlocking social contexts and repeated social interactions over time in each of those settings.
Legal Socialization of Children and Adolescents

Whether these recurring interactions influence children over time to either embrace or reject the law and its norms is uncertain. For example, recurring exposure to fair and respectful exercises of legal authority or social control should bring about positive views of the law and other social control agents, while unfair treatment should erode trust in the law and rejection of its moral foundations and everyday expressions. At the same time, immersion in a social network of delinquent peers might color adolescents' evaluations of law. Adolescent development also may frame both how these interactions unfold and how they are interpreted. During early adolescence, the dynamics of identity formation and the pursuit of autonomy may lead children to reject the normative orientation that animates the social control efforts of authority figures in their lives. With typically low stakes in conformity and a narrow social world, there is no easy offset for adolescents' predictable tendency to view social control as an infringement on their autonomy and therefore "illegitimate."

Accordingly, we hypothesize that experiences with the law and legal actors will shape and modify trajectories of legal socialization. These subjective evaluations of fair and respectful treatment are not simply cold cognitions or judgments. Rather, we assume that these experiences carry with them an affective or emotional component that animates views about the legitimacy of the law, cynicism toward it, or a disengagement from the law's moral underpinnings. While fair treatment may enhance evaluations of the law, poor treatment may arouse negative reactions or even anger leading to defiance of the law's norms (Paternoster et al., 1997; Sherman, 1993). This would suggest that procedural justice exerts both direct effects on compliance with the law as well as indirect effects by shaping evaluations of the law's legitimacy.

METHODS

The study was a cross-sectional analysis of data obtained from a community sample of \( n = 215 \) children and adolescents ages 10–16, drawn from two racially and socio-economically contrasting neighborhoods in one of the five boroughs of New York City. The age cohorts provided an opportunity to examine developmental progressions of legal socialization from early to middle adolescence, and to identify and control for moderating effects of both individual and social contextual factors. Sampling neighborhoods that differ in their rates of crime and legal interventions provided a further test of the effects of exposure to law and legal actors on legal socialization.

Research Sites

Study sites were the Red Hook and Bensonhurst neighborhoods in Brooklyn. These neighborhoods varied both in their socio-economic and racial composition.
Data from the 2000 U.S. Census showed that African Americans and Latinos comprised nearly 90% of the Red Hook population, but less than 10% of the Bensonhurst population. Red Hook had higher rates of several indicia of social and economic disadvantage: female headed households with minors, youth population, persons below poverty, children (0–16 years) living below poverty, and adults completing their high school degree. Bensonhurst included a higher percentage of White working class populations and immigrants: more than half the residents were foreign born, and nearly 60% reported at least one form of linguistic isolation. While median income in both neighborhoods was below the median for the city, the median income in Red Hook was more than one standard deviation below the city mean, and more than 10% lower than household incomes in Bensonhurst.

Table I shows important differences between the neighborhoods in their rates of crime and criminal justice involvement of their residents. Since both neighborhoods are patrolled by multiple police precincts, we included data from each of the precincts that were active in each neighborhood. We examined four indicia of crime and justice to characterize the exposure of children and adolescents to crime, law, and legal actors: reported crimes, stops by police, arrests, and incarcerations in either jail or prison. Crime rates in Bensonhurst were far lower, there were fewer visible interactions with police, and fewer citizens were involved with the legal system via arrest or incarceration.

We used felony crime complaints to the police as the measure of crime. Crime rates were lower in Bensonhurst, nearly 50% lower than the city average for the 3 years preceding sample recruitment (1998–2000). Citizen stops by police also were lower in the period immediately preceding the study. A study of police stops

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<th>Neighborhood</th>
<th>Felony crime complaints per 1000 persons, 1998–2000&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Stops per 1000 persons per year, 1998–2000&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Felony arrests per 1000 persons per year, 1998–2000&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Jail and prison incarcerations per 1000 persons, 1990–96&lt;sup&gt;c&lt;/sup&gt;</th>
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<tr>
<td>Red Hook</td>
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<td>72nd precinct</td>
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<td>15.5</td>
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<tr>
<td>76th precinct</td>
<td>30.1</td>
<td>28.9</td>
<td>17.8</td>
<td>2.4</td>
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<tr>
<td>78th precinct</td>
<td>35.6</td>
<td>23.3</td>
<td>10.6</td>
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<tr>
<td>Bensonhurst</td>
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<td>62nd precinct</td>
<td>18.8</td>
<td>11.3</td>
<td>4.2</td>
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<td>66th precinct</td>
<td>15.2</td>
<td>14.6</td>
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<td>City</td>
<td>30.9</td>
<td>23.9</td>
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<sup>a</sup> *Source*: New York City Police Department, Crime and Arrests (various years). Rates based on 2000 population data.


and frisks of suspects by the Office of the Attorney General of New York State (1999) showed the police were far less aggressive in their street stops of citizens in the two police precincts in Bensonhurst: stop rates averaged about 13 stops per 1000 persons in Bensonhurst, compared to 22.6 in Red Hook. The highest precinct stop rate in Red Hook was nearly twice the rate of the higher of the two precincts in Bensonhurst. Arrest and incarceration rates were correspondingly higher in Red Hook, not surprising given the increased supply of persons available for arrest and punishment as a result of greater police aggressiveness. Felony arrests and incarcerations also were substantially higher in the three Red Hook precincts: felony arrest rates per 1000 persons were more than twice as high, and incarceration rates more than three times higher.

**Samples**

A random sample of children and adolescents ages 10–16 was recruited from each neighborhood. Households were identified through an enumeration process of residences in a random sample of census block groups in each neighborhood. Prior to contacting families, neighborhood residents were notified about the study via public education announcements and informational meetings with local community groups (e.g., PTA, Tenant Associations in public housing, church organizations). Letters were sent to parents or heads of households to identify which families had children of eligible participants and to invite them to participate in the study. Responding families were then given a short screening questionnaire to validate their residence and the presence of children, and were scheduled for a full interview.

Recruitment was managed to ensure variation by age and gender. Both males and females were included, despite the greater likelihood that police contacts would be with males (Office of the Attorney General, 1999). Nevertheless, young girls are affected both directly and vicariously through their interactions with legal institutions. For example, young women often are reluctant to report dating violence or other physical abuse by males because of the potential reactions of police (Freudenberg, et al., 1999).

With few exceptions, sample profiles reflected the social and demographic makeup of each neighborhood in 2000. Red Hook is an inner-city neighborhood with few Whites and high concentrations of poverty. Nearly 80% of Red Hook residents live in public housing (Department of City Planning, New York City). In contrast, Bensonhurst is a racially heterogeneous neighborhood with very few African Americans but substantial populations of other non-White racial and ethnic groups. Nearly half the Bensonhurst sample was non-Hispanic White (49.2%), compared to less than 1% in Red Hook. Latinos comprised 20% of the Bensonhurst sample and 17% of the Red Hook sample. The high percentage of foreign born parents in Bensonhurst residents and native born subjects suggest that many of the
latter are second generation immigrants, including members of both Latino and other ethnic groups.

Procedures

Subjects participated following parental consent. Subjects were paid for interviews via gift certificates valued at $10.00 to one of several popular retail stores. In addition, subway fares (fare cards) valued at $3 (for one round trip) were added to the stipend to facilitate travel to the interview site. Interviews took place in secure neutral locations in the neighborhoods. Examples include offices of NGO’s, churches, and local public libraries. During warmer weather, interviews also were conducted in secluded outdoor locations in parks and playgrounds.

Variables and Measures

In addition to demographic information, data collection included five domains: personality, social context, the development of values about legal authorities (legal socialization), interaction quality with legal authorities (procedural justice), and antisocial behavior. Means, standard deviations, and scale properties are shown in Appendix A, and correlations in Appendix B.

Personality and Temperment

We used four subscales from the Multidimensional Personality Questionnaire (MPQ) (Tellegen, 1982, 1985; Tellegen and Walker, 1994) to measure dimensions of personality and temperament that are predictive of antisocial behavior. Control ("self-control") is high when subjects describe themselves as reflective, cautious, careful, rational, and planful (Caspi et al., 1997; Church and Burke, 1994; Gottfredson and Hirschi, 1990). Self-control was further divided into control ($\alpha = 0.971$) and impulsivity ($\alpha = 0.961$) subscales. Aggression, or “negative emotionality,” is a tendency to experience aversive affective states including anxiety, anger, and irritability ($\alpha = 0.980$). People high on negative emotionality tend to construe events in a biased way, perceiving threat in the acts of others and menace in everyday social interactions. (Tellegen, 1982, 1985; Watson and Clark, 1984; Watson et al., 1994). The fourth dimension, alienation, reflects the tendency of respondents to describe themselves as feeling mistreated, victimized, suspicious, betrayed, and the target of false rumors; they see the world as being peopled with potential enemies and expect mistreatment (Caspi et al., 1994, 1997; Moffitt et al., 1996) ($\alpha = 0.891$).
Social Contexts

We include measures of four social contexts that are robust predictors of crime and other antisocial behavior across a range of sampling and measurement conditions: violence exposure, family supervision, networks of delinquent peers, and perceived risks and benefits of crime.

We use the "MY ETV" (exposure to violence) inventory (Selner et al., 1998) to measure violence exposure. Both direct and vicarious experiences of physical and sexual assault victimization during childhood and early adolescence raise concomitant risks of aggressive and violent behavior in late adolescence and early adulthood (Cooley et al., 1995; Garbarino et al., 1992; Osofsky, 1995), and can lead to psychological, physical, and social disruptions during adolescence and beyond (Coie and Dodge, 1997). "MY ETV" was developed and normed in a population sample of urban children and adolescents in Chicago. Since subjects vary in age, we use the past year exposure scale that includes witnessing and exposure and computed an additive scale of the number of different types of exposure that occurred in the past year (α = 0.805).

We include measures of both the social and legal costs and rewards of sanctions. These scales predict individual differences in criminality among adolescents and college students (Nagin and Paternoster, 1991, 1994). Personal capital includes items social costs (reputation costs and relationship costs) and legal costs (sanction risks). It also includes a measure of "thrills" or intrinsic rewards of offending. These measures were developed and normed with college student samples (Nagin and Paternoster, 1991). Since subjects in this study are younger, we limit the measures to perceived risk and social rewards of antisocial behavior. Measures include perceived risk of arrest and punishment (α = 0.810), personal rewards of crime ("thrills") (α = 0.727), and social costs of arrest (α = 0.735).

We use measures of deviant peer groups and prosocial peer networks. Fagan et al. (1990) developed items that ask about the extent of involvement of close peers in antisocial activities, forming a scale of peer deviance: gang involvement of peers, involvement of peers in violence and illegal income-generating activities, substance abuse among peers, and juvenile and criminal justice system involvement of close friends (α = 0.728). Peer Networks includes the number of close friends, frequency of contact with close friends, a rating of involvement of friends in everyday life (e.g., "can borrow money from my friends in an emergency"), and a rating of intimacy with close friends ("e.g., I share my thoughts and feelings with my friends") (α = 0.560).

Measures of family context include Parental Supervision and Presence of Caring Adults. Parental Supervision is measured using items derived from Fagan et al. (1990) where respondents are asked to rate their agreement with statements about parental knowledge of their children's whereabouts, activities, close friends, problems in school, problems with the law, and sources of income. The mean of the five items produced a scale with strong reliability.
(\(\alpha = 0.904\)). Presence of Caring Adults (Nakkula et al., 1990; Phillips and Springer, 1992) determines the presence of supportive adults present in the adolescent’s life in eight domains that form a single factor, with items such as “there are adults I admire and want to be like,” and “there are adults I can go to if I need information or advice.” The mean of these items forms a scale with good reliability (\(\alpha = 0.871\)).

**Legal Socialization**

We include three domains of legal socialization: Legal Cynicism, Legitimacy, and Moral Disengagement. Following Sampson and Bartusch (1998), we modified Srole’s (1956) legal anomie scale to create a measure of Legal Cynicism that assesses general values about the normative basis of law and social norms. The items assess whether laws or rules are not considered binding in the existential, present lives of respondents (Sampson and Bartusch, 1998). Respondents are asked to report their level of agreement with five statements, such as “laws are made to be broken” and “there are no right or wrong ways to make money.” The measure is computed as the mean of the five items (\(\alpha = 0.735\)).

**Legitimacy** measures the respondent’s perception of fairness and equity of legal actors in their contacts with citizens, including both police contacts and court processing (Tyler, 1997). The scales measure the experiential basis for translating interactions with legal processes into perceptions and evaluations of the law and the legal actors that enforce it. This measure taps several dimensions of fair treatment: correctness, ethicality, representativeness, and consistency (Tyler, 1997; Tyler and Huo, 2002; Tyler and Lind, 1992). Respondents indicate their agreement with 11 statements such as “overall, the police are honest,” and “the basic rights of citizens are protected by the courts.” The measure is computed as the mean for the 11 items (\(\alpha = 0.746\)).

**Moral Disengagement** (Bandura et al., 1996) was modified for this study to measure the adolescent’s attitudes concerning the treatment of others. Respondents use a three-point scale to indicate their agreement with 32 items that show moral detachment from everyday social and legal norms that regulate social interactions, such as “It is alright to beat someone who bad mouths your family,” “Slapping and shoving someone is just a way of joking,” “Kids cannot be blamed for using bad words when all their friends do it,” and “A kid in a gang should not be blamed for the trouble the gang causes.” Following Bandura’s scoring recommendations, we computed an additive scale of the total number of items endorsed (\(\alpha = 0.882\)).

**Procedural Justice**

We also include a measure of procedural justice, to represent perceived quality of interactions with legal actors including police, school security officers, and store
security staff. We adopted measures used by Lind, MacCoun et al. (1989, cited in Tyler and Lind, 1992), and Paternoster et al. (1997) to assess procedural justice. The subscales are based on their recent encounters with legal actors (e.g., ethicality, fairness, representation, consistency, respect, and correctability). These measures have proven to be robust predictors of legal compliance under a wide range of sampling and measurement conditions including general population surveys, criminal justice defendants, mediation and arbitration participants, persons filing workplace grievances, and participants in tort litigation (Tyler and Lind, 1992: 124–37). These measures have only recently been extended to persons in the criminal justice system (Paternoster et al., 1997) and to adolescents. For this sample of children and adolescents, we limited these interactions to three domains: interactions with police officers, school disciplinary personnel, and private security personnel. We computed a summary Procedural Justice scale (α = 0.597).

Antisocial Behavior

We use a reduced version of the Self-Report Delinquency scales used in both general population samples (Elliott et al., 1985, 1989) and samples of inner-city youths from high-risk neighborhoods (Fagan et al., 1990; Huizinga et al., 1991). These have been adopted by Brame et al. (2004) to estimate sanction effects with a court sample of serious juvenile offenders. The level of seriousness in these 30 items was set for a general population of junior and senior high school subjects. The reporting period is the past year. We computed offending variety scores to measure the number of different types of behaviors in the past year (see, Thornberry and Krohn, 2000) (α = 0.776).

RESULTS

Developmental Trends

Evidence of change over time in three dimensions of legal socialization appears in Fig. 1(a)–(c). These figures show that rejection of the legal and social norms underlying law increases with age. Figure 1(a) shows that cynicism grows over time, beginning at age 12, and increasing nearly monotonically from age 14. Not surprisingly, perceptions of legitimacy decline with age. Figure 1(b) shows that legitimacy declines sharply and monotonically from age 10 through age 14 before stabilizing in middle adolescence. The correlation between growing cynicism and declining legitimacy is significant (r = −0.274, p < 0.001).

Moral disengagement is relatively stable from ages 10 to 16, with the exception of a spike for the respondents 14 years of age. Figure 1(c) shows that moral disengagement is highest at age 14 but then declines to its lowest point at age 15. The range in scale scores for this measure of legal socialization (3.7–7.4) is greater
Fig. 1. (a) Legal cynicism by age. (b) Legitimacy by age. (c) Moral disengagement by age.

than the range for the other two measures of legal socialization. Using an alternate scaling technique suggested by Bandura et al. (1996), based on the mean of the item scores, this measure is stable across age groups, with scale scores at 1.4 for four of the five age points, and 1.6 for respondents age 14. These inconsistencies hint that there is little variation in this measure over time. The weak correlation of moral
Legal Socialization of Children and Adolescents

Disengagement with legal cynicism (0.167, p < 0.05) and the modest negative correlation with legitimacy is (−0.307, p < 0.05) both are theoretically consistent.

**Contexts of Legal Socialization**

We hypothesized that, similar to other developmental progressions, legal socialization develops over time through interactions in social contexts of families, peers, and neighborhood. We also hypothesized that the procedural justice of adolescents’ direct or vicarious experiences with legal actors would influence the evaluation of the legal institutions those authorities represent. Measures of context included delinquent peers, parental supervision, violence exposure in the neighborhood, and perceived punishment risks. Neighborhood is a binary variable representing the differential exposure of children and adolescents to crime and law. We also hypothesized that legal socialization may be mediated by personality characteristics such as negative emotionality or aggressiveness, each of which might skew social interactions and bias evaluations of events and actors. Therefore, we included controls for four dimensions of personality: aggressiveness, alienation, control, and impulsivity.

We used Ordinary Least Squares regression models (Hanusheck and Jackson, 1977) to estimate the contributions of social contexts and personality plus procedural justice to each of three components of legal socialization: legitimacy, legal cynicism, and moral disengagement. Control variables included age, gender (female), and Latino ethnicity. We also estimated a latent construct of legal socialization using factor scores derived from a principal components factor analysis of the three separate legal socialization scales. The three scales loaded onto one factor (eigenvalue = 1.50) explaining 52.12% of the variance. Legitimacy loads negatively on the factor score, while the other two variables load positively. Thus, a higher factor score indicates poorer legal socialization. In Table II, we see unique patterns of predictors for each of these four indicia of legal socialization.

As predicted, procedural justice is a significant predictor of two of the three separate components of legitimacy, and of the composite measure of legal socialization. How children experience the law, or how they believe others experience the law, shapes their evaluations of legal actors and the underlying social norms that inform law. The first column in Table II shows that when perceived quality of interactions with legal actors is high, children give higher ratings to legitimacy, and embrace “the property that a rule or an authority has when others feel obligated to defer voluntarily” (Tyler, 2003, p. 307). The second column shows

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6Neighborhood was heavily confounded with race: there were extremely few African Americans in the Bensonhurst sample and similarly few Whites in the Red Hook sample. For this reason, we used only the control for Latino population to avoid variance inflation in the regression estimates.

7Standardized scale scores were used for the principle components factor analysis, which was estimated using a varimax rotation.
Table II. OLS Regression of Social and Legal Contexts on Legal Socialization

<table>
<thead>
<tr>
<th></th>
<th>Legitimacy</th>
<th></th>
<th>Legal cynicism</th>
<th></th>
<th>Moral disengagement</th>
<th></th>
<th>Legal socialization</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>t</td>
<td>B</td>
<td>SE</td>
<td>t</td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>Constant</td>
<td>2.039</td>
<td>0.519</td>
<td>3.928*</td>
<td>2.985</td>
<td>0.529</td>
<td>5.639*</td>
<td>6.055</td>
<td>2.463</td>
</tr>
<tr>
<td>Age</td>
<td>-0.044</td>
<td>0.037</td>
<td>-1.167</td>
<td>0.109</td>
<td>0.038</td>
<td>2.855**</td>
<td>-0.357</td>
<td>0.177</td>
</tr>
<tr>
<td>Female</td>
<td>-0.021</td>
<td>0.111</td>
<td>-0.186</td>
<td>-0.172</td>
<td>0.112</td>
<td>-1.530</td>
<td>0.333</td>
<td>0.526</td>
</tr>
<tr>
<td>Latino</td>
<td>-0.177</td>
<td>0.127</td>
<td>-1.388</td>
<td>0.22</td>
<td>0.128</td>
<td>1.717</td>
<td>2.692</td>
<td>0.605</td>
</tr>
<tr>
<td>Deviant peers</td>
<td>-0.050</td>
<td>0.105</td>
<td>-0.471</td>
<td>-0.125</td>
<td>0.107</td>
<td>-1.172</td>
<td>1.111</td>
<td>0.500</td>
</tr>
<tr>
<td>Parental supervision</td>
<td>0.295</td>
<td>0.091</td>
<td>3.244*</td>
<td>-0.082</td>
<td>0.092</td>
<td>-0.892</td>
<td>-0.652</td>
<td>0.432</td>
</tr>
<tr>
<td>Violence exposure</td>
<td>0.005</td>
<td>0.018</td>
<td>0.293</td>
<td>-0.002</td>
<td>0.018</td>
<td>-0.138</td>
<td>0.190</td>
<td>0.084</td>
</tr>
<tr>
<td>Punishment risk</td>
<td>0.003</td>
<td>0.015</td>
<td>0.176</td>
<td>-0.012</td>
<td>0.015</td>
<td>-0.823</td>
<td>0.105</td>
<td>0.070</td>
</tr>
<tr>
<td>Procedural justice</td>
<td>0.058</td>
<td>0.016</td>
<td>3.618*</td>
<td>-0.041</td>
<td>0.016</td>
<td>-2.490***</td>
<td>-0.068</td>
<td>0.076</td>
</tr>
<tr>
<td>Aggression</td>
<td>-0.006</td>
<td>0.016</td>
<td>-0.341</td>
<td>0.029</td>
<td>0.016</td>
<td>1.752</td>
<td>0.418</td>
<td>0.077</td>
</tr>
<tr>
<td>Alienation</td>
<td>-0.028</td>
<td>0.013</td>
<td>-2.18***</td>
<td>0.027</td>
<td>0.013</td>
<td>2.040***</td>
<td>0.062</td>
<td>0.062</td>
</tr>
<tr>
<td>Control</td>
<td>-0.006</td>
<td>0.018</td>
<td>-0.360</td>
<td>0.009</td>
<td>0.018</td>
<td>0.515</td>
<td>0.103</td>
<td>0.085</td>
</tr>
<tr>
<td>Impulsivity</td>
<td>-0.001</td>
<td>0.023</td>
<td>-0.027</td>
<td>0.019</td>
<td>0.024</td>
<td>0.797</td>
<td>0.019</td>
<td>0.111</td>
</tr>
<tr>
<td>Neighborhood</td>
<td>-0.125</td>
<td>0.123</td>
<td>-1.015</td>
<td>0.014</td>
<td>0.124</td>
<td>0.109</td>
<td>-2.546</td>
<td>0.584</td>
</tr>
</tbody>
</table>

Model statistics

- Adjusted $R^2$: 0.244
- $F$: 5.16
- $p(F)$: 0.000

$p(t)$: * $p < .001$; ** $p < .01$; *** $p < .05$. 

Eagan and Tyler
that when adolescents perceived that interaction quality is poor, they may develop weak ties toward law that might justify either lack of cooperation with legal actors or antisocial behavior” (Sampson and Bartusch, 1998, p. 786). The positive and significant effect for age suggests that legal cynicism increases with age. In the fourth column, the results show that procedural justice also significantly predicts the composite legal socialization scale ($t = -2.02, p < 0.05$).\(^8\) The model $R^2$ is 0.398, suggestive of a modestly strong model.

The contributions of the four domains of social contexts vary for each of the components of legal socialization and for the construct. For legitimacy, parental supervision is the only significant predictor among the social context variables, and alienation is the only significant predictor among the personality variables. Procedural justice is a significant predictor of legitimacy, suggesting that fair and respectful treatment leads to more positive evaluations of the police and the courts. The overall model $R^2$ is 0.244, a modest result. For legal cynicism, none of the social context variables are significant, and alienation is a significant predictor. Procedural justice also predicts this component of legal socialization. The $R^2$ (0.171) is low, however, indicative of a relatively weak model.

The results of the model for moral disengagement show a different pattern of predictors. First, procedural justice was not significant in this model, in contrast to the other three models. Second, here, deviant peers, violence exposure, aggression, and neighborhood are significant predictors, a different set of context measures compared to the other three models. The pattern of predictors is similar to a pattern of what one might expect in a model of delinquent behavior, with significant contributions from peers and ecology of neighborhood violence (Sampson and Lauritsen, 1994). The explained variance is high ($R^2 = 0.472$), indicative of a strong model, far stronger than the models for legitimacy or legal cynicism.

Thus, the factors that contribute to what Bandura \textit{et al}. (1996) characterize as “[g]radual disengagement of moral self-sanction” are contextually embedded in peer networks and high crime neighborhoods. These are contexts where recurring acts of antisocial behavior allow for disengagement of moral self-regulation. As a consequence of disengagement behavior that is initially viewed as immoral becomes seen as more acceptable through cognitive restructuring (Bandura, 1990). In other words, in these contexts, moral controls are attenuated, and justifications for antisocial behavior step to the cognitive forefront. The significant negative effect for age suggests that these processes are more likely among younger adolescents.

The personality measures make widest contributions to legal socialization in the four models. Alienation and aggression are significant predictors separately in the first three models, and both are predictors of the composite measure

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\(^8\)Procedural justice is negatively associated with legal socialization. Since the scoring of the factor is inverse, with the highest contribution from a negative load for legitimacy, we predict an inverse relationship between the legal socialization construct and procedural justice.
of legal socialization in Table II. One might conclude that to a limited extent, legal socialization is a trait or propensity. But these personality variables also might be mediators, influencing interaction qualities and perhaps provoking both a negative reaction by legal authorities and a negative interpretation by the subject.

Finally, the strong coefficient for neighborhood suggests that moral disengagement is stronger in the Bensonhurst neighborhood than in Red Hook. At first glance, this seems unlikely, since crime higher and law enforcement more intensive in Red Hook. But violence exposure, a contextual effect that reflects the criminal ecology in a neighborhood, also contributes to moral disengagement. Thus, the neighborhood effect here may actually reflect the less intensive social control in Bensonhurst, fostering conditions where everyday violence can erode social and moral norms of the law. The ambiguity in the measure and meaning of neighborhood in this study suggests the need for more research on the contextual and ecological effects across a broader range of neighborhoods.

**Legal Socialization and Compliance with the Law**

To assess whether legal socialization was associated with self-reports of compliance with legal rules or laws, the legal socialization measures were entered into regression models together with the same set of contextual and personality predictors used in the models shown in Table II. Since both legal socialization and delinquency are predicted by the same set of contextual measures, we used the standardized residuals of the four legal socialization models estimated in Table II as predictors of self-reported delinquency. We estimated two models, one with the three separate components of legal socialization entered simultaneously, and one with the factor score representing a unified legal socialization measure. The measure of delinquency is a variety score of the number of different types of delinquent acts in which respondents said they were engaged during the past year (Thornberry and Krohn, 2000).

In both models delinquency among children and adolescents is predicted by legal socialization processes through which adolescents develop positive values about the law. In Model 1 in Table III, legitimacy is a significant predictor of self-reported delinquency. Poorer evaluations of the legitimacy of the police and courts were associated with higher delinquency scores ($t = -2.42, p < 0.01$). The other two legal socialization measures were not significant predictors, suggesting the primacy of legitimacy among these three components of legal socialization. In Model 2, the composite legal socialization factor predicted delinquency ($t = -1.979, p < 0.05$). Again, since the factor structure is based on negative loads for legitimacy and positive loads for moral disengagement and legal cynicism, the positive parameter estimate for the composite legal socialization score indicates that poorer legal socialization is associated with higher rates of delinquency. Among control variables, delinquency rates were lower for females, consistent
Legal Socialization of Children and Adolescents

Table III. OLS Regression of Legal Socialization, Social Contexts, and Personality on Past Year Self-Reported Crime

<table>
<thead>
<tr>
<th></th>
<th>Model 1: Components</th>
<th></th>
<th>Model 2: Construct</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>t</td>
<td>B</td>
</tr>
<tr>
<td>Constant</td>
<td>2.346</td>
<td>1.497</td>
<td>1.567</td>
<td>0.980</td>
</tr>
<tr>
<td>Age</td>
<td>-0.009</td>
<td>0.090</td>
<td>-0.095</td>
<td>-0.028</td>
</tr>
<tr>
<td>Female</td>
<td>-0.935</td>
<td>0.260</td>
<td>-3.590**</td>
<td>-0.880</td>
</tr>
<tr>
<td>Latino</td>
<td>0.608</td>
<td>0.309</td>
<td>1.966***</td>
<td>0.521</td>
</tr>
<tr>
<td>Legitimacy</td>
<td>-0.397</td>
<td>0.164</td>
<td>-2.419**</td>
<td>—</td>
</tr>
<tr>
<td>Legal cynicism</td>
<td>-0.184</td>
<td>0.160</td>
<td>-1.148</td>
<td>—</td>
</tr>
<tr>
<td>Moral disengagement</td>
<td>0.140</td>
<td>0.483</td>
<td>0.291</td>
<td>—</td>
</tr>
<tr>
<td>Legal socialization</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.280</td>
</tr>
<tr>
<td>(composite)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deviant peers</td>
<td>1.271</td>
<td>0.240</td>
<td>5.292*</td>
<td>1.295</td>
</tr>
<tr>
<td>Parental supervision</td>
<td>-0.329</td>
<td>0.218</td>
<td>-1.511</td>
<td>-0.349</td>
</tr>
<tr>
<td>Violence exposure</td>
<td>0.285</td>
<td>0.040</td>
<td>7.097*</td>
<td>0.280</td>
</tr>
<tr>
<td>Punishment risk</td>
<td>0.063</td>
<td>0.034</td>
<td>1.821</td>
<td>0.064</td>
</tr>
<tr>
<td>Aggression</td>
<td>0.072</td>
<td>0.040</td>
<td>1.812</td>
<td>0.056</td>
</tr>
<tr>
<td>Alienation</td>
<td>-0.037</td>
<td>0.031</td>
<td>-1.209</td>
<td>-0.042</td>
</tr>
<tr>
<td>Control</td>
<td>-0.005</td>
<td>0.042</td>
<td>-0.123</td>
<td>-0.010</td>
</tr>
<tr>
<td>Impulsivity</td>
<td>-0.095</td>
<td>0.054</td>
<td>-1.749</td>
<td>-0.102</td>
</tr>
<tr>
<td>Neighborhood</td>
<td>-1.147</td>
<td>0.310</td>
<td>-3.698*</td>
<td>-1.095</td>
</tr>
</tbody>
</table>

Model statistics

<p>| | | |</p>
<table>
<thead>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted $R^2$</td>
<td>0.568</td>
<td>0.565</td>
</tr>
<tr>
<td>$F$</td>
<td>20.145</td>
<td>22.825</td>
</tr>
<tr>
<td>$p(F)$</td>
<td>0.000</td>
<td>0.000</td>
</tr>
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</table>

Note. High scores on the composite legitimacy index indicate low legitimacy.

$p(t)$: * $p < .001$; ** $p < .01$; *** $p < .05$.

with enduring trends in the criminological literature (cf., Moffitt et al., 2001). There was no significant age effect, a departure from the robust age–crime relationships in much of the criminological literature (Gottfredson and Hirschi, 1990; Moffitt, 1993). Delinquency rates were higher for Latino youths, but only in Model 1 using the separate indicia of legal socialization.

Among the social context measures, deviant peers and violence exposure were social contexts that predicted delinquency, consistent with a large body of criminological research. None of the personality variables predicted delinquency. Neighborhood also predicted delinquency: rates were higher in the safer and less disadvantaged Bensonhurst neighborhood, contrary to predictions. Again, the binary measure of neighborhood makes it difficult to interpret the meaning of neighborhood in this model, and whether measurement error might account for this anomalous finding.9

9One explanation for the lower delinquency rates in Bensonhurst may be race differences in the veridicality of self-reports, with self-attenuation of delinquency scores in the Red Hook sample. The sample in Red Hook was about 45% African American, and prior studies suggest the possibility of lower self-reports by African American youths on a of problem behaviors (Hindelang et al., 1981; Thornberry and Krohn, 2000).
CONCLUSIONS

We identified process of legal socialization that unfolds over time and age, and produces changing values and perceptions of law and legal actors. Adolescents seem to initially believe that the law and legal authorities are legitimate, but that belief declines for some adolescents over time. Further, it seems that the legitimacy of law and legal authorities shapes compliance with the law, and that these effects covary with social contexts including neighborhood. This finding is consistent with that of studies of adults (Sunshine and Tyler, 2003; Tyler, 1990; Tyler and Huo, 2002), but it extends the range within which values shape behavior into the adolescent period. Since most crime is committed by adolescents, these findings suggest the importance of focusing on socialization to better understand when and how values are acquired. Finally, ratings of the procedural justice of the police shape legitimacy, suggesting that one source of adolescent values is social experience with legal actors across a range of contexts, including police, school security personnel, and security staff in businesses and private unregulated settings.

Theories of legitimacy and legitimation become important if the normative values on which they focus play an important role in the legal system. This study suggests that these attributes of law shape norms and law-related behaviors among adolescents, not just the views of adults. This extension is important, since the vast majority of crimes are committed by adolescents. Accordingly, this study argues that beginning in adolescence legitimacy is an important force shaping law-related behavior.

This study also helps us to understand how legitimation occurs. Prior studies suggest that people’s views about the legitimacy of authority are primarily linked to their evaluations of the procedures by which the police and courts operate. This study supports this procedural justice argument among adolescents. Like adults, adolescent views about the legitimacy of authority are influenced by procedural justice judgments about their own and others experiences with the police. The finding that procedural justice issues matter during adolescence is consistent with the results of several other recent studies. Fondacaro et al. (1998) found that the procedural justice by which parents resolve family disputes influences rule following in both family and community contexts. And, Otto and Dalbert (2005) found that whether incarcerated adolescents felt guilt over their crimes was shaped by whether they viewed their trial as fairly conducted.

Of course, we recognize that the process of socialization involves the development of a broader range of values, including attitudes toward democracy, views about other social groups, and tolerance of diversity. Further, it leads to many forms of potentially important behavior. Engagement in communities and in the political process is important, and is linked to values learned in childhood.
(Flanagan and Sherrod, 1998). Hence it is important to emphasize that this study concerns only one aspect of the general process of socialization, as well as only speaking to one form of socially relevant behavior.

Just how important these results are depends on testing that expands on this study in four ways. First, studies across a wider range of neighborhood conditions are needed. Patterns of racial residential segregation in cities often lead to clustering of persons of the same race in single areas, and police responses may be unique to those areas. Further research is needed with neighborhoods that vary in their demography, crime rates and exposure to law enforcement. Sampling racially integrated neighborhoods is important to avoid confounding of race and policing styles. Second, panel data with multiple time points are needed to identify developmental trajectories of legal socialization, and identify their sensitivity to neighborhood effects including crime, social contexts, and exposure to different forms and patterns of social control. Third, the differences in legal socialization of males and females in this sample indicates that over-samples of adolescent girls may be necessary to identify the effects of legal socialization on their already high rates of compliance. Finally, the low skew in self-reported crime of teenagers in high crime areas may be a sign of underreporting and suggest the need both for collateral reports and alternate measures of compliance and cooperation with legal authorities.

**APPENDIX A: DESCRIPTIVE STATISTICS ON SCALES AND PREDICTORS**

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>( \alpha )</th>
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<tr>
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<td>16</td>
<td>5.83</td>
<td>3.79</td>
<td>0.980</td>
</tr>
<tr>
<td>Alienation</td>
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<td>6.62</td>
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<tr>
<td>Impulsive</td>
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<tr>
<td>Control</td>
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<tr>
<td>Deviant peers</td>
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<td>1.64</td>
<td>0.58</td>
<td>0.728</td>
</tr>
<tr>
<td>Prosocial peers</td>
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<td>4</td>
<td>2.93</td>
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</tr>
<tr>
<td>Presence of caring adult</td>
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<td>9</td>
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<td>Exposure to violence</td>
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<tr>
<td>Moral disengagement</td>
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<td>4.55</td>
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<tr>
<td>Crime thrill</td>
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<td>6.29</td>
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<td>0.77</td>
<td>0.727</td>
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<tr>
<td>Procedural justice</td>
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<td>25.5</td>
<td>16.70</td>
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<tr>
<td>Punishment risk</td>
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</tr>
<tr>
<td>Social costs of crime</td>
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<td>6.67</td>
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<td>0.735</td>
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<td>SRO—variety</td>
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<td>1.22</td>
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### APPENDIX B: CORRELATION MATRIX

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<th>14</th>
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<tbody>
<tr>
<td>1. Aggression</td>
<td>0.398</td>
<td></td>
<td>0.294</td>
<td>-0.002</td>
<td>0.172</td>
<td>-0.252</td>
<td>0.084</td>
<td>-0.090</td>
<td>0.378</td>
<td>-0.028</td>
<td>0.009</td>
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<td>0.270</td>
<td>0.213</td>
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<tr>
<td>2. Alienation</td>
<td>0.473</td>
<td>0.294</td>
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<td>-0.041</td>
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<td>0.216</td>
<td>-0.152</td>
<td>0.253</td>
<td>-0.114</td>
<td>0.202</td>
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<td>-0.107</td>
<td>0.166</td>
<td>0.303</td>
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<td>0.167</td>
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<tr>
<td>3. Impulsivity</td>
<td>-0.172</td>
<td>-0.002</td>
<td>-0.041</td>
<td></td>
<td>-0.117</td>
<td>0.163</td>
<td>-0.156</td>
<td>0.087</td>
<td>-0.136</td>
<td>0.047</td>
<td>-0.048</td>
<td>0.022</td>
<td>0.020</td>
<td>0.007</td>
<td>-0.066</td>
<td>0.066</td>
<td>-0.145</td>
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<td>4. Control</td>
<td>0.376</td>
<td>0.172</td>
<td>0.293</td>
<td>-0.117</td>
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<td>-0.441</td>
<td>0.370</td>
<td>-0.298</td>
<td>0.374</td>
<td>-0.094</td>
<td>0.283</td>
<td>-0.66</td>
<td>-0.179</td>
<td>0.093</td>
<td>0.462</td>
<td>-0.213</td>
<td>0.562</td>
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<tr>
<td>5. Deviant peers</td>
<td>-0.348</td>
<td>-0.252</td>
<td>-0.190</td>
<td>0.163</td>
<td>-0.441</td>
<td></td>
<td>-0.254</td>
<td>0.343</td>
<td>-0.404</td>
<td>0.105</td>
<td>-0.218</td>
<td>0.176</td>
<td>0.205</td>
<td>-0.182</td>
<td>-0.308</td>
<td>0.222</td>
<td>-0.410</td>
</tr>
<tr>
<td>6. Prosocial peers</td>
<td>0.203</td>
<td>0.084</td>
<td>0.216</td>
<td>-0.156</td>
<td>0.370</td>
<td>-0.254</td>
<td></td>
<td>0.378</td>
<td>0.269</td>
<td>-0.080</td>
<td>0.274</td>
<td>-0.227</td>
<td>-0.115</td>
<td>-0.013</td>
<td>0.350</td>
<td>-0.116</td>
<td>0.397</td>
</tr>
<tr>
<td>7. Presence of caring adult</td>
<td>8. Parental supervision</td>
<td>-0.242</td>
<td>-0.090</td>
<td>-0.152</td>
<td>0.087</td>
<td>-0.298</td>
<td>0.343</td>
<td>-0.378</td>
<td>0.368</td>
<td>0.072</td>
<td>-0.369</td>
<td>0.173</td>
<td>0.329</td>
<td>-0.191</td>
<td>-0.336</td>
<td>0.273</td>
<td>-0.451</td>
</tr>
<tr>
<td>9. Exposure to violence</td>
<td>0.418</td>
<td>0.378</td>
<td>0.253</td>
<td>-0.136</td>
<td>0.374</td>
<td>-0.404</td>
<td>0.269</td>
<td>-0.368</td>
<td>0.024</td>
<td>0.331</td>
<td>-0.246</td>
<td>-0.283</td>
<td>0.240</td>
<td>0.369</td>
<td>-0.386</td>
<td>0.562</td>
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<tr>
<td>10. Punishment risk</td>
<td>-0.050</td>
<td>-0.028</td>
<td>-0.114</td>
<td>0.047</td>
<td>-0.094</td>
<td>0.105</td>
<td>-0.080</td>
<td>0.072</td>
<td>0.024</td>
<td>0.040</td>
<td>0.165</td>
<td>0.031</td>
<td>-0.087</td>
<td>-0.048</td>
<td>0.031</td>
<td>-0.014</td>
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<tr>
<td>11. Personal rewards</td>
<td>0.355</td>
<td>0.009</td>
<td>0.202</td>
<td>-0.048</td>
<td>0.283</td>
<td>-0.218</td>
<td>0.274</td>
<td>-0.369</td>
<td>0.331</td>
<td>0.040</td>
<td>-0.034</td>
<td>-0.175</td>
<td>0.025</td>
<td>0.375</td>
<td>-0.228</td>
<td>0.467</td>
<td></td>
</tr>
<tr>
<td>12. Social costs of crime</td>
<td>-0.244</td>
<td>-0.017</td>
<td>-0.273</td>
<td>0.022</td>
<td>-0.266</td>
<td>0.176</td>
<td>-0.227</td>
<td>0.173</td>
<td>-0.246</td>
<td>0.165</td>
<td>-0.034</td>
<td>0.165</td>
<td>-0.132</td>
<td>-0.132</td>
<td>0.159</td>
<td>-0.253</td>
<td></td>
</tr>
<tr>
<td>13. Legitimacy</td>
<td>-0.186</td>
<td>-0.255</td>
<td>-0.107</td>
<td>0.020</td>
<td>-0.179</td>
<td>0.205</td>
<td>-0.115</td>
<td>0.329</td>
<td>-0.283</td>
<td>0.031</td>
<td>-0.175</td>
<td>0.165</td>
<td>-0.274</td>
<td>-0.302</td>
<td>0.366</td>
<td>-0.313</td>
<td></td>
</tr>
<tr>
<td>14. Legal cynicism</td>
<td>0.236</td>
<td>0.270</td>
<td>0.166</td>
<td>0.007</td>
<td>0.093</td>
<td>-0.182</td>
<td>-0.013</td>
<td>0.191</td>
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<td>0.025</td>
<td>-0.132</td>
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<td>0.167</td>
<td>0.040</td>
<td>-0.257</td>
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<tr>
<td>15. Moral disengagement</td>
<td>0.496</td>
<td>0.213</td>
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<td>-0.066</td>
<td>0.462</td>
<td>-0.308</td>
<td>0.350</td>
<td>-0.336</td>
<td>0.369</td>
<td>-0.048</td>
<td>0.375</td>
<td>-0.132</td>
<td>-0.302</td>
<td>0.167</td>
<td>-0.182</td>
<td>0.504</td>
<td></td>
</tr>
<tr>
<td>16. Procedural justice</td>
<td>-0.112</td>
<td>-0.210</td>
<td>-0.080</td>
<td>0.066</td>
<td>-0.213</td>
<td>0.222</td>
<td>-0.116</td>
<td>0.273</td>
<td>-0.386</td>
<td>0.031</td>
<td>-0.228</td>
<td>0.159</td>
<td>0.366</td>
<td>-0.257</td>
<td>-0.182</td>
<td>0.280</td>
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<tr>
<td>17. Self-reported delinquency</td>
<td>0.365</td>
<td>0.136</td>
<td>0.167</td>
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<td>0.562</td>
<td>-0.410</td>
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<td>-0.451</td>
<td>0.562</td>
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<td>0.467</td>
<td>-0.253</td>
<td>-0.313</td>
<td>0.126</td>
<td>0.504</td>
<td>-0.280</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Significance: $p < 0.05$ in bold.
ACKNOWLEDGMENTS

This research was supported in part by a grant from the John D. and Catherine T. MacArthur Foundation to the MacArthur Research Network on Adolescent Development and Juvenile Justice. The authors are grateful to the members of the Network, John Laub, and Alex Piquero for thoughtful comments. Thanks to Faith Samples, Clifton Edwards, Orlando Diaz, and Marlene Pantin for their contributions to the field research.

REFERENCES


Abstract

American judges, and especially lifetime-appointed federal judges, are often revered as the pinnacle of objectivity, possessing a deep commitment to fairness, and driven to seek justice as they interpret federal laws and the U.S. Constitution. As these judges struggle with some of the great challenges of the modern legal world, empirical scholars must seek to fully understand the role of implicit bias in judicial decision-making. Research from the field of implicit social cognition has long documented negative implicit biases towards a wide range of group members, some of whom may well be harmed in various ways across the legal system. Unfortunately, legal scholarship, and particularly empirical legal scholarship, has lagged behind in terms of investigating how implicit biases, beyond Black and White, may lead to unfair outcomes in a range of legal areas, including those relevant to judges' potentially landmark legal decisions.

This Article proposes, and then empirically tests, the proposition that even today negative implicit biases may manifest in federal and state judges against even so-called privileged minorities, such as Asian-Americans and Jews. We present the results of an original empirical study we conducted on 239 sitting federal and state judges (including 100 federal district judges representing all Circuits) and consider the ways in which these judicial implicit biases may manifest. The study found that the judges harbored strong to moderate negative implicit stereotypes against Asian-Americans and Jews, while holding favorable implicit stereotypes towards Whites and Christians. These negative stereotypes associate Asians and Jews with immoral traits, such as “greedy,” “dishonest,” and “controlling,” and associate Whites and Christians with moral traits, such as “trustworthy,” “honest,” and “giving.” The study further found that federal district court judges sentenced Jewish defendants to marginally longer prison terms than identical Christian defendants and that implicit bias was likely the cause of the disparity.
This Article suggests, and the empirical study supports the claim, that automatic biases and cognitions indeed influence a much broader range of judicial decisions than has previously been considered.

INTRODUCTION ...........................................................................................................65

I. IMPLICIT BIAS, JUDGES, AND LEGAL SCHOLARSHIP:
   EXPANDING BEYOND BLACK AND WHITE .................................................................70
   A. Judges' Implicit Bias: A Little-Studied Domain .....................................................72
   B. Implicit Bias in the Law: Empirical Studies, Black and White ...............................75
   C. Beyond Black and White: Social Science and the Big Picture of Implicit Bias ..........79

II. BIASES BEYOND BLACK AND WHITE:
   ASIANS AND JEWS IN AMERICA ...........................................................................82
   A. Anti-Asian Explicit Attitudes and Stereotypes: From Yellow Peril to the "Model Minority" .................................................................................................86
   B. Anti-Asian Attitudes and Stereotypes: Implicit Biases ............................................89
   C. Anti-Jewish Explicit Attitudes and Stereotypes: From Peddler to Wall Street .........92
   D. Anti-Jewish Attitudes and Stereotypes: Implicit Biases ........................................95

III. THE EMPIRICAL STUDY .........................................................................................97
   A. Participants ...........................................................................................................97
   B. Materials ............................................................................................................98
   C. Hypotheses ..........................................................................................................102
   D. Results: Implicit Bias, Federal Judges, and Sentencing ........................................103
      1. Judges Implicitly Biased Against Asians .............................................................104
      2. Judges Implicitly Biased Against Jews ...............................................................104
      3. Federal District Court Judges (Marginal Significance) Gave Longer Sentences to Jewish (vs. Christian) Defendants; State Court Judges Gave Longer Sentences to White (vs. Asian) Defendants ..................................................104
      4. All Judge Cohorts Possessed Similarly Strong Implicit Biases ..............................105
      5. Male Judges Showed Stronger Anti-Jewish Implicit Bias ...................................106
A NATIONAL EMPIRICAL STUDY OF JUDICIAL STEREOTYPES

6. Political Party of Appointing President Did Not Predict Different IAT Scores ........................................ 106
7. Protestant and Catholic Judges Had Higher Pro-Christian/Anti-Jewish IAT Biases Compared to Judges Who Reported No Religion ........................................ 107
8. Catholic and Protestant Judges Self-Reported More Agreement with Asian and Jewish Stereotypes, as Compared to “No Religion” Judges (for both Positive Stereotypes and Negative Stereotypes) ........................................ 107
10. Judges’ Self-Reported Agreement with Asian Stereotypes Were Correlated with Their Agreement with Jewish Stereotypes ........................................ 108
12. Anti-Jewish, Pro-Christian Implicit Biases Predicted the Sentence Length of Christian Defendant: the Higher the Bias, the Shorter the Sentence ........................................ 109

IV. DISCUSSION: ANTI-ASIAN AND ANTI-JEWISH IMPLICIT BIASES .................................................................................... 110

CONCLUSION ............................................................................................... 113

INTRODUCTION

American judges, and lifetime-appointed federal judges in particular, are often revered as the pinnacle of objectivity, possessing a deep commitment to fairness, and driven to seek justice as they interpret federal laws and the United States Constitution. ¹ Curiously, despite the growing interest in the concept of implicit bias among judges and legal

¹ E.g., 28 U.S.C. § 453 (2012) (requiring that all justices and judges of the United States take an oath or affirmation in which they affirm that they “will administer justice without respect to persons, and do equal right to the poor and to the rich, and . . . will faithfully and impartially discharge and perform all the duties incumbent upon [them]”); Michael B. Hyman, Implicit Bias in the Courts, Ill. B.J., Jan. 2014, at 40, 43 (“Judges must be impartial, as a matter of ethical principle, professional identity, and oath.”).
commentators,\(^2\) only one empirical study has measured judges’ individual implicit biases, and that study only measured a single implicit bias among a sample of state trial judges.\(^3\) Implicit bias research has been compelling for a range of reasons—perhaps chiefly among them that individual implicit biases often diverge from people’s egalitarian self-concepts.\(^4\) This disconnect between a person’s commitment to fairness, on the one hand, and their possession of justice-obscuring automatic biases on the other, highlights the question of whether American judges can actually fairly perpetuate the justice they hold so dear.

As federal judges, in particular, struggle with some of the great challenges of the modern legal world—the role of the government in health care,\(^5\) the boundaries of affirmative action,\(^6\) the legal status of executive orders over immigration,\(^7\) the role of the judge in sentencing,\(^8\)

\(^2\) See, e.g., Mark W. Bennett, Unraveling the Gordian Knot of Implicit Bias in Jury Selection: The Problems of Judge-Dominated Voir Dire, the Failed Promise of Batson, and Proposed Solutions, 4 HARV. L. & POL’Y REV. 149, 158, 168 (2010) (discussing judge-dominated voir dire and the Batson challenges and how these processes exacerbate problems of implicit bias in jury selection and jury determinations, and proposing two possible solutions—increasing lawyer participation in voir dire and eliminating peremptory challenges—to address the implicit biases of jurors and lawyers throughout these processes). As a gauge of the interest in implicit bias among judges and attorneys more generally, it is notable that the authors of this Article, alone, have given hundreds of trainings to judges and lawyers on implicit bias-related topics.

\(^3\) See Jeffrey J. Rachlinski et al., Does Unconscious Racial Bias Affect Trial Judges?, 84 NOTRE DAME L. REV. 1195, 1197 (2009) (finding that state court judges harbor White-Black implicit racial biases and that these biases can influence their judgment). The authors of that study indicate that they also included a gender Implicit Association Test (IAT) as part of their study, but they do not report the results. Id. at 1208 n.68.

\(^4\) See Mahzarin R. Banaji & Anthony G. Greenwald, Implicit Gender Stereotyping in Judgments of Fame, 68 J. PERSONALITY & SOC. PSYCHOL. 181, 190 (1995) (finding that explicit expressions of sexism or stereotypes were not correlated with the observed implicit gender bias in fame judgments); see also Alexander R. Green et al., Implicit Bias Among Physicians and Its Prediction of Thrombolysis Decisions for Black and White Patients, 22 J. GEN. INTERNAL MED. 1231, 1235 (2007) (finding that physicians held implicit racial biases against African-Americans that affected treatment recommendation, but no similar predictive validity was found by asking doctors about their explicit racial preferences); Laurie A. Rudman et al., Measuring the Automatic Components of Prejudice: Flexibility and Generality of the Implicit Association Test, 17 SOC. COGNITION 437, 460 (1999) (finding that the average effect size for implicit prejudice based on ethnicity (Jewish vs. Christian), age (young vs. old), and nationality (American vs. Soviet) was large (d = 1.32) as compared to moderate (d = 0.49) for self-reported measures of prejudice).


\(^7\) See, e.g., Texas v. United States, 809 F.3d 134, 186 (5th Cir. 2015), aff’d by an equally divided court, United States v. Texas, 136 S. Ct. 2271 (2016) (per curium).

and the status of the death penalty— it is indeed worth pursuing a vibrant research agenda that seeks to fully understand the role of implicit bias in judicial decision-making. As studies of the harmful effects of implicit bias against African-Americans in law and society continue to make an impact in scholarship and in practice, scholars must also expand the consideration of implicit bias in the law with special regard for judicial biases beyond the Black–White paradigm. Research from the field of implicit social cognition has long documented negative implicit biases towards a wide range of group members, some of whom may well be harmed in various ways across the legal system. Unfortunately, legal


10. See, e.g., Melody S. Sadler et al., The World Is Not Black and White: Racial Bias in the Decision to Shoot in a Multiethnic Context, 68 J. SOC. ISSUES 286, 306 (2012) (finding that college-age participants and police officers were quicker to correctly shoot armed Black targets and to indicate “don’t shoot” for unarmed Latino, Asian, and White targets but noting that police officers showed additional racial biases in reaction times towards Latinos compared to Asians and Whites); see also John Pyun, When Neurogenetics Hurts: Examining the Use of Neuroscience and Genetic Evidence in Sentencing Decisions Through Implicit Bias, 103 CALIF. L. REV. 1019, 1032, 1037 (2015) (arguing that given the strong implicit bias against disability and mental illness, the admission of neuro-genetic evidence of mental illness may hurt, rather than help, a defendant claiming mental illness as the cause of their actions).

This Article does not mean to suggest that work focusing on implicit bias within the Black–White paradigm is anywhere near complete. There still remain a wide range of areas within the legal system in which the role of implicit bias, specifically with respect to automatic discrimination towards African-Americans, has yet to be conducted. Some of our own work, in particular, continues to focus on the unaddressed problems related to racial disparities that most harm African-Americans. See, e.g., Robert J. Smith, Justin D. Levinson & Koichi Hioki, Race and Retribution: An Empirical Study of Racialized Punishment and Implicit Bias in America 43 (Feb. 29, 2016) (unpublished manuscript) (on file with authors) (finding that jury-eligible citizens associate Black with Payback and White with Mercy and that these racial associations are correlated with overall support for retributive theories of punishments); Justin D. Levinson & Robert J. Smith, Systemic Implicit Bias, 126 YALE L.J. 406 (2017), http://www.yalelawjournal.org/forum/systemic-implicit-bias.

11. See, e.g., Becca R. Levy & Mahzarin R. Banaji, Implicit Ageism, in AGEISM: STEREOTYPING AND PREJUDICE AGAINST OLDER PERSONS 49, 54–55 (Todd D. Nelson ed., 2002) (finding that there is a negative implicit bias toward the elderly); Dan-Olof Rooth, Automatic Associations and Discrimination in Hiring: Real World Evidence, 17 LABOUR ECON. 523, 529 (2010) (finding that a negative implicit association toward Arab-Muslim men can affect human resource officers’ choice of job candidates); Marlene B. Schwartz et al., Weight Bias Among Health Professionals Specializing in Obesity, 11 OBESITY RES. 1033, 1037 (2003) (finding that health professionals exhibited a significant pro-thin and anti-fat implicit bias); see also Laurie A. Rudman & Stephanie A. Goodwin, Gender Differences in Automatic In-Group Bias: Why Do Women Like Women More Than Men Like Men?, 87 J. PERSONALITY & SOC. PSYCHOL. 494, 497, 506 (2004) (finding that both genders implicitly prefer their own group but that women have a much stronger implicit bias favoring their own group than men do and that men were implicitly associated with violence and aggression more readily than women); cf. Christopher L. Aberson et al., Implicit Bias and Contact: The Role of Intercultural Friendships, 144 J. SOC. PSYCHOL. 335, 344 (2004) (finding that participants with close friends who were Latino or African-American
scholarship, and particularly empirical legal scholarship, has lagged behind in terms of investigating how implicit biases, beyond Black and White, may lead to unfair outcomes in a range of legal areas. Because of these implicit biases, judges and other well-intentioned actors in the criminal justice system and beyond may also harm stereotyped groups, such as Latinos, Native Americans, the disabled, the mentally ill, the overweight, immigrants, the LGBT community, the elderly, women, Asians, Arab-Muslims, Jews, and many others.

This Article proposes, and then empirically tests, the proposition that even today negative implicit biases may manifest in federal and state judges against even so-called privileged minorities, such as Asian-Americans and Jews. This Article presents the results of an original empirical study we conducted on 239 sitting federal district judges, federal magistrate judges, and state judges, and considers the ways in which judicial implicit biases may manifest. This Article aims to broaden the scholarly discourse around implicit bias by presenting this study, in which we measured judges’ levels of implicit bias towards Asians and Jews (as compared to Whites and Christians, respectively) and asked judges to sentence a hypothetical white-collar criminal defendant.

This study found that federal district court judges, federal magistrate judges, and state court judges harbored strong to moderate negative implicit stereotypes against Asians and Jews, while holding favorable exhibited less implicit bias toward those groups than participants without close friends in those particular groups).


13. See supra notes 10–12.
implicit stereotypes towards Whites and Christians. These negative stereotypes associate Asians and Jews with immoral traits, such as "greedy," "dishonest," and "controlling," and associate Whites and Christians with moral traits, such as "trustworthy," "honest," and "giving." The study further found that federal district court judges were marginally more likely to sentence a Jewish defendant to longer terms than a Christian defendant, and state court judges were more likely to sentence a White defendant to longer terms than an Asian defendant. A regression analysis also revealed that judges' anti-Jewish (pro-Christian) implicit stereotypes predicted shorter sentences for Christian defendants. Finally, the study revealed various judicial differences in explicit (self-reported) negative attitudes towards Asians and Jews in America, and in particular among state judges (as compared to federal judges) and among judges that self-identified as either Catholic or Protestant (as compared to judges who reported no religious affiliation).

Part I of this Article considers the current landscape of knowledge regarding implicit bias in the legal system, highlighting the fact that very little is known about judges' implicit biases and fairly little is known beyond the well-documented concerns relating to implicit biases towards African-Americans. Part II contextualizes this project within both social science and legal scholarship related to two groups: Asians and Jews in America. We tested judges' implicit biases toward these groups for two main reasons: first, both of these groups have been perceived as having overcome many of the historical barriers that hindered their progress; and second, if judges indeed harbor negative implicit biases against even the most favored minority groups, one could predict that further research would uncover a massive range of judicial implicit biases against a wide range of less privileged groups. This Part therefore presents the evolving historical role of both positive and negative stereotypes of Asians and Jews in America and concludes with a summary of modern social science findings that connect negative stereotypes—specifically those related to trustworthiness—with members of both groups. Part III presents the methods and results of the empirical study we conducted. We studied 239 federal and state judges, including 100 federal district court judges from all Circuits; provided them with a realistic white-collar criminal case (in which they read about an Asian, White, Jewish, or Christian defendant);

15. Bennett, Levinson & Hioki, supra note 8 (manuscript at 28–29). When data was combined across all conditions, 75% of federal trial judges and a lesser percentage of other judges gave the exact minimum possible sentence. Id. (manuscript at 27). This result likely reflects a larger issue related to the Federal Sentencing Guidelines and judges' perceptions of sentencing severity for white collar crime. We examine these particular study results in the context of the Federal Sentencing Commission, in a separate article. Id.
16. See infra Subsection III.D.
17. See infra Subsection III.D.10.
asked them to sentence the defendant in accordance with an agreed upon plea-bargain range (consistent with the Federal Sentencing Guidelines); and then tested both their implicit and explicit bias levels.

Part III then discusses the results of the study, which found that: (1) judges displayed strong to moderate negative implicit biases towards Asians and Jews, (2) state judges self-reported stronger anti-Asian attitudes than federal judges, (3) Catholic and Protestant judges held stronger pro-Christian, anti-Jewish biases than “no religion” judges, (4) Protestant judges self-reported some stronger anti-Asian biases than “no religion” judges, and (5) participants’ pro-Christian, anti-Jewish implicit bias levels predicted shorter sentencing of a Christian defendant. The study further found that federal district court judges sentenced (of marginal statistical significance) Jewish defendants to longer sentences than Christian defendants, and that state court judges sentenced Asian defendants to shorter sentences than White defendants.18 Part IV offers suggestions about the next stage of implicit bias scholarship and concludes by calling for a robust expansion of research.

I. IMPLICIT BIAS, JUDGES, AND LEGAL SCHOLARSHIP: EXPANDING BEYOND BLACK AND WHITE

Scholarship on implicit bias19 has altered society’s way of understanding ethnic and racial disparities in the legal system.20 That work, and in particular empirical studies conducted on the role of race and implicit bias, has made a profound contribution to law and policy literature, both in the criminal justice realm and beyond.21 Because of the continuing and

18. For an extensive detailing of this sentencing result, see Bennett, Levinson & Hioki, supra note 8 (manuscript at 28–29).
19. Simply stated, the concept of implicit bias describes “the process whereby the human mind automatically and unintentionally reacts to different groups in divergent ways, a process that can have unfortunate consequences.” Justin D. Levinson et al., Implicit Racial Bias: A Social Science Overview, in IMPLICIT RACIAL BIAS ACROSS THE LAW, supra note 12, at 9, 10.
20. See id. at 9–10; see also Jerry Kang et al., Implicit Bias in the Courtroom, 59 UCLA L. REV. 1124, 1186 (2012).
overwhelming racial disparities in America, especially those related to employment, \textsuperscript{22} education, \textsuperscript{23} home ownership, \textsuperscript{24} and criminal justice, \textsuperscript{25}

Rachlinski et al., \textit{supra} note 3, at 1197 (finding that judges harbor the same kinds of implicit biases as others and that these biases can influence their judgment).

\textsuperscript{22} Between 1972 and 2013, the ratio of unemployment rates among Blacks versus that among Whites were between 2 and 2.5. Neil Irwin et al., \textit{America's Racial Divide, Charted}, N.Y. TIMES (Aug. 19, 2014), http://www.nytimes.com/2014/08/20/upshot/americas-racial-divide-charted.html?_r=2. Even among people with similar levels of education, the Black unemployment rate is higher. \textit{Id.} For example, in 2013, among people with a Bachelor’s degree or higher, the unemployment rate for Blacks was 5.7%, compared with 3.5% for Whites. \textit{Id.} Additionally, in 2013, the median weekly earnings of full-time wage and salary workers was 21.6% higher for Whites, and an analysis of Federal Reserve data by the Urban Institute suggests that White families were 6.1 times as wealthy as Black families in 2010. \textit{Id.}

\textsuperscript{23} The disparities are apparent both at the level of high-school graduation as well as in advanced degree attainment. \textit{Table 1: Educational Attainment in the United States: 2014—Detailed Tables}, U.S. CENSUS BUREAU (2014), http://www.census.gov/hhes/socdemo/education/data/cps/2014/tables.html (under Table 1, click on hyperlinks for “Black alone” and “Non-Hispanic White alone” for statistics) (including data from 24,864 Blacks and 140,124 non-Hispanic Whites). For example, in 2014, 32.5% of Blacks had attained a Bachelor’s or Associate’s degree or higher, compared to 46.1% of Whites. \textit{Id.} In 2008, 44% of White 18- to 24-year-olds were enrolled in colleges and universities, compared to 32% of Black 18- to 24-year-olds. SUSAN AUD ET AL., U.S. DEP’T OF EDUC., NAT’L CTR. FOR EDUC. STATISTICS, STATUS AND TRENDS IN THE EDUCATION OF RACIAL AND ETHNIC GROUPS 117 (2010), http://nces.ed.gov/pubs2010/2010015.pdf. In 2008, 17% of Black children had a mother with at least a Bachelor’s degree, compared with 36% of White children. \textit{Id.} at 20. Black K-12 students are nearly three times more likely to be held back as their White peers. Lindsey Cook, \textit{U.S. Education: Still Separate and Unequal}, U.S. NEWS & WORLD REP. (Jan. 28, 2015, 12:01 AM), http://www.usnews.com/news/blogs/data-mine/2015/01/28/us-education-still-separate-and-unequal (citing the U.S. Department of Education’s Civil Rights Data Collection). On the SAT, black students had a mean score of 428 for critical reading and 428 for math, compared with mean scores for white students of 527 for critical reading and 536 for math. \textit{Id.} (same).

\textsuperscript{24} Access to homeownership may be the most important factor driving the wealth gap between Blacks and Whites. See Laura Shin, \textit{The Racial Wealth Gap: Why a Typical White Household Has 16 Times the Wealth of a Black One}, FORBES (Mar. 26, 2015, 8:00 AM), http://www.forbes.com/sites/laurashin/2015/03/26/the-racial-wealth-gap-why-a-typical-white-household-has-16-times-the-wealth-of-a-black-one/#13799aab6c5b; see also THOMAS SHAPIRO ET AL., INST. ON ASSETS & SOC. POLICY, \textit{The Roots of the Widening Racial Wealth Gap: Explaining the Black-White Economic Divide} 2-3 (2013), http://iasp.brandeis.edu/pdfs/Author/shapiro-thomasrn/racialwealthgapbrief.pdf (finding that in a study of 1,700 families over a period of twenty-five years, the number of years families owned their homes was the largest predictor of the gap in wealth growth by race in families with positive wealth growth, accounting for 27% of the difference in relative wealth growth between White and African-American families); U.S. CENSUS BUREAU NEWS, RESIDENTIAL VACANCIES AND HOMEOWNERSHIP IN THE SECOND QUARTER 2016, at 9 (2016), http://www.census.gov/housing/hvs/files/currenthvspress.pdf (finding that between 2012 and 2016, the homeownership rate for Blacks was 41–44%, compared to 71–73% for Whites).

\textsuperscript{25} Sonja B. Starr & M. Marit Rehavi, \textit{Mandatory Sentencing and Racial Disparity: Assessing the Role of Prosecutors and the Effects of Booker}, 123 YALE L.J. 2, 4 (2013) (explaining that one in nine Black men between the ages of twenty and thirty-four is behind bars, and Black males are incarcerated at nearly seven times the rate of White males); Sonja B. Starr & M. Marit Rehavi, \textit{Racial Disparity in Federal Criminal Charging and Its Sentencing Consequences}
much of the legal scholarship has rightfully focused on the Black–White paradigm of racial injustice.\textsuperscript{26} This work has established the need for a comprehensive examination and systemic response to implicit racial bias that spans the entire legal system, perhaps beginning with, but certainly not limited to, judges. This section examines what is known and not known about judges’ implicit biases, considers the successes and limitations of existing empirical work on implicit bias in the law, and outlines how social scientists studying implicit bias have outpaced legal scholars in understanding how implicit biases operate outside of the Black–White paradigm. It thus sets the stage for this Article’s empirical study of judges’ implicit biases beyond Black and White, specifically regarding judicial implicit biases related to Asian-Americans and Jews.

A. Judges’ Implicit Bias: A Little-Studied Domain

When looking at the powerful range of ways that implicit bias can lead to harm for stereotyped group members in the legal system, perhaps one of the most interesting places to look is at the role of the judge. Judges possess tremendous discretion in a vast range of legal areas. In criminal law, for example, discretion spans the entire trial process, beginning with

bail decisions and culminating in sentencing. 27 Similarly, judges are always present: unlike individual jurors (who are not present in many legal proceedings, are not present during important legal decisions even during jury trials, and may never sit on another jury), the cumulative courtroom impact of an individual judge’s implicit bias, as well as the potential impact of a “de-biased” judge, is considerable. 28 However, only one empirical study has examined the role of the judge with regard to implicit bias. 29 No studies have tested the implicit bias levels of U.S. district court or magistrate judges, and no studies have examined judges’ implicit biases towards stereotyped groups beyond Black and White.

Considering the tremendous discretion judges possess throughout the American legal system, it is surprising that the role of implicit bias in American judges has largely been unexamined empirically. Although a range of scholars may frequently allude to potential biases in judicial decisions, 30 only one study has in fact measured whether judges hold similar types of implicit bias as the rest of the population, and that study only investigated one type of implicit bias. 31 In this study, Professor Jeffrey Rachlinski and his colleagues conducted a study of 133 state or local trial judges at three different judicial conferences. 32 Judges were tested both using an Implicit Association Test (IAT) and a separate priming measure. 33 In the IAT portion of the study, judges completed what is known as the Black–White attitude IAT. 34 In this variation of the

27. See Richard B. Spindle, Judicial Discretion in Common Law Courts, 4 WASH. & LEE L. REV. 143, 145, 147–48, 152 (1947) (discussing the wide range of a judge’s discretion, including a judge’s discretion to grant or refuse a continuance, apply the rules of evidence, and decide probation, bail, and matters of procedure such as change of venue, setting aside order of dismissal, setting aside motion for default, setting aside default judgment, extension of time, separation of defendants on joint trial, consolidating several tort actions, amendment of pleadings, pretrial examination of state’s evidence in a criminal case, changing plea, compelling election, order of putting on evidence, and declaring a mistrial); see also Mark Osler & Mark W. Bennett, A “Holocaust in Slow Motion?” America’s Mass Incarceration and the Role of Discretion, 7 DEPAUL J. SOC. JUST. 117, 153, 155 (2014) (stating that prior to the U.S. Sentencing Guidelines established in 1987, judges had virtually unlimited discretion, and even now, after the Guidelines have been deemed advisory, judges, in their discretion, remain committed to the Guidelines).

28. See Rachlinski et al., supra note 3, at 1221.

29. See id. at 1208 (finding that judges harbor the same kinds of implicit biases as others and that these biases can influence their judgment).

30. See, e.g., Bennett, supra note 2, at 150; Hyman, supra note 1, at 41–42.

31. Rachlinski et al., supra note 3, at 1197 (“In this Article, we report the results of the first study of implicit racial bias among judges.”).

32. See id. at 1205–06, 1208, 1209 n.59 (finding that in two of these three judicial trainings, judges presumably were unaware of the topic of the study and in the third training, judges had voluntary chosen to attend a session that referenced the “unconscious bias” topic in conference materials).

33. Id. at 1208.

34. Id. at 1209, 1238.
IAT, judges categorized photos of White and Black faces with positive attitude words (e.g., peace, pleasure, friend) or negative attitude words (e.g., nasty, evil, awful) as quickly as possible. The researchers hypothesized that judges would display the same implicit biases as have been found in the rest of the population—judges would associate Black with bad and White with good.

The second part of the study involved a nonconscious priming task, in which the experimenters rapidly flashed coded words (e.g., dreadlocks, hood, rap, for the Black prime; summer, stress, trust, for the control group prime) on the judge participants’ computer screens at high speeds. Following this racial (or non-racial, in the case of the control group) priming, the researchers asked the judges to complete simulated trial decision tasks related to two juvenile defendants, one involving a shoplifting case and the other involving a robbery case. The researchers were interested first in whether judges who had been nonconsciously primed with Black-related words would respond to the trial decision tasks in harsher ways as compared to judges who were in the control group; and second, whether judges’ IAT scores predicted biased decisions on the decision-making task.

The results of the study showed that, on the IAT, judges indeed harbored the anti-Black implicit biases that the rest of the population has been repeatedly shown to possess—judges more readily associated Black with bad and White with good. On the priming task, however, the judges did not display the predicted results—judge participants who were exposed to the subliminal priming that presumably cognitively triggered the racial category of “Black” were not harsher in their judgments as compared to the control group. IAT scores, however, were shown to be related to the judges’ ultimate decisions. Judges with higher implicit bias scores indeed rendered harsher judgments when the judges had been primed with the racial category of “Black.”

Other than this one study, however, there have been no empirical examinations of judges’ implicit biases, and no studies have examined

35. Id. at 1238–39.
36. Id. at 1210–11.
37. Id. at 1212, 1213 & nn.86–87.
38. Id. at 1214–15, 1217 (explaining that the researchers also presented the judges with one trial decision task in which the researchers explicitly identified the race of the defendant).
39. Id. at 1214.
40. Id.
41. Id. at 1210 (finding “a strong white preference among white judges” but “[t]he black judges, by contrast, demonstrated no clear preference overall”).
42. Id. at 1215.
43. Id. at 1214.
44. Id. at 1217. This finding was reported as being “marginally significant.” Id.
judges’ implicit biases other than with regard to Black and White. A significant number of scholars, however, have empirically examined the ways in which implicit bias, and mostly Black–White bias, manifests in the legal system, and particularly in the criminal justice system.\(^{45}\)

**B. Implicit Bias in the Law: Empirical Studies, Black and White**

This Subsection briefly reviews empirical studies that demonstrate what is known about implicit bias in the legal system. Our review demonstrates that, despite major progress in the understanding of how implicit bias functions in the law, most of the work has focused on the Black–White paradigm in the field of criminal law. No studies have been conducted on federal judges or have compared different types of judges to each other. Little work has assessed how implicit bias may operate in the context of other minority groups, such as Asians and Jews.\(^{46}\) The empirical study we designed and describe in Part III seeks to begin to fill this gap.

Before describing the contributions of modern studies on implicit bias, which have disproportionately focused on discrimination against African-Americans in the criminal justice system, we wish to contextualize the discussion with the story behind one of social psychology’s earlier and most interesting studies, which raises a range of interesting legal questions not only about the role of race in perceptions of behavior and criminality but also about the role of stereotyped groups in the law more generally. This study, conducted by Professors Gordon W. Allport and Leo Postman, who originally designed it to test the psychology underlying rumors, almost accidentally began an era of study that focused on the power of negative racial stereotypes.\(^{47}\) In Professors Allport and Postman’s study, participants viewed a picture of passengers on a streetcar (one of whom was Black).\(^{48}\) In the picture, a White passenger holds a razor blade and a Black passenger is empty-handed.\(^{49}\) After viewing the picture, participants were asked to describe the picture to other participants who had not seen the picture, much like the traditional “telephone game” in which stories tend to transform as a story is told and retold.\(^{50}\) As participants told and retold the story to others, the story changed, and it did so in a racialized context.\(^{51}\) After participants had retold the story several times, some participants reported that the

\(^{45}\) See supra notes 25–26.

\(^{46}\) See Sadler et al., supra note 10, at 287.


\(^{48}\) For a description of the Allport and Postman study, see Levinson, supra note 21, at 381.

\(^{49}\) Id.

\(^{50}\) Id.

\(^{51}\) Id.
Black passenger—not the White passenger—held a razor blade.\(^{52}\) In psychological terms, the results of the study (which had originally focused on retelling accuracy) demonstrated a source-attribution error—the razor blade possession shifted from one memory source (the White passenger) to another (the Black passenger).\(^{53}\)

If, through storytelling, a knife can somehow migrate from the hand of a White perpetrator to the hand of his innocent Black neighbor, how does one deconstruct and analyze any law-related story that depends on facts, stories, and memories (e.g., employment,\(^{54}\) health care,\(^{55}\) rights of native peoples,\(^{56}\) tax,\(^{57}\) property\(^{58}\))? And how can one analyze the places within each law-related story that are susceptible to possible distortions triggered by racial or other group-based stereotypes? Modern empirical studies have done a fairly good job in beginning this dialogue but have left much undone. These studies have focused upon the cognitive elements of error that negative implicit attitudes and stereotypes can introduce into law and society, ranging from private action, to legislative progress, to jury decision-making. Why are voting citizens, for example, more likely to sign a petition to end so-called “three strikes” laws when

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52. Id.
53. Id.
54. See Nancy Gertner & Melissa Hart, Employment Law: Implicit Bias in Employment Litigation, in IMPLICIT RACIAL BIAS ACROSS THE LAW, supra note 12, at 80, 81–82 (discussing the role implicit bias plays in employment discrimination law in the courtroom).
55. See Michele Goodwin & Naomi Duke, Health Law: Cognitive Bias in Medical Decision-Making, in IMPLICIT RACIAL BIAS ACROSS THE LAW, supra note 12, at 95, 96–97 (discussing the threat of implicit bias to medical decision-making, the physician–patient relationship, and quality of care, and the challenges of combating racial discrimination in the health care system given that implicit bias is outside the scope of Title VI of the Civil Rights Act).
56. See Serrano & Nu‘uhiwa, supra note 12, at 210–11 (discussing how implicit biases toward Native Peoples as foreign, violent, and nonacademic undergird modern barriers to Native self-governance, such as legislation, case law, and administrative action limiting Native peoples’ governing power).
57. See Dorothy A. Brown, Tax Law: Implicit Bias and the Earned Income Tax Credit, in IMPLICIT RACIAL BIAS ACROSS THE LAW, supra note 12, at 164, 165–66 (discussing how implicit bias toward Blacks and welfare in the earned income tax credit context has harmed hard-working White taxpayers, led to the failure to monitor noncompliance and large instances of tax fraud, and led to little reduction of the error rate, which would help lift more hard-working Americans out of poverty).
58. See Michelle Wilde Anderson & Victoria C. Plant, Property Law: Implicit Bias and the Resilience of Spatial Colorlines, in IMPLICIT RACIAL BIAS ACROSS THE LAW, supra note 12, at 25, 26, 39–40 (discussing implicit bias in the context of racially ordered housing, neighborhoods, and mortgage markets, and the challenges of combating racial discrimination in the housing and land context given that implicit bias is outside the scope of the Fair Housing Act and other antidiscrimination laws).
prison is depicted as less Black? Why are resumes with White-sounding names more likely to elicit a phone call for a job interview than resumes with Black-sounding names? Why are guns, for example, more quickly identified and categorized when they are associated with Black faces? Why is a “for sale” home evaluated as being more desirable when there is a photo with a White family (as opposed to a Black family) on the mantle? And how is it that mock jurors evaluate the same ambiguous evidence differently based on the perpetrator’s skin color? These questions are likely best resolved by understanding the automatic and uncontrolled nature of group-based bias in the broader context of the legal system.

A summary of implicit-bias related legal studies may help begin to signal just how broad the discussion of implicit bias in the law can and should be, when one considers the impact of gender, disability, race, ethnicity, sexuality, religion, body shape, national origin, and more. Notably, however, a large proportion of existing implicit bias studies focus on African-Americans in the criminal justice system. These studies prove to be a great example of what can come next as researchers begin

59. See Rebecca C. Hetey & Jennifer L. Eberhardt, Racial Disparities in Incarceration Increase Acceptance of Punitive Policies, 25 PSYCHOL. SCI. 1949, 1950–51 (2014) (finding that “[w]hen a penal institution was represented as ‘more Black,’ people were more concerned about crime and expressed greater acceptance of punitive policies than when the penal institution was represented as ‘less Black’”).

60. See Marianne Bertrand & Sendhil Mullainathan, Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination, 94 AM. ECON. REV. 991, 992 (2004) (finding that submitting resumes with White-sounding names as opposed to African-American-sounding names resulted in 50% more callbacks for interviews, and finding that callbacks are also more responsive to resume quality for White names than for African-American names).

61. See B. Keith Payne, Prejudice and Perception: The Role of Automatic and Controlled Processes in Misperceiving a Weapon, 81 J. PERSONALITY & SOC. PSYCHOL. 181, 185 (2001) (finding that participants identified guns faster when primed with Black faces than with White faces and that participants misidentified tools as guns more often when primed with a Black face than with a White face); see also Joshua Correll et al., The Influence of Stereotypes on Decisions to Shoot, 37 EUR. J. SOC. PSYCHOL. 1102, 1102, 1107 (2007) (finding that using a video game simulation, participants who read stories about Black (vs. White) criminals had increased bias in the decision to shoot Black targets and that an increased number of armed Blacks in the simulation led participants to shoot armed Blacks more quickly than armed Whites).

62. See Anderson & Plant, supra note 58, at 35; see also Courtney Marie Bonam, Devaluing Black Space: Black Locations as Targets of Housing and Environmental Discrimination (Aug. 2010) (unpublished Ph.D. dissertation, Stanford University) (on file with the Stanford University Libraries) (arguing that people discriminate against Black, relative to White, space, evaluating and treating a Black space more poorly, and that people devalue Black space relative to White space).

63. See Levinson & Young, supra note 21, at 309–10 (proposing and confirming the Biased Evidence Hypothesis, which “posits that when racial stereotypes are activated, jurors automatically and unintentionally evaluate ambiguous trial evidence in racially biased ways”).
to think about implicit bias in broader contexts. In the criminal justice system, for example, implicit racial cues can even influence something as fundamental as societal support for law reform. A study by psychologists Rebecca C. Hetey and Jennifer L. Eberhardt found that, when they showed Californians photographs depicting over-incarceration in the wake of the state’s highly criticized “three strikes law,” a significantly larger percentage of citizens were willing to sign a real petition urging the repeal of the law when the prison population was depicted in the photographs as less Black.64 Racial cues can affect juries, too. For instance, one of the authors of this Article, Professor Justin D. Levinson, studied how mock-jurors remembered “trial” information presented to them. His study found that mock-jurors who read about an African-American perpetrator had better memories of the aggressive case facts than those who read the same case but with a White perpetrator, a process thereby likely to skew their subsequent judgments.65

In other jury-focused studies, Professor Levinson and his colleagues examined race in the context of the presumption of innocence and found that mock-jurors automatically associated Black with Guilty and White with Not Guilty on an IAT.66 In addition, they found that mock-jurors were more likely to evaluate ambiguous evidence as guilt-prone after having briefly seen a security camera image of a dark-skinned perpetrator (as compared to a lighter-skinned perpetrator in the same image).67 Even criminal defense lawyers, a group that is presumably motivated to avoid racial bias, can be susceptible to these biases. Professors Theodore Eisenberg and Sheri Lynn Johnson found that even capital defense lawyers implicitly associated Black with bad and White with good on an IAT that they conducted.68 Researchers later found that jurors eligible to sit on a death penalty trial actually harbored stronger Black-Worthless and White-Worth implicit associations than jurors who would not be allowed to sit on such juries.69 Finally, researchers have noted that even rationales for punishment may be infused with implicit racial bias. In a 2016 study, Professor Robert J. Smith and his colleagues found that, in a national study, jury-eligible citizens (on an IAT) actually associate Black with Payback and White with Mercy—core punishment concepts that are supposedly devoid of racial content and underlie fair criminal punishment.70

64. Hetey & Eberhardt, supra note 59, at 1950–51.
65. Levinson, supra note 21, at 350.
66. Levinson et al., Guilty by Implicit Racial Bias, supra note 21, at 190.
67. Levinson & Young, supra note 21, at 309–10.
68. Eisenberg & Johnson, supra note 26, at 1545.
69. Levinson et al., Devaluing Death, supra note 21, at 521, 564.
70. See Smith et al., supra note 10, at 43.
We need not recount all such implicit bias in criminal law studies here. There are quite a range, and most of them lead to the same conclusion: implicit racial bias can influence legal decision-making at every single stage of the criminal justice system, from law making, to policing, to the courtroom, to sentencing, and finally, to parole. Yet, outside of the Black-White paradigm, and outside of criminal law, a key theme that emerges from this research review is that empirical study of implicit biases in other legal domains lags behind social science findings, particularly outside the context of Black and White.

C. Beyond Black and White: Social Science and the Big Picture of Implicit Bias

Current legal scholarship has largely failed to reflect fully the extraordinary breadth of social science work on implicit bias. Specifically, few scholars have conducted implicit bias legal scholarship outside the Black–White paradigm, and few empirical studies have examined any legal domain outside of criminal law. One may begin to understand these shortcomings of legal scholarship by looking first to the field of implicit social cognition, where hundreds of studies have documented a wide range of implicit biases beyond Black and White.

Social scientists have published hundreds of articles dedicated to exploring implicit bias, its rationales, and its effects. Although the


72. But see supra note 12.

73. But see, e.g., Rachlinski et al., supra note 3, at 1197 (finding that judges harbor the same kinds of implicit biases as others and that these biases can influence their judgment).

74. See, e.g., Correll et al., supra note 61, at 1103 (“The current studies examine whether experimental manipulations designed to increase the accessibility of the Black-danger stereotype exacerbate bias in the decision to shoot. This research borrows from work on the malleability of implicit associations.”); see also Correll et al., supra note 71, at 1320 (finding that in a video game simulation, participants were able to make the decision to shoot an armed target more quickly and more accurately if the target was Black); Patricia G. Devine, Stereotypes and Prejudice: Their Automatic and Controlled Components, 56 J. PERSONALITY & SOC. PSYCHOL. 5, 12 (1989) (showing that the consequence of subconscious activation of negative black racial stereotypes is evaluating ambiguous behavior as aggressive); Eberhardt et al., supra note 71, at 881–83, 885–87 (finding that individuals, including police officers, who saw split-second images typically associated with crime prior to completing a study, were more likely to focus their attention on an image of a Black man as opposed to the White man on the same screen, even though they did not realize where they were looking); Goff et al., supra note 71, at 296, 302 (showing that individuals
research is too numerous to recount fully here, and there is indeed a wealth of research demonstrating the presence and societal effects of anti-Black implicit bias, it is helpful for the purposes of this Article to recognize the breadth of this research beyond Black and White. Researchers using implicit social cognition methods, such as the now well-known IAT,75 have found that a majority of Americans consistently hold a varied range of implicit biases. Because of the flexibility of the measures, the IAT has allowed researchers to test, and statistically confirm the presence of, a huge range of implicit associations and stereotypes, including demonstrating that Americans implicitly associate: Asian-American or Native American with foreign (White as American),76 Arab-Muslim with bad (White as Good),77 women with family (male with the workplace),78 gay as bad (straight as good),79 disabled as bad

subconsciously associate Black faces with apes and that the association, once triggered, can change the way an individual views violence against a Black person); John T. Jost et al., A Decade of System Justification Theory: Accumulated Evidence of Conscious and Unconscious Bolstering of the Status Quo, 25 POL. PSYCHOL. 881, 893, 912 (2004) (arguing that, psychologically, there is an unconscious ideological motive that supports the status quo and that this motive explains why members of minority groups sometimes express preferences toward the majority group); Brian A. Nosek et al., Pervasiveness and Correlates of Implicit Attitudes and Stereotypes, 18 EUR. REV. SOC. PSYCHOL. 36, 38 (2007) (summarizing the results of more than 2.5 million IAT results that studied various implicit biases); Payne, supra note 61, at 190 (discovering that individuals who saw split-second images of Black men prior to beginning a study were more likely to misidentify tools as guns in a timed experiment); Laurie A. Rudman & Richard D. Ashmore, Discrimination and the Implicit Association Test, 10 GROUP PROCESSES & INTERGROUP REL. 359, 368 (2007) (showing that an IAT that focuses on racial stereotypes can sometimes predict the likelihood that someone has participated in overt acts of racial discrimination in the past).


76. E.g., Nosek et al., supra note 74, at 20 (summarizing data from IATs and self-reports and finding, among other things, that participants more easily associated Asian or Native American faces with “Foreign” and European American faces with “American”); see also Thierry Devos & Mahzarin R. Banaji, American = White?, 88 J. PERSONALITY & SOC. PSYCHOL. 447, 452 (2005) (finding that Asian-Americans as groups are less associated with the “American” culture than are White Americans); Nosek et al., supra note 74, at 20 (finding that Native Americans are implicitly viewed as less American than White Americans).

77. E.g., Kristin A. Lane et al., Understanding and Using the Implicit Association Test: IV: What We Know (So Far) About the Method, in IMPLICIT MEASURES OF ATTITUDES 59, 66 (Bernd Wittenbrink & Norbert Schwarz eds., 2007) (finding that based on over 2.5 million online tests of seventeen different IATs, “participants demonstrated, on average, greater positivity for White over Black [and] Other Peoples (non-Arab Muslims) over Arab Muslims”); see also Jaihyun Park et al., Implicit Attitudes Toward Arab-Muslims and the Moderating Effects of Social Information, 29 BASIC & APPLIED SOC. PSYCHOL. 35, 38 (2007) (finding that participants exhibited a strong implicit preference for White over Arab-Muslim names).

78. E.g., Lane et al., supra note 77, at 64, 68.

79. E.g., id. at 66–67.
A NATIONAL EMPIRICAL STUDY OF JUDICIAL STEREOTYPES

(abled as good), obese as bad (thin as good), old as bad (young as good), and so many others. In many of these domains, Americans' self-reported attitudes and stereotypes often vary widely from, or even conflict with, their documented implicit biases. For example, most Americans will self-report that they consider Native Americans to be the most American of all groups, but these self-reports contrast deeply with their implicit associations revealed by scientific testing. Researchers estimate that the vast majority of Americans possess the implicit biases listed above, and many others, too. Thus, research has consistently shown that the practice of simply asking people about their group-related attitudes or stereotypes captures only a limited amount of relevant information.

Social scientists have also employed a variety of methods other than the IAT to test how implicit biases affect cognitive processing and behavior across a wide range of groups. Of the many articles chronicling implicit bias outside of the Black–White paradigm, consider one that demonstrates how certain actions can simply and easily activate implicit bias in people's minds. In an empirical study, researchers showed study participants a video of a research assistant holding cue cards that contained unfinished word fragments. One-half of the participants saw an Asian research assistant in the video, and the other half saw a White research assistant. The cue cards that the research assistant held contained incomplete words, several of which conformed to Asian

80. E.g., id.
81. E.g., id. at 67.
82. E.g., id. at 66–67.
83. E.g., id. at 66–68 (finding that people implicitly associate males with science (females with the liberal arts), light skin with good skin (dark skin with bad skin), and White with harmless objects (Black with weapons)).
84. See Nosek et al., supra note 74, at 20 (finding that participants' self-reported responses reflected the view that Native Americans were more “American” than whites).
86. This Article does not suggest, however, that asking people about their self-reported biases is a waste of time. Indeed, there are times in which people will indeed admit such biases or preferences, and researchers should scrutinize these admissions. For example, Levinson and collaborators found that participants who self-reported more explicit bias displayed more sentencing bias in a death-penalty task. See Levinson et al., Devaluing Death, supra note 21, at 562.
88. Id.
stereotypes, such as “POLI_E,” “RI_E,” “S ORT,” and “S.Y.”99 The researchers challenged participants to formulate as many word completions as they could during a limited time.90 The researchers found that participants who saw the Asian research assistant completed more Asian-stereotyped words (POLITE, RICE, SHORT, AND SHY) as compared to participants who saw a White assistant.91

Such a simple study can have more complex implications. Recognizing the ease with which an entire network of stereotypes became activated and readily available in cognition in the study, one might consider how easily group membership can function to prime stereotypes in the legal system. Particularly in the context of judging, one could predict that a judge could pick up on a huge range of cues (appearance of a person or categorization of a last name, as the simplest examples) and that those cues could potentially work to rapidly activate one or more networks of stereotypes.

The next Part builds upon this discussion of implicit bias beyond Black and White and sets the stage for this Article’s empirical study by considering why it might be important to empirically investigate judicial implicit biases related to Asian-Americans and Jews.

II. BIASES BEYOND BLACK AND WHITE: ASIANS AND JEWS IN AMERICA

Although the vast majority of legal scholarship on implicit bias has dealt with African-Americans and the harmful stereotypes that can influence a range of areas across the law (namely, aggressive stereotypes such as violence92),93 there is detailed empirical research from the social sciences that documents the history of discrimination, both explicit and implicit, against both Asian-Americans94 and Jews in America.95 Within

89. Id.
90. Id.
91. Id. at 513.
94. See supra note 75 and accompanying text. This Article uses the term “Asian-American” in full recognition of the multiple meanings of the term and the risks of grouping together all American people of Asian descent. As a Harvard Law Review note discusses, this descriptor “obscures not only the differences among Asian-American individuals qua individuals but also the historic disputes that have separated Asian peoples. Moreover, it helps conceive individuals as components of monolithic blocs defined primarily by common physical traits.” Note, Racial Violence Against Asian Americans, 106 HARV. L. REV. 1926, 1932 (1993); see also Masako lino, Asian Americans Under the Influence of “Japan Bashing,” 32 AM. STU. INT’L 17, 17 (1994) (“Asian Americans are diverse. They are people who are, or whose ancestors are, from such countries in Asia as China, Japan, Korea, the Philippines, India, Vietnam, Laos, and Cambodia.”).
95. BRUCE E. BLAINE, UNDERSTANDING THE PSYCHOLOGY OF DIVERSITY 87 (2007) (stating that “[s]tereotypes of Jews have long included a mix of positive and negative attributes,” such as...
legal discourse, there has been a deep and engaged discourse focusing on various elements of injustice within American law and society, primarily focusing on the Asian-American experience\(^{96}\) but also on the Jewish experience.\(^{97}\) Because many perceive both of these groups as "model intelligence, shrewdness, ambition, success, loyalty to family, dishonesty, money loving, and ruthlessness); BARRY A. KOSMIN & ARIELA KEYSAR, BRANDEIS CTR. & TRINITY COLL., NATIONAL DEMOGRAPHIC SURVEY OF AMERICAN JEWISH COLLEGE STUDENTS 2014: ANTI-SEMITISM REPORT 2–3 (2015), http://www.brandeiscenter.com/images/uploads/articleuploads/trinity-Anti-Semitism.pdf (finding that in a survey of 1,157 self-identified Jewish students at fifty-five university and four-year college campuses, 54% of Jewish students “reported having been subject to or witnessing anti-Semitism on their campus”); Daniel Katz & Kenneth Braly, Racial Stereotypes of One Hundred College Students, 28 J. ABNORMAL & SOC. PSYCHOL. 280, 282, 285 (1933) (finding that in 1933, when researchers asked one hundred Princeton students to select traits from a list of eighty-four adjectives that matched Jews, the top twelve chosen traits for Jews were: shrewd (79%), mercenary (49%), industrious (48%), grasping (34%), intelligent (29%), ambitious (21%), sly (20%), loyal to family ties (15%), persistent (13%), talkative (13%), aggressive (12%), and very religious (12%); Rudman & Ashmore, supra note 74, at 364, 365 (finding that results of a Jewish/Christian negative/positive traits IAT predicted recommended budget cuts (economic discrimination) for Jewish organizations); Edwards S. Shapiro, Jews with Money, 36 JUDAISM 7, 8 (1987) (“The association of Jews with money was a staple of American, as well as of British, literature of the nineteenth and early twentieth century.”); Stacey Burling, Jews, Money and Image, PHILA. INQUIRER (Jan. 11, 2009) (“Jews gravitated toward finance and trade centuries ago, when more highly valued roles in agrarian societies—land owner and warrior—were denied to them. Early Christians were banned from loaning money at interest to fellow Christians, but they needed loans and Jews took on that role.”).


97. E.g., Kenneth L. Marcus, Jurisprudence of the New Anti-Semitism, 44 WAKE FOREST L. REV. 371, 391 (2009) (noting that the view of Jews in America only as a religious group and not as a religious, ethnic, or racial group is problematic in claims of discrimination based on race or national origin); see also VICTORIA SAKER WOESTE, HENRY FORD'S WAR ON JEWS AND THE LEGAL BATTLE AGAINST HATE SPEECH 3 (2012) (detailing the discrimination against Jews in the 1920s in the context of Sapiro v. Ford); Daniel M. Hinkle, Peremptory Challenges Based on Religious Affiliation: Are They Constitutional?, 9 BUFF. CRIM. L. REV. 139, 178 (2005) (proposing that removing Jewish jurors based on the assumption that Jews are intelligent may lead to feelings of exclusion by Jewish jurors); Julie D. Arp, Note, The Batson Analysis and Religious Discrimination, 74 OR. L. REV. 721, 730–32 (1995) (noting discrimination against Jews as a
minorities" or "success stories," largely due to perceived academic and socio-economic measures as well as stereotypes related to these groups—for example, Asian academic achievement\(^9\) or Jewish business savvy\(^9\)—it may initially seem somewhat counterintuitive for those unfamiliar with the literature to focus on how they may be unintentional targets of discrimination in the legal system.

However, research from the cognitive sciences consistently shows the continuing prevailing stereotypes about these groups.\(^{100}\) Some of the stereotypes are indeed positive, but there are also strong negative associations between both of these groups and morality-related stereotypes, such as slyness, financial fraud, and an overall lack of trustworthiness.\(^{101}\) These stereotypes have deep historical roots, but they are not a relic of history; social scientists have demonstrated that they

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\(^{100}\) One study found that on average, Jews are viewed as wealthier, more intelligent, harder working, more self-supporting, and less violent than Whites in general. Thomas C. Wilson, *Compliments Will Get You Nowhere: Benign Stereotypes, Prejudice and Anti-Semitism*, 37 SOC. Q. 465, 465, 467 (1996) ("Research . . . has identified two sorts of Jewish stereotypes. The first is overly malevolent and clearly anti-Semitic, portraying Jews as pushy, covetous, clannish, ill-mannered, ruthless, dishonest, mercenary, grasping, overbearing, sloppy, loud, money-loving, and uncouth. The second kind of stereotype is ostensibly benign, characterizing Jews as financially successful, ambitious, hardworking, intelligent, loyal to family and other Jews, industrious, energetic, and able to get ahead."). Stereotypes for Jewish people include perceived disloyalty, power, intelligence, and dishonesty, all of which are also stereotypes of Asian-Americans. See Fiske, *supra* note 98, at 379–80. In addition, Jews are also seen as "clannish, greedy, ambitious, and pushy," and Asians are also seen as "quiet, law-abiding, hardworking, and intelligent." *Id.* In a study involving over 860 college students associating groups with each of 120 characteristics, Asian-Americans were perceived as more self-disciplined (more self-disciplined, reserved, shy, and quiet, but less noisy), less popular (less sociable, athletic, good looking, and competent), and more traditional (more family committed, tradition-loving, and old-fashioned) than White Americans. See Linda A. Jackson et al., *Cognition, Affect, and Behavior in the Prediction of Group Attitudes*, 22 PERSONALITY & SOC. PSYCHOL. BULL. 306, 308, 311 (1996). In a 2001 telephone survey of 1,216 Americans, the poll found that 23% of Americans said they were uncomfortable with the idea of voting for an Asian-American candidate for president (11% for a Jew and 15% for an African American). K. Connie Kang, *Study Finds Persistent Negative Perceptions of Chinese Americans*, L.A. TIMES (Apr. 25, 2001), http://articles.latimes.com/2001/apr/25/news/mn-55180.

\(^{101}\) See *supra* note 100 and accompanying text.
Within the law, the existence of negative moral stereotypes can play a dangerous role in a host of domains where moral judgments can become legally relevant, ranging, for example, from legislative and administrative decision-making in criminal law (e.g., implementing stricter sentencing guidelines for white-collar crimes),

corporate law (duty of loyalty violations),
tort law (punitive damage judgments), securities law (insider trading or disclosure violations), contract law (breach and damages), employment law (trustworthiness of employees and their perceived loyalty to a corporation), and immigration law (moral thresholds). Non-doctrinal but still important legal consequences could additionally flow from the impact of stereotypes on the hiring and promotion of these groups in legal jobs, including law firm positions, judicial clerkships, and academic posts.

We chose to focus on stereotypes of Asians and Jews in America for multiple reasons. First, we wanted to investigate the breadth of implicit bias in federal and state judges beyond Black and White. As discussed in Part I, the concept of implicit bias against African-Americans in the legal system is well-researched and now regularly debated by the media and the public, perhaps because it is supported by so many objective measures of inequality that it is nearly impossible to deny. Second, there is a rich history of discrimination against Asians and Jews in America, both inside and outside the legal context, but a significant amount of public discourse about these groups highlights recent successes and overshadows this history. Testing empirically the current state of bias against these groups (among a group as honored as federal and state judges, who presumably would be among the most motivated to avoid bias) would therefore be illuminating in the context of that history of discrimination.

Third, both of these groups are perceived largely as American success stories, yet somewhat contradictory data complicates these narratives, such as objective indicators of wealth and achievement, as compared to social-science data demonstrating the continued propagation of negative stereotypes. Studying implicit and explicit biases toward these groups

102. Rudman & Ashmore, supra note 74, at 368.
103. Bennett, Levinson & Hioki, supra note 8 (manuscript at 18).
104. Judgments relating to the seizing of corporate opportunities for personal gain may well involve moral judgments.
105. Kang et al., supra note 12, at 886–87 (finding that explicit and implicit biases in favor of Whites and against Asian-Americans altered the evaluation of a litigator’s deposition).
107. In fact, the only empirical study to examine implicit bias in judges was conducted on Black and White implicit attitudes. Rachlinski et al., supra note 3, at 1208, 1210.
108. The median wealth of White families in 2013 was $134,008 compared to $94,440 for Asian-American families and $11,184 for African-American families. Sunstein, supra note 98. In
allows us to harness scientific methods to potentially help resolve ambiguity about the state of these biases in the legal system. And finally, we believed that studying groups that are largely considered favored minority groups is important: if strong implicit biases against Asians and Jews (that may be considered counterintuitive by some) were documented among federal and state judges, it would help illuminate the true breadth of implicit bias in the law and all of its attendant dangers.

A. Anti-Asian Explicit Attitudes and Stereotypes: From Yellow Peril to the “Model Minority”

There is a long history of anti-Asian sentiment in the United States. Although this history is complex and well-documented, this Article summarizes briefly the evolution of anti-Asian attitudes and stereotypes to set the stage for our report on modern research on implicit and explicit anti-Asian attitudes and stereotypes. According to some scholars, significant anti-Asian sentiment initially grew out of the immigration of large numbers of Chinese and Japanese to the United States, largely beginning in 1900. In 2013, 65% of Asian-Americans between the ages of thirty-five and thirty-nine had a four-year college degree, compared with 42% of Whites of the same age. Id.

In 2013, 25% of Jews had a household income exceeding $150,000, compared with 8% of the general public, and 58% of Jews were college graduates, compared with 29% of the general public. A Portrait of Jewish Americans, PEW RES. CTR. (Oct. 1, 2013), http://www.pewforum.org/2013/10/01/jewish-american-beliefs-attitudes-culture-survey/.

Additional empirical work on other groups in the American legal system is still sorely needed. For example, the incarceration numbers for certain group members, such as Latinos, demonstrate serious concerns that should be investigated in the implicit bias context. Similarly, Muslims in America report overt discrimination in law enforcement. See Geneive Abdo, Muslims Say Fellow Americans Are Lashing Out, CHI. TRIB. (July 15, 2014), http://articles.chicagotribune.com/2004-07-15/news/0407150256_1_american-muslims-muslim-activist-non-muslim. Future empirical work must examine these biases, as well as others. Unfortunately, due to the voluntary nature of our study and the need to prevent a large drop-out rate, we were limited in what group stereotypes we could investigate empirically.

This summary is not meant to be comprehensive. There are a wide number of sources that can provide a meaningful context to anti-Asian sentiment in the United States. See generally, e.g., ANGELO N. ANCHETA, RACE, RIGHTS, AND THE ASIAN AMERICAN EXPERIENCE (2d ed. 2006) (comparing Asian-Americans’ experiences with those of African-Americans in the United States, specifically that they have been the targets of racially based violence); DAVID PALUMBO-LIU, ASIAN/AMERICAN (1999) (arguing that the United States’ identity has been strongly attached to the Pacific and various Asian-American identities had been formed as a result); Yuko Kawai, Stereotyping Asian Americans: The Dialectic of the Model Minority and the Yellow Peril, 16 HOWARD J. COMM. 109 (2005) (noting that Asian-American’s stereotype of the model minority is inseparable from the negative stereotype of “yellow peril”); Natsu Taylor Saito, Model Minority, Yellow Peril: Functions of “Foreignness” in the Construction of Asian American Legal Identity, 4 ASIAN L.J. 71 (1997) (finding that those of Asian descent have been labeled the “model minority,” but also “foreign,” which reinforces their inferiority to White Americans).
in the 1850s. In California, for example, 17% of the male workforce in the 1870s was composed of Chinese workers. According to the Asian-American Almanac, “once the new immigrants arrived they faced a growing tide of bigotry fueled by white workers’ fears of economic competition.” These fears manifested as “widespread public rhetoric excoriating Asian immigrants” and “culminated in a series of restrictive policies.” These policies included the Sidewalk Ordinance of 1870, the Chinese Exclusion Act of 1882, and later the Immigration Acts of 1917 and 1924, which essentially shut down Asian immigration for two decades. Although many of these efforts consisted of legally sanctioned discrimination related to negative perceptions and fears of Chinese-Americans in particular, these discriminatory efforts were by no means limited. The Japanese-American experience similarly tells a story of discrimination and fearful legal responses to stereotypes. This fear was at its height just ten weeks after the Pearl Harbor attack, when President Franklin D. Roosevelt signed Executive Order 9066, which codified a policy of “exclusion, removal, and detention” that affected 120,000 people without review. This policy, considered by some to be among the most embarrassing chapters in recent American history, was fueled by fears and stereotypes of Japanese-Americans, known by some as the

111. THE ASIAN AMERICAN ALMANAC 265 (Susan B. Gall & Irene Natividad eds., 1995).
112. See id.
113. Id.
114. Id. at 337.
115. Id. at 265.
116. This law “prohibited persons from walking on the streets while using poles to carry goods, a practice used only by Chinese Americans at the time.” Id. at 337.
117. Id. at 206 (suspending “the immigration of Chinese laborers to the United States for ten years” (emphasis omitted)).
118. Id. at 266.
120. See, e.g., Saito, supra note 110, at 74.

“[T]he broad historical causes which shaped these decisions were race prejudice, war hysteria and a failure of political leadership.” Based on this report, the president issued an official apology and Congress passed legislation providing for at least symbolic redress. These, too, imply that the experience was an unfortunate detour in an otherwise honorable history of respect for the rights of citizens.

Id. (footnotes omitted) (quoting COMM’N ON WARTIME RELOCATION & INTERNMENT OF CIVILIANS, supra note 119, at 18).
“yellow peril” era. During this era, “Japanese were depicted as degenerate mongrels and the voters [in California] were urged to save ‘California-the White Man’s Paradise’ from the ‘yellow peril.’”

Social science research began to document negative explicit (self-reported) attitudes and stereotypes against Asian-Americans as early as the 1930s. A 1933 study of Princeton students sought to document their racial and ethnic stereotypes, including stereotypes of Chinese- and Japanese-Americans. Researchers asked study participants to choose traits from a list of adjectives and match those traits to groups. For Japanese, participants selected “Intelligent,” “Industrious,” “Progressive,” “Shrewd,” and “Sly.” For Chinese, the participants’ top six choices were “Superstitious,” “Sly,” “Conservative,” “Tradition-loving,” “Loyal to family ties,” and “Industrious.”

Although one can see the beginnings of mixed negative with positive stereotyping in the Princeton survey, researchers report a stronger shift toward positive stereotyping that occurred primarily in the second half of the twentieth century, perhaps beginning in earnest across the American population around the 1960s. Self-reported attitudes toward Asian-Americans in the United States appear to evolve as the “Model Minority” stereotype began to emerge clearly; Asians began to be seen as “quiet, law-abiding, hardworking, and intelligent,” as well as “self-disciplined,” attributes that are believed to go along with educational and career success. These “model” stereotypes, however, were not always positive and failed to entirely evade the negative moral stereotypes that were clear in the early 1900s.

The “model minority” and other stereotypes about Asian-Americans did not disappear in the aftermath of the Civil Rights Movement. Modern researchers have been sensitive to the multi-directionality of stereotypes and have investigated the way seemingly positive stereotypes can actually activate a threat response, whereby White Americans became concerned about the overrepresentation of Asian-Americans in desirable

121. Kawai, supra note 110, at 113 (“[T]he 1941 Pearl Harbor bombing by Japan during World War II inflated the yellow peril stereotype and led to the detention of Japanese Americans in concentration camps.”).
122. Saito, supra note 110, at 72 n.3 (quoting Oyama v. California, 332 U.S. 633, 658–59 (1948)).
123. Katz & Braly, supra note 95, at 285.
124. Id. at 282.
125. Id. at 285.
126. Id
127. Nakanishi, supra note 119, at 11.
128. Fiske, supra note 98, at 379.
academic and professional positions. In a 2001 study of American attitudes towards Asian-Americans, for example, Professors Colin Ho and Jay Jackson presented survey participants with a series of questions that make up what they call the “Attitude Toward Asians (ATA) Scale.” The ATA is an explicit measure that asks participants how much they agree or disagree with statements like, “Asian Americans tend to be hardworking and diligent,” “Asian Americans should think in more American ways,” and “Asian Americans are gradually taking over the United States.” The researchers hypothesized that “[b]eing perceived as intelligent, industrious, and successful may elicit admiration and respect, but may also elicit threat, resentment, envy, and hostility.”

The results of their study confirmed these expectations and found that “[t]heir stereotype factors were found to underlie the stereotype of Asian Americans: a negative stereotype, a model-minority stereotype, an artistic stereotype, and a quiet stereotype.” One can expect this kind of multi-directionality and complexity of explicit self-reported measures to be found in continuing empirical studies. With the implicit social cognition revolution, however, researchers have not been limited to using explicit measures to investigate Asian-American stereotypes. The next Section summarizes this research endeavor and sets the stage for this Article’s empirical study of Asian-American implicit stereotypes held by federal and state judges.

B. Anti-Asian Attitudes and Stereotypes: Implicit Biases

Modern studies of implicit bias have occasionally, though not frequently, examined implicit biases that Americans hold towards Asians. These studies have shown that people implicitly classify Asian-Americans as foreigners, ineffective litigators, and inhibited, among other negative categorizations. A 2007 study by Professors Laurie A. Rudman and Richard D. Ashmore, for example, found that college student participants associated Asians (on an IAT) with negative traits (reserved, stiff, inhibited) and Whites with positive traits (warm, friendly, outgoing). When combined with an economic discrimination measure, in which researchers asked students to employ budget cuts to various student organizations at their university, the researchers found that the implicit bias levels predicted students’ discrimination against an Asian student group (the “Japanese Cultural Association”).

130. Id. at 1556.
131. Id. at 1563.
132. Id. at 1555.
133. Id. at 1570.
134. Rudman & Ashmore, supra note 74, at 364.
135. Id. at 367 (finding that explicit self-reported attitudes towards Asians also predicted discrimination in the budget cut task).
Research has also found Asian-Americans to be less associated as “American” compared to White Americans. \(^{136}\) In that study, researchers Thierry Devos and Mahzarin R. Banaji created an IAT in which they asked participants to pair photos of Whites or Asians with symbols that were easily identifiable as “American” (such as the American flag, Mt. Rushmore, Capitol building) or “Foreign” (UN Building in Geneva, Ukrainian bill, Green and White flag). \(^{137}\) Results of the study showed that participants implicitly associated White with American and Asian with Foreign, relative to one another. \(^{138}\)

In the legal context, one study has measured how implicit bias may affect Asian-Americans. In that study, Professor Jerry Kang and his colleagues investigated whether the stereotype of the successful litigator was indeed a White stereotype. \(^{139}\) The researchers in that study employed two different IATs designed to measure how implicit associations of Asians and Whites may be related to stereotypes of successful litigators. \(^{140}\) In one IAT, Kang and his colleagues instructed participants to group together photos of male Asian faces and White faces with attribute words typically associated with successful scientists (e.g., analytical, methodical, mathematical) or litigators (e.g., eloquent, charismatic, verbal). \(^{141}\) In the second, participants grouped together the photos with positive or negative attitudes (often called the good/bad IAT), including, for example, “beauty, gift, happy,” for the category “Good,” and “filth, pain, hurt,” for the category “Bad.” \(^{142}\) In both IATs, the researchers found the predicted implicit bias—participants not only associated White with good and Asian with bad, but they also associated White with successful litigator traits and Asian with successful scientist traits. \(^{143}\) Furthermore, the researchers found that when participants were asked to rate the performance of a litigator (whom they heard by audio and was labelled as either White or Asian), their implicit biases predicted their ratings of the litigator when he was labelled as White. \(^{144}\) The more implicit bias they held associating White with successful litigator attributes (as opposed to successful scientist attributes), the more likely they were to judge a White litigator as being competent, the more likely

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136. Devos & Banaji, supra note 76, at 453.
137. Id. at 454, 456, 457 (using identifiable Asian and White names instead of photos for the IAT, a second study found similar results).
138. Id. at 463.
139. See Kang et al., supra note 12, at 887.
140. Id. at 892, 895.
141. Id. at 893–94.
142. Id. at 895.
143. Id. at 900.
144. Id. at 896, 901–02.
they were to like him, and the more likely they were to hire or refer him to others.\textsuperscript{145}

In light of the historical evidence regarding anti-Asian discrimination, as well as the more modern implicit stereotypes of Asians in America described in this Subsection, it is not surprising that scholars have considered the ways in which Asian-Americans might face automatic discrimination in the legal setting.\textsuperscript{146} These scholarly accounts have included a range of claims that posit, for example: “The yellow peril stereotype tends to increase the likelihood of acquittal in cases involving Asian American victims;”\textsuperscript{147} “Asian American and other non-white victims tend to receive less attention from law enforcement officers at all stages of the criminal arrest, investigation, and pre-trial processes;”\textsuperscript{148} law enforcement officers, due to stereotypes of Asians as morally inferior, may “apply tactics of harassment or brutality to dominate Asian suspects;”\textsuperscript{149} Asian intellectual and “masterminding” stereotypes may make it less likely for a jury to agree with an insanity defense,\textsuperscript{150} and

\textsuperscript{145} See id. at 900–01. For the Asian-litigator condition, however, it was the participants’ explicit bias, not their implicit bias, that predicted their evaluations of his performance. See id.

\textsuperscript{146} See Gee, supra note 96, at 195, 197 (arguing that the model minority myth prevents Asian-Americans from becoming jury forepersons where Asian-Americans are not parties to the litigation; can help Asian defendants secure more lenient sentences than they deserve; and combined with the characterization of Asian-Americans as foreign, often create obstacles for Asian-Americans to establish \textit{prima facie} claims of racial discrimination due to a belief that they are less protected under the Fourteenth Amendment than are African-Americans); Yen, supra note 96, at 19, 19–20 (arguing that the “yellow peril” stereotype devalues Asian lives because the perception of Asian-Americans as foreign or non-American is a significant hurdle for prosecutors in convincing a non-Asian jury to identify with an Asian victim, and that police who perceive Asian-Americans as foreign may attempt to take advantage of Asian suspects by failing to comply with criminal procedures).

\textsuperscript{147} Yen, supra note 96, at 13–15 (arguing that the image of Asian men as dangerous foreigners or martial artists has influenced jurors’ views of “reasonableness” in self-defense contexts, such as in \textit{Hattori v. Peairs}, 662 So. 2d 509 (La. Ct. App. 1995), and \textit{Kansas v. Simon}, 646 P.2d 1119 (Kan. 1982)).

\textsuperscript{148} Id. at 16 (“Police often assume that Asian and Asian American victims are unable to speak coherent English and instead speak to white witnesses. Asian victims also may distrust police and fail to assert their grievances. As a result, police likely make fewer arrests for Asian and Asian American victims as compared to white victims.”) (footnote omitted)).

\textsuperscript{149} Id. at 19 (noting that a New York court convicted a police officer of attempted assault of a Korean storeowner after the officer called the storeowner and his brother “f—ing Orientals” and “animals” as he beat them).

\textsuperscript{150} See Kim, supra note 96, at 93–94 (“The model minority stereotype, which disproportionately attributes intelligence and wiles to Asian Americans, packs the potential to influence trials for Asian American defendants . . . . [T]he prosecution can insist that Asian Americans are capable of ‘masterminding’ crimes and outsmarting non-Asians, even when the crimes lack clear design. . . . In the end, it may be too paradoxical for jurors to find that a scholarly and well-educated defendant has a mental defect that clouds his ability to discern right from
Asians are less likely to be selected to be jury forepersons, among others.151

C. Anti-Jewish Explicit Attitudes and Stereotypes: From Peddler to Wall Street

Although Asians and Jews took quite different paths in terms of their settlement in America, there are some historical similarities, both in chronology and in stereotypes that have led to the development of a mix of negative and positive group-based stereotypes. As psychologist Susan Fiske summarizes, “Stereotypes for Jewish people . . . share some of the content for Asians: perceived disloyalty, power, intelligence, and dishonesty overlap.”152 Here, this Article briefly traces the historical development of Americans’ attitudes and stereotypes toward Jews.

The largest Jewish immigration occurred from Europe between the years of 1820–1924.153 During these years, over 2.5 million Jews immigrated to the United States, both as a response to intolerable anti-Semitism and harsh economic conditions in Europe and to the economic opportunities available in America.154 Jews settled into a new life in the United States, often becoming peddlers to make a living.155 This new life did not come without discrimination, however. Jews in the nineteenth century were often stigmatized “for what many considered essential racial traits—greed, depravity, crudeness, and clannishness.”156 Prior to the 1880s, however, most Americans also perceived Jews to be “white,” which made legally-sanctioned discrimination more difficult.157 After the 1880s, however, a more racialized view of Jews emerged in America. A large swath of private enterprises formalizing policies to exclude Jews (e.g., law firms, universities, hotels, clubs) accompanied this racialization,158 but this...
discrimination was not embodied in specific anti-Jewish legislation. Rather, unlike the more explicit Congressionally sanctioned discrimination against Asians of this era, governmental inaction and the decision not to enforce anti-discrimination laws seemed to be the prevailing response to this form of private discrimination.\footnote{See Diner, supra note 99, at 164–65.}

The twentieth century “did not spell the end of anti-Jewish behavior and rhetoric,” but rather, the 1920s and 1930s served as the “peak” of anti-Semitism in the United States.\footnote{Id. at 207–08, 210. Id. at 208. Id. at 209. Id. at 210. Id. at 211. Id. at 209 (footnote added). For more on the association between Jews and money, see Shapiro, supra note 95, at 8 (“The association of Jews with money was a staple of American, as well as of British, literature of the nineteenth and early twentieth century.”).}

Part of this height of anti-Jewish attitudes was attributable to the continuation of racialized stereotypes that derived from European cultural trends and then-current political rhetoric, which attempted to connect the notions of a Jewish race to varying forms of human immorality.\footnote{Id. at 212. For an interesting parallel discussion regarding Jewish stereotypes in Europe, see Werner Bergmann, Anti-Semitic Attitudes in Europe: A Comparative Perspective, 64 J. Soc. Issues 343, 346 (2008).}

Another part of it emerged from a combination of economic pressures leading up to the Depression, when “Americans facing unemployment and the loss of economic status blamed the Jews for their problems,” a phenomenon that was exacerbated by “a stream of anti-Semitic organizations, publications, and speakers who competed in viciously vilifying the Jews.”\footnote{Diner, supra note 99, at 209. Around the same time, Henry Ford waged his well-known assault on Jews, largely beginning with his 1920 publication, “The International Jew: The World’s Foremost Problem,” and continuing with his purchasing a newspaper that regularly told of the “international Jewish conspiracy,” making these ideas known “to anyone who came to buy an automobile.” Id.}

Indeed, some Americans of this era believed that “Jews, whom they assumed were controlling Wall Street... [and] Hollywood, conspired to destroy American rural life” and control the government.\footnote{Goldstein, supra note 157, at 123.} Even at this height of anti-Semitism in America, however, explicit negativity towards Jews was not universal. Jewish politicians and cultural figures were finding some level of success in local elections and in the entertainment world, and some non-Jewish intellectuals and cultural leaders openly fought to call out automobile manufacturer Henry Ford and others for their anti-Semitism.\footnote{For an interesting parallel discussion regarding Jewish stereotypes in Europe, see Werner Bergmann, Anti-Semitic Attitudes in Europe: A Comparative Perspective, 64 J. Soc. Issues 343, 346 (2008).}
Empirical study of attitudes and stereotypes of Jews in America began largely in the 1950s, but interestingly, some of the first telling self-report data that emerged for Jews came in the same 1933 Princeton study that examined students’ attitudes toward Japanese and Chinese.\footnote{168} Participants’ five most selected traits for Jews were “Shrewd,” “Mercenary,” “Industrious,” “Grasping,” and “Intelligent”\footnote{169}—multi-directional (both positive and negative) traits that one could indeed trace to the propagation of stereotypes surrounding Jewish control of Wall Street. This type of stereotype multi-directionality has persisted through more modern research. A 1950 study by Professor Gregory Razran, for example, asked 150 male American participants to rate photos of college-aged women based on a variety of characteristics.\footnote{170} Professor Razran randomly gave the photos either Jewish, “Old American,” Irish, or Italian names.\footnote{171} He found that participants disliked photos labeled with Jewish names the most, and participants more harshly judged the photographed women’s character, as compared to the same photos labeled with non-Jewish names.\footnote{172} However, he also found that participants were more likely to judge the women labelled with Jewish names as ambitious and intelligent, as compared to the other groups.\footnote{173}

Modern measures of self-reported attitudes toward Jews display some of the same multi-directionality revealed in the historical account. According to Professor Bruce Evan Blaine, “On the one hand, Jews are regarded as intelligent, shrewd, ambitious, successful, industrious, and loyal to family. On the other hand, Jews are associated with traits such as dishonesty, money loving, pushy, and ruthlessness.”\footnote{174} As previously discussed, Susan Fiske summarizes modern stereotypes as sharing some of the same stereotypes as Asians, such as “perceived disloyalty, power, intelligence, and dishonesty overlap. In addition, Jews are seen as clannish, greedy, ambitious, and pushy.”\footnote{175}

Over time, explicit self-reports of negative attitudes and stereotypes have shown that openly expressed anti-Semitic attitudes and stereotypes have declined, much as have openly expressed stereotypes toward many

\begin{footnotes}
\footnote{168} Katz & Braly, \textit{supra} note 95, at 282, 285. \\
\footnote{169} \textit{Id.} at 285. \\
\footnote{170} Gregory Razran, \textit{Ethnic Dislikes and Stereotypes: A Laboratory Study}, 45 J. ABNORMAL PSYCHOL. 7, 7 (1950). \\
\footnote{171} \textit{Id.} at 8. \\
\footnote{172} \textit{Id.} at 15, 22. \\
\footnote{173} \textit{Id.} at 15. It was during this era that Jewish law firms began to prosper in New York City, which Eli Wald has argued is due to a unique combination of anti-Jewish hiring discrimination and positive stereotyping. See Eli Wald, \textit{The Jewish Law Firm: Past and Present}, in \textit{JEWS AND THE LAW} 65, 65–66 (Ari Mermelstein et al. eds., 2014). \\
\footnote{174} BLAINE, \textit{supra} note 95, at 98. \\
\footnote{175} Fiske, \textit{supra} note 98, at 379–80.
\end{footnotes}
other groups. In this context, research using implicit methods has allowed researchers to introduce a more dynamic way to measure attitudes and stereotypes.

D. Anti-Jewish Attitudes and Stereotypes: Implicit Biases

Modern studies of implicit bias confirm that negative stereotyping of Jews persists on an automatic level. In one such study, Professor Laurie Rudman and her colleagues asked participants to complete IATs that required them to group together Christian and Jewish names with negative and positive attitude words (e.g., positive: rainbow, paradise; and negative: vomit, murder), and then to answer explicit attitude questions about how warmly they feel towards Christians and Jews.\(^{176}\) The researchers hypothesized that while out-group implicit biases would emerge, they did not expect non-Jewish participants to self-report similar negative attitudes toward Jews as would be revealed using the IAT.\(^{177}\) Indeed, confirming their predictions, the researchers found that non-Jewish participants showed significant anti-Jewish (pro-Christian) implicit bias on IAT but only showed small self-reported attitude preferences for Christian over Jewish when completing the feeling thermometer.\(^{178}\) The results, the researchers indicate, underscore the need to investigate intergroup biases not only by asking people about their attitudes but also by employing implicit methods.\(^{179}\)

In another study of implicit bias related to negative Jewish stereotypes, Professors Rudman and Ashmore also tested implicit biases of participants towards Jews and measured the effect of those biases on economic decision-making.\(^{180}\) They found, on an IAT, that participants displayed significant associations between Jewish and immoral traits (e.g., cheap, controlling, dominating) and Christian and moral traits (e.g., generous, charitable, friendly) and that these negative stereotype levels predicted their budget cuts to a Jewish university campus organization.\(^{181}\) Put simply, the stronger the participants’ anti-Jewish implicit bias, the more likely they were to cut the budget of a Jewish student organization.

In addition to these two studies showing negative out-group biases against Jews, other studies indicate that implicit attitudes related to

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176. Rudman et al., supra note 4, at 441–43. This measure is called a “feeling thermometer.”

177. Id. at 441.

178. Id. at 460–61.

179. See id. at 460.

180. See Rudman & Ashmore, supra note 74, at 363–68. This is the same study, described previously, that measured participants’ implicit biases toward Asian-Americans and then asked them to make budget cuts to university groups.

181. Id. at 363–64, 365–68.
Judaism, at least, may not be as negative as implicit attitudes toward other religions. For example, researchers who have studied IAT results gathered by Harvard University’s Project Implicit demonstration website\(^{182}\) report that Americans’ implicit attitudes towards Judaism (rather than specifically regarding Jewish people) are actually favorable. In those studies, researchers measured implicit attitudes towards religions by using symbols to represent Judaism (rather than using last names, for example, to represent Jewish people) and a mix of other religions.\(^{183}\) In these studies, about 50% of participants show positive implicit attitudes toward Judaism, with approximately 26% showing negative attitudes.\(^{184}\)

This study, in the context of the studies presented above, thus echoes the historical multi-directionality of attitudes and stereotypes regarding Jews. On the one hand, Judaism and Jews may well be favored as compared to other minority groups, but on the other hand, negative morality-based stereotypes still persist.

Considering the vast history of anti-Semitism in the United States and the continuing multi-directional stereotypes of Jews in modern America, it is somewhat surprising that the legal literature has not fully considered the ways in which Jews may face intentional or unintentional discrimination in the legal system. Two scholars, for example, have concluded that Jews may be discriminated against in jury selection due both to stereotypes regarding intellectual ability (Jews may be difficult to convince) or based on other perceived biases.\(^{185}\) Yet other legally focused scholarship has not deeply considered the ways in which the negative moral stereotypes of Jews may manifest in other areas of the law, for example, in white-collar fraud cases, medical malpractice, products liability tort cases, and other legal claims that could be related to morality.

It is based upon these similar explicit and implicit attitudes and stereotype profiles that we decided to craft identical measures of both explicit and implicit bias and apply them both to Asian-Americans and Jewish Americans.

\(^{182}\) See Nosek et al., supra note 74, at 18.

\(^{183}\) Id. at 52.

\(^{184}\) Id. at 18. The other participants showed no significant preference for Judaism or other religions. Id.

\(^{185}\) See Hinkle, supra note 97, at 178 ("[A] lawyer may use his peremptories to strike all the Jews from the jury on the assumption that Jews are intelligent because the lawyer is hoping for the dumbest jurors he can find."); see also Benjamin Hoorn Barton, Religion-Based Peremptory Challenges After Batson v. Kentucky and J.E.B. v. Alabama: An Equal Protection and First Amendment Analysis, 94 MICH. L. REV. 191, 210 n.89 (1995) ("For a particularly bizarre example of religious stereotyping in the use of the peremptory challenge, consider the Marcos-Khashoggi trial. Imelda Marcos, wife of the ex-President of the Philippines, and Adnan Khashoggi, an Arab businessman and arms-dealer, were on the same side at trial, yet Khashoggi’s lawyers wanted to eliminate Jewish potential jurors because of supposed anti-Arab bias, while Marcos’s lawyers thought Jewish jurors would be ideal because Jews are ‘sensitive to persecution and suspicious of government power.’").
III. The Empirical Study

Building upon prior research testing implicit biases in the legal system as well as on stereotype research relating to Asians and Jews in America, we designed a study to measure implicit and explicit stereotypes of Asians and Jews among a group of federal district court judges, federal magistrate judges, and state trial judges, and to test the effects of group membership on white-collar sentencing. We conducted the study using three types of judges not only to get a broad judicial sample but also to compare the responses of the different types of judges.

A. Participants

Two hundred thirty-nine judges participated in the study, all of whom participated voluntarily on their own time and on their own computers. One hundred eighty federal judges participated in the study, 100 of whom were district court judges (representing all federal judicial circuits) and 80 of whom were magistrate judges (also representing all federal judicial circuits). Fifty-nine state judges from eight states participated in the study. 71% of the judges were male, and 29% were female. The vast majority of judges, 91.6%, identified themselves as White. 3% identified themselves as African-American. 2% identified themselves as Asian, and 2% identified themselves as “more than one race.” Judges were asked to indicate their age within the span of a decade (to preserve anonymity), with judges’ ages ranging from 21–30 to 80-plus. The majority of judges, 71%, were between the ages of 51 and 70. We asked participants their religious affiliation in part due to historical studies that indicate a relationship between religiosity and prejudice (including anti-Semitism). In response to this question, 31% identified themselves as

186. State judges were typically invited to participate by a judicial training office in their state after Judge Mark W. Bennett obtained permission from the Chief Justice of that state. Federal judges were invited by email to participate by Judge Mark W. Bennett. They were not provided compensation for their participation.

187. District court judges from the Ninth (19), Eighth (15), Seventh (10), Fourth (12), and Fifth Circuits (9) were the most heavily represented among district court judge participants.

188. District court judges from the Ninth (19), Eleventh (11), and Sixth (10) were the most heavily represented among magistrate court judge participants.

189. State court judges from Missouri (14), Washington (11), Kentucky (10), and Arizona (9) were the most heavily represented among state court judge participants.

190. We separately asked if judges identified as Hispanic or Latino, and 5% of judges indicated that they identified as Hispanic or Latino.

191. Specifically, 37% reported being between the ages of 51–60 and 34% between the ages of 61–70.

Protestant, 30% identified as Catholic, 21% identified as “none,” and 11% identified as Jewish. The remaining judges identified religious affiliations including Baptist, Latter Day Saints, and others.

B. Materials

Because of the nuanced and multi-directional stereotypes relating to Asians and Jews in America, we were interested in measuring both implicit and explicit attitudes and stereotypes regarding these groups. To investigate this potential link, this study employed both implicit methods and explicit (self-report) methods. The primary implicit method employed was the IAT. Explicit (self-report) questions were employed using scaled survey-style questions.

The IAT measures implicit cognitions in an easy and compelling manner. It instructs participants to rapidly classify information, “and then calculates a participant’s reaction time (in milliseconds) and accuracy in completing the categorization task.” The wisdom behind the IAT holds that statistically significant speed and accuracy-based differences in a person’s ability to categorize different types of information reflect something meaningful in that person’s automatic cognitive processes. What follows is an in-depth description of how researchers typically conduct the IAT: While using computers, study participants rapidly press two pre-designated keyboard keys after viewing particular words or images on their computer screens. The words and images that participants view are classified into meaningful categories, which require participants to “pair an attitude object (for example, Black or White...) with either an evaluative dimension (for example, good or bad) or an attribute dimension (for example, home or career, science or arts).” Participants finish several trials of the matching activities so researchers can measure how participants perform in pairing each object with each dimension. For instance, “in one trial of the most well-known IATs, participants pair the concepts Good-White together by pressing a designated response key and the concepts Bad-Black together with a different response key.” After finishing the trial, participants then match the opposite concepts with

193. The following few paragraphs briefly describe the scientific principles underlying the IAT. An almost identical version of this Subsection appeared in Levinson et al., Guilty by Implicit Racial Bias, supra note 21, at 191–93.

194. As psychologists Nilanjana Dasgupta and Anthony Greenwald summarize, “When highly associated targets and attributes share the same response key, participants tend to classify them quickly and easily, whereas when weakly associated targets and attributes share the same response key, participants tend to classify them more slowly and with greater difficulty.” Nilanjana Dasgupta & Anthony G. Greenwald, On the Malleability of Automatic Attitudes: Combating Automatic Prejudice with Images of Admired and Disliked Individuals, 81 J. PERSONALITY & SOC. PSYCHOL. 800, 803 (2001).

195. Levinson, supra note 21, at 355.
each other: in this example, Good-Black and Bad-White. Computer software gathers the data and "measures the number of milliseconds it takes for participants to respond to each task. Scientists can then analyze (by comparing reaction times and error rates using a statistic called "D-prime") whether participants hold implicit associations between the attitude object and dimension tested." Race IAT results consistently demonstrate that "white Americans express a strong 'white preference' on the IAT." The IAT is a flexible measure. Researchers have developed several types of IATs. Some examples of IATs include: "Gender-Science IAT, Gay-Straight IAT, and the Fat-Thin IAT, among many others." For instance, the Gender-Science IAT requires participants to pair Male and Female images with Science and Liberal Arts words. One should note "the flexibility of the IAT to test either evaluative dimension words (such as grouping Male-Female with Good-Bad), or attribute dimension words (such as grouping Male-Female with Career-Family)." The two IATs we created for the present study, the Caucasian-Asian stereotype IAT, and the Christian-Jewish stereotype IAT, require participants to group together words associated with the group category (easily identifiable last names of members of the four groups, such as Chang, Goldberg, and Baker) and either positive or negative stereotype words (such as honest and generous versus controlling and greedy).

196. Because participants may naturally be quicker at responding with one of their hands, participants complete these tasks twice, once for each response key, to eliminate differences based on hand preference. The order of the IAT tasks is also usually randomized to reduce order effects.
197. In our empirical study, we used the software Inquisit, produced by Millisecond Software.
199. Rachlinski et al., supra note 3, at 1199; Levinson, supra note 26, at 612 (noting that "a majority of test takers exhibit implicit racial bias" and referencing one IAT which found that "sixty-eight percent of participants demonstrated an implicit preference for 'White people' versus 'Black people'").
201. Id.
202. The names selected for the IAT stimuli were, for Asian: Chang, Wu, Lee, Kwan, Choi, Tanaka, and Yamada; for Caucasian and Christian: Miller, Taylor, Johnson, Baker, Smith, Andrews, and Higgins; and for Jewish: Shapiro, Cohen, Friedman, Weinstein, Eisenberg, Siegel, and Zucker. It should be noted that we attempted to at least somewhat balance the Asian names by including recognizable names that are Chinese, Japanese, or Korean in origin, but these names are by no means a perfect representative of Asian-American names. For a brief discussion of the limitations of categorizing a diverse group of Americans into one category, see sources cited supra note 94.
203. See Greenwald et al., supra note 75, at 1466. The words we used for positive moral stereotypes were moral, generous, giving, charitable, trustworthy, friendly, and honest. The words
In addition to measuring implicit stereotypes with IATs, we also asked judges to self-report their stereotypes towards Asians and Jews. To do this, we used composite scale measures that we developed from existing, validated, scales. These measures ask participants, for example, how much they agree with the statements "Asians are taking more than their fair share of jobs in America," and "Jews are trying to control America." The purpose of these measures is to quantify self-reported attitudes towards each group. These questions were each completed on 1–7 scales, and the scores were compiled into scales.

After giving informed consent and completing demographic information, participants began the online study by completing the sentencing task. In this task, judges read about either a White defendant, an Asian-American defendant, a Christian defendant, or a Jewish defendant. We initially designed the study to compare two defendants of different religions—Jewish or Christian—and two defendants of different ethnicities—Asian or White. Using different defendant names varied the defendant's group membership. The White and Christian defendants were named Nathaniel Kinnear. The Asian defendant was named Michael Zhang. The Jewish defendant was identified as Nathanial Goldberg. For the Jewish and Christian defendants, the religion of the defendant was identified by stating that the defendant and his wife were active in either the Christian or Jewish community and that the defendant's brother served as a member of the clergy of either a Christian church or Jewish synagogue. All other information about the defendant was identical, including age (47), marital status (married), citizenship (U.S.), birth place (Chicago, IL), and education (Master's degree). Other names in the presentence report (e.g., names of defendant's parents) were made to be consistent with the group membership condition.

we used for negative moral stereotypes were dishonest, liar, scheming, controlling, dominating, competitive, and greedy.

204. To create these scales, we blended measures from previously validated scales. The purpose of the blending was to simplify and shorten the length of the study, as well as to narrow the stereotypes examined to those that would be most relevant in a legal context.

205. The full list of items was as follows: "Asian Americans are trying to control America; Asian Americans cannot be trusted; Asian Americans are taking more than their share of good jobs; Asian Americans are honest people; Asian Americans possess good moral values; Asian Americans are cunning." The same items were also asked relating to Jews.

206. We therefore conducted statistical analysis separately, comparing the results for Asian as compared to White, and Jewish as compared to Christian.

207. It should be noted that the surname Zhang is a traditionally Chinese name and therefore does not represent all Asian-American names. If participants identified the name as Chinese, and hold specific stereotypes of Chinese-Americans that are different from other Asian-American stereotypes, the results of the study could have been affected by this difference.

208. Spouse names also conformed with the defendant names.
The sentencing task asked judges to read a federal-style presentence report for a fraud case. To create a more manageable presentence report, we chose to conduct the sentencing for an 11(c)(1)(c) plea bargain, for which the stipulated sentencing range was 151–235 months. The presentence report described a fraud crime in which the alleged perpetrator had agreed to plead guilty to federal securities fraud in violation of 18 U.S.C. § 1348. Judges read that “the defendant abused his position of trust within the company by persuading [a company for which he was the director] to give him money and stock under the guise that he was going to take the company private through a stock buyback.” The amount involved in the fraud was estimated to be between $6,800,000 and $7,200,000. Under the Federal Sentencing Guidelines, a conviction for such a crime results in a sentence between 151–235 months in prison. Judge participants were instructed to sentence the defendant within this range. Although it would only be typical for federal district court judges to deliver the sentence in a crime such as the one presented, we nonetheless provided the same sentencing measure to all judges. Because federal magistrate judges are familiar with federal presentence reports and the sentencing guidelines, we expected that the task would not be difficult for them to follow. State judges were presumably less familiar with the sentencing rules and presentence report that were used in this study. However, we gave the same sentencing task to state and federal judges because we did not want to have different stimuli for different groups.

After the judges completed the sentencing task, they were asked questions relating to their personal sentencing philosophy. This scale included four questions: two designed to measure support for retributive punishment (“A person who commits the harshest crime deserves the harshest punishment” and “Those who hurt others deserve to be hurt in return”), and two to measure mercy or rehabilitation-based punishment (“People who commit serious crimes often should receive treatment instead of punishment” and “People who commit serious crimes sometimes deserve leniency”). They then completed an IAT: either a stereotype IAT for the groups Asian and Caucasian or a stereotype IAT for the groups Christian and Jewish. Judges who were randomly assigned to the Asian or White defendant condition received an Asian-Caucasian IAT, and judges who were randomly assigned to the Christian or Jewish defendant condition received a Christian-Jewish IAT.

After completing the IAT, participants next completed the self-report stereotype measure for both Asians and Jews. These measures consisted of:

210. If a judge attempted to enter a number not within the range, the study was programmed to reject the response and request a response between the 151–235 month guidelines.
of six questions each and were identical except for the target of the question (Asians or Jews). For example, participants were asked how much they agreed or disagreed with the following statements: “Asian Americans are taking more than their fair share of jobs,” and “Jews are trying to control America.” For each such question, participants responded based on a range of strongly agree to strongly disagree (1-7 scale). These questions were also presented in counterbalanced order, so that different participants answered these questions in different orders (to eliminate order effects). After completing these explicit stereotype measures, the survey concluded and participants were thanked for their participation.

C. Hypotheses

Based upon previous scholarship related to implicit bias in the criminal justice system, as well as knowledge gained through previous empirical research on stereotypes of Asians and Jews in America, we made the following hypotheses:

Hypothesis 1: Judges will harbor implicit biases associating Asians with negative economic and moral stereotypes and Whites with positive economic and moral stereotypes.

Hypothesis 2: Judges will harbor implicit biases associating Jews with negative economic and moral stereotypes and Christians with positive economic and moral stereotypes.

Hypothesis 3: Judges will sentence Jewish defendants more harshly than Christian defendants and will sentence Asian defendants more harshly than White defendants.

Hypothesis 4: Judges’ implicit bias scores (on the IATs) will predict the length of their hypothetical defendant’s sentence. For example, judges with higher levels of implicit bias towards Asians will give longer sentences to Asian defendants.

Hypothesis 5: Judges’ self-reported agreement with Asian and Jewish stereotypes will be less likely than the IAT scores to predict discrimination in sentencing, but it may still somewhat predict group-based sentences.

Hypothesis 6: Judges will use judicial philosophy to justify higher punishment of Asians and Jews. Phrased another way, judges who respond to a case with an Asian or Jewish defendant will embrace more retributive or punitive philosophies, and less rehabilitative philosophies, compared to judges who see a case with a White or Christian defendant.

211. We documented these hypotheses before conducting the study, in conformity with best empirical practices.
In calculating the IAT results, we used the updated scoring algorithms suggested by Professor Anthony Greenwald and his colleagues. These updated algorithms addressed challenges that were raised regarding the original IAT scoring algorithm.

D. Results: Implicit Bias, Federal Judges, and Sentencing

To test our hypotheses, we conducted several statistical analyses. For hypotheses one and two, we examined whether judges held implicit biases by using one-sample T-tests. For hypothesis three, we compared whether judges gave different sentences based on defendant ethnicity or religion using analysis of variance (ANOVA) tests. This statistical analysis also was employed to determine whether different types of judges reported different levels of self-reported bias or harbored different levels of implicit bias. For the remaining hypotheses, we employed regression analyses. IAT D scores were regressed upon judicial retributive and mercy philosophies. Sentencing decisions were regressed upon ethnicity or religion of defendant, implicit and explicit biases, sentencing philosophies, and the two-way interactions between these variables.

212. See Greenwald et al., supra note 198, at 213–15.
213. As Levinson et al., summarized:

Greenwald, Nosek and Banaji's suggested improved scoring measure for the IAT, called a D score, has improved test-response detection (for instance, it throws out indiscriminate responses or responses that indicate a lack of attention) and incorporates an inclusive standard deviation for all congruent trials (for instance, both the practice and test block of white-guilty and black-not guilty). Mean latencies are computed for each block, and complimentary blocks are subtracted from each other (e.g., practice white-not guilty and black-guilty would be subtracted from practice white-guilty and black-not guilty). These two difference scores are divided by their inclusive standard deviation score, and the average of these two scores is called D.

Levinson et al., Guilty by Implicit Racial Bias, supra note 21, at 203 n.80 (citations omitted). For more on Greenwald and his colleagues' scoring algorithm, see Rachlinski et al., supra note 3, at 1245–46.

214. A one-sample T-test tests whether a single population differs from a hypothesized value. See RONALD CHRISTENSEN, ANALYSIS OF VARIANCE, DESIGN AND REGRESSION 37–42 (1996) (explaining one-sample T-tests). In the case of the IAT, the hypothesized value is zero, or no bias. An IAT score that is significantly different from zero would indicate bias in the population. Thus, the one-sample T-test referenced here tested whether the study population's IAT score was significantly different than zero.

215. Generally, ANOVA, or Analysis of Variance, is a series of statistical techniques that segment the observed variance in a dataset into the sources of variance, allowing for the comparison of the means between two or more groups. For example, is the variance in a sample (e.g., measured height) attributable to differences between two groups (such as Democrats and Republicans), or is it due to other, unexplained or unmeasured variation within the group (such as how much coffee they had this morning)?
1. Judges Implicitly Biased Against Asians

Federal and state judges displayed strong to moderate implicit bias against Asians (relative to Caucasians) on the stereotype IAT,\(^{216}\) such that Asians were associated with negative moral stereotypes (e.g., greedy, dishonest, scheming) and Caucasians were associated with positive moral stereotypes (e.g., trustworthy, honest, generous).

2. Judges Implicitly Biased Against Jews

Federal and state judges displayed strong to moderate implicit bias against Jews (relative to Christians) on the stereotype IAT,\(^{217}\) such that Jews were associated with negative moral stereotypes (e.g., greedy, dishonest, scheming), and Christians were associated with positive moral stereotypes (e.g., trustworthy, honest, generous).

3. Federal District Court Judges (Marginal Significance)
   Gave Longer Sentences to Jewish (vs. Christian) Defendants; State Court Judges Gave Longer Sentences to White (vs. Asian) Defendants

Federal district judges gave (of marginal significance) longer sentences to Jewish defendants than Christian defendants.\(^{218}\) There were no significant differences in how these judges sentenced White as compared to Asian defendants. Magistrate judges’ sentences did not vary significantly based on the defendant’s group membership. State judges, contrary to prediction, sentenced White defendants to significantly longer sentences than Asian-American defendants.\(^{219}\)

\(^{216}\) \(M = .46, t(108) = 9.20, p < .001.\)
\(^{217}\) \(M = .52, t(101) = 9.44, p < .001.\)
\(^{218}\) \(F(1, 52) = 2.89, p = .095, \eta^2 = .05, M_{Jewish} = 160.12, SD = 15.51, M_{Christian} = 153.90, SD = 6.51.\)
\(^{219}\) \(F(1, 26) = 6.77, p = .05, \eta^2 = .21, M_{White} = 184.00, SD = 24.06, M_{Asian} = 163.50, SD = 14.73.\) For an interesting study analyzing Asian defendants in federal sentencing, see Brian D. Johnson & Sara Betsinger, *Punishing the 'Model Minority': Asian-American Criminal Sentencing Outcomes in Federal District Courts*, 47 CRIMINOLOGY 1045, 1075, 1079 (2009) (finding that for white-collar crimes, Asian-American defendants received similar or more lenient sentences to their White counterparts).
4. All Judge Cohorts Possessed Similarly Strong Implicit Biases

Each of the three types of judges we tested displayed significant negative implicit biases towards Asians (relative to Caucasians) and Jews (relative to Christians), and there were no statistically significant differences between IAT score and type of judge participant.220

220. \( F_{\text{Asian-Caucasian}}(2, 106) = .77, \text{ns.} \), \( F_{\text{Jewish-Christian}}(2, 99) = .19, \text{ns.} \). The scores were: for Federal District Court judges, \( M_{\text{Asian-Caucasian}} = 0.50 \) (SD = 0.55), \( M_{\text{Jewish-Christian}} = 0.53 \) (SD = 0.49); for Federal Magistrate judges, \( M_{\text{Asian-Caucasian}} = 0.38 \) (SD = 0.46).
5. Male Judges Showed Stronger Anti-Jewish Implicit Bias

There was a significant difference whereby male judges displayed stronger anti-Jewish implicit biases as compared to female judges. For the Asian-Caucasian IAT, there were no statistically significant differences between male and female judges.

**FIGURE 3.**
Mean IAT Scores (+/- 1 SD) for Types of Judge Participants

6. Political Party of Appointing President Did Not Predict Different IAT Scores

We were able to categorize federal district court judges based upon the political party of their appointing president. Judges appointed by Republicans appeared to display higher overall IAT bias scores than...

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0.53), $M_{\text{Jewish-Christian}} = 0.46$ (SD = 0.57); and for state court judges, $M_{\text{Asian-Caucasian}} = 0.52$ (SD = 0.44), $M_{\text{Jewish-Christian}} = 0.54$ (SD = 0.64).

221. $F_{\text{Jewish-Christian}}(1, 100) = 4.14$, $p < .05$, $\eta^2 = .04$. For male judges, $M_{\text{Jewish-Christian}} = 0.59$ (SD = 0.48). For female judges, $M_{\text{Jewish-Christian}} = 0.36$ (SD = 0.65).

222. $F_{\text{Asian-Caucasian}}(1, 107) = 0.16$, ns.; $F_{\text{Jewish-Christian}}(1, 121) = 1.69$, ns. For male judges, $M_{\text{Asian-Caucasian}} = 0.45$ (SD = 0.53). For female judges, $M_{\text{Asian-Caucasian}} = 0.49$ (SD = 0.50).
Democrats; however these differences did not reach statistical significance.223

7. Protestant and Catholic Judges Had Higher Pro-Christian/Anti-Jewish IAT Biases Compared to Judges Who Reported No Religion

Judges who self-identified as Catholic or Protestant displayed significantly higher pro-Christian (anti-Jewish) biases on the Jewish-Christian IAT, as compared to judges who self-identified as affiliated with no religion and as compared to Jewish judges.224 Jewish judges showed no significant bias towards Jewish or Christian stereotypes.225 Catholic and Protestant judges did not, however, hold significantly higher implicit biases towards Asians as compared to judges who reported no religion.

8. Catholic and Protestant Judges Self-Reported More Agreement with Asian and Jewish Stereotypes, as Compared to “No Religion” Judges (for both Positive Stereotypes and Negative Stereotypes)

There were numerous differences in terms of judges’ religion and their agreement with Asian stereotypes. Generally, Catholic and Protestant judges were more likely to self-report anti-Asian stereotypes as compared to judges who affiliated with no religion or as compared to Jewish judges,226 on the averaged following measures: Asians control America,227 Asians take jobs,228 and Asians are cunning.229 There were no statistically significant differences between religious groups on positive stereotypes of these groups,

223. $F_{\text{Asian-Caucasian}}(1, 42) = 2.58$, $ns.$, $F_{\text{Jewish-Christian}}(1, 43) = 1.00$, $ns.$ For Republican appointees, $M_{\text{Asian-Caucasian}} = 0.67$ (SD = 0.61), $M_{\text{Jewish-Christian}} = 0.63$ (SD = 0.37). For Democratic appointees, $M_{\text{Asian-Caucasian}} = 0.40$ (SD = 0.50), $M_{\text{Jewish-Christian}} = 0.48$ (SD = 0.55).

224. $F(3, 92) = 8.46, p < .001$, $\eta^2 = .05$, $MCatholic = 0.59$ (SD = 0.58), $MProtestant = 0.71$ (SD = 0.45), $MNo religion = 0.32$ (SD = 0.32), $MJewish = -0.19$ (SD = 0.55).

225. $t(7) = 0.98, ns.$ This result may have been due to the small number of Jewish judges (8) who completed this particular IAT. The stats came from a T-test comparing with 0. Prior studies have indicated that Jewish participants have favored Judaism over other religions in attitude IATs. Rudman et al., supra note 4, at 446.

226. $F(3, 188) = 5.52, p = .001$, $\eta^2 = .08$.

227. $MCatholic = 1.6$ (SD = 1.08), $MProtestant = 1.06$ (SD = 0.87), $MJewish = 1.42$ (SD = 0.24), $MNo religion = 1.23$ (SD = 0.78).

228. $MCatholic = 1.95$ (SD = 1.21), $MProtestant = 1.80$ (SD = 1.17), $MJewish = 1.06$ (SD = 0.24), $MNo religion = 1.33$ (SD = 0.75).

229. $MCatholic = 2.42$ (SD = 1.54), $MProtestant = 2.18$ (SD = 1.46), $MJewish = 1.78$ (SD = 1.11), $MNo religion = 1.72$ (SD = 1.22).
including on the following measures\textsuperscript{230}: Asians are honest\textsuperscript{231} and Asians have good morals\textsuperscript{232}.

Catholic judges were also more likely to agree with statements of Jewish stereotypes as compared to Protestant, Jewish, and “no religion” judges on the following measures\textsuperscript{233}: Jews control America,\textsuperscript{234} Jews take jobs,\textsuperscript{235} Jews are cunning.\textsuperscript{236} Interestingly, Catholic and Protestant judges were also more likely to agree with the following positive Jewish stereotypes as compared to Jewish judges\textsuperscript{237}: Jews are honest\textsuperscript{238} and Jews have good morals.\textsuperscript{239} These findings indicate that, for at least Protestant judges, they were more likely to self-report agreement with all Jewish stereotypes and not just negative stereotypes.

9. State Judges Were More Anti-Asian in Their Self Reports

State judges, as compared to all federal judges, were more likely to self-report agreement with negative Asian attitudes and stereotypes,\textsuperscript{240} including the statements “Asians are trying to control America,”\textsuperscript{241} “Asians are taking more than their share of jobs,”\textsuperscript{242} and “Asians are cunning.”\textsuperscript{243}

10. Judges’ Self-Reported Agreement with Asian Stereotypes Were Correlated with Their Agreement with Jewish Stereotypes

Agreement with (self-reported) negative stereotypes relating to Asians and (self-reported) negative stereotypes relating to Jews were

\textsuperscript{230} F(3, 188) = 0.49, ns.
\textsuperscript{231} MCatholic = 4.28 (SD = 1.93), MProtestant = 4.62 (SD = 1.82), MJewish = 4.11 (SD = 1.68), MNo religion = 4.49 (SD = 1.76).
\textsuperscript{232} F(3, 188) = 2.79, p = .04, n2 = .04.
\textsuperscript{233} MCatholic = 1.71 (SD = 1.2), MProtestant = 1.29 (SD = 0.7), MJewish = 1.22 (SD = 0.73), MNo religion = 1.37 (SD = 0.98).
\textsuperscript{234} MCatholic = 1.8 (SD = 1.23), MProtestant = 1.47 (SD = 0.93), MJewish = 1.33 (SD = 0.77), MNo religion = 1.44 (SD = 0.98).
\textsuperscript{235} MCatholic = 2.36 (SD = 1.48), MProtestant = 2.15 (SD = 1.46), MJewish = 1.78 (SD = 1.26), MNo religion = 1.91 (SD = 1.31).
\textsuperscript{236} F(3, 188) = 2.26, p = .08, n2 = .04.
\textsuperscript{237} MCatholic = 4.97 (SD = 1.61), MProtestant = 4.46 (SD = 1.75), MJewish = 3.78 (SD = 1.86), MNo religion = 4.53 (SD = 2.02).
\textsuperscript{238} MCatholic = 4.75 (SD = 1.77), MProtestant = 4.75 (SD = 1.73), MJewish = 4.11 (SD = 1.68), MNo religion = 4.26 (SD = 1.97).
\textsuperscript{239} F(2, 202) = 5.15, p = .007, n2 = .05.
\textsuperscript{240} MFD = 1.45 (SD = 0.98), MFM = 1.31 (SD = 0.82), MST = 1.53 (SD = 0.81).
\textsuperscript{241} MFD = 1.58 (SD = 1.03), MFM = 1.57 (SD = 1.00), MST = 1.96 (SD = 1.18).
\textsuperscript{242} MFD = 2.21 (SD = 1.47), MFM = 1.74 (SD = 1.22), MST = 2.63 (SD = 1.46).
correlated with one another. The more likely a judge was to report agreement with a negative Asian stereotype, the more likely the judge was to similarly report agreement with a negative Jewish stereotype. There was no such correlation for agreement with positive stereotypes: self-reported positive stereotypes relating to Asians and self-reported positive stereotypes relating to Jews were not significantly correlated.

11. Federal District Judges’ Support for Retribution Predicted Higher Anti-Asian Implicit Bias

In selecting regression models, we were first interested in examining which of our other variable measures—and specifically, our questions regarding judges’ retributive or mercy philosophies—served as predictors of judges’ implicit bias levels. When analyzing federal district judges, the results of this regression showed that judges’ self-reported retributive punishment philosophies (but not their mercy punishment philosophies) predicted anti-Asian implicit biases. This may be best understood by referencing the correlation: the higher the support for retribution, the higher the anti-Asian bias.

12. Anti-Jewish, Pro-Christian Implicit Biases Predicted the Sentence Length of Christian Defendant: the Higher the Bias, the Shorter the Sentence

One of the interesting questions raised by IAT research has been whether implicit attitudes and stereotypes predict differences in decision-making and behavior. We therefore conducted a second regression, this time on the judges’ sentences, based upon the defendant’s group membership. In this analysis, the results showed that pro-Christian, anti-Jewish stereotypes predicted the length of a Christian defendant’s sentence, so that the higher the implicit bias (Jew with immorality and Christian with morality), the lesser the sentence was of a Christian defendant.

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244. \( r = .56, p < .001 \).
245. \( r = .18, \text{ ns.} \).
246. A regression model on the IAT D score of Asians (Asian IAT \( d = \beta_1 \times \text{retribution} + \beta_2 \times \text{mercy} + C \)) was predicted by retribution score but not mercy score (Adjusted R square = .10, \( F(2, 41) = 3.44, p = .05, \beta_1 = .35, t = 2.30, p < .05; \beta_2 = -.06, t = 0.39, \text{ ns.} \)). However, the same model of the IAT D score of Jewish was not significant (Adjusted R square = .05, \( F(2, 42) = 0.02, \text{ ns.} \)).
defendant.\textsuperscript{248} Also, the results showed that retributive attitudes positively predicted the length of a Christian defendant’s sentence.\textsuperscript{249} We tested the same model (replacing Jewish stereotypes with Asian stereotypes) on the White or Asian defendant condition, however, results were not statistically significant.\textsuperscript{250}

IV. DISCUSSION: ANTI-ASIAN AND ANTI-JEWISH IMPLICIT BIASES

The results of the study raise additional questions not only about how implicit biases may work against Asian-Americans and Jews in the legal system but also trigger questions related to the broader risks of hidden, automatic biases in judicial decision-making. Here, this Article discusses the implications of our direct study findings and considers the implications beyond our study, specifically regarding current legal issues where judicial discretion will likely shape and reshape America.

First and foremost, our findings confirm that the federal and state judges we surveyed indeed harbored strong to moderate negative implicit biases about groups that are largely viewed not as subordinated but rather as American success stories. In light of the heavy ethical burden resting on the shoulders of judges—and lifetime-appointed federal judges in particular—these results are concerning. The biases revealed by the study focused on the judges’ implicit judgments of morality, connecting group membership with traits such as scheming, dominating, and controlling, and manifested without regard to judges’ length of service, age, or type of judgeship. Thus, the primary message revealed by the study is that implicit biases, even about groups not usually discussed in the national conversation of discrimination, may be lurking as part of a complex, deep, and hidden network of cognitive associations, even in the most egalitarian of judges.

Beyond the mere existence and strength of these biases, though, the study results raise further reason to worry. The results of the study, for example, showed that federal district judges (the very judges who make sentencing determinations for the federal crime we presented) were more likely (of marginal statistical significance) to sentence a Jewish defendant.

248. For this statistical analysis, we tested a regression model of sentencing behavior (Sentence of Defendant = $\beta_1 x$ IAT score + $\beta_2 x$ positive Jewish stereotype + $\beta_3 x$ negative Jewish stereotype + $\beta_4 x$ retributive attitude score + $\beta_5 x$ mercy attitude score + C). We tested the model on the Christian and Jewish defendant conditions separately. The model was significant only on Christian defendant condition (Christian condition: $F(5, 12) = 2.80, p = .07$; Jewish condition: $F(5,19) = 1.22, ns.$). The results showed that implicit anti-Jewish (pro-Christian) stereotypes negatively predicted the length of a Christian defendant’s sentence. $[bata_1 = -.69, t = 3.17, p < .01]$

249. $bata_4 = .55, t = 2.30, p < .05.$

250. Fs < 1.00, ns.
to a longer sentence than an otherwise identical Christian defendant. This finding was (although we initially predicted it), in retrospect, surprising considering that a full 75% of federal district judges sentenced the defendant to the exact minimum sentence of a possible seven-year sentencing range. Thus, it may be informative to note that no judges gave a Christian defendant a sentence longer than 175 months, while eight (of thirty-four) judges sentenced a Jewish defendant to 180 months or more.

Our corresponding finding on state judges’ sentencing, however, is more difficult to explain. Those judges were more lenient on Asian white-collar fraud defendants than similarly situated White defendants, a finding that we did not predict and would seem to be made less likely by those judges’ self-report of higher agreement with Asian stereotypes (at least relative to the other judge cohorts). One preliminary explanation for this finding, which could be consistent with the judges’ stereotype self-reports, however, could be that stereotypes of Asian men as non-threatening would lead to a perceived need for a shorter sentence. Such an interpretation, however, would mean that other stereotypes that we did not test (e.g., Asian men are non-threatening) could, in the sentencing context, exert a stronger influence than the morality-related and financial stereotypes we did test. We also note that our state judge-only pool was the smallest of all of three judge cohorts and was spread across jurisdictions with different statutes and legal norms, factors that make our result somewhat more difficult to interpret.

The results of the study also address the current state of implicit bias towards Asian-Americans and Jewish-Americans, suggesting that perhaps there is too little modern focus on bias against these groups. Although some commentators have highlighted a small range of possible biases, some relating, for example, to the way that harms to Asian-Americans are either undervalued or erroneously seen as provoked,

251 We focus on the role of judges in federal white-collar sentencing, without regard to bias, in our companion article, Bennett et al., supra note 8. We also note that, in a situation in which judges were more likely to use their discretion to sentence within a range (rather than at the absolute bottom), one could predict that a larger bias would appear.

252 It is notable, though, that a recent empirical study of actual white-collar sentences found no such difference on sentencing. See Johnson & Betsinger, supra note 219, at 1047, 1076 (finding that Asian-American and White defendants received similar sentences for white-collar crimes).

253 See Yen, supra note 96, at 11–15; see also Hutchinson, supra note 96, at 95–96 (“The development of sexualized racial stereotypes was a product of and helped to justify the sexual exploitation and domination of Asian American women and control of Asian American people through the law.”); cf Chin, supra note at 96, at 185 (“Asians and Pacific Islanders make up about 9 percent of California’s population and are expected to be almost 12 percent in 2020. But when you look to the municipal courts, 84 percent of the judges in these courts are Caucasian. Asian-Americans hold only 2.9 percent of these positions.” (footnotes omitted)).
legal literature has far from addressed the way widely held judicial biases relating to these groups may manifest in legal decision-making. Without endeavoring to make more than a few specific law-related claims here, we first broadly suggest that all areas of law in which morality judgments play a role are overdue for investigation, considering the long history of the stereotypes we uncovered. As preliminary specific suggestions, these areas of investigation could include, for example, judgments of intentionality in tort or white-collar criminal law, evaluations of whether, and how, a contract has been breached, considerations of culpability (or punitive damages) in products liability or related cases, and, of course, evaluations of corporate director or officer behavior in the context of fiduciary duties or securities laws violations.

The results of the study also implicate the lack of diversity of America’s judicial pool, particularly among federal judges. Of the 100 district court judges who participated in our study, sixty-eight were male while only thirty-two were female, and eighty-seven self-reported as White while only six reported as African-American, and three reported as Asian-American. And yet diversity mattered in our study, as it does more broadly in implicit bias literature. We found, for example, that female judges harbored lower implicit anti-Jewish biases and that Jewish judges did not possess a significant bias that was either pro- or anti-Jewish. These results underscore an important point: not all groups display identical implicit biases. In the broader implicit bias context, although diversity cannot be counted on to eliminate all biases, research has shown that one of the best ways to de-bias others is to view, and have interactions with, leaders who run counter to prevailing stereotypes. These “counter-stereotypical exemplars” are the people who, in turn, through their leadership and actions, act as de-biasing agents, whether or not this de-biasing is intentional. Thus, the results of our study, and related implicit bias work more generally, lead us to support calls for

254. Research has shown, for example, that morality information can affect judgments such as those of causation and intentionality. See Mark D. Alicke, Culpable Causation, 63 J. PERSONALITY & SOC. PSYCHOL. 368, 368 (1992) (finding that morality information affects causation judgments); Joshua Knobe, Intention, Intentional Action and Moral Considerations, 64 ANALYSIS 181, 183 (2004) (considering the overlap of morality and intentionality); Justin D. Levinson, Mentally Misguided: How State of Mind Inquiries Ignore Psychological Reality and Overlook Cultural Differences, 49 HOW. L.J. 1, 28 (2005) (arguing for psychologically competent legal rules); Justin D. Levinson & Kaiping Peng, Different Torts for Different Cohorts: A Cultural Psychological Critique of Tort Law’s Actual Cause and Foreseeability Inquiries, 13 SO. CAL. INTERDISC. L.J. 195, 212 (2004).

255. See Nosek, supra note 74, at 37 (summarizing data from more than 2.5 million IATs).

greater diversity in judicial appointments. In our view, this call for diversity is now scientific in nature and not entirely about politics.\textsuperscript{257}

\textbf{CONCLUSION}

Federal judges in America continue to preside over a broad slate of cases that stand to potentially transform the way America is defined—on matters as fundamental and contentious as immigration, gun control, the role and identity of corporations, health care, and even matters of life and death (e.g., abortion and the death penalty). As commentators work to dissect these intricate legal issues, much attention has been paid not only to the substantive legal issues themselves in Constitutional context but also to judges’ self-reported and expressed predilections, politics, and previous opinions. Little has been said of the role of the way judges perceive these fundamental issues and the actors involved: how individual lives are automatically valued,\textsuperscript{258} how corporations are implicitly perceived,\textsuperscript{259} and how fundamental legal principles are unconsciously intertwined with group assumptions.\textsuperscript{260} This Article suggests, and the empirical study supports the idea, that automatic biases and cognitions indeed influence a much broader range of judicial decisions than has ever been considered. It is only in this broader, more fundamental context that the role of judicial implicit biases and their impact on the legal system can ever fully be considered.

\textsuperscript{257} Indeed, our study did not show a statistically significant difference in the implicit bias results of federal judges appointed by Republican Presidents compared to those appointed by Democrat Presidents.

\textsuperscript{258} See Levinson et al., Devaluing Death, supra note 21, at 567 (discussing how jurors automatically value individual lives).

\textsuperscript{259} See Justin D. Levinson, Corporations Law: Biased Corporate Decision-Making?, in IMPLICIT RACIAL BIAS ACROSS THE LAW, supra note 21, at 146, 163.

\textsuperscript{260} See Smith et al., supra note 10, at 46.
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The Myth of the Double-Edged Sword: An Empirical Study of Neuroscience Evidence in Criminal Cases

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THE MYTH OF THE DOUBLE-EDGED SWORD: AN EMPIRICAL STUDY OF NEUROSCIENCE EVIDENCE IN CRIMINAL CASES

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Abstract: This Article presents the results of my unique study of 800 criminal cases addressing neuroscience evidence over the past two decades (1992–2012). Many legal scholars have theorized about the impact of neuroscience evidence on the criminal law, but this is the first empirical study of its kind to systematically investigate how courts assess the mitigating and aggravating strength of such evidence. My analysis reveals that neuroscience evidence is usually offered to mitigate punishments in the way that traditional criminal law has always allowed, especially in the penalty phase of death penalty trials. This finding controverts the popular image of neuroscience evidence as a double-edged sword—one that will either get defendants off the hook alto-
gether or unfairly brand them as posing a future danger to society. To the contrary, my study indicates that neuroscience evidence is typically introduced for a well-established legal purpose—to provide fact-finders with more complete, reliable, and precise information when determining a defendant’s fate. My study also shows that courts accept neuroscience evidence for this purpose, and in fact expect attorneys to raise this evidence when possible on behalf of their clients. This expectation is so entrenched that courts are willing to grant defendants their “ineffective assistance of counsel” claims when attorneys fail to pursue this mitigating evidence. Meanwhile, my study also reveals that the potential future danger posed by defendants is rarely a facet of cases involving neuroscience evidence—again contradicting the myth of the double-edged sword. The cases that do address future danger, however, offer fascinating insight into the complex legal issues raised by neuroscience evidence. As courts continue to embrace neuroscience tools and techniques, the empirical data collected in my study provide a foundation for discussions regarding the use of neuroscience evidence in criminal cases. The findings presented in this Article will ensure that those discussions are grounded in fact rather than hyperbole.

INTRODUCTION

A little explanation can go a long way . . . the difference between life and death.¹

In 2010, shortly after escaping from prison, John McCluskey killed a retired couple in order to steal their camping trailer.² The crime was horrific: McCluskey and two accomplices shot the defenseless couple inside their trailer and then set their truck ablaze with their bodies inside.³ Yet a jury rejected the death penalty, instead sentencing McCluskey to life in prison without the possibility of parole.⁴ The jury’s life-over-death choice was seemingly influenced by the defense’s introduction of brain scans indicating substantial damage to McCluskey’s frontal lobe.⁵ According to legal analysts, the jury viewed McCluskey’s brain abnormalities as a mitigating factor that decreased his level of culpability and ability to plan or intend such a

¹ Caro v. Woodford, 280 F.3d 1247, 1249 (9th Cir. 2002).
³ See Transcript of Record, supra note 2, at 4558 (transcript of trial on the merits). McCluskey was convicted in federal court of carjacking and two murders. See id. at 12031 (transcript of punishment phase).
⁴ See id. at 13049 (transcript of punishment phase).
⁵ Motion to Rebut Defendant’s Mental Health Expert Testimony at 3–4, McCluskey, 893 F. Supp. 2d at 1117; Ruben C. Gur, Ph.D., Neurobehavioral Assessment of Mr. McCluskey (Oct. 2, 2013) (report submitted to Michael Burt, Attorney at Law) (on file with Author).
crime, rather than as an aggravating factor that heightened his future danger to society.\textsuperscript{6}

Courtroom battles over mitigating and aggravating evidence are a common aspect of capital cases, but the unprecedented use of neuroscience evidence in these battles has led to some striking outcomes.\textsuperscript{7} In 2010, for example, a judge ruled brain mapping evidence admissible for the first time, noting its “ability to provide vital information on brain injury and impairment.”\textsuperscript{8} The defendant, Grady Nelson, was convicted in Miami of first degree murder after stabbing his wife sixty times, and then also stabbing his step-children.\textsuperscript{9} Despite Nelson’s appalling crimes, the jury declined a death sentence,\textsuperscript{10} with some jurors noting in post-verdict interviews that neuroscience evidence of Nelson’s mental incapacity dissuaded them from issuing a death sentence.\textsuperscript{11}

The rising acceptance of neuroscience evidence has fueled heated debate regarding its impact on the criminal justice system.\textsuperscript{12} The criminal law has focused on the human mind and mental states since the seventeenth century, yet the field of neuroscience is relatively young.\textsuperscript{13} The first use of the term


\textsuperscript{11} Miller, supra note 6.

\textsuperscript{12} See generally Joshua Greene & Jonathan Cohen, For the Law, Neuroscience Changes Nothing and Everything, 359 PHIL. TRANSACTIONS ROYAL SOC’Y: BIOLOGICAL SCI. 1775 (2004) (discussing the key debates regarding the criminal law and neuroscience).

neuroscience did not even occur until 1963. The term is defined in varying ways, but the definition provided by the American Association for the Advancement of Science is representative: neuroscience is “the branch of life sciences that studies the brain and nervous systems [including] . . . brain processes such as sensation, perception, learning, memory, and movement.” Recent neuroscience research focuses on an even newer discipline—that of cognitive neuroscience, which combines cognitive science, psychology, and neuroscience to examine the mechanisms of the mind, such as motor function, language, higher cognitive functions, emotions, and consciousness.

Key criminal law concepts of culpability depend on the internal workings of individuals’ minds. Revelations about a defendant’s level of intentionality or consciousness are just some examples of areas where new discoveries could improve the criminal justice system. Yet, neuroscience evidence can be portrayed as a potential “double-edged sword: it may diminish [a defendant’s] blameworthiness for his crime even as it indicates that there is a probability that he will be dangerous in the future.” This Article refers to this misconception as the “myth of the double-edged sword.” Specifically, much of the debate surrounding the intersection of neuroscience and the criminal law centers on the mistaken assumption that neuroscience evidence will abdicate violent criminals of all responsibility for their crimes—especially those like McCluskey and Nelson. In contrast, others fear that


16 JAMIE WARD, THE STUDENT’S GUIDE TO COGNITIVE NEUROSCIENCE 4 (2d ed. 2010).

17 See Denno, Post-Freudian World, supra note 13, at 640–44 (discussing state of mind, or mens rea, as it is used to define criminal conduct by the Model Penal Code).

18 Penry v. Lynaugh, 492 U.S. 302, 324 (1989); see also Owen D. Jones & Francis X. Shen, Law and Neuroscience in the United States, in INTERNATIONAL NEUROLAW: A COMPARATIVE ANALYSIS 349, 362 (T.M. Spranger ed., 2012) (“Using neuroscience evidence in capital sentencing . . . introduces a double-edged sword problem that multiple commentators have recognized. . . . That is, a brain too broken may be simply too dangerous to have at large, even if it is somehow less culpable.”); Snead, supra note 7, at 1338 (Snead cautions against the use of neuroscience evidence in death penalty cases, despite its mitigating potential, because aspects of the capital sentencing process “—most notably, the aggravating factor of future dangerousness—are no friend to the capital defendant. In fact, they are often the gravest threat to his life.”).

such evidence could bolster predictions of defendants’ purported future danger to society, thereby unfairly generating longer prison terms or even the death penalty.\textsuperscript{20} Meanwhile, media accounts of some particularly controversial cases have alarmed the public with inaccurate narratives of how courts use neuroscience evidence and how neuroscience fits into the framework of the criminal justice system.\textsuperscript{21} The complexity of these legal issues will only expand as the science progresses and becomes increasingly common in courtrooms.\textsuperscript{22}

Numerous scholars have offered insightful assessments of the legal issues that arise at the intersection of law and neuroscience.\textsuperscript{23} The bulk of

(focusing on John McCluskey and arguing that neuroscience is infiltrating the criminal law to the advantage of criminals far beyond what our current understanding of neuroscience should permit); Priya Shetty, \textit{Law and Order: Blame It on the Brain}, BBC (July 11, 2012), http://www.bbc.com/future/story/20120710-blame-it-on-the-brain, \textit{archived at} https://perma.cc/SV7C-RE99?type=pdf (focusing on Grady Nelson and discussing a group of scientists and doctors who feel that at least some neuroscience evidence is simply not well enough understood to be used conclusively in courtrooms today).

\textsuperscript{20} See Nicholas Mackintosh, \textit{Guilty Minds}, \textit{NEW SCIENTIST}, Dec. 17, 2011, at 26–27 (“Rather than such evidence serving to reduce a criminal’s sentence, one could argue that it might be used to increase it, or at least influence decisions about release or parole.”); Peter McKnight, \textit{The Ethical Minefield of Using Neuroscience to Prevent Crime (Part 2 of 3): Is It Moral to Make Changes to a Person’s Brain If It Benefits Both the Offender and Society?}, \textit{VANCOUVER SUN}, Dec. 10, 2012, http://www.vancouversun.com/health/ethical+minefield+using+neuroscience+prevent+crime+Part/7674188/story.html, \textit{archived at} https://perma.cc/9SSV-L97N?type=pdf ("[N]euroscience could indeed lead to defendants being found less blameworthy. But such evidence could also backfire, for judges could conclude that the neuroscience shows the defendant is constitutively, irremediably dangerous, and hence must be locked away for a longer period of time to protect the public.").

\textsuperscript{21} See Kate Kelland, \textit{Insight—Neuroscience in Court: My Brain Made Me Do It}, \textit{REUTERS}, Aug. 29, 2012, \textit{available at} http://www.reuters.com/article/2012/08/29/us-neuroscience-crime-idUSBRE87S07020120829, \textit{archived at} http://perma.cc/C4X2-42C5 (examining a number of extreme cases where neuroscience evidence has been used, branding neuroscience as the “my brain made me do it” defense, and citing a number of sources arguing that neuroscience is being misapplied and far overextended in courts of law).

\textsuperscript{22} See generally Owen D. Jones et al., \textit{Law and Neuroscience}, 33 J. \textit{NEUROSCIENCE} 17624 (2013) (discussing the growth of neuroscience and the ways the criminal justice system can handle it).

\textsuperscript{23} There is currently a multilayered debate among scholars regarding the impact cognitive neuroscience will have on the law. Theoretically speaking, some scholars believe that cognitive neuroscience will challenge our traditional notions of free will, which, in turn, will dramatically alter the way society views criminal punishment. See Greene & Cohen, \textit{supra} note 12, at 1784 (explaining that “free will as we ordinarily understand it is an illusion generated by our cognitive architecture,” and since “retributivist notions of criminal responsibility ultimately depend on this illusion,” they will give way to a criminal justice system based solely on consequentialism). \textit{But see} Stephen J. Morse, \textit{Avoiding Irrational Neurallaw Exuberance: A Plea for Neuromodesty}, 62 \textit{MERCER L. REV.} 837, 855 (2011) (arguing that “[g]iven how little we know about the brain-mind and brain-action connections, to claim that we should radically change our picture of ourselves, legal doctrines, and practices based on neuroscience is a form of neuroarrogance”); Amanda C. Pustilnik, \textit{Violence on the Brain: A Critique of Neuroscience in Criminal Law}, 44 \textit{WAKE FOREST L. REV.} 183, 237 (2009) (“[T]he claim that the criminal law can understand violence principally as emerging from localized brain dysfunction in people who are neurobiologically distinct is simpler than possible.”). Similarly, there is an ongoing debate regarding the specific practical applications
the academic writing, however, has been confined to small-scale empirical studies or to a handful of unusual cases, whether real or theoretical. This focus by scholars on the outliers and unlikely cases tends to distort the dialogue on neuroscience with misconceptions about the actual impact of neuroscience on the law. Until now, there has been no comprehensive nationwide account of how neuroscience is actually used to evaluate a defendant’s mental state within a universe of criminal cases. With this Article, I seek to fill that void. I have conducted an unprecedented empirical study (“Neuroscience Study” or “Study”) of all criminal cases (totaling 800 cases) that addressed neuroscience evidence over the course of two decades (1992–2012). The Neuroscience Study provides, for the first time, extensive and systematic empirical data that show how neuroscience evidence is used in courtrooms. These data enable us to look beyond assumptions and misconceptions, particularly the myth of the double-edged sword.

In presenting the results of the Neuroscience Study, I do not engage in debates over the appropriate use of neuroscience evidence. That important topic has been discussed in-depth elsewhere. Instead, the Neuroscience Study reveals the marked degree to which such evidence has been integrated into the criminal justice system in ways that have never before been documented or analyzed. The Study also uncovers a criminal justice system that is surprisingly willing to accept and comprehend both the strengths and of neuroscience evidence. For example, many scholars advocate the use of neuroscience evidence by death penalty defendants to bolster their mitigation claims during sentencing. See John H. Blume & Emily C. Paavola, Life, Death, and Neuroimaging: The Advantages and Disadvantages of the Defense’s Use of Neuroimages in Capital Cases—Lessons from the Front, 62 MERCER L. REV. 909, 914 (2011) (explaining that neuroimaging “can make the difference between life and death” in a defendant’s mitigation presentation); Adam Lamparello, Neuroscience, Brain Damage, and the Criminal Defendant: Who Does It Help and Where in the Criminal Proceeding Is It Most Relevant?, 39 RUTGERS L. REC. 161, 178 (2012) (arguing that neuroscience evidence of traumatic brain injuries is “substantially relevant and probative” during the sentencing phase of a capital trial, and that demonstrated injuries to the defendant’s frontal lobe and amygdala should warrant a term of life in prison instead of the death penalty). But see Jones & Shen, supra note 18, at 362 (discussing the “double-edged sword problem”); Snead, supra note 7, at 1338 (emphasizing the “threat” of the future dangerousness aggravator to capital defendants). For a parallel discussion regarding the controversy surrounding the use of behavioral genetics in criminal law, see Deborah W. Denno, Courts’ Increasing Consideration of Behavioral Genetics Evidence in Criminal Cases: Results of a Longitudinal Study, 2011 MICH. ST. L. REV. 967, 1008–27.

For the most thorough and recent overview of this research, see generally JONES ET AL., supra note 8.

For an example of such distortion, see Markowitz, supra note 19; see also Shetty, supra note 19 (addressing previous scholarly attention to extreme views on the use and impact of neuroscience evidence).

In separate articles, Neal Feigenson and Carter Snead come the closest to offering such published and systematic accounts. See Neal Feigenson, Brain Imaging and Courtroom Evidence: On the Admissibility and Persuasiveness of fMRI, 2 INT’L J.L. CONTEXT 233, 233–55 (2006); Snead, supra note 7.

See generally JONES ET AL., supra note 8.
limitations of neuroscience evidence in ways that clearly discredit the myth of the double-edged sword. Rather than simply furthering current theoretical debates, this Study suggests that the substance of such debates should change. Indeed, the results of the Neuroscience Study spur a straightforward, yet perhaps unexpected, conclusion: the key question we should be asking is not whether neuroscience evidence should be used in the criminal justice system, but rather how and why.

In an effort to begin answering this how-and-why question, Part I of this Article describes the Neuroscience Study and some of its most fundamental findings. Neuroscience evidence is typically raised in cases where defendants are facing a severe sentence, such as the death penalty, a life sentence, or a substantial prison sentence. Yet contrary to the myth of the double-edged sword, the Study reveals that such evidence is most commonly introduced for an important yet relatively conventional purpose: as part of an effort to mitigate a defendant’s sentence. Indeed, this Study uncovers a criminal justice system that is willing to embrace innovative methods of assessing defendants’ mental capabilities, and expects its attorneys to do the same.

Part II of this Article focuses on this latter point—courts’ expectations of attorneys. Part II explains how the standards articulated by the U.S. Supreme Court in *Strickland v. Washington* are applied in the context of neuroscience evidence and presents one of the Neuroscience Study’s most striking findings: many courts not only expect attorneys to investigate and use available neuroscience evidence when it is appropriate, but also penalize attorneys who neglect this obligation. In an effort to better discern the parameters of courts’ requirements, Part II concludes by examining a number of cases in which courts found attorneys’ approaches to available neuroscience evidence to be ineffective.

Part III tests one of the most widely held myths of the double-edged sword—that prosecutors will use neuroscience evidence to fuel arguments that a defendant is a future danger and therefore deserves death or extensive incarceration. The Neuroscience Study’s findings are clear: neuroscience evidence is only rarely used to argue a defendant’s future dangerousness. Yet the topic itself is more nuanced, and Part III concludes by warning attorneys of the contradictions that neuroscience evidence can bring.

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28 See infra notes 34–68 and accompanying text.
29 See infra Chart 1. For the reader’s convenience, the charts discussed in this Article are archived at https://perma.cc/7QV8-L8F8?type=pdf.
30 See infra Charts 6–7.
31 See infra notes 70–274 and accompanying text.
33 See infra notes 276–448 and accompanying text (discussing future dangerousness).

Science and law have long intersected, but neuroscience is a relatively new concept to many. In collecting data for the Neuroscience Study, I defined “neuroscience evidence” as incorporating two broad groups of tests: “imaging tests,” which are generated by computer images of a human brain—such as those tests listed in Chart 4—and “non-imaging tests,” which are based on tests administered by a medical professional to an individual for the purpose of gaining insight into how that person’s brain operates—such as those tests listed in Chart 5. The 800 criminal law cases addressing neuroscience evidence from January 1, 1992 to December 31, 2012 were collected employing the Westlaw and Lexis legal databases. I used information from these cases to code and analyze over 100 key factors.

34 See Merriam-Webster Online Dictionary, supra note 13; Oxford English Dictionary Online, supra note 14 (noting that the term “neuroscience” only surfaced in the 1960s).

35 See Ellen G. Koenig, A Fair Trial: When the Constitution Requires Attorneys to Investigate Their Clients’ Brains, 41 FORDHAM URB. L.J. 177, 194–95 (2013) (dividing neuroscience evidence into “brain scans” and “neuroscience evaluations”). Functional brain scans (EEG, PET, SPECT, fMRI) “are computer images of a person’s brain that show how his brain works by tracking how blood flows through the brain.” Id. at 195. Structural, or organic brain scans (MRI, CT), “show what the brain’s structure looks like.” Id. at 197.

36 See infra Chart 4.

37 See infra Chart 5.


39 The case selection techniques employed for the Neuroscience Study were comparable to those used in my prior studies of behavioral genetics evidence in criminal cases. See Denno, supra note 23, at 1035–47. For this Article’s Study, searches for decisions were conducted using Westlaw and Lexis, applying parameters that included the following cases: published opinions, unpublished opinions, opinions that are slated to be published, and opinions in which the state of publication is, at the time of this Article’s writing, unclear. In order to make the content of this Article’s search consistent across all cases, the search looked only at opinions. The search did not look at the briefs for those opinions because case briefs are not available for all cases in either the Westlaw or Lexis databases. As mentioned, the search incorporated judicial decisions released between January 1, 1992, and December 31, 2012. In order to collect the relevant opinions and to make the search consistent with the Author’s past studies, the search was limited to decisions in which courts reference permutations of the following terms: “neuro or brain,” “MRI,” “fMRI,” “PET scan,” “CAT scan,” “CT scan,” “SPECT,” “EEG,” “BEAM,” or “brain fingerprinting.” Some of the searches also contained the terms “ineffective” or “effective” (where those terms appeared within three words of the word “assistance”), and also title assignations used by experts, such as “Dr.” To be included in this Article’s study, a court must have announced a disposition in a case where a party either introduced or sought to introduce neuroscience evidence at any point in the proceeding (e.g., innocence-or-guilt phase, penalty phase, post-conviction hearing, evidentiary hearing, etc.). Cases in which neuroscience evidence was introduced post-trial were included in the Study only if the court took action on the basis of that evidence. Such action could consist of granting an evidentiary hearing, finding ineffective assistance of counsel for counsel’s failure to pursue the evidence, or finding prior court error for failure to admit the evidence. The Author also required that the court have considered the neuroscience evidence as part of its rationale for a particular holding.
relevant to the criminal justice system. Although some cases that discuss neuroscience evidence do not find their way into the Westlaw and Lexis databases (for example, because they have never been reported), those that do can be retrieved by anyone who would like to verify or replicate my methods. This selection strategy also provides relative consistency and accountability across the twenty years this Study examines.

The Neuroscience Study’s 800 cases are documented in separate Appendixes on file with the Author. The cases fall into three categories: 247 cases (30.88%) concern neuroscience evidence as it pertains to the victim, primarily to prove the extent of a victim’s brain injury; 514 cases (64.25%) concern neuroscience evidence as it pertains to the defendant; and thirty-nine cases (4.88%) concern neuroscience evidence as it pertains to both the defendant and the victim because the brains of one or more individuals in both the “victim” and “defendant” categories were examined. The focus of this Article is on the cases in the latter two categories—“defendant” and “both victim and defendant”—which comprise 553 cases or 69.13% of the total data set of 800 cases. This Article refers to these two categories generically as “Defendant Cases.”

A. Crimes and Punishments

The vast majority of the Neuroscience Study’s Defendant Cases involve defendants convicted of murder. As Chart 1 shows, two-thirds of

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40 See Stat. App., supra note 38; see also DENNO, supra note 38. The Author supervised the coding of all data. Data were coded with the assistance of three J.D. graduates of Fordham Law School with a strong interest in law and neuroscience. These coders were Daniel Goddin, J.D., Jeremy Gold, J.D., and Ellen Koenig, J.D. These coders worked together and spot-checked each other at key points in time during the Neuroscience Study, thereby ensuring inter-rater reliability and consistency. The coding efforts of these three were then checked again for validity and reliability by four additional coders, all current J.D. candidates at Fordham Law School. These coders were Aaron Neishlos, Madhundra Sivakumar, David Tarras, and Katherine Yi.

41 See Stat. App., supra note 38; see also DENNO, supra note 38.

42 These victim cases follow a pattern that is distinct from other types of cases because neuroscience evidence is used to prove the extent of a victim’s injury and it is mostly introduced by the State. In a typical victim injury case, a prosecutor introduces into court a CAT scan of the brain of a baby who has been shaken, or of an adult who has suffered a gunshot wound to the head. This neuroscience evidence, which almost always comes in the form of brain imaging, is used to prove either the perpetrator’s intent (to abuse, injure, or kill) and thus his guilt, or it is used for the purposes of requesting a harsher sentence based on the severity of the injury inflicted upon the victim. See State v. McDowell, 715 S.E.2d 602, 604 (N.C. Ct. App. 2011) (“Dr. Riemer identified forty-five gunshot wounds to Mr. Howell’s body, including a sufficient number of entrance and exit wounds in Mr. Howell’s head that his entire brain was destroyed.”); see also Stat. App., supra note 38; DENNO, supra note 38 (listing and examining all victim cases).

43 See Stat. App., supra note 38; see also DENNO, supra note 38.

44 See Stat. App., supra note 38; see also DENNO, supra note 38. The 553 defendants were convicted of the following crimes (only the most serious crime conviction per defendant is listed): 366 murder convictions that resulted in a death sentence; ninety-five murder convictions that did
the Defendant Cases (366 cases or 66.18%) began as capital cases in which the defendant was eligible for the death penalty even if that sentence was later reduced. Defendants in the remaining cases (187 cases or 33.82%) faced disproportionately severe sentences. Among these non-death penalty cases, less than half (80 cases or 42.78%) were given a sentence of life either with or without the possibility of parole. The other 107 cases were mostly allotted prison sentences of substantial length. In sum, my analysis indicates that neuroscience evidence is typically used in cases where defendants face the death penalty, a life sentence, or a substantial prison sentence.

The Neuroscience Study also reveals that neuroscience evidence is employed at different stages of cases. In a capital case, neuroscience may be incorporated during the guilt-or-innocence phase and/or the penalty phase. The guilt-or-innocence phase requires the State to prove beyond a reasonable doubt that a defendant committed an alleged crime; this phase invites the use of defenses that suggest a defendant was not fully responsible. In the penalty phase, the jury has found the defendant guilty of the capital crime and is determining whether to sentence the defendant to death. The great majority of death penalty states require that the jury consider both evidence of aggravation from the State and evidence of mitigation from the defense. In this Study, the concept of mitigation is not exclusive to death penalty cases, but that is by far the most common context in which the term is used. In most jurisdictions, aggravating factors must outweigh mitigating factors for a defendant to be sentenced to death.

not result in a death sentence; one negligent homicide; five attempted murder or conspiracy to commit murder; six sexual assaults; thirteen robbery, burglary, theft or home invasion; seventeen assault or battery; four child abuse; seven fraud or conspiracy to commit fraud; one arson; seventeen drug trafficking or drug possession; one criminal possession of a weapon; one distribution of child pornography; one filing false public records and perjury; one escape; five driving under the influence or leaving the scene; one criminal mistreatment; one bribery; two racketeering or making threats; one illegal gambling; and seven unknown charges.

45 See infra Chart 1.
46 Chart 1 shows the most serious sentence for which a defendant was eligible. For example, if a defendant was sentenced for seventeen years-to-life, Chart 1 categorizes that defendant as having a life sentence. For some cases, an opinion was adjudicated without the use of a sentence. In other cases, the defendant had yet to be sentenced at the time of the opinion’s publication. See id.
47 See Blume & Paavola, supra note 23, at 914 (discussing the two phases of capital cases generally and the application of neuroimaging as mitigation).
48 See id.
49 Id. at 914–15.
50 Id. (“Unlike the decision the jurors made during the guilt-or-innocence phase of the proceedings . . . this decision is not . . . a determination of fact, for example, did the defendant do it, but a moral and normative choice—does he deserve to die?” (internal quotations omitted)).
51 See Stat. App., supra note 38; see also DENNO, supra note 38. In the Neuroscience Study there were about a dozen cases that used the term “mitigation” to apply to the goals of certain
Mitigating factors usually include information about a capital defendant’s background and life prior to his crime, whereas aggravating factors include the circumstances surrounding a crime and a defendant’s prior criminal record.\textsuperscript{53} Death penalty jurisdictions vary with respect to the types of mitigating and aggravating circumstances that they permit fact-finders to consider; but the U.S. Supreme Court has made clear that defendants can present mitigating evidence relevant to “any aspect of [the] defendant’s character or record and any of the circumstances of the offense that the defendant proffers as a basis for a sentence less than death.”\textsuperscript{54} This highly open-ended standard allows for a full range of mitigating factors to be introduced; most attorneys weave these facts into a compelling “story” that can be critical to determining a defendant’s fate.\textsuperscript{55}

The Neuroscience Study is the first empirical study to systematically investigate how courts assess the mitigating and aggravating strength of neuroscience evidence. My analysis reveals that neuroscience evidence is usually offered to mitigate punishments in the way that traditional criminal law has always allowed, especially in the penalty phases of death penalty trials. This finding is noteworthy because it controverts the popular image of neuroscience evidence as a double-edged sword—one that will either get defendants off the hook altogether or unfairly brand them as posing a future danger to society. To the contrary, the Neuroscience Study indicates that neuroscience evidence is typically introduced for well-established legal defenses such as extreme mental or emotional disturbance or insanity. \textit{See} Stat. App., \textit{supra} note 38; \textit{see also} DENNO, \textit{supra} note 38.


\textsuperscript{54} \textit{Marsh}, 548 U.S. at 174 (quoting \textit{Lockett v. Ohio}, 438 U.S. 586, 604 (1978)) (internal quotations omitted). The \textit{Marsh} Court explained that state courts are allowed significant license to determine “the manner in which aggravating and mitigating circumstances” should be weighed so long as those courts had rationally narrowed the class of “death-eligible defendants” \textit{and} permitted juries to consider a defendant’s “record, personal characteristics, and the circumstances of his crime” in rendering a sentence. \textit{Id}.

purposes—to provide fact-finders with more complete, reliable, and precise information when determining a defendant’s fate.56

B. A Range of Innovative Tests

Mitigation is by no means the exclusive purpose for which neuroscience evidence is introduced. Indeed, the push for mitigation is commonly accompanied by a complex range of defense strategies, with a full menu of legal doctrines explicated by neuroscience evidence.57 Neuroscience evidence is primarily used for mitigation, however, in both death penalty and non-death penalty cases. Accordingly, this Section will discuss some of the kinds of mitigating neuroscience evidence available to attorneys.

As Chart 2 shows,58 the most prevalent mental and behavioral disorders ascribed to defendants by way of neuroscience evidence include disorders of adult personality and behavior, mental and behavioral disorders due to psychoactive substance abuse, schizophrenia, schizotypal and delusional disorder, and organic mental disorders.59 Diagnoses are most commonly issued by expert medical professionals, although sources such as self-report and hospital records may also be employed.60 Notably, although Chart 2 presents information on the prevalence of confirmed diagnoses, many cases involved expert testimony regarding the possible existence of these and other mental and behavioral disorders. For example, Chart 3 shows that one-half of the cases (271 cases or 49.01%) featured testimony by an expert medical professional explaining that the defendant suffered brain damage,61 which in this study could have been from any one of a number of sources, such as childhood beatings, car accidents, or severe alcoholism.62

56 See Jones et al., supra note 22, at 17624 (noting the seven ways that “neuroscientific evidence might aid law”).
57 See infra notes 70–448 and accompanying text; see also Stat. App., supra note 38; DENNO, supra note 38.
58 See infra Chart 2.
59 For ease of presentation, the diagnoses in Chart 2 are classified using the International Classification of Diseases, 10th Revision, Clinical Modification (“ICD-10”), in particular, the ICD-10 V: Mental Health and Behavioral Disorders. The ICD-10 is recognized and ratified by all 193 countries of the World Health Organization. See WORLD HEALTH ORG., ICD-10 CLASSIFICATION OF MENTAL AND BEHAVIOURAL DISORDERS: CLINICAL DESCRIPTIONS AND GUIDELINES (2010). This Study’s coder reviewed each opinion to determine specific neurological diagnoses ascribed to each defendant. Only expert testimony was considered for the purposes of the coding process. The experts at the very least held a doctorate in their respective fields. The diagnosing experts covered numerous professions ranging from medical doctors to forensic psychologists, neurosurgeons, and pharmacists. See Stat. App., supra note 38; see also DENNO, supra note 38.
60 See Stat. App., supra note 38; see also DENNO, supra note 38.
61 For detailed glossaries defining and explaining the purposes of many of these tests, see JONES ET AL., supra note 8, at 755–67; GARLAND, supra note 15, at 201–09.
Neuroscience evidence supporting the confirmed diagnoses include a swath of tests encompassing both imaging and non-imaging techniques. Charts 4\(^{63}\) and 5\(^{64}\) list the most commonly used tests. At least one type of brain imaging test was discussed in nearly two-thirds of the Defendant Cases (350 cases or 63.29%).\(^{65}\) Although the diagnoses and tests listed in Charts 2–5\(^{66}\) overlap within cases, the array of factors represented in each of these charts illustrates the criminal justice system’s reliance on and acceptance of neuroscience evidence for mitigation purposes. Moreover, the results portrayed in these charts make clear that the criminal justice system comfortably incorporates even very recent technology for assessing defendants’ mental capabilities. For example, Chart 4\(^{67}\) indicates that brain imaging tests known as QEEG scans were referenced or used in fifteen cases, despite being first introduced in a courtroom only five years ago in the 2010 Grady Nelson case.\(^{68}\)

In sum, the Neuroscience Study reveals a modern criminal justice system that is open to employing a wide range of neuroscience evidence. As a result, attorneys currently prosecuting and defending criminal cases must educate themselves about medical and neurological conditions and tests that a past generation of lawyers confronted rarely, if at all. Part II will discuss one of the most striking findings of the Neuroscience Study, which is that courts not only expect attorneys to investigate and use available neuroscience evidence in their cases when it is appropriate, but they penalize attorneys who neglect this obligation.\(^{69}\)

II. NEUROSCIENCE AND INEFFECTIVE ASSISTANCE OF COUNSEL

The U.S. Supreme Court has stated that an attorney’s performance is determined by a standard of “prevailing professional norms,”\(^{70}\) which, for capital cases, entails a “thorough investigation”\(^{71}\) of “all reasonably available mitigating evidence”\(^{72}\) relevant to a defendant’s history and circumstances.\(^{73}\) The Court has stressed repeatedly that a key part of this mitiga-
tion inquiry requires attorneys to investigate defendants’ cognitive and intellectual deficiencies because such evidence has a particularly pronounced impact on mitigation, especially in death penalty cases.74

According to the Court, an attorney’s failure to conduct such an investigation hinders the attorney’s ability to make reasonable strategic decisions about how and when to present evidence that may benefit his or her client.75 Furthermore, those attorneys open themselves up to defendants’ appeals claiming prejudicially deficient counsel in violation of the Sixth Amendment, known as an “ineffective assistance of counsel” or Strickland claim.76

In 1984, in Strickland v. Washington,77 the U.S. Supreme Court established a two-pronged test to assess the validity of ineffective assistance of counsel challenges. First, counsel’s performance must actually be “deficient,” and second, this deficient performance must have “prejudiced” the defendant.78 To be “prejudiced,” the legal counsel must not only be of poor quality, but must also be the “but for” cause of the resulting conviction.79 In the Neuroscience Study, defendant-petitioners who satisfied this Strickland test were typically afforded relief in the form of a new penalty phase,80 reversal of their

74 These deficiencies cover a broad span. See Sears v. Upton, 561 U.S. 945, 946 (2010) (frontal lobe damage); Porter, 558 U.S. at 36 (brain damage and cognitive defects in reading, writing, and memory); Rompilla v. Beard, 545 U.S. 374, 392 (2005) (organic brain damage and significant cognitive impairments); Tennard v. Dretke, 542 U.S. 274, 287 (2004) (impaired intellectual functioning); Wiggins, 539 U.S. at 535 (diminished mental capacities); Williams, 529 U.S. at 396 (borderline mental retardation). The American Bar Association Guidelines also advise attorneys to conduct an investigation into a defendant’s neurological history as part of a death penalty defendant’s mitigation claim. Specifically, the comment to Guideline 4.1 states: “Counsel must compile extensive historical data, as well as obtain a thorough physical and neurological examination. Diagnostic studies, neuropsychological testing, appropriate brain scans, blood tests or genetic studies, and consultation with additional mental health specialists may also be necessary.” ABA, Guidelines for the Appointment and Performance of Defense Counsel in Death Penalty Cases, 31 Hofstra L. Rev. 913, 956 (2003). Indeed, scholars have suggested that the ABA’s guidelines provide more protection for defendants than the Strickland test. See Koenig, supra note 35, at 204 (“[U]nder the ABA Guidelines approach, neuroscience evidence should be a real part of counsel’s reasonable investigation, and, specifically in capital cases, defense counsel may be ineffective for failing to comply with this duty.”).

75 See Sears, 561 U.S. at 954 (“We rejected any suggestion that a decision to focus on one potentially reasonable trial strategy . . . [can be] ‘justified by a tactical decision’ when ‘counsel did not fulfill their obligation to conduct a thorough investigation of the defendant’s background.”’ (quoting Williams, 529 U.S. at 364)).

76 See Strickland, 466 U.S. at 687–92 (establishing and discussing the Strickland test for ineffective assistance of counsel).

77 Id. at 687.

78 Id.

79 See id.

80 See Stat. App., supra note 38; see also DENNO, supra note 38.
conviction for a new trial, or a remand with instructions to hold a new evidentiary hearing.

As commentators have long noted, however, the *Strickland* standard “is notoriously difficult for defendants to meet” and the percentage of successful claims is small. Whether a defendant’s lawyer is “asleep, drunk, unprepared, or unknowledgeable,” courts still shy away from granting such claims. One scholar pithily stated that any “lawyer with a pulse will be deemed effective.” Overwhelmingly, courts presume that attorneys are adequate and, even if defendants can surmount this presumption with a show of an attorney’s “deficiency,” defendants can still fall short of meeting the prejudice prong.

Yet *Strickland* claims are particularly significant when neuroscience evidence is at issue, given the U.S. Supreme Court’s emphasis on the mitigating value of neuroscience evidence in criminal cases. Indeed, the Neuroscience Study reveals a remarkable finding: among the *Strickland* claims recorded in the Study’s 553 Defendant Cases, nearly all of the successful claims were based on an attorney’s failure to appropriately investigate, gather, or understand neuroscience evidence. The next Section explains this finding in more detail.

**A. The Marked Success of Strickland Claims**

Among the Neuroscience Study’s 553 Defendant Cases, most of the defendants raised multiple *Strickland* claims. These claims ranged from an attorney’s mishandling of neuroscience evidence to a broad array of non-neuroscience issues such as an attorney’s errors during the jury selection process, a conflict of interest with multiple clients, or a failure to communicate with a client. Chart 6 breaks down the number and success rate of

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83 Carissa Byrne Hessick, *Ineffective Assistance at Sentencing*, 50 B.C. L. REV. 1069, 1074 (2009); see also Nancy J. King, *Enforcing Effective Assistance After Martinez*, 122 YALE L.J. 2428, 2431 (2013) (noting that prior to the U.S. Supreme Court’s decision in *Martinez v. Ryan*, 132 S. Ct. 1309 (2012), “less than 1% of noncapital habeas petitions were granted for any claim” and that *Martinez* will be unlikely to alter this outcome).
86 See generally Hessick, *supra* note 83 (discussing *Strickland* claims generally and observing historical criticisms of the prejudice prong as overly difficult to satisfy).
87 See *supra* note 74 and accompanying text.
89 In the Neuroscience Study, it was unusual for a defendant-petitioner to bring only one ineffective assistance of counsel claim in a given case. Some of the individual opinions in the Study’s data set featured dozens of ineffective assistance of counsel claims with some being centered on
these Strickland claims in three ways: all 553 cases, only death penalty cases (366), and only non-death penalty cases (187). As the chart shows, over one-half (293 cases or 52.98%) of the 553 defendants raised a Strickland claim during litigation. Of those 293 cases, over one-quarter (81 cases or 27.65%) included a successful Strickland claim, meaning that the defendants successfully proved that they met the two prongs of the Strickland test. A clear majority of the cases (254 or 86.69%) featured at least one Strickland claim based specifically on an issue related to neuroscience evidence. In turn, 75 of those 254 cases (or 29.53%) included a Strickland claim that was granted, and all but one of those 75 cases were specifically based on the attorney’s mishandling or omission of neuroscience evidence (74 cases or 98.67%). In sum, nearly all successful Strickland claims were based on an attorney’s failure to appropriately investigate, gather, or understand neuroscience evidence—as opposed to any one of a number of other types of ineffective assistance of counsel claims that the Neuroscience Study recorded.

The next Section will provide more detail regarding the bases for these seventy-four claims. Courts typically found multiple and often interrelated reasons for granting the claims, so the categories discussed in the next Section are not mutually exclusive. They are, however, enlightening for understanding attorney strategy.

B. How Counsel Damage Their Cases

Results from the Neuroscience Study show that Strickland claims are most frequently raised in death penalty cases, presumably because the stakes are so high for the defendant. Yet as Chart 6 indicates, when it comes to neuroscience-related Strickland claims, there is little distinction in neuroscience evidence (failure to procure a brain imaging scan, failure to plead a diminished capacity defense, etc.) and some focused on non-neuroscience evidence (such as the improper handling of the jury selection process, failure to object to improper jury instructions, etc.).
The overwhelming impact of neuroscience evidence in the grant of a *Strickland* claim is virtually the same for both types of cases.99 Among the seventy-four cases that successfully raised neuroscience-related *Strickland* claims, each of the sixty-six death penalty cases resulted in the petitioner’s death sentence being vacated.100 In each of the eight non-death penalty cases, habeas relief (reversal of judgment) was granted.101

In half of the seventy-four cases, the court determined that defense counsel “actively” rather than “passively” damaged their clients’ cases.102 I use the term “actively” to designate an attorney’s deliberate decision to engage in or refrain from a certain action that prejudiced a client. Conversely I use the term “passively” to designate an attorney’s objectively unreasonable failure to take a certain course of action that prejudiced a client. The most common examples of active damage by attorneys included the following scenarios: eliciting damaging testimony from defense witnesses;103 offering evidence/testimony for the purpose of mitigation that actually served as aggravating evidence;104 choosing not to ask for a continuance to investigate mitigation evidence;105 erroneously presenting the wrong defense or withdrawing a favorable defense based on the evidence in their possession;106

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98 Altogether, 221 of the 255 cases in the death penalty group (86.67%) featured at least one *Strickland* claim that was based specifically on the quality of counsel’s handling of neuroscience evidence; similarly thirty-three of the thirty-eight cases in the non-death penalty group (86.84%) featured one such neuroscience *Strickland* claim. While these percentages are similar, grants of *Strickland* claims vary. For the death penalty group, sixty-seven of the 221 cases included a *Strickland* claim that was granted (30.32%); yet, for the non-death penalty group, eight of the thirty-three cases (24.24%) included a *Strickland* claim that was granted. That said, the proportion of those successful claims based specifically on the mishandling of neuroscience evidence is virtually identical for both groups. For death penalty defendants, sixty-six of the sixty-seven successful claims (or 98.51%) were based specifically on a mishandling of neuroscience evidence whereas, for non-death penalty defendants, all eight of the eight successful claims were based specifically on a mishandling of neuroscience evidence. See id.

99 *See id.*

100 *Stat. App., supra note 38; DENNO, supra note 38.*

101 *See Stat. App., supra note 38; see also DENNO, supra note 38. In some cases, the reversal of judgment took one of the following forms: affirmed a lower court’s grant of habeas relief and remand, vacated the death sentence to hold an evidentiary hearing regarding the merits of the ineffective assistance of counsel claim; granted a Certificate of Appealability for the same purpose; or remanded the lower court’s denial of habeas relief and remand. See Stat. App., supra note 38; see also DENNO, supra note 38.*

102 *See Stat. App., supra note 38; see also DENNO, supra note 38.*

103 *See Waters v. Zant, 979 F.2d 1473, 1482–94 (11th Cir. 1992), vacated, 11 F.3d 139 (11th Cir. 1993).*

104 *See Simmons v. State, 105 So. 3d 475, 507–08 (Fla. 2012).*

105 *See Jackson v. Calderon, 211 F.3d 1148, 1156–61 (9th Cir. 2000); see also State v. Coney, 845 So. 2d 120, 131–32 (Fla. 2003).*

advising the client to waive a mitigation presentation; choosing not to present mitigation at the penalty phase that counsel erroneously believed would damage the “humanizing” evidence; or making damaging statements of their own.

Most (sixty-nine cases or 93.24%) of the seventy-four cases involving a successful neuroscience-related Strickland claim were based on trial counsel’s failure to adequately present a case in mitigation (“FTP M”). This is a very broad category involving several overlapping sub-categories of deficient performance. Nearly one third of the sixty-nine cases contained both an FTPM claim and an additional similar yet separate Strickland claim. These additional claims included the following deficiencies: counsel’s failure to adequately investigate and present a mental health defense; counsel’s failure to consult a necessary mental health expert; and, in two cases, counsel’s failure to adequately understand or be familiar with the American Bar Association guidelines for attorney representation in capital murder cases.

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109 Stat. App., supra note 38; DENNO, supra note 38. The legal standard for failure to adequately present a case in mitigation derives from Strickland: “[t]he right to present, and to have the sentencer consider, any and all mitigating evidence means little if defense counsel fails to look for mitigating evidence or fails to present a case in mitigation at the capital sentencing hearing. Accordingly, counsel’s general duty to investigate takes on supreme importance . . . .” Strickland, 466 U.S. at 706 (Marshall, J., dissenting) (citation and internal quotations omitted).
110 Deficient performance in this category often included a failure to sufficiently investigate/present evidence and/or testimony of the following: psychological impairment, neurologic (functional and organic) impairment, social history containing mental dysfunction cues (including potentially favorable family and friend testimony), mental health history (including prior medical records, evaluations, and history of drug and/or alcohol abuse), and several other related pieces of neuroscience evidence. Stat. App., supra note 38; DENNO, supra note 38. Examples of these mental health defenses include a diminished capacity defense, insanity defense, or a defense based on defendant’s mental retardation or incompetency to stand trial. Notably, among the six successful Strickland cases in which an FTPM claim was not offered and/or accepted, the Strickland claims primarily involved counsel’s failure to adequately investigate and present a mental health defense. One case involved counsel’s failure to investigate diminished capacity, a failure to contest the issue of competency, and ineffective counseling regarding the client’s previous plea agreement. Hoffman v. Arave, 455 F.3d 926, 932–42 (9th Cir. 2006), vacated in part, 552 U.S. 117 (2008). Two cases involved counsel’s failure to provide adequate assistance during the client’s competency determination. Hummel v. Rosemeyer, 564 F.3d 290, 301–02 (3d Cir. 2009); Deere v. Cullen, 713 F. Supp. 2d 1011, 1028–41 (C.D. Cal. 2010). In one case, counsel was found constitutionally deficient for unreasonably withdrawing an insanity defense without conducting sufficient investigation, and failing to present an intoxication defense based on available, favorable evidence. Johnson, 794 A.2d at 667–68. One case involved counsel severely prejudicing a client by failing to request a diminished capacity defense. Pirtle v. Morgan, 313 F.3d 1160, 1162 (9th Cir. 2002). Lastly, one case involved counsel’s failure to call a readily available and willing medical expert (forensic psychiatrist) whose testimony would be the centerpiece of a diminished capacity defense.
In an overlapping subset of FTMP cases, including one non-death penalty case,\(^{113}\) a number of courts addressed the failure of counsel to explain the role of mitigating circumstances and evidence to clients before those clients waived the right to present a case in mitigation.\(^{114}\) One of these cases involved an attorney advising a client to waive the right to a jury trial before sufficiently articulating the role of mitigating circumstances in a jury’s determination of capital punishment.\(^{115}\) Another similar case concerned counsel’s failure to fully clarify the definition and role of “mitigating circumstances” to the jury, resulting in prejudice to the client.\(^{116}\)

In more than half of the FTPM cases, courts expressly noted that counsel were actually aware of the mitigating neuroscience evidence, but failed to adequately investigate that evidence.\(^{117}\) In the remaining cases, counsel were either not aware that the mitigating neuroscience evidence existed, or were aware of the evidence but did not recognize that it was mitigating.\(^{118}\)

Predictably, most defense counsel offered the court excuses for their deficient and prejudicial performance.\(^{119}\) The next Section will discuss the excuses that were provided in the seventy-four cases involving a successful neuroscience-related Strickland claim.\(^{120}\) Counsel often offered multiple excuses within the same case, so the categories presented in the next Section are not mutually exclusive. They are nonetheless useful for providing a general sense of courts’ priorities when assessing Strickland claims.

### C. Why Counsel Omit or Mishandle Neuroscience

In nearly one third of the seventy-four cases involving successful neuroscience-related Strickland claims, counsel claimed to have had a reasonable trial strategy or tactic.\(^{121}\) Typically, counsel’s sole defense was that they were following a course of conduct during trial that they thought would succeed, and when it did not succeed, they were unprepared for the sentencing phase.\(^{122}\) For example, in Miller v. Dretke,\(^{123}\) counsel claimed he “did not prepare much for the punishment phase” because he believed his client

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\(^{113}\) See King v. Kemna, 226 F.3d 981, 985–86 (8th Cir. 2000), vacated on reh’g en banc, 266 F.3d 816 (8th Cir. 2001).

\(^{114}\) Stat. App., supra note 38; DENNO, supra note 38.

\(^{115}\) Lynch, 897 F. Supp. 2d at 1306.

\(^{116}\) Waters, 979 F.2d at 1493.

\(^{117}\) See Stat. App., supra note 38; see also DENNO, supra note 38.

\(^{118}\) See Stat. App., supra note 38; see also DENNO, supra note 38.

\(^{119}\) See Stat. App., supra note 38; see also DENNO, supra note 38.

\(^{120}\) See infra notes 121–150 and accompanying text.

\(^{121}\) See Stat. App., supra note 38; see also DENNO, supra note 38.

\(^{122}\) See Stat. App., supra note 38; see also DENNO, supra note 38.

\(^{123}\) 420 F.3d 356, 359 (5th Cir. 2005).
would accept the plea bargain of probation. Yet counsel admitted that he could have acquired her doctors’ letters before the trial’s punishment phase began, as well as interviewed the doctors before the trial and offered their testimony as mitigation evidence. Likewise, in Pirtle v. Morgan, trial counsel’s inexplicable decision to choose an intoxication instruction over a diminished capacity instruction to explain his client’s lack of premeditation left the jury “without any guidance as to the significance of the defense testimony.” The court in Smith v. Mullin aptly depicted trial counsel’s flaws in just one sentence: “Astoundingly, [trial counsel] admitted at the evidentiary hearing that he was unaware Mr. Smith’s ‘mental state or mental illness could be introduced as mitigation in the second stage’ of trial.” The court proceeded to find that Mr. Smith’s attorney therefore “made no attempt to explain how this kind and considerate person could commit such a horrendous crime, although mental health evidence providing such an explanation was at his fingertips.”

In another category of excuses, counsel acknowledged ignorance in the mishandling of evidence or in communications with experts or clients. These circumstances included counsel inappropriately accepting a client’s own portrayal of his mental status, relying on unqualified or insufficient numbers of experts to make decisions regarding a client’s defense, or erroneously believing that a client waived his right to present mitigating evidence because counsel did not do not adequately investigate the client’s background or mental health issues.

Some cases involved attorneys who admitted their incompetence more straightforwardly. In Loyd v. Whitley, for example, trial counsel conceded that his inability to adequately investigate and present mitigation evidence “was based upon a failure to understand the difference between the McNaughten test for sanity and the Louisiana mitigating factors of ‘mental or emotional disturbance,’ or ‘mental disease or defect.” In other cases,
counsel stated that the client either stopped cooperating with counsel’s investigation of potential mitigation evidence or counsel simply accepted a client’s waiver of mental health mitigation—explanations that courts found unacceptable.\textsuperscript{135} In \textit{Perkins v. Hall},\textsuperscript{136} for example, the court acknowledged evidence of the defendant’s “steadfast” resistance to being evaluated and “labeled [as] crazy” by experts, but concluded nonetheless that counsel was deficient for insufficiently acquiring mitigation evidence from non-experts.\textsuperscript{137} Such an alternative would involve more thoroughly investigating the defendant’s background, information from family and friends, records of the defendant’s potential brain injury, and other methods of circumventing the defendant’s lack of cooperation.\textsuperscript{138}

A particularly troubling category of excuses involved the contention that counsel chose not to present certain mitigation evidence in an attempt to “humanize,” or conversely, “de-humanize” their clients because they thought such evidence could do their clients more harm than good.\textsuperscript{139} Three cases are especially representative. In \textit{Hurst v. State},\textsuperscript{140} the court rejected defense counsel’s erroneous contention that “any mitigation other than the fact that [the defendant] was a good person would have been inconsistent” with the defendant’s guilt-phase claim that he was innocent.\textsuperscript{141} As the court explained, counsel had “no sound basis” for failing “to investigate and present mitigation evidence of [defendant’s] borderline intelligence . . . possible organic brain damage . . . and other mental mitigation.”\textsuperscript{142} Such evidence was in no way harmful to defendant’s mitigation claim, nor did it carry the potential to “open[] the door to any damaging testimony.”\textsuperscript{143}

Likewise, in \textit{Turpin v. Lipham},\textsuperscript{144} the court upheld a \textit{Strickland} claim due to trial counsel’s failure to hire a medical expert for penalty-phase mitigation based on the erroneous and medically unsubstantiated belief that their client’s mental health records indicated both aggravating and mitigating factors.\textsuperscript{145} The attorneys were particularly concerned that they would

\begin{enumerate}
\item \textsuperscript{135} \textit{See} \textit{Perkins v. Hall} 708 S.E.2d 335, 341–42 (Ga. 2011).
\item \textit{Id.} at 335.
\item \textit{Id.} at 341–42.
\item \textit{Id.}
\item See \textit{Simmons}, 105 So. 3d at 507–10; \textit{Hurst}, 18 So. 3d at 1012–13; \textit{Turpin v. Lipham}, 510 S.E.2d 32, 40 (Ga. 1998).
\item \textit{Id.} at 3d at 975.
\item \textit{Id.} at 1012–13.
\item \textit{Id.} at 1012.
\item \textit{Id.} at 1012–13 (“[B]ecause counsel never had Hurst examined and could not know what a mental health expert might discover, he could not make an informed tactical decision that the mental mitigation would be inconsistent with the defense or with other mitigation.”).
\item \textit{Id.} at 3d at 32.
\item \textit{Id.} at 40 (noting that the caseworker who determined that defendant’s records could be viewed as both aggravating and mitigating was merely an unlicensed family counselor and “[n]o other person with mental health training” evaluated the records).
\end{enumerate}
dehumanize their client and unleash potentially aggravating evidence if they enabled experts to interpret their client’s records for the jury. As the court explained, however, “[t]he jury, left unguided to comb through voluminous records, was just as likely to encounter aggravating information as mitigating information,” such as a nurse’s note that the defendant attacked another patient as compared to a caseworker’s memorandum explaining “the terrible neglect” that the client suffered at the hands of his parents.

Finally, in Simmons v. State, the court rejected the attorneys’ “humanizing” justification for somewhat different reasons. In this case, although counsel claimed to be tactically humanizing the defendant, the jury heard very little positive mitigation because of counsel’s failure to investigate, uncover, and present it. Moreover, counsel provided no rationale to explain why aggravating evidence would have outweighed such mitigating evidence during the penalty phase.

In essence, then, the courts in Hurst, Turpin, and Simmons rejected the argument that counsel’s failure to investigate or present mitigating information constituted a “strategic decision.” The double-edged-sword argument is unpersuasive when counsel contends that neuroscience evidence can do more harm than good to clients. Courts plainly expect defense counsel to use neuroscience evidence when appropriate, yet the precise parameters of this expectation can be elusive.

As indicated by the degree of overlap among the categories discussed in previous sections, Strickland cases involving neuroscience evidence are often highly complex, and they incorporate a wide range of circumstances. In Strickland claims, it is not always clear what type of neuroscience evidence will be used, how the courts will handle that evidence, and finally, when and why the attorneys in these cases will be deemed ineffective. In an effort to address such questions, the next Section examines in more detail a selection of the Neuroscience Study’s seventy-four cases involving a successful neuroscience-related Strickland claim.

**D. What Courts Expect from Attorneys Using Neuroscience**

This Section presents six case studies of opinions that represent the kinds of attorney failures that prompt courts to grant a neuroscience-related Strickland claim. As the case studies show, the decisions made by trial attorneys are egregious in terms of their omission and/or mishandling of

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146 Id. at 42.
147 Id.
148 105 So. 3d at 507–10.
149 Id. at 507.
150 Id.
151 See infra notes 155–274 and accompanying text.
evidence and expert testimony, often with potentially “disastrous”\textsuperscript{152} or “devastating”\textsuperscript{153} results for their clients. Courts typically appear influenced not by just one mistake an attorney may have made but by many such mistakes which, when combined, throw doubt on counsel’s explanations that their decisions were “strategic.” As one court stresses, bad decisions are not strategy but rather inadequacy,\textsuperscript{154} and therefore just one edge of a sword.

1. Investigate and Present Mitigating Evidence

In the 2012 case of \textit{Simmons v. State},\textsuperscript{155} following the circuit court’s denial of Simmons’s motion for post-conviction relief on \textit{Strickland} grounds, the Supreme Court of Florida ultimately reversed and remanded the denial of relief as to the penalty phase. According to the court, Simmons’s counsel “failed to fully investigate and present mitigating evidence regarding Simmons’s childhood and mental health.”\textsuperscript{156} Simmons’s trial counsel testified during an evidentiary hearing that, because she thought Simmons was competent, she never consulted a mental health expert on his behalf, nor did she investigate any other kind of mental mitigation.\textsuperscript{157} Thus, counsel presented no medical experts whatsoever to the jury during the penalty phase.\textsuperscript{158}

In sharp contrast, post-conviction defense counsel presented a range of medical testimony for the purposes of mitigation, including experts who tested Simmons during a post-conviction evidentiary hearing.\textsuperscript{159} Dr. H.D., for example, a psychologist and expert in neuropsychology, conducted several non-imaging tests on Simmons including the WAIS-III and the Denman Neuropsychology Memory Scale to determine if Simmons had brain damage.\textsuperscript{160} The results showed that Simmons fell in the borderline range of mental retardation.\textsuperscript{161} Other investigations revealed that Simmons had been placed in early programs for the severely emotionally disturbed—a status that ultimately fostered Simmons’s conflicts with other school children and led in part to Simmons eventually dropping out of school.\textsuperscript{162} Consequently, as an adult, Simmons experienced limited employability and maladjustments in his workplace.\textsuperscript{163} After discovering that Simmons was accidentally

\textsuperscript{152} Hooper v. Mullin, 314 F.3d 1162, 1169 (10th Cir. 2002).
\textsuperscript{153} \textit{Waters}, 979 F.2d at 1494.
\textsuperscript{154} Frierson v. Woodford, 463 F.3d 982, 992 (9th Cir. 2006).
\textsuperscript{155} 105 So. 3d at 483.
\textsuperscript{156} Id.
\textsuperscript{157} Id. at 504.
\textsuperscript{158} Id.
\textsuperscript{159} Id.
\textsuperscript{160} Id.
\textsuperscript{161} Id.
\textsuperscript{162} Id.
\textsuperscript{163} Id.
suffocated as an infant and only later revived at a hospital, Dr. H.D. recommended a PET scan to further assess whether Simmons suffered brain damage.\(^{164}\) The results validated Dr. H.D.’s view of Simmons’s cognitive impairments, which, along with all of his earlier problems in school, fostered Simmons’s striking impulsivity and misbehavior—“a ‘sort of pervasive maladjustment.’”\(^{165}\)

According to Dr. H.D., Simmons also suffered from a personality disorder “that manifested in fear of rejection and abandonment, running away from home, affective instability, depression, extreme self-criticism, and social isolation.”\(^{166}\) Given Dr. H.D.’s assessment that alcohol and drugs more strongly affect brain damaged individuals, and that Simmons had continuously consumed both alcohol and marijuana since a young age, Dr. H.D. rendered Simmons eligible for the statutory mitigator of “extreme mental or emotional disturbance.”\(^{167}\) Likewise, while Simmons “could appreciate the criminality of his conduct,” he “had an impaired capacity to conform his conduct to the requirements of law,” a classification that was also a statutory mitigator.\(^{168}\)

A second expert, Dr. F.W., a psychologist with training in neuropsychology, provided testimony specific to Simmons’s PET scan results.\(^{169}\) According to Dr. F.W., Simmons’s PET scan abnormalities were so pronounced it was clear that “Simmons has real trouble understanding people and social contexts around him.”\(^{170}\) In addition, Simmons’s “underactive thalamus” could lead to a loss of control “because that portion of the brain is also involved in stopping hazardous or inappropriate behavior.”\(^{171}\) Therefore, Dr. F.W. confirmed that Simmons’s PET scan results met the same criteria necessary for the two statutory mitigators supported by Dr. H.D.’s testimony.\(^{172}\) Yet post-conviction defense counsel also presented the testimony of a third expert—a psychotherapist and mitigation specialist—who concluded from her “psychosocial evaluation of Simmons” that “Simmons never developed the skills to live in the adult world.”\(^{173}\)

The court ultimately found in Simmons’s favor on the *Strickland* claim despite the State’s own medical expert rebutting defense counsel’s PET scan

\(^{164}\) *Id.*

\(^{165}\) *Id.* at 504–05.

\(^{166}\) *Id.* at 505.

\(^{167}\) *Id.*

\(^{168}\) *Id.*

\(^{169}\) *Id.*

\(^{170}\) *Id.*

\(^{171}\) *Id.*

\(^{172}\) *Id.*

\(^{173}\) *Id.* at 506.
The court recognized the “weighty aggravators” in Simmons’s case, but it also stressed the need to reverse for a new penalty phase in light of trial counsel’s extraordinary failure to investigate or present available mitigating evidence. In the court’s view, trial counsel had no reasonable “strategic decision;” the contrast in quality of representation between trial and post-conviction was just too great. In particular, Simmons’s “severe mental disturbance” was such a “weighty” mitigating factor that trial counsel’s failure to present it in the penalty phase could have been prejudicial. The court vacated Simmons’s death sentence.

2. Review Prior History and Testimony

In Frierson v. Woodford, Frierson appealed for federal habeas corpus relief, alleging in his Strickland claim that his penalty phase counsel was ineffective for failing to investigate and present available mitigation evidence of several disorders: childhood head trauma, chronic drug abuse, mental impairments, and organic brain damage. The court agreed that counsel’s conduct was deficient and prejudicial, emphasizing counsel’s failure to review evidence and testimony that was presented in earlier stages of the case. Specifically, the court found that counsel never examined trial transcripts containing a drug history report prepared by Dr. R.S., a psychologist and pharmacologist. In his trial testimony, Dr. R.S. mentioned his report six times, stating that Frierson “was severely intoxicated with PCP” during

\[174\] Id. at 503, 506. According to the State’s expert, the PET scan of Simmons’s brain did not “appear to be abnormal.” Id. at 506. Moreover, the same expert testified that “a PET scan cannot be used with any degree of reliability to diagnose behavioral problems;” however, on cross-examination the expert “agreed that he ha[d] not examined Simmons and ha[d] not read any reports of Simmons’ functional ability, and therefore d[id] not know how Simmons’ brain [wa]s functioning.” Id.\n
\[175\] Id. at 507.

\[176\] Id. at 510; see also White v. Singletary, 972 F.2d 1218, 1220–21 (11th Cir. 1992). As the U.S. Court of Appeals for the Eleventh Circuit explained:

The [Strickland] test has nothing to do with what the best lawyers would have done. Nor is the test even what most good lawyers would have done. We ask only whether some reasonable lawyer at the trial could have acted, in the circumstances, as defense counsel acted at trial. . . . We are not interested in grading lawyers’ performances; we are interested in whether the adversarial process at trial, in fact, worked adequately.

\[177\] Simmons, 105 So. 3d at 506–07.

\[178\] Id. at 510.

\[179\] 463 F.3d at 982.

\[180\] Id. at 989.

\[181\] Id.

\[182\] Id. at 985, 990.

\[183\] Id. at 990.
the commission of his crime, and that he likely suffered mental impairment from his chronic drug abuse.\textsuperscript{184}

Frierson’s attorney was also unaware of a report prepared by Dr. M.G., a forensic psychiatrist, who read his report into the record five times during trial testimony.\textsuperscript{185} In Dr. M.G.’s opinion, Frierson’s “PCP intoxication during the crime prevented Frierson from deliberating, premeditating, and meaningfully reflecting on his actions,” as is required for a first-degree murder conviction.\textsuperscript{186} Had Frierson’s counsel reviewed the trial transcripts, he would have learned that Frierson underwent several psychiatric evaluations while in custody of the California Youth Authority, including one explaining that Frierson exhibited symptoms of brain dysfunction.\textsuperscript{187} The court found that because counsel did not avail himself of this information and, in turn, give it to Dr. M.G., counsel had “failed to provide [his expert] with the information necessary to make an accurate evaluation of [Frierson’s] neurological system.”\textsuperscript{188}

Counsel contended that he purposely omitted evidence of Frierson’s past psychiatric evaluations in order to present Frierson in a positive light at the penalty hearing, and to avoid evidence of his antisocial personality disorder.\textsuperscript{189} As counsel explained, “such evidence would only have helped the prosecution’s case by showing Mr. Frierson to be unredeemable and without remorse, and would thus have undermined my efforts to humanize [him].”\textsuperscript{190} The court strongly rejected this excuse, holding that counsel’s decision clearly reflected not strategy, but rather inadequacy, and was therefore deficient.\textsuperscript{191}

3. Properly Handle Evidence and Experts

In \textit{Hooper v. Mullin},\textsuperscript{192} Hooper sought federal habeas relief after he was convicted of three murders in state court and sentenced to death.\textsuperscript{193} Hooper raised a \textit{Strickland} claim at the sentencing phase, alleging that his

\begin{itemize}
  \item \textsuperscript{184} \textit{Id.} at 985.
  \item \textsuperscript{185} \textit{Id.} at 990.
  \item \textsuperscript{186} \textit{Id.} at 986.
  \item \textsuperscript{187} \textit{Id.} at 990. Frierson’s attorney conceded that organic brain dysfunction “could have ‘great legal significance,’” yet he never investigated any of the leads provided to pursue further evidence of it. \textit{Id.}
  \item \textsuperscript{188} \textit{Id.} at 992 (citations omitted); \textit{see also id.} at 991 (“‘Counsel . . . [has] an obligation to conduct an investigation which will allow a determination of what sort of experts to consult.”’) (citations omitted).
  \item \textsuperscript{189} \textit{Id.} at 992.
  \item \textsuperscript{190} \textit{Id.}
  \item \textsuperscript{191} \textit{Id.} at 992–93.
  \item \textsuperscript{192} 314 F.3d at 1162.
  \item \textsuperscript{193} \textit{Id.} at 1165.
attorneys mishandled mitigating psychological evidence.\textsuperscript{194} On habeas review, the court agreed with Hooper, granting him relief from his death sentence.\textsuperscript{195}

Before Hooper committed his crimes, he received counseling from Dr. R.A., who administered several non-imaging neuropsychological tests to ascertain Hooper’s intellectual functioning.\textsuperscript{196} Dr. R.A. reported that Hooper’s cognitive functioning and intelligence were average, but that he may be learning disabled because of his challenges with spelling.\textsuperscript{197} The test results also demonstrated that Hooper had psychological problems, including his “difficulty controlling his anger and coping with everyday problems.”\textsuperscript{198}

After Hooper committed his crimes but prior to his conviction, his attorneys hired a psychologist, Dr. P.M., who reviewed Dr. R.A.’s report on Hooper.\textsuperscript{199} Without conducting his own evaluation of Hooper, Dr. P.M. then submitted a report indicating that “there was evidence of ‘mild but probable brain damage’ that could increase the likelihood of violence, especially if [Hooper] was under the influence of alcohol or other substances.”\textsuperscript{200} Dr. P.M. also reported that Hooper might be suffering from a “serious psychiatric thought disorder.”\textsuperscript{201} After Hooper’s conviction, Dr. P.M. refused, for ethical reasons, the attorneys’ request that he testify at the sentencing proceedings, explaining that he had never personally examined Hooper.\textsuperscript{202} Dr. P.M. also warned that his comments about Hooper “likely would be aggravating rather than mitigating.”\textsuperscript{203}

Regardless, Hooper’s attorneys subpoenaed Dr. P.M. to authenticate his report so that both Dr. P.M.’s and Dr. R.A.’s reports could be admitted into evidence at the capital sentencing phase.\textsuperscript{204} Predictably, however, Dr. P.M. informed the jury that “he did not put ‘enormous stock’ in his conclusions because he did not personally evaluate [Hooper].”\textsuperscript{205} Dr. P.M. also stated that Dr. R.A. was the better expert to address Hooper’s alleged brain damage because Dr. R.A. had evaluated Hooper in person.\textsuperscript{206} The State

\textsuperscript{194}Id. at 1167.
\textsuperscript{195}Id. at 1165–66.
\textsuperscript{196}Id. at 1167–68.
\textsuperscript{197}Id. at 1168.
\textsuperscript{198}Id.
\textsuperscript{199}Id.
\textsuperscript{200}Id.
\textsuperscript{201}Id. (“Petitioner had a psychological ‘profile often . . . associated with psychotic behavior . . . [and] definite difficulties with interpersonal relationships.’ Dr. Murphy qualified his ‘impressions’ by noting that both ‘possible disorders require further diagnostic investigation to confirm.’”).
\textsuperscript{202}Id.
\textsuperscript{203}Id.
\textsuperscript{204}Id.
\textsuperscript{205}Id.
\textsuperscript{206}Id.
called Dr. R.A. in rebuttal, and Dr. R.A. testified that Hooper “had a mild learning disability, but no brain damage.”207 In addition, while Hooper had some psychological problems, “those problems would not cause him to lose touch with reality or make him incapable of controlling himself or his anger.”208

Such contradictions in the testimony of both experts moved the court to grant Hooper’s Strickland claim.209 Neither expert had provided “any mitigating evidence” for Hooper “and their combined testimony was disastrous for [his] defense.”210 As the court explained, “[t]he jury was left with unchallenged expert opinions that [Hooper] did not suffer from brain damage, had no particular trouble controlling his temper, and that his learning disability would not have affected his capacity for violence or ability to reason in adverse circumstances.”211

The court’s analysis of Strickland’s deficiency prong212 focused on whether the attorneys’ presentation of the evidence was part of a “reasonable trial strategy” or “the product of ‘neglectful’ or otherwise erroneous representation.”213 While their penalty phase strategy was to present evidence indicating that Hooper may have had brain damage that could lead to violence, in reality, defense counsel followed a course devoid of investigation.214

Hooper’s attorneys claimed that they intentionally chose not to have Dr. P.M. further evaluate Hooper out of concern that the results would do more harm than good; in other words, a more thorough assessment could show that Hooper had no brain damage.215 Instead, by using Dr. P.M.’s report that Hooper “might have brain damage,” they could still press for mitigation on Hooper’s behalf, despite acknowledging that additional psychological testing could have provided more definitive mitigating prognoses.216 The court was unconvinced; even if counsel considered their rationale to be a “strategic decision,” they still presented the evidence they had “in an un-
prepared and ill-informed manner.” The court thus affirmed Hooper’s petition for habeas relief from his death sentence.

4. Distinguish Aggravating and Mitigating Circumstances

In Waters v. Zant, Waters had been convicted of capital murder in state court and sentenced to death. He appealed a district court’s denial of his habeas corpus petition, which was grounded in part on a Strickland claim. The appellate court affirmed Waters’s conviction, but granted him a writ of habeas corpus as to the death penalty because of his attorney’s ineffective assistance at the sentencing phase of trial.

As the court explained, Waters’s attorney never informed the jury “of the role of aggravating and mitigating circumstances” even though Waters suffered from a mental illness that was a clear mitigating circumstance. Not only did the attorney fail to acquire mitigating evidence from medical experts concerning Waters’s mental abnormalities, he inexplicably omitted the mental illness testimony that he had introduced in an earlier effort to prove the insanity defense at trial. Waters had twice attempted suicide and had been diagnosed with paranoid schizophrenia, an illness typically accompanied by delusions and hallucinations. He had also been treated with an antipsychotic drug prescribed to diffuse his “feelings of anger and hostility,” but he had stopped taking the drug a few weeks prior to his crimes.

Furthermore, testimony at Waters’s state habeas proceeding revealed that Waters’s medical experts “had no idea” that counsel expected them to offer mitigating evidence at the guilt-innocence phase. The court noted, for example, that counsel failed to elicit one expert psychologist’s opinion that Waters’s mental illness would have influenced his behavior on the day he committed his crimes, or that he also could have been hallucinating that day in light of his mental condition. Such evidence may have at least “of-

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217 Id. at 1171.
218 Id.
219 979 F.2d at 1473.
220 Id. at 1474.
221 Id.
222 See id. at 1490–92.
223 Id. at 1493.
224 Id. at 1494.
225 See id. at 1477, 1494. According to Waters’s counsel, “although the public defenders’ office had available funds to hire an independent psychiatrist, [counsel] was unable to find one willing to enter the case.” Id. at 1477.
226 Id.
227 Id. at 1477–78.
228 Id. at 1494.
229 Id.
fered the jury an alternative” to what the court found to be counsel’s most
deficient performance: eliciting damaging testimony from his own defense
witnesses, while failing to draw upon their readily available favorable test-
imony.230

As the court stated, counsel “presented evidence that was not only very
harmful but was devastating to his client’s plea for life.”231 Furthermore,
counsel introduced experts “who never should have been a part of the de-
fense case,” including psychiatrist Dr. H.D., whose “entire testimony was
harmful to Waters.”232 Dr. H.D. testified that Waters only suffered from
“anxiety neurosis, not paranoid schizophrenia,” and additionally that Waters
was “in good contact with reality.”233 As the court explained, counsel’s han-
dling of Dr. H.D.’s harmful testimony was particularly detrimental to W a-
ters because it was elicited by counsel himself on direct examination, not by
the prosecution during cross-examination.234 In addition, counsel was so
unprepared that he had “no idea” what Dr. H.D. would say on the stand.235

Counsel’s elicited testimony from another expert witness was equally
troublesome, suggesting first that Waters’s mental illness had no bearing on
his commission of the crime,236 and then, “[w]ith a persistence that resem-
bled that of a prosecutor” drawing forth testimony that “Waters attacked his
victims to fulfill his sexual desire.”237 Most stunningly, the expert witness
attempted to prevent counsel from extracting such detrimental information,
but without success.238 According to the expert’s post-conviction affidavit
about his experience, counsel had never informed him that he would be tes-
tifying for Waters at the penalty phase.239 Had the expert known this, his
testimony would have been favorable.240 He explained that Waters suffered
from a “schizophrenic disorder” that provided substantial grounds for miti-
gation.241

According to the court, counsel “totally failed” to effectively handle
the paltry mitigating evidence he did decide to present.242 He also neglected
to explain to the jury why Waters’s mental illness could be a mitigating fac-

230 Id.
231 Id.
232 Id. at 1494–95.
233 Id. at 1495 (internal quotations omitted).
234 Id.
235 Id.
236 Id. at 1479.
237 Id. at 1495.
238 Id.
239 Id. at 1482.
240 Id.
241 Id.
242 Id. at 1496.
tor. The court emphasized ample precedent indicating that counsel’s performance was without question constitutionally deficient.

5. Research Early Childhood Disorders

In *Stankewitz v. Wong*, the court ultimately vacated Stankewitz’s death sentence and ordered a re-sentence of life without the possibility of parole. According to Stankewitz’s *Strickland* claim, his penalty phase attorney not only performed deficiently but also prejudiced Stankewitz with a skeletal investigation and presentation of mitigation evidence that failed to address aggravating factors.

In particular, Stankewitz claimed that counsel failed to sufficiently investigate and present evidence of his “impaired intellectual functioning and brain damage,” which was thoroughly documented by three medical experts who agreed that he suffered from brain injuries as well as a history of mental illness. According to one of the experts, Stankewitz was borderline mentally retarded and evinced “significant brain dysfunction, perhaps attributable to Fetal Alcohol Syndrome and childhood abuse.” Another expert testified that Stankewitz’s brain damage “would produce problems with emotional control, tendencies to be impulsive and unpredictable, and to be unable to exercise adequate judgment or to understand the consequences of his behavior.” Moreover, Stankewitz had been diagnosed with antisocial personality disorder and evidenced neurologic abnormalities based on the results of two EEG tests. Some of the strongest testimony came from the doctor who administered the first EEG test and a psychiatric evaluation when Stankewitz was age twelve. At that early age Stankewitz already exhibited “sudden loss of control;” in addition he “becomes abusive, uses vile language, [is] combative, [and demonstrates] ample evidence of neurotic disturbance (bitten fingernails and bed-wetting).” Given that all of this mitigation evidence was available at the penalty phase and much

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243 *Id.*

244 *Id.* at 1492–94.


246 *Id.* at 1112.

247 *Id.* at 1105; see also *Wallace v. Stewart*, 184 F.3d 1112, 1116 (9th Cir. 1999) (“Does an attorney have a professional responsibility to investigate and bring to the attention of mental health experts who are examining his client, facts that the experts do not request? The answer, at least at the sentencing phase of a capital case, is yes.”).

248 *Stankewitz*, 659 F. Supp. 2d at 1106.

249 *Id.* at 1109.

250 *Id.*

251 *Id.* (internal quotations omitted).

252 *Id.*

253 *Id.*

254 *Id.* at 1113 (citing in Appendix A the May 6, 1970 psychological evaluation with Dr. Z).
of it was officially documented, counsel’s choice to exclude it was “unreasonable” and prejudicial.255

6. Evaluate Mental Health and Drug Abuse

In *James v. Ryan*,256 petitioner James, convicted of capital murder and sentenced to death, appealed a district court’s denial of his habeas corpus petition.257 The court affirmed his petition for habeas relief from his death sentence,258 citing counsel’s “complete failure to investigate and present mitigating evidence of James’s troubled childhood, his mental illness, and his history of chronic drug abuse.”259 The court held that this deficiency prejudiced James because his troubled history was relevant to the sentencing judge’s assessment of James’s moral culpability.260

In particular, the court found that counsel did not conduct even the most elementary research on James’s background.261 The court noted that a minimal investigation would have uncovered “obvious indications that James had suffered emotional and psychological trauma during his childhood,”262 including a pretrial competency report that labeled James’s early years as “disturbed.”263 This label was reinforced by evidence that James’s father was a drug addict who was incarcerated during James’s youth, as well as documentation that James’s mother offered him into foster care before he reached the age of three.264 Counsel also failed to gather accessible documentation of James’s educational history, which would have revealed his “subaverage academic and intellectual functioning, as well as his behavioral and social problems.”265

Furthermore, counsel did not sufficiently study James’s mental health, which should be a key focus in any investigation of a defendant’s background for mitigation purposes.266 The competency reports of two doctors noted that James had a history of suicide attempts, some of which included crashing cars at high speeds.267 Counsel knew that James took lithium and

255 Id. at 1112 (“[T]here was a reasonable probability that the jury would not have sentenced Stanekwitz to death had it been presented with the evidence of the numerous deprivations and abuses Stanekwitz alleges that he suffered.” (citation and internal quotations omitted)).
256 679 F.3d 780, 784–85 (9th Cir. 2012), vacated, 133 S. Ct. 1579 (2013).
257 Id. at 785.
258 Id. at 820.
259 Id. at 786.
260 Id.
261 Id. at 785, 807.
262 Id. at 808.
263 Id.
264 Id.
265 Id.
266 Id.
267 Id.
had undergone psychiatric care,268 and was therefore aware of the need to investigate.

Finally, the court noted that counsel failed to investigate James’s drug abuse trajectory, a requirement reinforced by case precedent stressing this “well-established” part of mitigation research.269 The court again observed that there were obvious signs of James’s history of polysubstance abuse of a wide range of drugs,270 including marijuana, cocaine, and LSD.271 Moreover, despite counsel’s mitigating argument for diminished capacity based on James’s LSD intoxication, counsel “failed to appreciate that chronic drug abuse itself evinces, as well as exacerbates, serious mental illness.”272

In sum, although there are common themes that resonate among the ineffective assistance of counsel cases involving neuroscience evidence,273 the particularized nature of the evidence and the circumstances in which it is used also invite case studies. Each case study evokes its own double-edged-sword analysis, but the shared message from the courts is this: it is critical for attorneys to fully investigate and present mitigation evidence, particularly in death penalty cases.274 Neuroscience—in all of its many facets—is an important component of mitigation.

The next Part, however, deals with neuroscience cases that go to the crux of the double-edged-sword analysis, specifically those situations in which neuroscience is used not for purposes of mitigation but rather to suggest or validate a defendant’s future dangerousness.275 Given the emphasis courts place on mitigation, attorneys must also be aware of the flip side of what neuroscience can bring to the courtroom.

268 Id. at 808–09. The court quoted the U.S. Court of Appeals for the Ninth Circuit, stating:

[W]here “counsel was aware that [the defendant] tried to commit suicide in prison . . . and that he was taking anti-depressant medication at the time of trial,” counsel “should have retained a mental health expert and provided the expert with the information needed to form an accurate profile of [the defendant’s] mental health.”

Id. (quoting Hamilton v. Ayers, 583 F.3d 1110, 1117 (9th Cir. 2009)).

269 Id. at 809.

270 Id.

271 Id. Particularly relevant on this point was an expert’s opinion that James’s alleged use of LSD at the time of the murder “may have’ compromised James’s capacity to appreciate the wrongfulness of his conduct.” Id. at 795.

272 Id. at 809.

273 See supra notes 155–272 and accompanying text (exploring six shared themes of ineffective assistance of counsel cases).

274 See James, 679 F.3d at 786; Frierson, 463 F.3d at 989; Hooper, 314 F.3d at 1170; Stankewitz, 659 F. Supp. 2d at 1106; Simmons, 105 So. 3d at 483.

275 See infra notes 276–448 and accompanying text.
III. NEUROSCIENCE AND FUTURE DANGEROUSNESS

The majority of death penalty states consider a defendant’s potential for future dangerousness to be an aggravating factor worthy of consideration during the penalty phase of a capital trial.276 Indeed, the concept of future dangerousness has garnered substantial attention in recent years.277 A major concern is that prosecutors will seek the death penalty based on neuroscience evidence indicating that a defendant is likely to commit future crimes278—just as some of the mitigating factors in Strickland cases can be translated into aggravating factors if defense attorneys are not sufficiently prepared or careful.279 Yet the Neuroscience Study found minimal support for this concern. In those rare instances when prosecutors did utilize neuroscience evidence to suggest a defendant’s propensity to commit crimes, they typically did so only by building upon the evidence first introduced by a defense expert.280

In contrast, some defense attorneys decided to omit potentially mitigating evidence because they thought it may bolster the perception of a client’s future dangerousness.281 Such tactics are controversial, as demonstrated by this Article’s discussion of the Strickland claim cases. As one judge voiced in a future dangerousness case, “we cannot insulate an unreasonable tactic not to present mitigating evidence by labeling it a two-edged sword.”282 Nonetheless, this Part shows that, for a range of reasons, cases involving neuroscience and future dangerousness typically do not evoke successful

276 See Mitzi Dorland & Daniel Krauss, The Danger of Dangerousness in Capital Sentencing: Exacerbating the Problem of Arbitr ary and Capricious Decision-Making, 29 LAW & PSYCHOL. REV. 63, 64 (2005). The U.S. Supreme Court has also given prosecutors free reign to use this evidence. See Simmons v. South Carolina, 512 U.S. 154, 165 n.5 (1994) (“The State is free to argue that the defendant will pose a danger to others in prison and that executing him is the only means of eliminating the threat to the safety of other inmates or prison staff.”). Although there are a number of routes for states to follow when incorporating future dangerousness into the penalty phase, four methods stand out: (1) a state statute can list future dangerousness among its statutory aggravating factors; (2) a state statute can list a lack of future dangerousness as a statutory mitigating factor; (3) states can enable prosecutors to present future dangerousness “as a non-statutory aggravating factor” or as one that jurors can weigh in choosing between the defendant’s life or death; or (4) states can allow “prosecutors to present evidence of future dangerousness in rebuttal to mitigating evidence presented by the defense alleging non-dangerousness or potential for rehabilitation.” Dorland & Krauss, supra, at 64–65.

277 See infra notes 286–448 and accompanying text.

278 See Snead, supra note 7, at 1318–38.

279 See supra notes 219–244 and accompanying text.

280 See infra notes 328–353 and accompanying text.

281 See infra notes 304–325 and accompanying text.

282 Bryan v. Mullin, 335 F.3d 1207, 1225 (10th Cir. 2003) (Henry, J., concurring in part and dissenting in part).
Strickland claims. Section A begins with an overview of the Neuroscience Study’s future dangerousness cases, and Section B examines the trends, themes, and controversies among them.

A. How Cases Involve Neuroscience

Among the Neuroscience Study’s 553 Defendant Cases, only 80 cases (14.47%) feature any discussion of future dangerousness related to the defendant, as Chart 7 shows. Most of this discussion did not involve neuroscience evidence, but instead relied upon other kinds of evidence or testimony, such as a warden’s personal assessment of the defendant’s behavior as an inmate. Indeed, as Chart 7 indicates, only 39 cases featured a discussion of future dangerousness that was driven, even in part, by an examination of neuroscience evidence (7.05% of the 553 Defendant Cases and 48.75% of the 80 future dangerousness cases).

Of these 39 cases, 14 cases—all of which were capital murder cases—featured a discussion of neuroscience that was intended to establish the future dangerousness of the defendant. In addition, three of those fourteen cases contain references to future dangerousness that are only indirect or implied, rather than explicit. In yet another case, the court upheld the

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283 See infra notes 284–448 and accompanying text. At the same time, the Neuroscience Study’s sample is so small that it is difficult to generalize and the reasons for this outcome have less to do with double-edged-sword concerns than other sorts of doctrines and protections.

284 See infra notes 286–296 and accompanying text.

285 See infra notes 297–325 and accompanying text.

286 See infra Chart 7; Stat. App., supra note 38; DENNO, supra note 38.

287 See Stat. App., supra note 38; see also DENNO, supra note 38.


289 See Lorraine, 291 F.3d at 425; Gudinas, 816 So. 2d at 1104; Coe, 17 S.W.3d at 243. Three cases involved future dangerousness references that were only implied or inferred in the record, as opposed to being explicitly referenced as part of the defendant’s case. In two of these cases, references to the defendant’s “future dangerousness” derived from expert medical testimony that was unrelated to an explicit discussion of the actual statutory aggravator of future dangerousness. In the first of these two cases, Coe v. State, the State’s expert witness testified that Coe “possibly could become psychotic in the future.” 17 S.W.3d. at 243. This testimony, however, was only offered to demonstrate that at the relevant period of time, Coe was in fact competent to be executed. Id. at 248. In the second of these two cases, Gudinas v. State, the only mention of future dangerousness appeared during the court’s review of the defendant’s Strickland claim regarding counsel’s alleged failure to adequately present mitigation evidence during the penalty phase. 816 So.
Strickland claim concerning future dangerousness, thereby whittling the total number of successful uses by prosecutors of such evidence to just ten.\footnote{290} The Neuroscience Study’s findings thus suggest that overall there is little likelihood that neuroscience evidence introduced by the defense will be leveraged by the prosecution in an effort to prove the defendant’s future dangerousness.

As Chart 7 shows,\footnote{291} a Strickland claim was raised in conjunction with future dangerousness in 33 of the 80 cases (41.25%), and the fourteen future dangerousness cases based on neuroscience evidence only rarely evoked a successful Strickland claim. Fourteen cases constitute a small sample, however, and future dangerousness circumstances differ from those cases involving typical Strickland claims. It is therefore difficult to make generalizations or reach broad conclusions linking future dangerousness arguments to the use of neuroscience evidence in criminal law cases.

One major difference with future dangerousness cases, for example, concerns the protections afforded to defendants through what is known as the Simmons jury instruction.\footnote{292} The U.S. Supreme Court’s 1994 ruling in Simmons v. South Carolina\footnote{293} stipulates that if a prosecutor in a capital case raises concerns regarding a defendant’s future dangerousness, the jury must be instructed that life in prison is equivalent to life without the possibility of parole.\footnote{294} Thus, the purpose of a Simmons instruction is to diminish the possibility that a jury will award a defendant the death penalty simply because of the jury’s concern that a defendant could be a future danger if that defendant is no longer incarcerated.\footnote{295} As Chart 7 shows, a Simmons instruction was mentioned in 17 of the 80 cases (21.25%) that addressed future dangerousness.
The Neuroscience Study therefore found a limited number of cases linking the concept of future dangerousness to neuroscience; but those few cases are intricate and important for a criminal justice system preparing to accommodate an influx of innovative brain technology and prediction research. Thus, it is critical to understand the kinds of arguments attorneys raise and the ways courts respond, especially because it becomes clear that defense attorneys can avoid the threat of potential future dangerousness arguments by preparing and remaining in control of their experts’ testimony.

B. The Specter of the Double-Edged Sword

Among the fourteen future dangerousness cases involving neuroscience evidence, several themes emerge. First, in all but one of the cases, the court affirmed the defendant’s death sentence. In that case, State v. Ross, Ross claimed that the court committed harmful error by allowing, over objection, the State to cross-examine a defense psychiatric expert about Ross’s potential for future danger if he were released from prison. The court agreed with Ross’s contention that such a cross-examination regarding future dangerousness was outside the scope of what the State was procedurally allowed to rebut relating to his mitigation case. The court ultimately affirmed Ross’s convictions, but it reversed and remanded his death sentence, reasoning that the lower court committed the harmful error.

Judicial considerations of future dangerousness vary widely in the remaining thirteen cases, in which the courts affirmed death sentences. Generally, however, the attorneys involved in these thirteen cases demonstrate far less egregious behavior than the attorneys involved in the Strickland claim cases discussed in Part II. Neuroscience evidence most commonly appeared when a court was evaluating a Strickland claim based on trial counsel’s failure to fully develop that evidence—but courts consistently rejected defendants’ Strickland claims in this context. Instead, courts fa-
vored a finding of reasonable trial strategy across a variety of purported strategies. In several cases, the court noted that it was objectively reasonable for counsel not to present certain neuroscience evidence due to the potentially dual nature of the evidence in capital cases as both mitigating and aggravating.

A number of these thirteen cases referred to neuroscience mitigation evidence as a double-edged sword for this reason. In *Bryan v. Mullin*, counsel explained why he excluded the mitigating opinions of two mental health experts who had diagnosed his client as severely psychologically impaired, or crazy, but not insane. Counsel’s concern was that because his client seemingly had the capacity to form intent, testimony concerning his client’s mental abnormalities would suggest he “was a danger to society.” As the dissent in *Bryan* noted, the majority defended counsel’s decision because, “[g]iven the other evidence of violent behavior, the jury could have thought this type of psychological problem indicated a propensity for future violence.”

Likewise, in *Ex parte Lucas*, the court noted that Lucas’s mental impairment, including schizophrenia and continuing psychological trauma from his abusive childhood, exemplified “evidence which both militates for and against the death penalty,” and therefore supported counsel’s decision to omit Lucas’s mental health background. In *Maldonado v. Thaler*, Maldonado argued that trial counsel failed to present his mental retardation as mitigation in his capital case. Yet the court rejected Maldonado’s argu-

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304 See infra notes 305–448 and accompanying text.

305 See *Bryan*, 335 F.3d at 1239 (Henry, J., concurring in part and dissenting in part); *Smith*, 550 F.3d at 1265; *Maldonado*, 662 F. Supp. 2d at 752; *Dowthitt*, 180 F. Supp. 2d at 861; *Peeples*, 793 N.E.2d at 680; *Ex parte Lucas*, 877 S.W.2d at 324.

306 See *Bryan*, 335 F.3d at 1239 (“[Counsel’s] choice not to present the mental health history at the sentencing stage was reasonable, given his fear of the evidence acting as a two-edged sword.”); *Ex parte Lucas*, 877 S.W.2d at 324 (“[A]pplicant may have been less culpable based upon his emotional and mental problems . . . . [However] such evidence was a two-edged sword in that it might diminish applicant’s blameworthiness for his crime even as it indicates that there is a probability that he will be dangerous in the future.”).

307 335 F.3d at 1207 (majority opinion).

308 *Id.* at 1218.

309 *Id.* at 1231 (Henry, J., concurring in part and dissenting in part).

310 *Id.* at 1243; see also *Peeples*, 793 N.E.2d at 659 (holding that evidence of frontal lobe damage resulting in poor decision making, irrational behavior, as well as a history of psychological impairment including a quick and violent temper, may “‘tend to show the court that [defendant] is, in fact, dangerous,’ as well as ‘his capacity for future conduct,’” as opposed to mitigating future dangerousness).

311 877 S.W.2d at 315.

312 See *id.* at 319 (internal quotations omitted).

313 662 F. Supp. 2d at 684.

314 *Id.* at 752.
ment, quoting *Atkins v. Virginia* \(^{315}\) as support: \(^{316}\) “reliance on mental retardation as a mitigating factor can be a two-edged sword that may enhance the likelihood that the aggravating factor of future dangerousness will be found by the jury.” \(^{317}\) Thus, counsel’s omission of mental retardation evidence as a basis for mitigation “can be reasonable in order to prevent a negative jury finding on issue of future dangerousness.” \(^{318}\)

In two cases, the courts praised attorneys for presenting evidence of mental illness even though defendants in both cases expressly requested that counsel *not* present such evidence. \(^{319}\) In *Bryan*, \(^{320}\) for example, the court held that trial counsel had used an acceptable strategy when introducing evidence of mental illness, despite being forbidden by his client from mentioning any such evidence and being informed that his client would not accept a guilty plea—even to avoid a death sentence. \(^{321}\) Similarly, in *Dowthitt v. Johnson*, \(^{322}\) Dowthitt not only consistently denied having a history of mental illness, but also showed no symptoms of mental or emotional disorders. \(^{323}\) His attorney nonetheless retained a psychiatrist to examine Dowthitt, but the psychiatrist advised counsel not to have him testify on Dowthitt’s behalf given the psychiatrist’s own conflicting views of Dowthitt’s future dangerousness. \(^{324}\) The court upheld as reasonable counsel’s compliance with this request. \(^{325}\)

It is clear, therefore, that the theme of the double-edged sword in future dangerousness cases is pervasive. An analysis of particular cases further demonstrates how this theme resonates. The next Section closely analyzes the details of such cases given their relevance to the future use of neuroscience technology in court. \(^{326}\)

### C. How Cases Involve Dangerousness

This Section examines five particularly insightful future dangerousness cases, focusing specifically on how courts view future dangerousness in the

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\(^{315}\) 536 U.S. 304, 321 (2002) (holding the execution of mentally retarded individuals unconstitutional under the Eighth Amendment).

\(^{316}\) *Maldonado*, 662 F. Supp. 2d at 752.

\(^{317}\) *Id.* (quoting *Atkins*, 536 U.S. at 321).

\(^{318}\) *Id.*

\(^{319}\) *Bryan*, 335 F.3d at 1120; *Dowthitt*, 180 F. Supp. 2d at 859.

\(^{320}\) 335 F.3d at 1207.

\(^{321}\) *Id.* at 1220.

\(^{322}\) 180 F. Supp. 2d at 832.

\(^{323}\) *Id.* at 859.

\(^{324}\) *Id.* at 861.

\(^{325}\) *Id.*

\(^{326}\) *See infra* notes 327–448 and accompanying text.
context of a double-edged-sword analysis. These cases illustrate the murky line between what courts do and do not consider acceptable.

1. Unanticipated Expert Testimony

In *Fleenor v. Farley*, Fleenor petitioned for a writ of habeas corpus following the court’s affirmance of his murder conviction and death sentence. Fleenor primarily contended that his attorneys mishandled available neuroscience evidence and arguments during the penalty phase. Fleenor’s attorneys attempted to show at the penalty phase that Fleenor was mentally abnormal and that his crimes were attributable to his mental illness, extreme mental or emotional disturbance, and/or the consequences of his intoxication from alcohol. Yet, under cross-examination, the prosecution attempted to undercut much of this evidence. Particularly damaging to Fleenor was the testimony provided by two experts—Dr. G.B., a court-appointed psychiatrist, and Dr. P.C., a psychologist that defense counsel chose. During the prosecutor’s cross examination of Dr. G.B., for example, Dr. G.B. stated that “if given the chance in the future, Fleenor would ‘continue to involve himself in similar behavior in the future,’”—an opinion that the prosecutor then stressed and repeated to the jury. Dr. P.C. also provided dangerousness projections about Fleenor’s behavior. In his view, “Fleenor was ‘not psychotic’ but that, under extreme stress, someone with borderline personality disorder [like Fleenor] [could] exhibit psychotic symptoms.” Fleenor’s attorneys referred to this characterization of Fleenor as a “transient psychotic episode,” but on cross-examination Dr. P.C. bolstered the prosecution’s case with the following statements: “Fleenor was not psychotic and not insane, but mentally ill,” and Fleenor’s

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327 See infra notes 328–448 and accompanying text.
329 *Fleenor*, 47 F. Supp. 2d at 1035. Although there are numerous issues that arise in this doctrinally rich case, this overview focuses on a few selected challenges that Fleenor faced in an attempt to prove a *Strickland* claim in the context of neuroscience evidence of future dangerousness. See *id.* at 1035–37, 1066–72.
330 *Id.*
331 *Id.* at 1036. These arguments were similar to those presented at the guilt phase. See *id.* Evidence at Fleenor’s guilt-phase of the trial included testimony from two court-appointed psychiatrists (including Dr. G.B.) and testimony from a psychologist selected by defense counsel (Dr. P.C.). *Id.* Testimony at the penalty phase included an expert with a doctorate in sociology and a background in counseling alcoholics. *Id.*
332 *Id.*
333 *Id.*
334 *Id.* at 1037.
335 *Id.* at 1036.
336 *Id.* at 1066.
personality disorder was a long term condition that would be “‘quite resistant to treatment.’”337

Taken together, the testimony from both experts fueled the prosecutor’s assessment of Fleenor’s likely future violence, especially during his closing argument.338 According to Fleenor, however, the prosecutor had engaged in misconduct during his closing argument by offering an expert’s opinion to the jury, which violated Fleenor’s Sixth Amendment rights.339 In particular, Fleenor argued that although he and his attorneys knew that Dr. G.B. would be evaluating Fleenor’s sanity and competency to stand trial, they had no idea that he would also contribute testimony during trial regarding Fleenor’s future dangerousness.340 In rejecting Fleenor’s claims and affirming his death sentence, the court ultimately explained that, given the type of testimony offered, counsel was aware that “the nature of any mental disorder or behavioral problem would be explored in detail, including any persistent and continuing patterns of violent conduct.”341 Likewise, it was not “unreasonable or unfair” for the prosecution to attempt to rebut expert testimony that Fleenor’s antisocial personality disorder could be controlled, especially because the defense set forth mental health and other mitigating evidence at the penalty phase.342

That said, in multiple ways the prosecutor’s closing argument demonstrated the effects of the future dangerousness testimony and the double-edged nature of the mental illness testimony presented in this case.343 Referring to Fleenor as an “‘animal’” and repeatedly as “‘the enemy,’” the prosecutor continuously stressed the “right” and need for individuals to “protect” themselves from “‘people who kill and kill again.’”344 The prosecutor also emphasized the obligation to protect “‘the prison guards that have to deal with this man,’” as well as the “‘jail dispatchers’” and the “‘people in this [court]room.’”345 By declining this call to defend, the prosecutor argued, society will have “‘lost its ability to stand up against the blackness and against the enemy.’”346

Other factors also worked against Fleenor’s efforts either to raise a Strickland claim or to highlight the potential impact of future dangerousness

337 Id.
338 Id. at 1036, 1066.
339 Id. at 1069.
340 Id.
341 Id. at 1071.
342 Id. at 1072.
343 See id. at 1059.
344 Id.
345 Id.
346 Id.
testimony. In contrast to Part II’s accounts of attorney deficiencies, for example, the court ultimately rejected Fleenor’s ineffective assistance of counsel claims. Not only had Fleenor’s attorneys devoted more than 1000 hours of time both before and during Fleenor’s trial, the court had also characterized them as “two skilled, experienced, and tenacious lawyers who fought to save [Fleenor’s] life.” Thus, counsel’s representation of Fleenor at both the guilt and penalty phases of trial was well above the constitutional floor set in *Strickland*.

Indeed, as the remaining case studies indicate, attorneys in these future dangerousness cases are relatively more prepared and professional than the attorneys discussed in Part II’s *Strickland* claim cases. As a result, a defendant-petitioner’s challenges against future dangerousness arguments can lose steam when attorneys are otherwise covering their legal bases. That said, as the dissent in the following case study compellingly argues, not everyone agrees that these attorneys are providing effective representation.

2. The Slide From Mitigation to Danger

In *Bryan*, Bryan appealed a district court decision denying his petition for habeas relief from his conviction of first-degree murder and attendant death sentence. Bryan contended in his *Strickland* claim that his attorney failed to present available evidence of Bryan’s mental impairment and that Bryan was therefore prejudiced. The court ultimately rejected Bryan’s claim, but on appeal Bryan offered a vast range of evidence regarding his alleged mental abnormalities. These included “organic brain disease” potentially linked to “his severe case of diabetes mellitus,” a

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347 See id. at 1049.
348 See supra notes 155–272 and accompanying text.
349 See *Fleenor*, 47 F. Supp. 2d at 1043. Among other things, Fleenor contended that his attorneys were deficient for failing to present a neuropsychologist and/or a neurologist’s testimony that Fleenor suffered from frontal lobe damage resulting in “‘disinhibition or poor impulse control in addition to neurocognitive deficits and dysfunction that impaired [Fleenor’s] reason, judgment and problem solving ability.’” Id. at 1038.
350 Id. at 1049.
351 Id.
352 See supra 155–272 and accompanying text.
353 See *Bryan*, 335 F.3d at 1225 (Henry J., concurring in part and dissenting in part).
354 335 F.3d at 1207.
355 Id. at 1210–11.
356 Id. at 1217–23.
357 Id. at 1223–24.
358 Id. at 1210–13.
359 Id. at 1212 (noting, for example, that in 1989 “Bryan was diagnosed as suffering from an organic delusional disorder and was considered severely psychotic at the time of his admission to the hospital”).
“delusional system and circumstantiality of thought,” as well as a “serious mental disorder.” Indeed, Bryan’s Strickland claim contended that counsel failed to present this evidence or any other mental health evidence on his behalf. Contrary to Fleenor, then, the issue in Bryan was one of counsel choosing to omit evidence rather than counsel insufficiently anticipating the content of testimony already admitted into court.

Counsel contended, however, that he had limited options during Bryan’s guilt phase, a position the court seemingly took to heart. For example, the court concluded that Bryan’s counsel lacked the medical evidence necessary to adequately argue an insanity plea. Moreover, Bryan himself explicitly did not want his counsel to present evidence portraying him as mentally ill. Finally, Bryan told counsel that he would not accept a guilty plea, even if doing so meant avoiding the death sentence. For all of these reasons, the court determined that counsel utilized sound strategy during the guilt phase.

Regarding Bryan’s penalty-phase Strickland claims, the court similarly held that counsel’s decision to omit evidence of organic brain dysfunction and mental impairment for mitigation purposes was a reasonable trial strategy. Counsel explained that introducing such evidence on Bryan’s behalf would have done “more harm than good.” Specifically, counsel believed that testimony by either of Bryan’s medical experts “might play into the prosecution’s case that Bryan was a continuing threat to society.”

360 Id. at 1213 (internal quotations omitted).
361 Id.
362 Id. With respect to the guilt phase, Bryan contended that his attorney should have presented the readily available evidence of his mental dysfunction to support an insanity defense or a second-degree murder instruction. Id. at 1217. According to Bryan, a swath of information cast doubt on his ability to form the intent to kill at the time the crime was committed, including the opinions of two medical experts, the information revealed from the CAT and SPECT scans of his brain, and his earlier records from the Eastern State Hospital. Id. Bryan also claimed that much of the evidence that was actually introduced was circumstantial, such as evidence “indicating that Bryan’s physical condition had so deteriorated at the time of the murder, due to his diabetes, that he was physically incapable of carrying out this crime.” Id. at 1219. Nonetheless, the court found that Bryan’s contention that his attorney should have pursued an insanity defense was completely unsubstantiated by prior counsel’s representation in the case, the available medical documentation, and Bryan’s own wish to avoid the insanity plea. Id.
363 See Bryan, 335 F.3d at 1213; Fleenor, 47 F. Supp. 2d at 1069.
364 Bryan, 335 F.3d at 1219–20.
365 Id. at 1218.
366 Id. at 1219.
367 Id.
368 Id.
369 Id. at 1222–23.
370 Id. at 1222.
The dissent’s response to the majority’s argument, however, emphatically rejected the double-edged-sword argument: “Mr. Bryan’s counsel provided the most ineffective defense I have ever seen . . . . [His] reasoning is untenable.”372 Unlike the majority, the dissent found counsel’s decision to omit the available mental health mitigation completely non-strategic,373 particularly counsel’s fear “that the mental health testimony might be viewed to support future dangerousness.”374 The dissent first reviewed the vast amount of mitigation evidence available to Bryan’s trial counsel based on extensive testing, especially stressing the SPECT scan results showing Bryan’s extensive brain damage.375 In the dissent’s view, this evidence also strengthened expert testimony that Bryan was “crazy” and suffered from “paranoid,” “grandiose,” and “persecutory” thinking.376

The dissent then contended that despite trial counsel’s “purported familiarity” with Bryan’s medical history, counsel seemingly believed “the better tack was to pretend Mr. Bryan was a perfectly normal defendant who was in a bad spot,” rather than present the evidence in mitigation.377 Questioning counsel’s concern that, because Bryan could apparently form intent, “any testimony regarding his mental distress would indicate that Mr. Bryan was a danger to society,”378 the dissent concluded that counsel failed to comprehend that psychiatric evidence (as well as SPECT scan evidence) could both mitigate and dissipate the strength of aggravating factors.379

Moreover, the majority failed to consider that a defendant can be competent to stand trial yet still demonstrate mental health disorders that a judge and jury should be able to assess.380 In the context of these arguments, the dissent thoroughly analyzed and critiqued the potential for neuroscience evidence to be viewed as a double-edged sword.381 The dissent noted that the majority defended counsel’s decision to omit the available mental health evidence as mitigation because “[g]iven the other evidence of violent behavior, the jury could have thought this type of psychological problem indi-

372 Id. at 1225 (Henry, J., concurring in part and dissenting in part).
373 Id. at 1243–44. “Strickland counsels deference to plausible legal strategies, not to unilateral disarmament.” Id. at 1243.
374 Id. at 1225. The dissent also stressed that Bryan had three defense attorneys before his elderly parents mortgaged their home in order to hire the attorney at issue, who charged the parents $50,000 for his services. Id. at 1225–26. As the dissent lamented, “[h]ad the Bryans not tried to help, paradoxically, I believe that Leroy Bryan would not be facing execution today.” Id. at 1226.
375 Id. at 1126–32.
376 Id. at 1131.
377 Id. at 1227.
378 Id. at 1231.
379 Id. at 1231–32.
380 Id. at 1231.
381 See id. at 1243–44.
cated a propensity for future violence.”382 Yet the dissent found it far more important for the jury to hear all the critical evidence about Bryan’s history of mental disorders, organic disease, and treatment, as well as a previous conviction for which he was initially found to be incompetent.383

Had the jury been presented with a full set of evidence, the dissent believed that there was a reasonable probability that Bryan would not have received the death penalty because the jury had the option of sentencing Bryan to life without parole.384 In essence, counsel’s tactics left the jury devoid of any argument that Bryan may not be sufficiently culpable for the death penalty despite Bryan’s brain abnormalities.385 Thus, in the dissent’s eyes, counsel’s assistance at trial was constitutionally ineffective under Strickland.386

3. The Special Case of Mental Retardation

In Maldonado,387 Maldonado was convicted of capital murder and sentenced to death.388 His death sentence was affirmed on appeal, and after the State dismissed his petition for habeas relief, Maldonado filed for federal habeas relief.389 Maldonado contended first that his mental retardation precluded his execution, and second, that his counsel provided ineffective assistance by neglecting to investigate his mental retardation and additional mitigating evidence.390 The court ultimately denied Maldonado’s petition and granted summary judgment for the State.391

According to Maldonado, his trial counsel’s failure to investigate and present information concerning his mental retardation392 was a critical omission because such evidence would have diminished the impact of his confession in the guilt phase and also provided strong mitigation in the penalty phase.393 Due to major debates at trial among medical experts regarding Maldonado’s intellectual abilities, however, the court found that Maldonado

382 Id. at 1243.
383 Id.
384 Id.
385 See id.
386 Id. (“The compelling and extensive evidence of Mr. Bryan’s history of mental illness creates a reasonable probability that the jury would have concluded that the mitigating evidence outweighed the continuing threat aggravator and might also be viewed in a mitigating light as to past violent behavior.”).
387 662 F. Supp. 2d at 684.
388 Id. at 689.
389 Id. at 689–90.
390 Id. at 692.
391 Id. at 690.
392 Id. at 749.
393 Id.
was not sufficiently “subaverage”\textsuperscript{394} and therefore had not demonstrated his counsel’s ineffectiveness.\textsuperscript{395}

Next, Maldonado argued that trial counsel performed deficiently and prejudicially in declining to present his mental retardation as a mitigating factor against his death sentence.\textsuperscript{396} The court, in reviewing this claim, noted the potential threat of future dangerousness and the challenges attorneys confront when considering whether to introduce mental retardation in the penalty phase.\textsuperscript{397} In \textit{Atkins},\textsuperscript{398} for example, the U.S. Supreme Court acknowledged that a jury could view mental retardation as both a mitigating factor and an aggravating factor predictive of a defendant’s future dangerousness.\textsuperscript{399} Moreover, the Fifth Circuit had similarly embraced this double-edged-sword concept, holding that a trial attorney’s decision to omit mental retardation evidence can be reasonable as a means to preclude a jury’s finding of future dangerousness.\textsuperscript{400} Thus, once again, the \textit{Maldonado} court determined that counsel was not ineffective under \textit{Strickland}.\textsuperscript{401}

Regarding the pertinent issue of future dangerousness, the court would have weighed the aggravating factor of Maldonado’s “violent and lawless history” against the potentially mitigating evidence of his alleged mental retardation had trial counsel presented such evidence.\textsuperscript{402} As the court explained, this comparison would not have helped Maldonado: “[w]hile low intelligence may have allowed the jury to find that Maldonado was (as suggested by the facts of the murder) a follower, that evidence also could have shown him to be a future danger when again encouraged by others to be violent.”\textsuperscript{403} The court emphasized in particular the various ways such evidence could be viewed for good or for ill: “[t]he double-edged nature of the mitigating evidence would make it not reasonably probable that the jury would answer the special issues differently had trial counsel emphasized low intelligence in the punishment phase.”\textsuperscript{404}

\textsuperscript{394} \textit{Id.} at 734–35.
\textsuperscript{395} \textit{Id.} at 751.
\textsuperscript{396} \textit{Id.} at 752.
\textsuperscript{397} \textit{Id.}
\textsuperscript{398} 536 U.S. at 321 (holding that the execution of mentally retarded individuals violates the Eighth Amendment’s ban on cruel and unusual punishments).
\textsuperscript{399} \textit{Maldonado}, 662 F. Supp. 2d at 752 (citing \textit{Atkins}, 536 U.S. at 321).
\textsuperscript{400} \textit{Id.}
\textsuperscript{401} \textit{Id.} at 752–53 (“The Fifth Circuit has previously found no \textit{Strickland} prejudice in failing to present evidence of low IQ because the upper borderline of mild retardation does not amount to any significant organic damage or mental illness.” (internal quotations omitted)).
\textsuperscript{402} See \textit{id.} at 753.
\textsuperscript{403} \textit{Id.}
\textsuperscript{404} \textit{Id.}
Ultimately the court held that Maldonado’s claim did not have sufficient merit.\textsuperscript{405} While the double-edged-sword concept can appear compelling in theory, such a balance becomes challenging in practice, particularly when so many other factors pertaining to cognitive deficiency are considered clearly mitigating.\textsuperscript{406} As the next case shows, the double-edged-sword analogy has additional interpretations beyond those discussed so far.

4. The Two Sides of Cognitive Deficiency

In \textit{People v. Peeples},\textsuperscript{407} defendant-petitioner sought post-conviction relief after the appellate court affirmed his convictions, including first-degree murder.\textsuperscript{408} On a post-conviction appeal, Peeples alleged for the second time that his counsel was ineffective for neglecting to research and present mitigating evidence pertaining to Peeples’s disturbing family circumstances, his cognitive deficiencies, and his possible neurological disorders.\textsuperscript{409}

The lower circuit court rejected Peeples’s argument, emphasizing in particular that not only was such evidence a double-edged sword, it also leaned in favor of future dangerousness.\textsuperscript{410} Specifically, the court held that the “additional mitigation evidence regarding defendant’s family background and psychological condition ‘would tend to show the court that [defendant] is, in fact, dangerous,’ as well as ‘his capacity for future conduct.’”\textsuperscript{411} Such evidence, therefore, would not necessarily be viewed as mitigating.\textsuperscript{412}

The opinion also noted that Peeples’s attorneys did make some effort to gather and present mitigation evidence, as demonstrated by their request for a continuance between the guilt phase and penalty phase.\textsuperscript{413} In particular, counsel discovered that Peeples had been injured in a car accident several years prior to the case and had suffered spinal meningitis in his youth, both of which “may have affected [Peeples’s] brain.”\textsuperscript{414} Moreover, counsel demonstrated sound trial strategy in utilizing their witnesses to account for Peeples’s social background at the mitigation stage, thereby blunting the effect of Peeples’s potential for future danger.\textsuperscript{415} As the court stated, “[t]he record shows that defense counsel made a strategic choice to argue that

\begin{itemize}
\item \textsuperscript{405} Id.
\item \textsuperscript{406} See supra notes 155–272 and accompanying text.
\item \textsuperscript{407} 793 N.E.2d at 641.
\item \textsuperscript{408} Id. at 654.
\item \textsuperscript{409} Id. at 655.
\item \textsuperscript{410} Id. at 659.
\item \textsuperscript{411} Id. (emphasis added).
\item \textsuperscript{412} See id.
\item \textsuperscript{413} Id. at 677–78.
\item \textsuperscript{414} Id. at 677.
\item \textsuperscript{415} Id. at 679.
\end{itemize}
there were ‘two William Peeples. The William Peeples that family and friends knew and the William Peeples that the jury convicted of murder.”  

In addition, counsel had, while presenting mitigation, emphasized Peeples’s positive characteristics and requested that the judge regard Peeples as someone whose life had value and who deserved forgiveness.  

Ultimately, the court concluded that Peeples sufficiently demonstrated under Strickland prong 1 that trial counsel was constitutionally deficient for failing to investigate and present the mitigating evidence of Peeples’s cognitive deficiency. The court also found, however, that counsel’s deficiency did not prejudice Peeples under Strickland prong 2, so Peeples’s claim failed.  

In an attempt to explain its denial of prong 2, the court cited its own precedent regarding future dangerousness and the double-edged nature of certain mental health mitigation evidence. Essentially, the precedent holds that when a jury considers evidence of mental dysfunction, the jury may find such evidence mitigating or aggravating “depending, of course, on whether the individual hearing the evidence finds that it evokes compassion or demonstrates possible future dangerousness.” In rejecting Peeples’s claim that the evidence of mental impairment would have been mitigating, the court reasoned that one of the expert witness’s reports “may have been harmful” to Peeples’s arguments because it stated that Peeples’s academic achievement was at the high school level. Further, Peeples’s “recollec-

The court also rejected Peeples’s Strickland claim regarding his disturbing family background, which Peeples contended should have been presented in mitigation, because the court believed the information contained

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416 Id.
417 Id.
418 Id. at 680.
419 Id.
420 See id. at 681 (reviewing case law from U.S. Court of Appeals for the Seventh Circuit and Supreme Court of Illinois).
421 See id. at 682 (internal quotations omitted).
422 Id.
423 Id. at 683.
424 See id.
“powerful evidence of defendant’s future dangerousness.” For example, the evidence reveals that, throughout his life, defendant had a quick and violent temper, and that this violence animated his relationships with his family, friends, and, most especially, with women. For all these reasons, the court determined that what Peeples viewed as mitigation could have just as easily, and perhaps even more likely, been viewed as aggravating evidence by a reasonable jury. Therefore, trial counsel’s failure to produce such evidence, even if constitutionally deficient, did not prejudice Peeples under Strickland.

Similar to the other future dangerousness cases, however, the court provided no documentation or support for its conclusions beyond simple speculation or, in some instances, remote prior precedent. All of the evidence that Peeples deemed relevant for mitigation was, by contrast, considered critical by the courts discussed in Part II’s Strickland claim cases.

5. The Role of Psychiatric Experts

In Smith v. Workman, Smith was convicted of first degree murder and sentenced to death. Smith’s first petition for habeas relief was denied in state court, and he subsequently appealed to the court under review here for habeas relief.

Smith first argued that his counsel was ineffective for failing to request an Ake expert at the mitigation stage. In 1985, in Ake v. Oklahoma, the U.S. Supreme Court held that “when a defendant demonstrates to the trial judge that his sanity at the time of the offense is to be a significant factor at trial, the State must, at a minimum, assure the defendant access to a competent psychiatrist.” With respect to the mitigation stage of the trial, the Court determined that the State is obligated to provide a defendant a psychiatric expert “when the State presents psychiatric evidence of the defendant’s future dangerousness.” According to Smith, Ake applies “when any evidence of future dangerousness is introduced,” not just psychiatric evidence. Therefore, in Smith’s view, his counsel was ineffective for not

\[ \text{Id. at 684.} \]
\[ \text{Id. at 683.} \]
\[ \text{Id. at 681.} \]
\[ \text{Id. at 1265.} \]
\[ \text{Id. at 1265.} \]
\[ \text{Id. at 1258.} \]
\[ \text{Id. at 1262.} \]
\[ \text{Id.} \]
\[ \text{Id. at 1265.} \]
\[ \text{470 U.S. 68, 83 (1985).} \]
\[ \text{Id.} \]
\[ \text{Id. (emphasis added).} \]
\[ \text{Smith, 550 F.3d at 1265.} \]
requesting an *Ake* expert despite the State’s decision to exclude psychiatric evidence of Smith’s future dangerousness.437

The court found that Smith’s argument was correct on the merits because the State did present evidence of future dangerousness as an aggravating factor.438 Smith’s claim failed, however, because of its timing.439 As the court noted, Smith’s case was tried and his sentence was handed down during a period when the courts in Oklahoma interpreted *Ake* very narrowly; specifically, *Ake* was applied only when the State introduced expert psychiatric evidence to demonstrate future dangerousness.440 Thus, counsel’s failure to call an *Ake* expert when Smith’s trial took place did not adequately support a *Strickland* claim even though, had the failure occurred at the time of the Tenth Circuit appeal, it would have.441

Smith also asserted that counsel failed to adequately investigate and present readily available mitigation evidence—specifically, “evidence of deprivation, neglect, physical abuse, psychological problems, addiction, and brain damage.”442 The court accepted, however, counsel’s contention that omitting certain kinds of evidence about Smith was a reasonable strategic decision because such information “might actually enhance rather than mitigate the State’s argument that [Smith] presented a continuing threat.”443 In addition to detailing counsel’s investigation and presentation of mitigation at trial, the court also emphasized that counsel was “understandably reluctant” to present specific mitigation witnesses and evidence.444 In particular, counsel testified that he did not want mitigation witnesses to “open the door” to Smith’s “lifetime propensity for fighting,” which would have supported an aggravating factor of future dangerousness.445 The court concluded that despite the evidence that could have been introduced, such as childhood abuse, “addiction problems, psychological problems, brain injury and borderline intelligence,” Smith’s counsel did not perform unreasonably un-

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437 Id. (citing *Ake*, 470 U.S. at 83).
438 Id. at 1266.
439 Id. at 1266–67.
440 See id.
441 Id.
442 Id. at 1270.
443 Id. at 1271.
444 Id.
445 Id.
nder the circumstances. Therefore, the court affirmed Smith’s death sentence.

Smith is an unusual case because it is based, in part, on the interpretation of legal decisions that have since been expanded to broaden the scope of Ake. In addition, Ake is an important Supreme Court decision that provides some protection for defendants involved in future dangerousness cases. That said, like the other cases in this Section, the evidence at issue in Smith could just as easily be regarded as mitigating.

Overall, then, this Part discussed the future dangerousness cases focusing on the contradictions presented by the double-edged-sword concept. On the one hand, courts urge attorneys to fully investigate and present mitigating evidence such as neuroscience; they discipline those who fail to do so under appropriate circumstances, especially when defendants face a death sentence. On the other hand, in a limited number of cases, courts also accept arguments that neuroscience evidence can be indicative of a defendant’s future dangerousness. The justifications for future dangerousness arguments are complex and varied, but they should not be ignored. Neuroscience evidence overwhelmingly occupies the halls of mitigation—hence the myth of the double-edged sword—but danger can lie at the ends of those halls and attorneys should be prepared for it.

CONCLUSION

In recent years, the increasing acceptance of neuroscience evidence in the criminal justice system has spurred controversy, raising questions about how such evidence is applied. This Article tackles those questions by analyzing my unprecedented empirical Study of the 800 criminal cases that

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446 See id. According to Smith’s counsel, Smith and his family hindered his efforts to investigate Smith’s history of “drugs, abuse, and mental illness.” Id. at 1272. In light of “the apparent good faith in which the counsel conducted the investigation and the lack of transparency on the part of his primary sources of information [Smith and his family members],” the court determined that counsel’s performance was reasonable. Id.

447 Id. at 1274.

448 See Fitzgerald v. State, 972 P.2d 1157, 1169 n.43 (Okla. Crim. App. 1998) (explaining that the interpretation of Ake had “significantly changed” since its “narrowest possible construction” was used in Brewer v. State, which held that Ake merely requires a psychologist to be appointed when the State introduces an expert to testify about a defendant’s future dangerousness); Brewer v. State, 718 P.2d 354, 363–64 (Okla. Crim. App. 1986), overruling recognized by Fitzgerald, 972 F.2d at 1169 n.43; see also Rogers v. Gibson, 173 F.3d 1278, 1285 (10th Cir. 1999) (noting that, under Ake, a defendant is entitled to have a psychological expert appointed when a defendant shows that the state introduced any evidence—even if it was not an expert—relating to the defendant’s future dangerousness, and defendant’s “mental condition was likely to be a significant mitigating factor” at trial); Liles v. Saffle, 945 F.2d 333, 340 (10th Cir. 1991) (expanding Brewer by holding that, under Ake, a defendant is entitled to have a psychological expert appointed when a defendant can show that “his sanity was likely ‘to be a significant factor at trial’” even if the State does not introduce an expert to testify about the defendant’s future dangerousness).
addressed neuroscience evidence over the course of two decades (1992–2012). The Study’s results suggest that not only is much of the controversy concerning the role of neuroscience unwarranted, but also that the use of such evidence has been misunderstood. Neuroscience is often viewed as a “double-edged sword,” capable both of lessening and enhancing a defendant’s blameworthiness; yet, that view fuels myths that neuroscience will either justify the freeing of violent criminals or bolster unjust predictions regarding defendants’ future dangerousness.

My Study reveals a criminal justice system that accepts both the strengths and limitations of neuroscience evidence in ways that discredit the myth of the double-edged sword. For example, results show that neuroscience evidence is usually offered to mitigate punishments in the way that traditional criminal law has always allowed, and to provide fact-finders with more complete, reliable, and precise information when determining a defendant’s fate. Likewise, the Study uncovers a criminal justice system that is willing to accept modern methods of assessing defendants’ mental capabilities, and expects its attorneys to do the same. Indeed one of the Study’s most striking findings concerns the parameters of ineffective assistance of counsel claims: courts not only expect attorneys to investigate and use available neuroscience evidence in their cases when it is appropriate, but they penalize attorneys who neglect this obligation.

This Article further examines one of the most widely held myths about the double-edged sword—that prosecutors will use neuroscience evidence to fuel arguments that a defendant is a future danger and therefore deserves death or extensive incarceration. To the contrary, however, my Study found that neuroscience evidence is only rarely used to bolster a defendant’s future dangerousness and that prosecutors employ a variety of purported strategies in making such arguments. Indeed, as courts continue to support neuroscience tools and raise new questions, my Study’s empirical data will provide a foundation for discussions regarding the use of neuroscience evidence in criminal cases. The findings presented in this Article will also ensure that those discussions are grounded in fact rather than hyperbole.
Chart 1
Severity of Sentence by Number of Cases
553 Total Cases

<table>
<thead>
<tr>
<th>SENTENCE</th>
<th>NUMBER OF CASES</th>
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<tbody>
<tr>
<td>Death</td>
<td>366</td>
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<tr>
<td>Life (with or without possibility of parole)</td>
<td>80</td>
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<td>31–50 years</td>
<td>13</td>
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<tr>
<td>11–30 years</td>
<td>41</td>
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<td>10 years or less</td>
<td>31</td>
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<td>Fine</td>
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<tr>
<td>Committed to a Mental Health Facility</td>
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</tr>
<tr>
<td>Sentence for Juvenile (Confidential)</td>
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</tr>
<tr>
<td>Sentence Not Sought</td>
<td>2</td>
</tr>
<tr>
<td>Sentence Not Yet Given</td>
<td>15</td>
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</table>

NUMBER OF CASES
## Chart 2
**Confirmed Neuroscientific Diagnoses by Number of Cases**

553 Total Cases

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<tr>
<th>Purpose</th>
<th>Number of Cases</th>
<th>Non-Death Penalty Cases</th>
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<tr>
<td>Polysubstance Abuse</td>
<td>87</td>
<td>15</td>
</tr>
<tr>
<td>Temporal, Parietal or Frontal Lobe Dysfunction</td>
<td>47</td>
<td>16</td>
</tr>
<tr>
<td>Depression</td>
<td>43</td>
<td>15</td>
</tr>
<tr>
<td>Organic Brain Damage</td>
<td>42</td>
<td>2</td>
</tr>
<tr>
<td>Mental Retardiation</td>
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<td>3</td>
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<td>Borderline Personality Disorder</td>
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<td>Psychosis/Psychopathy</td>
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<td>5</td>
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<tr>
<td>Delusional Disorder</td>
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<td>4</td>
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<tr>
<td>Organic Brain Disorder</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Schizotypal Personality Disorder</td>
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</table>

*Death Penalty Cases  Non-Death Penalty Cases

*Categories are not mutually exclusive*
Chart 3
Purpose of Presenting Neuroscience Evidence by Number of Cases*
553 Total Cases

<table>
<thead>
<tr>
<th>PURPOSE</th>
<th>Death Penalty Cases</th>
<th>Non-Death Penalty Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brain Damage</td>
<td>189</td>
<td>82</td>
</tr>
<tr>
<td>Head Injury</td>
<td>127</td>
<td>51</td>
</tr>
<tr>
<td>Low IQ</td>
<td>99</td>
<td>25</td>
</tr>
<tr>
<td>Malingerising</td>
<td>55</td>
<td>38</td>
</tr>
<tr>
<td>Mental Retardation</td>
<td>55</td>
<td>7</td>
</tr>
<tr>
<td>Toxin Exposure</td>
<td>11</td>
<td>6</td>
</tr>
</tbody>
</table>

*Categories are not mutually exclusive
Chart 4
Use or Discussion of Brain Imaging Technology by Number of Cases*
553 Total Cases

<table>
<thead>
<tr>
<th>BRAIN IMAGING TECHNOLOGY</th>
<th>NUMBER OF CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT Scan</td>
<td>82</td>
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<tr>
<td></td>
<td>59</td>
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<td>MRI</td>
<td>94</td>
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<tr>
<td>EEG</td>
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<tr>
<td>PET Scan</td>
<td>60</td>
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<td>SPECT Scan</td>
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<tr>
<td>QEEG</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

*Categories are not mutually exclusive
Chart 5

Use or Discussion of Non-Imaging Tests by Number of Cases**
553 Total Cases

TYPE OF TEST

- WAIS-R 48
- MMPI 43
- Bender-Gestalt Test 20
- Rorschach Inkblot Test 12
- Halstead Reitan Battery 12
- Wide Range Achievement Test 11
- Trail Making Test 10
- Wisconsin Card Sorting Test 10
- General Adaptive Behavior Testing 9
- Test of Memory Malingering 6

* Categories are not mutually exclusive
+ Chart 5 lists the top 10 most widely used tests. There were 68 additional types of tests.
Chart 6
Number of Cases Raised To Support at Least One Claim of Ineffective Assistance of Counsel
553 Total Cases

- **Category 1:** Number of Strickland claim cases that featured at least one claim based on misuse or non-use of neuroscience evidence
- **Category 2:** Number of Strickland claim cases in Category 1 that were granted
- **Category 3:** Number of Strickland claim cases in Category 1 that were granted based on the misuse or non-use of neuroscience evidence
Chart 7

**Number of Cases Addressing Defendants' Future Dangerousness***

553 Total Cases

- **553**
  - TOTAL DEFENDANT CASES

- **80**
  - FUTURE DANGEROUSNESS CASES
    - **17***
      - FUTURE DANGEROUSNESS & SIMMONS INSTRUCTION CASES
    - **33***
      - FUTURE DANGEROUSNESS & STRICKLAND CLAIM CASES
    - **39***
      - FUTURE DANGEROUSNESS & DISCUSSION OF NEUROSCIENCE EVIDENCE CASES

- **14**
  - USE OF NEUROSCIENCE EVIDENCE TO ESTABLISH FUTURE DANGEROUSNESS CASES

*Categories are not mutually exclusive
For the Law, Neuroscience Changes Nothing and Everything
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For the law, neuroscience changes nothing and everything

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The rapidly growing field of cognitive neuroscience holds the promise of explaining the operations of the mind in terms of the physical operations of the brain. Some suggest that our emerging understanding of the physical causes of human (mis)behaviour will have a transformative effect on the law. Others argue that new neuroscience will provide only new details and that existing legal doctrine can accommodate whatever new information neuroscience will provide. We argue that neuroscience will probably have a transformative effect on the law, despite the fact that existing legal doctrine can, in principle, accommodate whatever neuroscience will tell us. New neuroscience will change the law, not by undermining its current assumptions, but by transforming people’s moral intuitions about free will and responsibility. This change in moral outlook will result not from the discovery of crucial new facts or clever new arguments, but from a new appreciation of old arguments, bolstered by vivid new illustrations provided by cognitive neuroscience. We foresee, and recommend, a shift away from punishment aimed at retribution in favour of a more progressive, consequentialist approach to the criminal law.

Keywords: law; brain; morality; free will; punishment; retributivism

1. INTRODUCTION

The law takes a long-standing interest in the mind. In most criminal cases, a successful conviction requires the prosecution to establish not only that the defendant engaged in proscribed behaviour, but also that the misdeed in question was the product of mens rea, a ‘guilty mind’. Narrowly interpreted, mens rea refers to the intention to commit a criminal act, but the term has a looser interpretation by which it refers to all mental states consistent with moral and/or legal blame. (A killing motivated by insane delusional beliefs may meet the requirements for mens rea in the first sense, but not the second.) (Goldstein et al. 2003) Thus, for centuries, many legal issues have turned on the question: ‘what was he thinking’?

To answer this question, the law has often turned to science. Today, the newest kid on this particular scientific block is cognitive neuroscience, the study of the mind through the brain, which has gained prominence in part as a result of the advent of functional neuroimaging as a widely used tool for psychological research. Given the law’s aforementioned concern for mental states, along with its preference for ‘hard’ evidence, it is no surprise that interest in the potential legal implications of cognitive neuroscience abounds. But does our emerging understanding of the mind as brain really have any deep implications for the law? This theme issue is a testament to the thought that it might. Some have argued, however, that new neuroscience contributes nothing more than new details and that existing legal principles can handle anything that neuroscience will throw our way in the foreseeable future (Morse 2004).

In our view, both of these positions are, in their respective ways, correct. Existing legal principles make virtually no assumptions about the neural bases of criminal behaviour, and as a result they can comfortably assimilate new neuroscience without much in the way of conceptual upheaval: new details, new sources of evidence, but nothing for which the law is fundamentally unprepared. We maintain, however, that our operative legal principles exist because they more or less adequately capture an intuitive sense of justice. In our view, neuroscience will challenge and ultimately reshape our intuitive sense(s) of justice. New neuroscience will affect the way we view the law, not by furnishing us with new ideas or arguments about the nature of human action, but by breathing new life into old ones. Cognitive neuroscience, by identifying the specific mechanisms responsible for behaviour, will vividly illustrate what until now could only be appreciated through esoteric theorizing: that there is something fishy about our ordinary conceptions of human action and responsibility, and that, as a result, the legal principles we have devised to reflect these conceptions may be flawed.

Our argument runs as follows: first, we draw a familiar distinction between the consequentialist justification for state punishment, according to which punishment is merely an instrument for promoting future social welfare, and the retributivist justification for punishment, according to which the principal aim of punishment is to give people what they deserve based on their past actions. We observe that the common-sense approach to moral and legal responsibility has consequentialist elements, but is largely retributivist. Unlike the consequentialist justification for

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One contribution of 16 to a Theme Issue ‘Law and the brain’.


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punishment, the retributivist justification relies, either explicitly or implicitly, on a demanding—and some say overly demanding—conception of free will. We therefore consider the standard responses to the philosophical problem of free will (Watson 1982). ‘Libertarians’ (no relation to the political philosophy) and ‘hard determinists’ agree on ‘incompatibilism’, the thesis that free will and determinism are incompatible, but they disagree about whether determinism is true, or near enough true to preclude free will. Libertarians believe that we have free will because determinism is false, and hard determinists believe that we lack free will because determinism is (approximately) true. ‘Compatibilists’, in contrast to libertarians and hard determinists, argue that free will and determinism are perfectly compatible.

We argue that current legal doctrine, although officially compatibilist, is ultimately grounded in intuitions that are incompatibilist and, more specifically, libertarian. In other words, the law says that it presupposes nothing more than a metaphysically modest notion of free will that is perfectly compatible with determinism. However, we argue that the law’s intuitive support is ultimately grounded in a metaphysically overambitious, libertarian notion of free will that is threatened by determinism and, more pointedly, by forthcoming cognitive neuroscience. At present, the gap between what the law officially cares about and what people really care about is only revealed occasionally when vivid scientific information about the causes of criminal behaviour leads people to doubt certain individuals’ capacity for moral and legal responsibility, despite the fact that this information is irrelevant according to the law’s stated principles. We argue that new neuroscience will continue to highlight and widen this gap. That is, new neuroscience will undermine people’s common sense, libertarian conception of free will and the retributivist thinking that depends on it, both of which have heretofore been shielded by the inaccessibility of sophisticated thinking about the mind and its neural basis.

The net effect of this influx of scientific information will be a rejection of free will as it is ordinarily conceived, with important ramifications for the law. As noted above, our criminal justice system is largely retributivist. We argue that retributivism, despite its unstable marriage to compatibilist philosophy in the letter of the law, ultimately depends on an intuitive, libertarian notion of free will that is undermined by science. Therefore, with the rejection of common-sense conceptions of free will comes the rejection of retributivism and an ensuing shift towards a consequentialist approach to punishment, i.e. one aimed at promoting future welfare rather than meting out just deserts. Because consequentialist approaches to punishment remain viable in the absence of common-sense free will, we need not give up on moral and legal responsibility. We argue further that the philosophical problem of free will arises out of a conflict between two cognitive subsystems that speak different ‘languages’: the ‘folk psychology’ system and the ‘folk physics’ system. Because we are inherently of two minds when it comes to the problem of free will, this problem will never find an intuitively satisfying solution. We can, however, recognize that free will, as conceptualized by the folk psychology system, is an illusion and structure our society accordingly by rejecting retributivist legal principles that derive their intuitive force from this illusion.

2. TWO THEORIES OF PUNISHMENT: CONSEQUENTIALISM AND RETRIBUTIVISM

There are two standard justifications for legal punishment (Lacey 1988). According to the forward-looking, consequentialist theory, which emerges from the classical utilitarian tradition (Bentham 1982), punishment is justified by its future beneficial effects. Chief among them are the prevention of future crime through the deterrent effect of the law and the containment of dangerous individuals. Few would deny that the deterrence of future crime and the protection of the public are legitimate justifications for punishment. The controversy surrounding consequentialist theories concerns their serviceability as ‘complete’ normative theories of punishment. Most theorists find them inadequate in this regard (e.g. Hart 1968), and many argue that consequentialism fundamentally mischaracterizes the primary justification for punishment, which, these critics argue, is retribution (Kant 2002). As a result, they claim, consequentialist theories justify intuitively unfair forms of punishment, if not in practice then in principle. One problem is that of Draconian penalties. It is possible, for example, that imposing the death penalty for parking violations would maximize aggregate welfare by reducing parking violations to near zero. But, retributivists claim, whether or not this is a good idea does not depend on the balance of costs and benefits. It is simply wrong to kill someone for double parking. A related problem is that of punishing the innocent. It is possible that, under certain circumstances, falsely convicting an innocent person would have a salutary deterrent effect, enough to justify that person’s suffering, etc. Critics also note that, so far as deterrence is concerned, it is the threat of punishment that is justified and not the punishment itself. Thus, consequentialism might justify letting murderers and rapists off the hook so long as their punishment could be convincingly faked.

The standard consequentialist response to these charges is that such concerns have no place in the real world. They say, for example, that the idea of imposing the death penalty for parking violations to make society an overall happier place is absurd. People everywhere would live in mortal fear of bureaucratic errors, and so on. Likewise, a legal system that deliberately convicted innocent people and/or secretly refrained from punishing guilty ones would require a kind of systematic deception that would lead inevitably to corruption and that could never survive in a free society. At this point critics retort that consequentialist theories, at best, get the right answers for the wrong reasons. It is wrong to punish innocent people, etc. because it is fundamentally unfair, not because it leads to bad consequences in practice. Such critics are certainly correct to point out that consequentialist theories fail to capture something central to common-sense intuitions about legitimate punishment.

The backward-looking, retributivist account does a better job of capturing these intuitions. Its fundamental principle is simple: in the absence of mitigating circumstances, people who engage in criminal behaviour deserve to be punished, and that is why we punish them. Some would
The problem of free will is old and has many formulations (Watson 1982). Here is one, drawing on a more detailed and exacting formulation by Peter Van Inwagen (1982): determinism is true if the world is such that its current state is completely determined by (i) the laws of physics and (ii) past states of the world. Intuitively, the idea is that a deterministic universe starts however it starts and then ticks along like clockwork from there. Given a set of prior conditions in the universe and a set of physical laws that completely govern the way the universe evolves, there is only one way that things can actually proceed.

Free will, it is often said, requires the ability do otherwise (an assumption that has been questioned; Frankfurt 1966). One cannot say, for example, that I have freely chosen soup over salad if forces beyond my control are sufficient to necessitate my choosing soup. But, the determinist argues, this is precisely what forces beyond your control do—always. You have no say whatsoever in the state of the universe before your birth; nor do you have any say about the laws of physics. However, if determinism is true, these two things together are sufficient to determine your choice of soup over salad. Thus, some say, if determinism is true, your sense of yourself and others as having free will is an illusion.

There are three standard responses to the problem of free will. The first, known as ‘hard determinism’, accepts the incompatibility of free will and determinism (‘incompatibilism’), and asserts determinism, thus rejecting free will. The second response is libertarianism (again, no relation to the political philosophy), which accepts incompatibilism, but denies that determinism is true. This may seem like a promising approach. After all, it has not modern physics shown us that the universe is indeterministic (Hughes 1992)? The problem here is that the sort of indeterminism afforded by modern physics is not the sort the libertarian needs or desires. If it turns out that your ordering soup is completely determined by the laws of physics, the state of the universe 10 000 years ago, and the outcomes of myriad subatomic coin flips, your appetizer is no more freely chosen than before. Indeed, it is randomly chosen, which is no help to the libertarian. What about some other kind of indeterminism? What if, somewhere deep in the brain, there are mysterious events that operate independently of the ordinary laws of physics and that are somehow tied to the will of the brain’s owner? In light of the available evidence, this is highly unlikely. Say what you will about the ‘hard problem’ of consciousness (Shear 1999), there is not a shred of scientific evidence to support the existence of causally effective processes in the mind or brain that violate the laws of physics. In our opinion, any scientifically respectable discussion of free will requires the rejection of what Strawson (1962) famously called the ‘panicky metaphysics’ of libertarianism.

Finally, we come to the dominant view among philosophers and legal theorists: compatibilism. Compatibilists concede that some notions of free will may require indefensible, panicky metaphysics, but maintain that the kinds of free will ‘worth wanting’, to use Dennett’s (1984) phrase, are perfectly compatible with determinism. Compatibilist theories vary, but all compatibilists agree that free will is a perfectly natural, scientifically respectable phenomenon and part of the ordinary human condition. They also agree that free will can be undermined by various kinds of psychological deficit, e.g. mental illness or ‘infancy’. Thus, according to this view, a freely willed action is one that is made using the right sort of psychology—rational, free of delusion, etc.

Compatibilists make some compelling arguments. After all, is it not obvious that we have free will? Could science plausibly deny the obvious fact that I am free to raise my hand at will? For many people, such simple observations make the reality of free will non-negotiable. But at the same time, many such people concede that determinism, or something like it, is a live possibility. And if free will is obviously real, but determinism is debatable, then the reality of free will must not hinge on the rejection of determinism. That is, free will and determinism must be compatible. Many compatibilists sceptically ask what would it mean to give up on free will. Were we to give it up, wouldn’t we have to immediately reinvent it? Does not every decision involve an implicit commitment to the idea of free will? And how else would we distinguish between ordinary rational adults and other individuals, such as young children and the mentally ill, whose will—or whatever you want to call it—is clearly compromised? Free will, compatibilists argue, is here to stay, and the challenge for science is to figure out how exactly it works and not to peddle silly arguments that deny the undeniable (Dennett 2003).

The forward-looking-consequentialist approach to punishment works with all three responses to the problem of free will, including hard determinism. This is because consequentialists are not concerned with whether anyone is really innocent or guilty in some ultimate sense that might depend on people’s having free will, but only with the likely effects of punishment. (Of course, one might wonder what it means for a hard determinist to justify any sort of choice. We will return to this issue in § 8.) The retributivist approach, by contrast, is plausibly regarded as requiring free will and the rejection of hard determinism. Retributivists want to know whether the defendant truly deserves to be punished. Assuming one can deserve to be punished only for actions that are freely willed, hard determinism implies that no one really deserves to be punished. Thus,
hard determinism combined with retributivism requires the elimination of all punishment, which does not seem reasonable. This leaves retributivists with two options: compatibilism and libertarianism. Libertarianism, for reasons given above, and despite its intuitive appeal, is scientifically suspect. At the very least, the law should not depend on it. It seems, then, that retributivism requires compatibilism. Accordingly, the standard legal account of punishment is compatibilist.

4. NEUROSCIENCE CHANGES NOTHING

The title of a recent paper by Stephen Morse (2004), 'New neuroscience, old problems', aptly summarizes many a seasoned legal thinker's response to the suggestion that brain research will revolutionize the law. The law has been dealing with issues of criminal responsibility for a long time, Morse argues that there is nothing on the neuroscientific horizon that it cannot handle.

The reason that the law is immune to such threats is that it makes no assumptions that neuroscience, or any science, is likely to challenge. The law assumes that people have a general capacity for rational choice. That is, people have beliefs and desires and are capable of producing behaviour that serves their desires in light of their beliefs. The law acknowledges that our capacity for rational choice is far from perfect (Kahneman & Tversky 2000), requiring only that the people it deems legally responsible have a general capacity for rational behaviour.

Thus, questions about who is or is not responsible in the eyes of the law have and will continue to turn on questions about rationality. This approach was first codified in the M'Naghten standard according to which a defence on the ground of insanity requires proof that the defendant laboured under a 'defect of reason, from disease of the mind' (Goldstein 1967). Not all standards developed and applied since M'Naghten explicitly mention the need to demonstrate the defendant's diminished rationality (e.g. the Durham standard; Goldstein 1967), but it is generally agreed that a legal excuse requires a demonstration that the defendant 'lacked a general capacity for rationality' (Goldstein et al. 2003). Thus, the argument goes, new science can help us figure out who was or was not rational at the scene of the crime, much as it has in the past, but new science will not justify any fundamental change in the law's approach to responsibility unless it shows that people in general fail to meet the law's very minimal requirements for rationality. Science shows no sign of doing this, and thus the basic precepts of legal responsibility stand firm. As for neuroscience more specifically, this discipline seems especially unlikely to undermine our faith in general minimal rationality. If any sciences have an outside chance of demonstrating that our behaviour is thoroughly irrational or atypical it is the ones that study behaviour directly rather than its proximate physical causes in the brain. The law, this argument continues, does not care if people have 'free will' in any deep metaphysical sense that might be threatened by determinism. It only cares that people in general are minimally rational. So long as this appears to be the case, it can go on regarding people as free (compatibilism) and holding ordinary people responsible for their misdeeds while making exceptions for those who fail to meet the requirements of general rationality.


In light of this, one might wonder what all the fuss is about. If the law assumes nothing more than general minimal rationality, and neuroscience does nothing to undermine this assumption, then why would anyone even think that neuroscience poses some sort of threat to legal doctrines of criminal responsibility? It sounds like this is just a simple mistake, and that is precisely what Morse contends. He calls this mistake 'the fundamental psychologcal error' which is 'to believe that causation, especially abnormal causation, is per se an excusing condition' (Morse 2004, p. 180). In other words, if you think that neuroscientific information about the causes of human action, or some particular human's action, can, by itself, make for a legitimate legal excuse, you just do not understand the law. Every action is caused by brain events, and describing those events and affirming their causal efficacy is of no legal interest in and of itself. Morse continues, '[The psychologcal error] leads people to try to create a new excuse every time an allegedly valid new "syndrome" is discovered that is thought to play a role in behaviour. But syndromes and other causes do not have excusing force unless they sufficiently diminish rationality in the context in question' (Morse 2004, p. 180).

In our opinion, Morse and like-minded theorists are absolutely correct about the relationship between current legal doctrine and any forthcoming neuroscientific results. For the law, as written, neuroscience changes nothing. The law provides a coherent framework for the assessment of criminal responsibility that is not threatened by anything neuroscience is likely to throw at it. But, we maintain, the law nevertheless stands on shakier ground than the foregoing would suggest. The legitimacy of the law itself depends on its adequately reflecting the moral intuitions and commitments of society. If neuroscience can change those intuitions, then neuroscience can change the law.

As it happens, this is a possibility that Morse explicitly acknowledges. However, he believes that such developments would require radical new ideas that we can scarcely imagine at this time, e.g. a new solution to the mind-body problem. We disagree. The seeds of discontent are already sown in common-sense legal thought. In our opinion, the 'fundamental psychologcal error' is not so much an error as a reflection of the gap between what the law officially cares about and what people really care about. In modern criminal law, there has been a long tense marriage of convenience between compatibilist legal principles and libertarian moral intuitions. New neuroscience, we argue, will probably render this marriage unworkable.

5. WHAT REALLY MATTERS FOR RESPONSIBILITY? MATERIALIST THEORY, DUALIST INTUITIONS AND THE 'BOYS FROM BRAZIL' PROBLEM

According to the law, the central question in a case of putative diminished responsibility is whether the accused was sufficiently rational at the time of the misdeed in question. We believe, however, that this is not what most people really care about, and that for them diminished rationality is just a presumed correlate of something deeper. It seems that what many people really want to know is: was it him? This question usually comes in the form of a disjunction, depending on how the excuse is constructed: was it him, or was it his upbringing? Was it him, or was it his genes?
Was it him, or was it his circumstances? Was it him, or was it his brain? But what most people do not understand, despite the fact that naturalistic philosophers and scientists have been saying it for centuries, is that there is no 'him' independent of these other things. (Or, to be a bit more accommodating to the supernaturally inclined, there is no 'him' independent of these things that shows any sign of affecting anything in the physical world, including his behaviour.)

Most people's view of the mind is implicitly dualist and libertarian and not materialist and compatibilist. Dualism, for our purposes, is the view that mind and brain are separate, interacting, entities. Dualism fits naturally with libertarianism because a mind distinct from the body is precisely the sort of non-physical source of free will that libertarianism requires. Materialism, by contrast, is the view that all events, including the operations of the mind, are ultimately operations of matter that obeys the laws of physics. It is hard to imagine a belief in free will that is materialist but not compatibilist, given that ordinary matter does not seem capable of supplying the non-physical processes that libertarianism requires.

Many people, particularly those who are religious, are explicitly dualist libertarians (again, not in the political sense). However, in our estimation, even people who do or would readily endorse a thoroughly material account of human action and its causes have dualist, libertarian intuitions. This goes not only for educated people in general, but for experts in mental health and criminal behaviour. Consider, for example, the following remarks from Jonathan Pincus, an expert on criminal behaviour and the brain.

When a composer conceives a symphony, the only way he or she can present it to the public is through an orchestra... If the performance is poor, the fault could lie with the composer's conception, or the orchestra, or both... Will is expressed by the brain. Violence can be the result of volition only, but if a brain is damaged, brain failure must be at least partly to blame. (Pincus 2001, p. 128)

To our untutored intuitions, this is a perfectly sensible analogy, but it is ultimately grounded in a kind of dualism that is scientifically untenable. It is not as if there is you, the composer, and then your brain, the orchestra. You are your brain, and your brain is the composer and the orchestra all rolled together. There is no little man, no 'homunculus', in the brain that is the real you behind the mass of neuronal instrumentation. Scientifically minded philosophers have been saying this ad nauseam (Dennett 1991), and we will not belabour the point. Moreover, we suspect that if you were to ask Dr Pincus whether he thinks there is a little conductor directing his brain's activity from within or beyond he would adamantly deny that this is the case. At the same time, though, he is comfortable comparing a brain-damaged criminal to a healthy conductor saddled with an unhealthy orchestra. This sort of doublethink is not uncommon. As we will argue in § 7, when it comes to moral decision making to changes in brain structure and function... In our view, however, there is sufficient indirect suggestive evidence of age differences in capacities that are relevant to criminal blameworthiness to support the position that youths who commit crimes should be punished more leniently than their adult counterparts.

This gets the order of evidence backwards. If what the law ultimately cares about is whether adolescents can behave rationally, then it is evidence concerning adolescent behaviour that is directly relevant. Studying the adolescent brain is a highly indirect way of figuring out whether adolescents in general are rational. Indeed, the only way we neuroscientists can tell if a brain structure is important for rational judgement is to see if its activity or damage is correlated with (ir)rational behaviour.

If everyone agrees that what the law ultimately cares about is the capacity for rational behaviour, then why are Steinberg and Scott so optimistic about neuroscientific evidence that is only indirectly relevant? The reason, we suggest, is that they are appealing not to a legal argument, but to a moral intuition. So far as the law is concerned, information about the physical processes that give rise to bad behaviour is irrelevant. But to people who implicitly believe that real decision-making takes place in the mind, not in the brain, demonstrating that there is a brain basis for adolescents' misdeeds allows us to blame adolescents' brains instead of the adolescents themselves.

The fact that people are tempted to attach great moral or legal significance to neuroscientific information that, according to the letter of the law, should not matter, suggests that what the law cares about and what people care about do not necessarily coincide. To make this point in a more general way, we offer the following thought experiment, which we call 'The Boys from Brazil problem'. It is an extension of an argument that has made the rounds in philosophical discussions of free will and responsibility (Rosen 2002).

In the film The Boys from Brazil, members of the Nazi old guard have regrouped in South America after the war. Their plan is to bring their beloved führer back to life by raising children genetically identical to Hitler (courtesy of some salvaged DNA) in environments that mimic that of Hitler's upbringing. For example, Hitler's father died while
young Adolph was still a boy, and so each Hitler clone’s surrogate father is killed at just the right time, and so on, and so forth.

This is obviously a fantasy, but the idea that one could, in principle, produce a person with a particular personality and behavioural profile through tight genetic and environmental control is plausible. Let us suppose, then, that a group of scientists has managed to create an individual—call him ‘Mr Puppet’—who, by design, engages in some kind of criminal behaviour: say, a murder during a drug deal gone bad. The defence calls to the stand the project’s lead scientist: ‘Please tell us about your relationship to Mr Puppet.’

It is very simple, really. I designed him. I carefully selected every gene in his body and carefully scripted every significant event in his life so that he would become precisely what he is today. I selected his mother knowing that she would let him cry for hours and hours before picking him up. I carefully selected each of his relatives, teachers, friends, enemies, etc. and told them exactly what to say to him and how to treat him. Things generally went as planned, but not always. For example, the angry letters written to his dead father were not supposed to appear until he was fourteen, but by the end of his thirteenth year he had already written four of them. In retrospect I think this was because of a handful of substitutions I made to his eighth chromosome. At any rate, my plans for him succeeded, as they have for 95% of the people I’ve designed. I assure you that the accused deserves none of the credit.

What to do with Mr Puppet? Insofar as we believe this testimony, we are inclined to think that Mr Puppet cannot be held fully responsible for his crimes, if he can be held responsible for them at all. He is, perhaps, a man to be feared, and we would not want to return him to the streets.

But given the fact that forces beyond his control played a dominant role in causing him to commit these crimes, it is hard to think of him as anything more than a pawn.

But what does the law say about Mr Puppet? The law asks whether or not he was rational at the time of his misdeeds, and as far as we know he was. For all we know, he is psychologically indistinguishable from the prototypical guilty criminal, and therefore fully responsible in the eyes of the law. But, intuitively, this is not fair.

Thus, it seems that the law’s exclusive interest in rationality misses something intuitively important. In our opinion, rationality is just a presumed correlate of what most people really care about. What people really want to know is if the accused, as opposed to something else, is responsible for the crime, where that ‘something else’ could be the accused’s brain, genes or environment. The question of someone’s ultimate responsibility seems to turn, intuitively, on a question of internal versus external determination. Mr Puppet ought not be held responsible for his actions because forces beyond his control played a dominant role in the production of his behaviour. Of course, the scientists did not have complete control—after all, they had a 5% failure rate—but that does not seem to be enough to restore Mr Puppet’s free will, at least not entirely. Yes, he is as rational as other criminals, and, yes, it was his desires and beliefs that produced his actions. But those beliefs and desires were rigged by external forces, and that is why, intuitively, he deserves our pity more than our moral condemnation.

The story of Mr. Puppet raises an important question: what is the difference between Mr Puppet and anyone else accused of a crime? After all, we have little reason to doubt that (i) the state of the universe 10 000 years ago, (ii) the laws of physics, and (iii) the outcomes of random quantum mechanical events are together sufficient to determine everything that happens nowadays, including our own actions. These things are all clearly beyond our control. So what is the real difference between us and Mr Puppet? One obvious difference is that Mr Puppet is the victim of a diabolical plot whereas most people, we presume, are not. But does this matter? The thought that Mr Puppet is not fully responsible depends on the idea that his actions were externally determined. Forces beyond his control constrained his personality to the point that it was ‘no surprise’ that he would behave badly. But the fact that these forces are connected to the desires and intentions of evil scientists is really irrelevant, is it not? What matters is only that these forces are beyond Mr Puppet’s control, that they’re not really his. The fact that someone could deliberately harness these forces to reliably design criminals is an indication of the strength of these forces, but the fact that these forces are being guided by other minds rather than simply operating on their own seems irrelevant, so far as Mr Puppet’s freedom and responsibility are concerned.

Thus, it seems that, in a very real sense, we are all puppets. The combined effects of genes and environment determine all of our actions. Mr Puppet is exceptional only in that the intentions of other humans lie behind his genes and environment. But, so long as his genes and environment are intrinsically comparable to those of ordinary people, this does not really matter. We are no more free than he is.

What all of this illustrates is that the ‘fundamental psycholegal error’ is grounded in a powerful moral intuition that the law and allied compatibilist philosophies try to sweep under the rug. The foregoing suggests that people regard actions only as fully free when those actions are seen as robust against determination by external forces. But if determinism (or determinism plus quantum mechanics) is true, then no actions are truly free because forces beyond our control are always sufficient to determine behaviour. Thus, intuitive free will is libertarian, not compatibilist. That is, it requires the rejection of determinism and an implicit commitment to some kind of magical mental causation.

Naturalistic philosophers and scientists have known for a long time that magical mental causation is a non-starter. But this realization is the result of philosophical reflection about the nature of the universe and its governance by physical law. Philosophical reflection, however, is not the only way to see the problems with libertarian accounts of free will. Indeed, we argue that neuroscience can help people appreciate the mechanical nature of human action in a way that bypasses complicated arguments.

6. NEUROSCIENCE AND THE TRANSPARENT BOTTLENECK

We have argued that, contrary to legal and philosophical orthodoxy, determinism really does threaten free will and responsibility as we intuitively understand them. It is just that most of us, including most philosophers and legal
Neuroscience changes nothing and everything J. Greene and J. Cohen 1781

theorists, have yet to appreciate it. This controversial opinion amounts to an empirical prediction that may or may not hold: as more and more scientific facts come in, providing increasingly vivid illustrations of what the human mind is really like, more and more people will develop moral intuitions that are at odds with our current social practices (see Robert Wright (1994) for similar thoughts).

Neuroscience has a special role to play in this process for the following reason. As long as the mind remains a black box, there will always be a donkey on which to pin dualist and libertarian intuitions. For a long time, philosophical arguments have persuaded some people that human action has purely mechanical causes, but not everyone cares for philosophical arguments. Arguments are nice, but physical demonstrations are far more compelling. What neuroscience does, and will continue to do at an accelerated pace, is elucidate the ‘when’, ‘where’ and ‘how’ of the mechanical processes that cause behaviour. It is one thing to deny that human decision-making is purely mechanical when your opponent offers only a general, philosophical argument. It is quite another to hold your ground when your opponent can make detailed predictions about how these mechanical processes work, complete with images of the brain structures involved and equations that describe their function.6

Thus, neuroscience holds the promise of turning the black box of the mind into a transparent bottleneck. There are many causes that impinge on behaviour, but all of them—from the genes you inherited, to the pain in your lower back, to the advice your grandmother gave you when you were six—must exert their influence through the brain. Thus, your brain serves as a bottleneck for all the forces spread throughout the universe of your past that affect who you are and what you do. Moreover, this bottleneck contains the events that are, intuitively, most critical for moral and legal responsibility, and we may soon be able to observe them closely.

At some time in the future we may have extremely high-resolution scanners that can simultaneously track the neural activity and connectivity of every neuron in a human brain, along with computers and software that can analyse and organize these data. Imagine, for example, watching a film of your brain choosing between soup and salad. The analysis software highlights the neurons pushing for soup in red and the neurons pushing for salad in blue. You zoom in and slow down the film, allowing yourself to trace the cause-and-effect relationships between individual neurons—the mind’s clockwork revealed in arbitrary detail. You find the tipping-point moment at which the blue neurons in your prefrontal cortex out-fire the red neurons, seizing control of your pre-motor cortex and causing you to say, ‘I will have the salad, please’.7

At some further point this sort of brainware may be very widespread, with a high-resolution brain scanner in every classroom. People may grow up completely used to the idea that every decision is a thoroughly mechanical process, the outcome of which is completely determined by the results of prior mechanical processes. What will such people think if we tell them every decision is a thoroughly mechanical process? Will they wonder if it was really him who killed his wife rather than his uncontrollable anger? Will they ask whether he could have done otherwise? Whether he really deserves to be punished, or if he is just a victim of unfortunate circumstances? We submit that these questions, which seem so important today, will lose their grip in an age when the mechanical nature of human decision-making is fully appreciated. The law will continue to punish misdeeds, as it must for practical reasons, but the idea of distinguishing the truly, deeply guilty from those who are merely victims of neuronal circumstances will, we submit, seem pointless.

At least in our more reflective moments. Our intuitive sense of free will runs quite deep, and it is possible that we will never be able to fully talk ourselves out of it. Next we consider the psychological origins of the problem of free will.

7. FOLK PSYCHOLOGY AND FOLK PHYSICS COLLIDE: A COGNITIVE ACCOUNT OF THE PROBLEM OF ATTRIBUTIVE FREE WILL

Could the problem of free will just melt away? This question begs another: why do we have the problem of free will in the first place? Why does the idea of a deterministic universe seem to contradict something important in our conception of human action? A promising answer to this question is offered by Daniel Wegner in The Illusion of Conscious Will (Wegner 2002). In short, Wegner argues, we feel as if we are uncaused causes, and therefore granted a degree of independence from the deterministic flow of the universe, because we are unaware of the deterministic processes that operate in our own heads. Our actions appear to be caused by our mental states, not physical states of our brains, and so we imagine that we are metaphysically special, that we are non-physical causes of physical events. This belief in our specialness is likely to meet the same fate as other similarly narcissistic beliefs that we have cherished in our past: that the Earth lies at the centre of the universe, that humans are unrelated to other species, that all of our behaviour is consciously determined, etc. Each of these beliefs has been replaced by a scientific and humbling understanding of our place in the physical universe, and there is no reason to believe that the case will be any different for our sense of free will. (For similar thoughts, see Wright (1994) on Darwin’s clandestine views about free will and responsibility.)

We believe that Wegner’s account of the problem of free will is essentially correct, although we disagree strongly with his conclusions concerning its (lack of) practical moral implications (see below). In this section we pick up on and extend one strand in Wegner’s argument (Wegner 2002, pp. 15–28). Wegner’s primary aim is to explain, in psychological terms, why we attribute free will to ourselves, why we feel free from the inside. Our aim in this section is to explain, in psychological terms, why we insist on attributing free will to others—and why scientifically minded philosophers, despite persistent efforts, have managed to talk almost no one out of this practice. The findings we review serve as examples of how psychological and neuroscientific data are beginning to characterize the mechanisms that underlie our sense of free will, how these mechanisms can lead us to assume free will is operating when it is not, and how a scientific understanding of these mechanisms can serve to dismantle our commitment to the idea of free will.

Looking out at the world, it appears to contain two fundamentally different kinds of entity. On the one hand, there are ordinary objects that appear to obey the ordinary laws of physics: things like rocks and puddles of water and blocks of wood. These things do not get up and move around on their own. They are, in a word, inanimate. On the other hand, there are things that seem to operate by some kind of magic. Humans and other animals, so long as they are alive, can move about at will, in apparent defiance of the physical laws that govern ordinary matter. Because things like rocks and puddles, on the one hand, and mice and humans, on the other, behave in such radically different ways, it makes sense, from an evolutionary perspective, that creatures would evolve separate cognitive systems for processing information about each of these classes of objects (Pinker 1997). There is a good deal of evidence to suggest that this is precisely how our minds work.

A line of research beginning with Fritz Heider illustrates this point. Heider and Simmel (Heider & Simmel 1944) created a film involving three simple geometric shapes that move about in various ways. For example, a big triangle chases a little circle around the screen, bumping into it. The little circle repeatedly moves away, and a little triangle repeatedly moves in between the circle and the big triangle. When normal people watch this movie they cannot help but view it in social terms (Heberlein & Adolphs 2004). They see the big triangle as trying to harm the little circle, and the little triangle as trying to protect the little circle; and they see the little circle as afraid and the big triangle as frustrated. Some people even spontaneously report that the big triangle is a bully. In other words, simple patterns of movement trigger in people’s minds a cascade of complex social inferences. People not only see these shapes as ‘alive’. They see beliefs, desires, intentions, emotions, personality traits and even moral blameworthiness. It appears that this kind of inference is automatic (Scholl & Tremoulet 2000). Of course, you, the observer, know that it is only a film, and a very simple one at that, but you nevertheless cannot help but see these events in social, even moral, terms.

That is, unless you have damage to your amygdala, a subcortical brain structure that is important for social cognition (Adolphs 1999). Andrea Heberlein tested a patient with rare bilateral amygdala damage using Heider’s film and found that this patient, unlike normal people, described what she saw in completely asocial terms, despite the fact that her visual and verbal abilities are not compromised by her brain damage. Somehow, this patient is blind to the ‘human’ drama that normal people cannot help but see in these events (Heberlein & Adolphs 2004).

The sort of thinking that is engaged when normal people view the Heider–Simmel film is sometimes known as ‘folk psychology’ (Fodor 1987), ‘the intentional stance’ (Dennett 1987) or ‘theory of mind’ (Premack & Woodruff 1978). There is a fair amount of evidence (including the work described above) suggesting that humans have a set of cognitive subsystems that are specialized for processing information about intentional agents (Saxe et al. 2004). At the same time, there is evidence to suggest that humans and other animals also have subsystems specialized for ‘folk physics’, an intuitive sense of how ordinary matter behaves. One compelling piece of evidence for the claim that normal humans have subsystems specialized for folk physics comes from studies of people with autism spectrum disorder. These individuals are particularly bad at solving problems that require ‘folk psychology’, but they do very well with problems related to how physical objects (e.g. the parts of machine) behave, i.e. ‘folk physics’ (Baron Cohen 2000). Another piece of evidence for a ‘folk physics’ system comes from discrepancies between people’s physical intuitions and the way the world actually works. People say, for example, that a ball shot out of a curved tube resting on a flat surface will continue to follow a curved path outside the tube when in fact it will follow a straight path (McCloskey et al. 1980). The fact that people’s physical intuitions are slightly, but systematically, out of step with reality suggests that the mind brings a fair amount of implicit theory to the perception of physical objects.

Thus, it is at least plausible that we possess distinguishable cognitive systems for making sense of the behaviour of objects in the world. These systems seem to have two fundamentally different ‘ontologies’. The folk physics system deals with chunks of matter that move around without purposes of their own according to the laws of intuitive physics, whereas the folk psychology system deals with unseen features of minds: beliefs, desires, intentions, etc. But what, to our minds, is a mind? We suggest that a crucial feature, if not the defining feature, of a mind (intuitively understood) is that it is an uncaused causer (Scholl & Tremoulet 2000). Minds animate material bodies, allowing them to move without any apparent physical cause and in pursuit of goals. Moreover, we reserve certain social attitudes for things that have minds. For example, we do not resent the rain for ruining our picnic, but we would resent a person who hosed our picnic (Strawson 1962), and we resent picnic-hosers considerably more when we perceive that their actions are intentional. Thus, it seems that folk psychology is the gateway to moral evaluation. To see something as morally blameworthy or praiseworthy (even if it is just a moving square), one has to first see it as ‘some-one’, that is, as having a mind.

With all of this in the background, one can see how the problem of attributive free will arises. To see something as a responsible moral agent, one must first see it as having a mind. But, intuitively, a mind is, among other things, an uncaused causer. Consequently, when something is seen as a mere physical entity operating in accordance with deterministic physical laws, it ceases to be seen, intuitively, as a mind. Consequently, it is seen as an object unworthy of moral praise or blame. (Note that we are not claiming that people automatically attribute moral agency to anything that appears to be an uncaused causer. Rather, our claim is that seeing something as an uncaused causer is a necessary but not sufficient condition for seeing something as a moral agent.)

After thousands of years of our thinking of one another as uncaused causes, science comes along and tells us that there is no such thing—that all causes, with the possible exception of the Big Bang, are caused causes (determinism). This creates a problem. When we look at people as physical systems, we cannot see them as any more blameworthy or praiseworthy than bricks. But when we perceive people using our intuitive, folk psychology we cannot avoid attributing moral blame and praise.

So, philosophers who would honour both our scientific knowledge and our social instincts try to reconcile these two competing outlooks, but the result is never completely
satisfying, and the debate wears on. Philosophers who cannot let go of the idea of uncaused causes defend libertarianism, and thus opt for scientifically dubious, ‘panicly metaphysics’. Hard determinists, by contrast, embrace the conclusions of modern science, and concede what others will not: that many of our dearly held social practices are based on an illusion. The remaining majority, the compatibilists, try to talk themselves into a compromise. But the compromise is fragile. When the physical details of human action are made vivid, folk psychology loses its grip, just as folk physics loses its grip when the morally significant details are emphasized. The problem of free will and determinism will never find an intuitively satisfying solution because it arises out of a conflict between two distinct cognitive subsystems that speak different cognitive ‘languages’ and that may ultimately be incapable of negotiation.

8. FREE WILL, RESPONSIBILITY AND CONSEQUENTIALISM

Even if there is no intuitively satisfying solution to the problem of free will, it does not follow that there is no correct view of the matter. Ours is as follows: when it comes to the issue of free will itself, hard determinism is mostly correct. Free will, as we ordinarily understand it, is an illusion. However, it does not follow from the fact that free will is an illusion that there is no legitimate place for responsibility. The consequentialist approach to responsibility, by which the goal of punishment is to give people what they really deserve, does depend on this dubious notion of free will. However, the consequentialist approach does not require a belief in free will at all. As consequentialists, we can hold people responsible for crimes simply because doing so has, on balance, beneficial effects through deterrence, containment, etc. It is sometimes said that if we do not believe in free will then we cannot legitimately punish anyone and that society must dissolve into anarchy. In a less hysterical vein, Daniel Wegner argues that free will, while illusory, is a necessary fiction for the maintenance of our social structure (Wegner 2002, ch. 9). We disagree. There are perfectly good, forward-looking justifications for punishing criminals that do not depend on metaphysical fictions. (Wegner’s observations may apply best to the personal sphere: see below.)

The vindication of responsibility in the absence of free will means that there is more than a grain of truth in compatibilism. The consequentialist approach to responsibility generates a derivative notion of free will that we can embrace (Smart 1961). In the name of producing better results to free will and retributivism are simply inescapable

In a word: retributivism. We have argued that commonsense retributivism really does depend on a notion of free will that is scientifically suspect. Intuitively, we want to punish those people who truly deserve it, but whenever the causes of someone’s bad behaviour are made sufficiently vivid, we no longer see that person as truly deserving of punishment. This insight is expressed by the old French proverb: ‘to know all is to forgive all’. It is also expressed in the teachings of religious figures, such as Jesus and Buddha, who preach a message of universal compassion. Neuroscience can make this message more compelling by vividly illustrating the mechanical nature of human action.

Our penal system is highly counter-productive from a consequentialist perspective, especially in the USA, and yet it remains in place because retributivist principles have a powerful moral and political appeal (Lacey 1988; Tonry 2004). It is possible, however, that neuroscience will change these moral intuitions by undermining the intuitive, libertarian conceptions of free will on which retributivism depends.

As advocates of consequentialist legal reform, it behoves us to briefly respond to the three standard criticisms levied against consequentialist theories of punishment. First, it is claimed that consequentialism would justify extreme over-punishing. As noted above, it is possible in principle that the goal of deterrence would justify punishing violations of the death penalty or framing innocent people to make examples of them. Here, the standard response is adequate. The idea that such practices could, in the real world, make society happier on balance is absurd. Second, it is claimed that consequentialism justifies extreme under-punishment. In response to some versions of this objection, our response is the same as above. Deceptive practices such as a policy of faking punishment cannot survive in a free society, and a free society is required for the pursuit of most consequentialist ends. In other cases consequentialism may advocate more lenient punishments for people who, intuitively, deserve worse. Here, we maintain that a deeper understanding of human action and human nature will lead people—more of them, at any rate—to abandon these retributivist intuitions. Our response is much the same to the third and most general criticism of consequentialist punishment, which is that even when consequentialism gets the punishment policy right, it does so for the wrong reasons. These supposedly right reasons are reasons that we reject, however intuitive and natural they may feel. They are, we maintain, grounded in a metaphysical view of human action that is scientifically dubious and therefore an unfit basis for public policy in a pluralistic society.

Finally, as defenders of hard determinism and a consequentialist approach to responsibility, we should briefly address some standard concerns about the rejection of free will and concepts of responsibility that depend on it. First, does not the fact that you can raise your hand ‘at will’ prove that free will is real? Not in the sense that matters. As Daniel Wegner (2002) has argued, our first-person sense of the law can make this message more compelling by vividly illustrating the mechanical nature of human action.

A more serious challenge is the claim that our commitments to free will and retributivism are simply inescapable.
for all practical purposes. Regarding free will, one might wonder whether one can so much as make a decision without implicitly assuming that one is free to choose among one's apparent options. Regarding responsibility and punishment, one might wonder if it is humanly possible to deny our retributive impulses (Strawson 1962; Pettit 2002). This challenge is bolstered by recent work in the behavioural sciences suggesting that an intuitive sense of fairness runs deep in our primate lineage (Brosnan & De Waal 2003) and that an adaptive tendency towards retributive punishment may have been a crucial development in the biological and cultural evolution of human sociality (Fehr & Gachter 2002; Boyd et al. 2003; Bowles & Gintis 2004). Recent neuroscientific findings have added further support to this view, suggesting that the impulse to exact punishment may be driven by phylogenetically old mechanisms in the brain (Sanfey et al. 2003). These mechanisms may be an efficient and perhaps essential, device for maintaining social stability. If retributivism runs that deep and is that useful, one might wonder whether we have any serious hope of, or reason for, getting rid of it. Have we any real choice but to see one another as free agents who deserve to be rewarded and punished for our past behaviours?

We offer the following analogy: modern physics tells us that space is curved. Nevertheless, it may be impossible for us to see the world as anything other than flatly Euclidean in our day-to-day lives. And there are, no doubt, deep evolutionary explanations for our Euclidean tendencies. Does it then follow that we are forever bound by our innate Euclidean psychology? The answer depends on the domain of life in question. In navigating the aisles of the grocery store, an intuitive, Euclidean representation of space is not only adequate, but probably inevitable. However, when we are, for example, planning the launch of a spacecraft, we can and should make use of relativistic physical principles that are less intuitive but more accurate. In other words, an Euclidean perspective is not necessary for all practical purposes, and the same may be true for our implicit commitment to free will and retributivism. For most day-to-day purposes it may be pointless or impossible to view ourselves or others in this detached sort of way. But—and this is the crucial point—it may not be pointless or impossible to adopt this perspective when one is deciding what the criminal law should be or whether a given defendant should be put to death for his crimes. These may be special situations, analogous to those routinely encountered by 'rocket scientists', in which the counter-intuitive truth that we legitimately ignore most of the time can and should be acknowledged.

Finally, there is the worry that to reject free will is to render all of life pointless: why would you bother with anything if it has all long since been determined? The answer is that you will bother because you are a human, and that is what humans do. Even if you decide, as part of a little intellectual exercise, that you are going to sit around and do nothing because you have concluded that you have no free will, you are eventually going to get up and make yourself a sandwich. And if you do not, you have got bigger problems than philosophy can fix.


9. CONCLUSION

Neuroscience is unlikely to tell us anything that will challenge the law's stated assumptions. However, we maintain that advances in neuroscience are likely to change the way people think about human action and criminal responsibility by vividly illustrating lessons that some people appreciated long ago. Free will as we ordinarily understand it is an illusion generated by our cognitive architecture. Retributivist notions of criminal responsibility ultimately depend on this illusion, and, if we are lucky, they will give way to consequentialist ones, thus radically transforming our approach to criminal justice. At this time, the law deals firmly but mercifully with individuals whose behaviour is obviously the product of forces that are ultimately beyond their control. Some day, the law may treat all convicted criminals this way. That is, humanly.

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ENDNOTES

1 Of course, scientific respectability is not everyone's first priority. However, the law in most Western states is a public institution designed to function in a society that respects a wide range of religious and otherwise metaphysical beliefs. The law cannot function in this way if it presupposes controversial and unverifiable metaphysical facts about the nature of human action, or anything else. Thus, the law must restrict itself to the class of intersubjectively verifiable facts, i.e. the facts recognized by science, broadly construed. This practice need not derive from a conviction that the scientifically verifiable facts are necessarily the only facts, but merely from a recognition that verifiable or scientific facts are the only facts upon which public institutions in a pluralistic society can effectively rely.

2 There are some forms of dualism according to which the mind and body, although distinct, do not interact, making it impossible for the mind to have any observable effects on the brain or anything else in the physical world. These versions of dualism do not concern us here. For the purposes of this paper, we are happy to allow the metaphysical claim that souls or aspects of minds may exist independently of the physical body. Our concern is specifically with interactionist versions of dualism according to which non-physical mental entities have observable physical effects. We believe that science has rendered such views untenable and that the law, insofar as it is a public institution designed to serve a pluralistic society, must not rely on beliefs that are scientifically suspect (see previous endnote).

3 It is conceivable that rationality could someday be redefined in neurocognitive rather than behavioural terms, much as water has been redefined in terms of its chemical composition. Were that to happen, neuroscientific evidence could then be construed as more direct than behavioural evidence. But Steinberg and Scott's argument appears to make use of a conventional, behavioural definition of rationality and not a neurocognitive redefinition.

4 This is not to say that we could not describe Mr Puppet in such a way that our intuitions about him would change. Our point is only that, when the details are laid bare, it is very hard to see him as morally responsible.

5 Compatibilist philosophers such as Daniel Dennett (2003) might object that the story of Mr Puppet is nothing but a misleading 'intuition pump'. Indeed, this is what Dennett says about a similar case of Alfred Mele's (1995). We believe that our case is importantly different from Mele's. Dennett and Mele imagine two women who are psychologically identical: Ann is a typical, good person, whereas Beth has been brainwashed to be just like Ann. Dennett argues, against Mele, that if you take seriously the claim that these two are psychologically identical and properly imagine that Beth is as rational, open-minded, etc. as Ann, you will come to see that the two are equally free. We agree with Dennett that Ann and Beth are comparable and that

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Mele’s intuition falters when the details are fleshed out. But does the same hold for the intuition provoked by Mr Puppet’s story? It seems to us that the more one knows about Mr Puppet and his life the less inclined one is to see him as truly responsible for his actions and our punishing him as a worthy end in itself. We can agree with Dennett that there is a sense in which Mr Puppet is free. Our point is merely that there is a legitimate sense in which he, like all of us, is not free and that this sense matters for the law.

We do not wish to imply that neuroscience will inevitably put us in a position to predict any given action based on a neurological examination. Rather, our suggestion is simply that neuroscience will eventually advance to the point at which the mechanistic nature of human decision-making is sufficiently apparent to undermine the force of dualist/libertarian intuitions.

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Empirically derived algorithm for performance validity assessment embedded in a widely used neuropsychological battery: Validation among TBI patients in litigation

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PLEASE SCROLL DOWN FOR ARTICLE
Empirically derived algorithm for performance validity assessment embedded in a widely used neuropsychological battery: Validation among TBI patients in litigation

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Introduction: Validity of neuropsychological assessment depends, inter alia, on the cooperation of the examinee, requiring separate assessment. Stand-alone tests devised for detecting negative response bias (NRB) are exposed to potential threats to their validity. In this study, an algorithm was developed for assessing NRB within a standardized, computerized neuropsychological battery (NeuroTrax), making it difficult to detect and circumvent.

Method: Data were collected from the archived medical records of 75 outpatients with mild to moderate head injury, all in litigation. Participants were classified as low or high likelihood for NRB, using a known test for effort assessment (Test of Memory Malingering).

Results: Variables judged to be prone for exaggeration and showing large differences between the groups were entered into a logistic regression analysis. The resulting formula exhibited high specificity (98.0%) and sensitivity (87.5%), classifying correctly 94% of the cases.

Conclusion: It is suggested that the algorithm developed empirically using scores on the NeuroTrax computerized battery can be a useful tool for assessing effort. This algorithm should resist threats to its validity and can be automatically computed while assessing a range of cognitive skills.

Keywords: Malingering; Computerized testing; Neuropsychological test validity; Test of Memory Malingering; NeuroTrax.

Psychological assessment in general and neuropsychological evaluation in particular are dependent to a large extent on the examinee’s cooperation and her or his genuine test-taking attitude. Consequently, assessment of the tendency to respond disingenuously, known as Negative Response Bias (NRB), constitutes an essential part of the standard neuropsychological evaluation and requires measures of high sensitivity and specificity (Arnold et al., 2005).

The central role of motivation in neuropsychological assessment is well known and is reflected in the large number of publications dealing with this topic (e.g. Binder, 1993; Frederick, 2003; Heilbrunner et al., 2009; Larrabee, 2000; Silk-Eglt, Stencilik, Miele, Lynch, & McCaffrey, 2015; Sugarman & Axelrod, 2015; see also Seron, 2014, for an extensive review Young, 2014). Measuring motivation is now known as performance validity testing (PVT). One prominent example is the Test of Memory Malingering (TOMM; Glen M. Doniger is affiliated with NeuroTrax TM, Texas. No other conflict of interest was declared by all the other authors. This study was not funded. Address correspondence to: Moran Bar-Hen, Department of Psychology, Ben-Gurion University of the Negev, P.O.B. 653, Beer Sheva 84105, Israel (E-mail: moranbar@post.bgu.ac.il).
In view of the above, several studies were constructed to provide algorithms to detect NRB embedded in scores of conventional paper-and-pencil neuropsychological tests. Examples of such embedded algorithms within paper-and-pencil tests include the California Verbal Learning Test-II (Millis, Putnam, Adams, & Ricker, 1995); The Raven Standardized Progressive Matrices (Ding, Gao, & Liu, 2002), the Trail Making Test, and the Stroop Test (Egeland & Langfjaeran, 2007), among others. These studies reported reasonable success in detecting NRB. Therefore, NRB detection using standard neuropsychological tests may save time, while providing information on PVT, since they simultaneously measure cognitive functions and the validity of test performance. This approach is also useful when evaluating data from previous assessments, in which symptom validity tests were not administered. In addition, the use of standard neuropsychological tests with embedded algorithm for detecting NRB is useful and improves upon stand-alone NRB tools in cases where the examinee may detect the purpose of a stand-alone NRB assessment tool, performs well on it, while faking poor performance on other tests in the battery.

Computerized neuropsychological assessment is a growing field that capitalizes on the ability of computers to provide standardized administration, rapid, errorless scoring, and reporting of results (cf. Bauer, Iverson, Cernich, Binder, Ruff, & Naugle, 2012). However, like any neuropsychological diagnostic instruments, computerized batteries are vulnerable to poor cooperation and negative response bias. In fact, since patients are typically placed in front of a computer screen, often with minimal supervision, such computerized batteries may be more susceptible to validity threats, such as poor cooperation and effort due to boredom and NRB. For example, on computerized tests, it may not be easy for the examiner to re-focus a patient whose attention has wandered from the task on the screen due to boredom, fatigue, or wavering attention due to pathology. These threats to the validity of computerized batteries may be addressed with stand-alone tests specifically devised to measure performance validity, but the validity of the tests themselves may be compromised, and they take additional testing and scoring time, as noted above. Moreover, as stand-alone NRB tests constitute a separate testing event, it may not provide accurate “online” information regarding the patient’s effort on the actual assessment tool. Accordingly, Kertzman et al. (2006) suggested using real-time computerized neuropsychological assessment for malingering detection, rather than traditional pen-and-paper tests. Such assessment provides more objective and precise results and permits detection of any anomalous performance pattern by the examinee in real time. In addition, computerized assessment enables analysis not only of the final results, but also of the trial-by-trial, level-by-level, and/or test-by-test performance pattern. Thus, in a recently published study, Brooks, Sherman, and Iverson (2014) attempted to employ an embedded algorithm used by a commercially available computerized battery (CNS Vital Signs) to detect poor effort in children with neurological disorders, though they noted its low sensitivity.

Computerized neuropsychological screening batteries are often used in the outpatient clinic for...
economic reasons, for expedience, and in order to obtain preliminary clinical picture of the patient’s neuropsychological status for rehabilitative purposes. Given the necessity of evaluating negative response bias on a standardized computerized neuropsychological battery (NeuroTrax) and the advantage over stand-alone instruments for performance validity estimation, we devised the present study. In an earlier study (Hegedish, Doniger, & Schweiger, 2012), we attempted to create such an algorithm based on scores obtained from the NeuroTrax battery, but the participants were students instructed to simulate the performance of brain-damaged patients. Although that algorithm demonstrated reasonable specificity and sensitivity, it is necessary to validate such an algorithm and determine its clinical utility in the clinical population.

Thus, the present study was designed to develop and evaluate the performance of such an embedded algorithm, which is sufficiently complex yet should demonstrate relatively good sensitivity and specificity in a clinical population, by examining its efficiency in assessing NRB “on line” in patients. Our purpose was to provide a measure of response bias using the advantages of the computerized platform (such as standardized administration and scoring, no special test material required, results available immediately), so that the determination of performance validity can be culled from the actual performance on the battery, rather than from a stand-alone instrument administered independently.

The aforementioned issues with stand-alone tests notwithstanding, we used in this study a well-known, widely researched NRB instrument (the Test of Memory Malingering, or TOMM, Tombaugh, 1996), as the gold standard, against which the algorithm developed from the computerized battery was validated. It should be kept in mind that the purpose of the present study was to provide PVT embedded in regular cognitive assessment, as a quick indication of the examinee’s test-taking attitude, in the context of a computerized neuropsychological screening.

METHOD

Participants

Data were collected anonymously from the archived medical records of 75 outpatients (mean age = 36.26 ± 12.27 years) from an outpatient unit for traumatic brain injury (TBI) at Loewenstein Rehabilitation Hospital (Israel) archive, and from NYC Medical & Neurological Clinic (New York). Permission for the study was given by the appropriate Institutional Review Board. All participants reported general cognitive impairments due to a history of mild to moderate head injury, and all were in litigation. Classification of TBI severity was done using the guidelines of the Department of Defense and Department of Veterans Affairs (2008). Thus, “mild” TBI was defined as having reports of loss of consciousness (LOC) 0 to 30 min, with a Glasgow Coma Scale score of 13 to 15; “moderate” TBI was defined as LOC duration longer than 30 min, but less than 24 hours, Glasgow Coma Scale of 9 to 12. Posttraumatic amnesia data were not available on most patients.

In the low likelihood of NRB (low-NRB) group (see below), 87% and 13% were classified as mild and moderate, respectively; in the high likelihood of NRB (high-NRB), 70% were classified as mild. Since the TOMM was found to be relatively insensitive to TBI (Rees, Tombaugh, Gansler, & Moczynski, 1998), we combined the data for mild and moderate TBI participants. See also discussion of this issue in Greve, Bianchini, and Doane (2006).

Participants were tested on the NeuroTrax and in the postacute stage (between one month to one year post injury) and in their native language (Hebrew/English/Spanish/Russian), as part of the intake process. The participants were classified into two groups, based on their performance on the Test of Memory Malingering scores (cutoff: TOMM, Trial 2 score <45, Tombaugh, 1996): cognitively impaired with low likelihood for NRB (low-NRB) and cognitively impaired with high likelihood for NRB (high-NRB). Fifty-one participants (mean age = 38.11 ± 13.6 years; 68.6% males) comprised the low-NRB group, and 24 participants (mean age = 32.33 ± 8.95 years; 62.5% males) comprised the high-NRB group. Inclusion criteria consisted of: (a) participants older than 18 years and younger than 65 years of age; (b) no history of significant psychiatric problems; (c) no current abuse of legal or illegal substances that significantly affect cognitive functioning; (d) no history of significant psychiatric problems; (e) time from injury no less than one month; (f) demonstrated ability to follow written instructions on the NeuroTrax. Exclusion criteria were: no severe head injuries (as defined above). Participants were tested in their native language: English (34 participants), Hebrew (32), Spanish (5), and Russian (4). The distribution of language between the high- and low-NRB was not significant (for high- and low-NRB respectively: English, 18% and 82%; Hebrew, 44% and 56%; Spanish, 33% and 67%; Russian, 25% and 75%). Data for all languages were
combined for the analyses, since analyses of the multicultural normative database showed that the language factor accounted for less than 5% of the variance in the sample (see Neurotrax Manual).

Procedure

All participants completed the NeuroTrax™ computerized neuropsychological battery (Dwolatzky et al., 2003) and the TOMM as part of a routine procedure during the intake phase.

Clinical measures

The Test of Memory Malingering (TOMM, Tombaugh, 1996) consists of forced-choice recognition of 50 line drawings of common objects. The targets are presented for 3 s each during each of the two learning trials. Following each learning trial, the participant is asked to choose the picture she or he saw previously from among two alternatives, one of which is the previously presented picture and the other of which is a novel one; after each response, the examinee is given immediate feedback. The second learning trial is identical to the first learning trial. If the participant correctly identifies 45 or more pictures on the two learning trials, the retention trial is not administered. A cutoff score of <45 for Trial 2 and the retention trial was used, then, to classify optimal effort and to identify participants with NRB (Tombaugh, 1997).

NeuroTrax computerized neuropsychological battery (NeuroTrax Corp., Texas, formerly known as “MindStreams”) is a standardized set of computerized neuropsychological tests for cognitive assessment (Dwolatzky et al., 2003). Skills assessed are verbal and nonverbal memory, attention, information processing speed, visual–spatial processing, verbal function, motor skill, and executive function. Administration time is about 60 min. The NeuroTrax data report consists of raw data, as well as age- and education-adjusted normalized scores ($M = 100, SD = 15$). Depending upon the test, outcome parameters included are percentage accuracies and mean response times (computed from correct trials only). Test–retest reliability coefficients ranged from .64 to .84 (Schweiger, Doniger, Dwolatzky, Jaffe, & Simon, 2003). Due to the wide range of ages in the sample, standardized outcome parameter scores ($M = 100, SD = 15$) were the primary dependent variables in the current study.

The computerized tests have strong construct validity and have been used in several populations, including mild cognitive impairment, dementia (Doniger et al., 2005; Schweiger et al., 2003), attention-deficit/hyperactivity disorder (ADHD; Schweiger, Abramovitch, Doniger, & Simon, 2007), TBI (Doniger, Simon, & Schweiger, 2008), multiple sclerosis (Achiron et al., 2007), Parkinson disease (Hausdorff et al., 2006), obsessive-compulsive disorder (OCD; Abramovitch, Dar, Schweiger, & Hermesh, 2011), and schizophrenia (Gibel & Ritsner, 2008).

The data report provides index scores for each cognitive domain (memory, attention, executive function, psychomotor skills, visuospatial processing, verbal function, information processing speed, and a global performance score). The following NeuroTrax tests were used in this study:

Verbal memory

Participants are presented with 10 pairs of words, followed by a recognition test in which one member (the target) of a previously presented pair appears together with a list of four candidates for the other member of the pair. Participants must indicate which word of the four alternatives was paired with the target when presented previously. Four consecutive immediate recognition trials are presented during the “learning” phase, and an additional recognition test is administered following a delay period of approximately 10 min. Outcome parameters include accuracy for each recognition trial, and total accuracy across these repetitions and for the delayed phase.

Nonverbal memory

Participants are presented with eight images followed by the recognition test, which includes the target image together with similar images of three different orientations. The participants are required to remember the original image orientation. Four immediate recognition tests are presented, and an additional recognition test is administered following a delay period of approximately 10 min. Outcome parameters include accuracy for each recognition trial and for the delayed phase.

Go/no-go response inhibition

Participants are presented with a series of large colored squares and are required to respond as fast as possible by clicking the computer mouse to a sequence of colored squares (blue, green, and white), presented one at a time, but to do nothing when a red square appears on the screen. Outcome parameters include accuracy, response time and its associated variance, a composite score, number of errors of omission, number of errors of
commission, and mean response time associated with errors of commission.

**Stroop test**

A computerized version of the well-known Stroop test (Stroop, 1935), consisting of three levels, was used. In the first phase, participants are presented with a general word in colored letters and are asked to choose the color of the letters from among two alternatives. In the next phase, participants are presented with a word that names a color in white letters and are asked to select the color. In the final level (Stroop phase) the participants are presented with words that name colors but with a letter-color that differs from the color named by the word and are required to choose the color of the letters as fast as possible, and not the color named by the word. Outcome parameters for each phase include accuracy, response time and its associated variance, and a composite score.

**Visual–spatial processing**

Computer-generated scenes containing a red pillar are presented. Participants are instructed to imagine standing at the location of the red pillar and to select the view of the scene from the location of the red pillar. Outcome parameter is a total accuracy score.

**Verbal function**

Rhyming phase: Participants are instructed to select from four options the word that rhymes with a name of a common object shown on the screen. Naming phase: Participants are instructed to select the name of the object in the picture from four options. Outcome parameters include rhyming and naming accuracy.

**Staged information processing speed**

The test is composed of three levels of information processing load: single digits, two-digit arithmetic problems (e.g., 5 – 1), and three-digit arithmetic problems (e.g., 3 + 2 – 1), each level at three blocks with increasing speeds. Participants are asked to press the left mouse key as fast as possible if the digit or the result is less than or equal to 4 and the right mouse button if it is greater than 4. Outcome parameters for each rate increment for each level include accuracy, response time and its associated variance, and a composite score.

**Finger tapping**

Participants are instructed to tap on the mouse button as many times as possible for 12 s with their dominant hand. The test is repeated twice. Outcome parameters include intertap interval and associated variance (in milliseconds).

**“Catch” game**

Participants are presented with a rectangular white object falling vertically from the top of the screen and are asked to “catch” the falling object before it reaches the bottom of the screen by moving a green “paddle” horizontally using the mouse buttons. The object falls progressively more rapidly as the test continues. Outcome parameters include response time and associated variance for the first move, number of direction changes per trial, error for missed catches, and a total performance score.

**Problem solving**

Participants are presented with an incomplete pattern consisting of three simple geometric forms. Participants are asked to select the best fit for the fourth (missing) form from six possible alternative forms. This test is somewhat similar to the familiar Raven’s Standard Progressive Matrices Test and is considered relatively resistant to neurological impairment (Doniger et al., 2008). Outcome parameter is the total accuracy score.

**Statistical Analysis**

In order to address differences in age and education across the groups, and to permit averaging performance across different types of outcome parameters, each computerized outcome parameter is normalized by age and education and converted to an IQ scale (mean = 100, SD = 15) using a normative database of cognitively intact individuals as the reference sample of the Neurotrax battery online. Since it is expected that high-NRB patients may perform poorly on all tests, which may produce low scores indistinguishable from very impaired patients, we analyzed tests consisting of multiple levels (verbal and nonverbal memory, Stroop test, and staged information processing test), in order to identify patterns of performance atypical for very impaired patients who performed with low negative bias. Thus we analyzed with mixed-model analyses of variance (ANOVA; within-groups factor: test level; between-groups factor: group).
in order to evaluate the interaction between test level and group. Logistic regression and receiver operating characteristic (ROC) were utilized in order to construct a classification model for the variables that best discriminate between low-NRB and high-NRB. Multivariate discriminant function analysis (DFA) was conducted in order to cross validate the results of Hegedish et al. (2012), final model formula (information processing speed test: accuracy; response time, RT; and accuracy/response time × 100). All analyses were conducted with alpha level set at \( p < .05 \), using SPSS statistical software (SPSS 20, 2011; Chicago, IL).

RESULTS

Demographic Analysis

The groups did not differ significantly in terms of gender distribution, \( \chi^2(1) = 0.27, p > .60 \), or age, as presented in Table 1: low-NRB males = 68.6%, mean age = 38.11 years, SD = 13.22; high-NRB males = 62.5%, mean age 32.33 years, SD = 8.95.

Summary of Cognitive Measure Analysis

The index scores and global score from the computerized cognitive tests for each group are presented in Table 1. One-way ANOVAs yielded significant group differences on all NeuroTrax summary scores (\( p < .01 \)). It can be seen that even the low-NRB performed below average, as expected even from mildly brain-damaged patients.

Demographic characteristics and NeuroTrax summary scores for High and Low likelihood for NRB groups

**Verbal memory**

On the verbal memory test, mixed-model ANOVAs (within-group factors: test level; between-groups factor: group) yielded significant effects of group, \( F(1, 73) = 45.39, p < .001 \), of test level, \( F(4, 292) = 6.02, p < .001 \), and of Group × Test Level interaction, \( F(4, 292) = 2.85, p < .05 \). Inspection of Figure 1 and pairwise comparisons (least significant difference, LSD, \( p < .05 \)) indicated that the interaction was mainly due to the differences between the two groups in Repetition 1 compared to delayed recognition. This pattern implies that the high-NRB group did not improve across repetition trials. Moreover, the high-NRB group showed a decline on the delayed recognition trial and achieved lower scores than on the first learning stage. The low-NRB group showed the expected pattern of statistically even normalized scores (that is, improvement in raw scores, albeit below average normalized scores). Thus we used the first repetition and delayed recognition to represent the differences between the two groups in the final logistic regression analysis.

**Nonverbal memory**

Similar to the verbal memory test, there were significant effects of group, \( F(1, 73) = 17.30, p < .001 \), and of test level, \( F(4, 292) = 12.75, p < .001 \), as well as for Group × Test Level interaction, \( F(4, 292) = 5.55, p < .001 \), on the nonverbal test. Therefore we used the first repetition and delayed recognition to represent the differences between the two groups in the final logistic regression analysis.

**Stroop test: Response time**

We used only the noninterference levels without the interference Stroop effect (name the color of words that spell another color name): The repeated measure ANOVA for normalized response time (RT) measure revealed a significant effect of group, \( F(1, 73) = 11.57, p < .01 \), and of test level, \( F(1, 73) = 4.34, p < .05 \), but

<table>
<thead>
<tr>
<th>Characteristics and index scores</th>
<th>L-NRB ( (N = 51) )</th>
<th>H-NRB ( (N = 51) )</th>
<th>( F(1, 50) )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>38.11 (13.22)</td>
<td>32.33 (8.95)</td>
<td>3.76</td>
<td>.056</td>
</tr>
<tr>
<td>Global cognitive score</td>
<td>85.15 (15.63)</td>
<td>61.05 (16.12)</td>
<td>38.02**</td>
<td>.000</td>
</tr>
<tr>
<td>Memory</td>
<td>78.66 (24.42)</td>
<td>43.31 (15.38)</td>
<td>42.21**</td>
<td>.000</td>
</tr>
<tr>
<td>Executive function</td>
<td>83.52 (22.05)</td>
<td>64.30 (22.91)</td>
<td>12.09**</td>
<td>.001</td>
</tr>
<tr>
<td>Visual–spatial function</td>
<td>96.56 (18.02)</td>
<td>73.95 (21.96)</td>
<td>22.76**</td>
<td>.000</td>
</tr>
<tr>
<td>Verbal</td>
<td>81.83 (29.64)</td>
<td>59.85 (30.66)</td>
<td>8.78**</td>
<td>.004</td>
</tr>
<tr>
<td>Attention</td>
<td>78.25 (22.25)</td>
<td>56.50 (22.93)</td>
<td>15.28**</td>
<td>.000</td>
</tr>
<tr>
<td>Information processing speed</td>
<td>77.10 (26.62)</td>
<td>61.81 (17.60)</td>
<td>6.54**</td>
<td>.013</td>
</tr>
<tr>
<td>Motor skills</td>
<td>83.86 (31.96)</td>
<td>64.04 (33.36)</td>
<td>6.10**</td>
<td>.016</td>
</tr>
<tr>
<td>Problem solving</td>
<td>87.28 (27.23)</td>
<td>66.76 (25.19)</td>
<td>9.25**</td>
<td>.003</td>
</tr>
</tbody>
</table>

Note. NRB = negative response bias; H = high; L = low. **\( p < .01 \).
not of Group × Test Level interaction, \(F(1, 73) = 0.67, p > .05\).

**Stroop test: Accuracy**

A repeated measure ANOVA for normalized Stroop accuracy measures revealed a significant main effect of group, \(F(1, 73) = 7.11, p < .01\), but not for overall test level, \(F(2, 146) = 0.67, p > .05\). There was a significant Group × Test Level interaction, \(F(2, 146) = 3.83, p < .05\). Figure 2 shows the performance curve for accuracy of each group on the three trials of the Stroop test. Inspection of Figure 2 and follow-up analyses with pairwise comparisons (LSD, \(p < .05\)) indicated that the interaction was due to significant difference between the groups in the word reading level when compared to the interference level, \(F(1, 73) = 6.45, p < .05\), and between color naming and word reading, \(F(1, 73) = 4.96, p < .05\). The high-NRB group showed increase in accuracy between the word meaning level (no interference) and the Stroop interference level. In contrast, the low-NRB showed decrease in accuracy between the word meaning and interference phase. We used the following formula to quantify this pattern in the final logistic analysis: Stroop accuracy scaled scores = interference levels – word reading level.

In order to construct an algorithm for distinguishing between high- and low-NRB groups, logistic regression analysis was conducted in an attempt to classify the two participant groups. Logistic regression was chosen since it could not be assumed that all the predictor variables are equally normally distributed, or that the variances are equal in our patient populations. We used the subtests that showed significant interactions as described above. That is, variables showing unusual performance patterns for high-NRB, relative to those produced by low-NRB patients, were entered into the analysis: From verbal memory, first immediate repetition and delayed recognition; from nonverbal memory, third and fourth immediate repetitions; Stroop accuracy: interference levels – word reading level.

Three additional variables were entered into the logistic regression analyses on empirical grounds, as they all showed significant differences between high- and low-NRB patients on the ANOVAs as follows: (a) finger tapping (FT): \(p = .016\); (b) Problem Solving (PS): \(p = .003\); (c) visual–spatial accuracy (VS): \(p = .000\). Prior studies on the role of detecting malingering with the finger tapping test supported the inclusion of FT in the analysis (Arnold et al., 2005; Larrabee, 2003; Mittenberg, Tremont, Zielinski, Fichera, & Rayls, 1996; Papport, Farchione, Coleman, & Axelrod, 1998). Likewise, a previous study (Ding
et al., 2002) found that the pattern of performance in five subtests of Raven’s Standard Progressive Matrices (RSPM; Raven & De Lemos, 1958) showed differences between malingering and nonmalingering TBI patients. Being a test of matrices, as well as showing a significant difference between high- and low-NRB, motivated the inclusion of this variable as well. The inclusion of the visual–spatial processing test was motivated by its large difference between high- and low-NRB patients, as well as by its assumed ecological validity (it requires processing features such as depth, shape, and size and may be an accurate measurement of these abilities in the real world).

The logistic regression yielded a significant model, $\chi^2(8) = 64.854, p = .000$. Table 2 shows the regression coefficients, Wald statistics, odds ratios, and 95% confidence intervals for the odds ratios, $\exp(\beta)$, for the NeuroTrax parameters chosen as predictor variables.

The final model classified correctly 94.7% of cases, with 87.5% sensitivity and 98.0% specificity. The classification matrix is provided in Table 3. Figure 3 displays the receiver operating characteristics (ROC) curve for discrimination between high and low likelihood for NRB, using the final probabilities from the logistic regression. The area under the ROC curve (AUC) was calculated to be .969 ($p = .000$), reflecting outstanding discrimination (Larrabee & Berry, 2007) between patients who were high and low for NRB.

**Cross-validation of Hegedish et al. (2012)**

Multivariate discriminant function analysis (DFA) was conducted in order to cross-validate the model developed in the previous study (Hegedish et al., 2012), which included three variables from the information processing speed test: accuracy, RT, and accuracy/response time $\times$ 100. The results of the DFA on the present cohort did not yield a significant discriminant effect, Wilks’s lambda $\lambda = .985$, $\chi^2(3) = 1.083, p > .05$, between the low and high likelihood for NRB among the patients of the present study. This previous DFA model, used on the present group, exhibited rather low sensitivity

**TABLE 2**

<table>
<thead>
<tr>
<th>Variables</th>
<th>$\beta$</th>
<th>Wald $\lambda$</th>
<th>$p$</th>
<th>$\exp(\beta)$</th>
<th>95% Confidence interval for $\exp(\beta)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal memory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st immediate repetition</td>
<td>−0.055</td>
<td>3.340</td>
<td>.068</td>
<td>0.946</td>
<td>[0.892, 1.004]</td>
</tr>
<tr>
<td>Delayed recognition</td>
<td>−0.077</td>
<td>5.934</td>
<td>.015</td>
<td>0.926</td>
<td>[0.870, 0.985]</td>
</tr>
<tr>
<td>Nonverbal memory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd immediate repetition</td>
<td>0.177</td>
<td>5.103</td>
<td>.024</td>
<td>1.193</td>
<td>[1.024, 1.391]</td>
</tr>
<tr>
<td>4th immediate repetition</td>
<td>−0.172</td>
<td>5.913</td>
<td>.015</td>
<td>0.842</td>
<td>[0.734, 0.967]</td>
</tr>
<tr>
<td>Stroop accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interference – word level</td>
<td>0.089</td>
<td>6.886</td>
<td>.009</td>
<td>1.093**</td>
<td>[1.023, 1.168]</td>
</tr>
<tr>
<td>Finger tapping</td>
<td>0.014</td>
<td>1.267</td>
<td>.260</td>
<td>0.986</td>
<td>[0.961, 1.011]</td>
</tr>
<tr>
<td>Problem solving</td>
<td>0.061</td>
<td>3.726</td>
<td>.054</td>
<td>1.063</td>
<td>[0.999, 1.031]</td>
</tr>
<tr>
<td>Visual–spatial</td>
<td>−1.21</td>
<td>4.201</td>
<td>.040</td>
<td>0.886</td>
<td>[0.789, 0.995]</td>
</tr>
</tbody>
</table>

**Note.** NRB = negative response bias; H = high; L = low.
(68%) in detecting the high-NRB group and poor specificity, as it classified all the participants as low-NRB. This poor performance of the algorithm of the 2011 study is likely due to the present use of real-life patients, all involved in litigation, as opposed to students simulating cognitive impairment.

**DISCUSSION**

The present study was designed in order to develop the means of detecting NRB surreptitiously, as part of a standardized, computerized screening battery, thus reducing the risk to the validity of neuropsychological status estimation. This was achieved by developing an algorithm embedded in the standard assessment, confirmed by a widely used and accepted NRB instrument. Thus the current study used known-groups design to detect unusual performance patterns associated with NRB on the NeuroTrax computerized battery. The known-group design has important clinical value by addressing participants with seeming incentive for poor effort (Rogers, 2008). Previous studies reported suboptimal effort among patients with mild traumatic brain injury (mTBI) involved in compensation procedures, compared with patients who sustained moderate to severe head injuries and neurological disease. Moreover, effort explained about 53% of the variance and was found to have a greater effect on assessment results than the severity of the brain injury itself (Binder, 1993; Constantinou et al., 2005; Green et al., 2001; Larrabee, 2000). In the current study, all the participants reported general cognitive impairments due to a history of mild to moderate head injury, all of them in litigation.

Generally speaking, malingers tend to perform worse than patients with low-NRB on memory recognition tests, such as forced-choice recognition tasks, and on timed tests, such as finger tapping (Beetar & Williams, 1995). Memory recognition tests have been frequently used in studies with suspected malingering populations, as memory deficits seem to be a common complaint in neuropsychological assessment (Brandt, 1988). In addition, memory impairment is well known among the general population as a symptom of brain injury and is reported to be the most frequently feigned strategy (Tan, Slick, Strauss, & Hultsch, 2002). In the present study, recognition tests showed an atypical learning pattern among the high-NRB group: On the verbal memory recognition task, the high-NRB group showed a decline in performance with repetition trials. Moreover, the high-NRB group showed a decline on the delayed recognition trial and achieved lower scores than on the first learning trial. The learning curve of the high NRB seems to violate the normal pattern of improvement with repetition (as shown also by our low-NRB patients), and their performance was worse than chance level on the delayed recognition trial. It was suggested that in multiple-choice recognition tasks, similar to the memory tasks used in this study, participants can easily choose the incorrect distractor in a way that can lead to performance even worse than chance (Rogers, Harrell, & Liff, 1993).

Similarly, atypical performance was shown on the nonverbal memory task, as the high-NRB group did not improve in their scores with repeated exposure of the material to be learned, and contrary to the normal learning pattern, they even showed a decline over time. The high-NRB performance on memory tests in our study is consistent with studies examining the California Verbal Learning Test–Second Edition (CVLT) learning slope, suggesting that it is an effective measurement of negative response bias following head trauma (Millis et al., 1995; Moore & Donders, 2004; Sweet et al., 2000.) We used this analysis for the Stroop test, by comparing the more difficult interference task to the easy control run, in which only simple reading of word meaning is involved. Once again, the high-NRB group exhibited atypical performance, by performing with lower accuracy on the easier task of responding to color word meaning (no interference) than on the more challenging Stroop interference part. Thus, performance of the high-NRB group failed to exhibit the well-known “Stroop effect.” The “interference Stroop effect” (naming the color of the letters in a word that spells another color name) requires inhibition of an automatic reading response and selectively attending to the color, which normally slows down response times and accuracy. This finding is consistent with findings from Osimani, Alon, Berger, and Abarbanel (1997) and Egeland and Langjaeran (2007), suggesting that the Stroop test can be a useful measure for detecting negative response bias.

As mentioned earlier, poor performance on timed tasks is a common strategy among malingers (Beetar & Williams, 1995; Rogers et al., 1993). In contrast to our hypothesis and previous studies, our results did not yield significant (Group × Test Level) interaction for Stroop RT, nor for the information processing speed RT subtsts. Apparently, our low-NRB patients performed poorly on timed tasks as well, thus rendering this dimension noncontributory to differentiation between our groups.
The current study also aimed to cross-validate the findings of Hegedish et al. (2012) among simulating participants. Hegedish et al. (2012) compared coached simulator and nonsimulator (healthy and cognitively impaired) control groups and found performance patterns associated with high-NRB on three parameters of the staged information processing speed test. In the present study we repeated the multivariate discriminant function analysis on the patients’ data (DFA), but it did not yield a significant discriminant effect. It is quite likely that this failure to replicate the previous result is due to the differences between coached simulators and participants with real-world incentive for poor effort (Rogers, 2008). This difference between the studies underlines the need for cross-validation in the clinical population, when developing algorithms for NRB detection in simulating participants.

The current findings show the benefit of using multiple sources for detecting inadequate effort, as recommended by the America Academy of Clinical Neuropsychology (Heilbronner et al., 2009). Multiple indicators enable the clinician to provide a range of probabilities for performance validity, rather than considering it to be a dichotomous concept of presence or absence (Heilbronner et al., 2009; Slick, Sherman, & Iverson, 1999). Moreover, multiple tests can be used to assess probability of malingering by using converging evidence, without increasing false-positive rates (Larrabee & Berry, 2007; Rogers, 2008).

Limitations

Our current findings need to be considered in the context of several limitations, such as the relatively small sample size. Furthermore, our sample included mild to moderate TBI participants, without controlling for the severity of injury, or the period of time between injury and assessment. It could be objected, therefore, that perhaps some patients in the present sample exhibited poor performance due to their impairments, rather than to a high negative response bias. This possibility cannot be excluded entirely on theoretical ground. However, since we examined parameters that are unexpected even in severely brain-damaged patients (e.g., worsening performance in memory recognition following repeated exposure), it is unlikely that stratification by the severity of injury would have changed the results dramatically. Yet it would be advisable to replicate the present findings, especially in severely brain-damaged patients.

Another significant limitation is the use of only one PVT to classify participants into high- and low-NRB. It is conceivable that as the result of classifying participants based on one PVT instrument, the sensitivity of this process may be limited. As a consequence, the high rates of sensitivity and specificity reported here should be viewed with some caution. Thus, it is possible that some noncredible participants (perhaps those more alert to the use of PVT) were inadvertently included in the low-NRB. In such event, the actual rates of both sensitivity and specificity could have been negatively impacted. As we used archived data in the present study, we only had screening data for the vast majority of the participants. Given the high specificity of the TOMM, and the need for information on performance validity, we believe this study has value, despite the possibility of somewhat inflated sensitivity and a concomitant decrease in specificity. The utility of the present findings may apply in particular in the context of limited resources and the use of computerized neuropsychological screening. Nevertheless, further research using multiple PVTs should be used to confirm the present findings.

In conclusion, our results indicate that an algorithm, produced by using logistic regression analysis based on parameters taken from the NeuroTrax battery, demonstrated good classification rates between participants known independently to show low- and high-NRB and thus can be used as a relatively sensitive and specific assessment tool for effort following mild to moderate TBI. The high-NRB group violated the typical learning curve of normal individuals and of our low-NRB patients and exhibited performance poorer than chance. Further, across multiple sections of varying difficulty, performance of the high-NRB was inconsistent with known learning processes in performing better on difficult parts than on easier ones. Overall, our findings suggest that, despite weakness inherent in a retrospective study, analyses of performance patterns have important clinical utility by facilitating detection of inadequate performance validity during neuropsychological evaluation.

REFERENCES


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Introduction

RICHARD ROGERS, PH.D.

Diagnoses of mental disorders and the evaluation of psychopathology rely heavily on the honesty, accuracy, and completeness of patients' self-reporting. Most symptoms of disorders are not directly observable by others. Therefore, each patient's presentation becomes a critical component of the clinical assessment. Distortions, both intentional and unintentional, complicate greatly the assessment process. This book is devoted to a systematic examination of dissimulation, integrating a distillation of research findings with a discussion of their clinical applications.

Chapter 1 is organized into four major sections: (1) assumptions of honesty and self-disclosure, (2) explanatory models of malingering and defensiveness, (3) basic tools and terminology of dissimulation, and (4) an overview of the book's organization. I examine how changes in the delivery of mental health services may affect patients' honesty and propensity to dissimulate. I consider the often-neglected issue of motivation (e.g., why do malingerers malinger?) and evaluate different explanatory models. I provide a framework for understanding the basic concepts and terms that are necessary for a thorough understanding of malingering and deception. I complete the chapter with an overview of the book's structure and goals.

ASSUMPTIONS OF HONESTY AND SELF-DISCLOSURE

A fundamental but unspoken premise of clinical practice is heartfelt cooperation and good-faith participation by patients in their assessment and treatment. Psychologists and psychiatrists typically assume that shared goals will optimize patients' honesty and self-disclosure. By training, practitioners are deeply imbued in their enduring image as helping professionals. Practitioners may have difficulty accepting that some patients may see them as disinterested bureaucrats, financially motivated businesspeople, agents of social control, or outright adversaries.
The increasing complexity of mental health service delivery is likely to alienate the patients it was designed to serve. Many practitioners view managed care as an indifferent and occasionally hostile force (Barlow, 1994); patients are apt to have similar reactions to their loss of autonomy in choosing mental health professionals, controlling access to sensitive information (see Corcoran & Winslade, 1994), and establishing treatment goals (see Table 1.1). One profound change with managed care is agency (Monahan, 1980). Many health care professionals no longer function as the agents of their patients. Rather, they serve, often reluctantly, cost-conscious organizations that determine the length of services and oversee future referrals on the basis of a bottom-line metric (Sabin, 1994). Understandably, these changes are likely to affect fundamentally how patients perceive practitioners and their consequent willingness to be open and honest.

Other influences on patients’ forthrightness are presented in Table 1.1. Social control continues to be an important issue with respect to involuntary and quasi-voluntary treatment (Lidz & Hoge, 1993). In addition, judicial and administrative proceedings often mandate treatment through explicit threats (e.g., termination of parental rights or condition of employment). Under these conditions, practitioners can easily be viewed as agents of social control. A more subtle form of control is the imposition of values through treatment. While many practitioners are sensitized to cultural issues (e.g., Altarriba & Santiago-Rivera, 1994), their inculcation of patients with mainstream and politically correct values is likely to continue unabated.

The plethora of advertised promises only heightens concerns regarding profit motivations and provision of unnecessary or unproven treatment. Certainly, highly publicized scandals associated with private psychiatric hospitals promote a nonbeneficent image of mental health care. Moreover, the superabundance of mental health professionals and rise of unregulated counselors raise questions of competence and unbridled competition. My purpose is not to bemoan these tarnishing effects on mental health care, but rather to understand more completely why some patients are not forthcoming and may attempt to dissimulate.

Traditional practice has often assumed the veracity of psychiatric patients in describing their psychological impairment. For reasons given previously, this assumption may well be naive. The clinician–patient relationship is complicated by a spectrum of sociological issues that extend far beyond psychological treatment. Even patients contemplating outpatient psychotherapy outside of managed care (often considered the bastion of voluntary treatment) are aware of the limitations on confidentiality, issues of insurance reimbursability, and the social implications of seeking treatment (Halleck, 1971; Mansouri & Dowell, 1989; Robitche, 1980). As noted more than a decade ago (Rogers & Cavanaugh, 1983), consumers of mental health services increasingly are aware of the far-reaching implications of their participation and of clinicians’ often divided loyalties.

A second assumption commonly present in psychotherapy practice is that the veracity of patients’ self-report is of only secondary importance, since the primary focus of treatment is on process and not content issues. In other words, the therapeutic value of content is largely symbolic and representational. From this perspective, less atten-
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<th>Construct</th>
<th>ISSUE</th>
<th>Example</th>
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<td>Confidentiality</td>
<td>Does the clinician keep information confidential?</td>
<td>Informed consent agreements</td>
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<td>Competence</td>
<td>Is the clinician competent?</td>
<td>Clinical supervision and continuing education programs</td>
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<td>Confidentiality</td>
<td>Does the clinician respect confidentiality?</td>
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<td>Conscience</td>
<td>Does the clinician act in the best interest of the patient?</td>
<td>Conflict of interest policies</td>
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<td>Control</td>
<td>Does the patient have control over their care?</td>
<td>Patient decision-making authority</td>
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<td>Consequence</td>
<td>What are the consequences of the clinician's actions?</td>
<td>Legal and ethical considerations</td>
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<tr>
<td>Confidentiality</td>
<td>Is the clinician's work confidential?</td>
<td>Patient privacy laws</td>
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<td>Competence</td>
<td>Is the clinician competent?</td>
<td>Board certification and licensing requirements</td>
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<td>Control</td>
<td>Does the patient have control over their care?</td>
<td>Patient empowerment and self-management support</td>
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<td>Consequence</td>
<td>What are the consequences of the clinician's actions?</td>
<td>Legal and ethical considerations</td>
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TABLE 1.1: Impediments to Honesty and Forbearingness in Psychological and Psychiatric Evaluations

<table>
<thead>
<tr>
<th>Example</th>
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<tr>
<td>Widespread use of HMOs, PPOs, EAPs, and insurance companies for reduced referrals</td>
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<tr>
<td>Price gouging by private psychiatric hospitals and inpatient programs</td>
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<tr>
<td>Involuntary hospitalization and withholding of necessary treatment</td>
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<td>Mainstream values (e.g., workaholism, sexual harassment, and &quot;at home&quot; shredding)</td>
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<tr>
<td>Psychological injury and intimidation</td>
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<td>Inadequate and unpredictable programs</td>
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<tr>
<td>Social sanctions (e.g., against drunk driving, monogamy, and attitudes toward mental health professionals)</td>
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</table>

From this perspective, less attention is paid to the role of the patient's perspective and the importance of patient autonomy. The table above highlights some of the impediments to honesty and forbearingness in psychological and psychiatric evaluations. Further research is needed to understand the factors that contribute to these issues and develop strategies to address them.
tion is needed to assess the truthfulness and completeness of patients' presenting complaints. However, as documented by the recent furor over repressed memories of childhood abuse (e.g., Loftus, 1993b; Wakefield & Underwager, 1992; Williams, 1994), this perspective is shortsighted. The veridicality of content should not be confused with the patient's sincerity and genuine expression of emotions. Content is an important facet of treatment that cannot be summarily dismissed. Therefore, I believe that it is inadvisable for practitioners to ignore issues of dissimulation or deliberate distortion in patients' self-reports during psychotherapy.

A third assumption is that malingering and other forms of dissimulation occur so infrequently that their routine investigation is unwarranted. On this issue, Rogers (1994) observed that infrequency should not be equated with ineffectuality. However, available data strongly question the rarity of dissimulation among persons receiving mental health services. For example, Rogers, Sewell, and Goldstein (1994) in a survey of 320 forensic psychologists generated estimates of malingering of 15.7% for forensic and 7.4% for nonforensic settings. While the latter estimate (7.4%) might be inflated by forensic experts' involvement in quasi-judicial and administrative proceedings, these percentages are considerable. A subsequent survey of 221 forensic experts (Rogers, Salekin, Sewell, & Goldstein, 1996) yielded comparable results (17.4% and 7.8%, respectively). Rogers, Harrell, and Liff (1993) reviewed the available literature with respect to feigned neuropsychological impairment; very preliminary estimates suggested that as many as half of personal injury evaluatees may be feigning all or part of their cognitive deficits. With respect to insanity evaluations, Rogers (1986) found that 20.8% of defendants engaged in suspected or definite malingering with an additional 5.2% having unintentional distortions in their self-report. Although prevalence data are unavailable, Lorei's (1970) extensive survey of 12,054 staff members from 12 Veterans Administration hospitals underscored the importance of malingering (i.e., second only to dangerousness) in determining a patient's level of adjustment and readiness to be discharged.

Estimates of other response styles are less than adequate. Although the Minnesota Multiphasic Personality Inventory (MMPI) appears to be the most promising measure of general defensiveness, Baer, Wetter, and Berry (1992) reported pervasive problems in establishing consistent cutting scores to determine defensiveness, thus militating against accurate estimates. Extrapolating from MMPI data provided by Greene (1988a, p. 152), some evidence of defensiveness is found in 6–7% of normal individuals. Research by Sabourin and her colleagues (Sabourin, Bourgeois, Gendreau, & Morval, 1989; Sabourin, Lafferriere, et al., 1989) suggests that social desirability is likely to be prevalent in adult psychotherapy patients seen at a university-based clinic. Moreover, social desirability may have affected reports of treatment outcome and consumer satisfaction, although the data are conflicting (see Gaston & Sabourin, 1992; Hays & Ware, 1986). Inpatients who do not acknowledge their mental disorders and associated impairment appear to underreport their symptomatology in a combination of defensiveness and social desirability (Carkuy, Selzer, Terkelson, & Hurl, 1992).

For evidence of inconsistent responding, Greene suggested that 3–5% of normal individuals and 15% of persons with mental disorders manifest some inconsistencies in item endorsement. In a series of college and community participants, many or all MMPI-2 items. In However, those hired permanently did not endorse.

Several conclusions can be drawn from these data. First, preexisting clinical data suggest that estimates of malingering are grossly inflated. Third, in spite of variability among those malingered, and defensive response styles in best circumstances.

Practitioners, although perhaps not explicitly aware of their assumptions or as systematically. When conducting the number of clinicians that, despite the lack of dissimulation. The problem is that they may never find it. I believe that this suggests that an appreciable minority of patients may adopt response style. If we accept the possibility of screening all referrals and other forms of deception.

What are the day-to-day realities? Not all professionals who spend the majority of their time in practice terms, I am suggesting that practitioners are often asked to determine the patient's own wants and needs in the form of questions. These may involve in the treatment. For purposes of diagnosis, patients are placed into three categories: “1,” a commitment to treatment; “2,” an active involvement, and “3,” heterogeneous. All three of these categories are asked to seek treatment, self-directed by psychiatric professionals, and self-determined. A patient may have an autonomy in meeting these demands. The decision-making process is largely stimulated and guided by the response to perceived coercion.

EXPLANATORY FRAMEWORK

Rogers (1990a, 1990b; Ustad, 1991) has been implicit in the three explanatory frameworks for malingerers. Their strategies include: (1) mentally classify the patient attempting to meet their objective, (2) intentional misrepresentation, and (3) prototypical analyses of attribution. Rogers suggested support for this conceptualization.
item endorsements. In a series of four experiments, Berry et al. (1992) found that 3–7% of college and community participants openly acknowledged random responding to many or all MMPI-2 items. In contrast, police recruits with a strong motivation to be hired permanently did not admit to a predominant pattern of random responding.2

Several conclusions can be drawn from these prevalence data. First and foremost, prevalence rates for response styles remain virtually uninvestigated. Second, the available data suggest that estimates are highly dependent on settings and referral questions. Third, in spite of variability across settings, the combined prevalence of inconsistent, malingering, and defensive response styles is much too large to ignore, even under the best circumstances.

Practitioners, although possibly swayed by the previous argument, may not change either their assumptions or assessment methods in order to investigate response styles systematically. When conducting workshops, I continue to be dismayed at the number of clinicians that, despite decades of practice, have never observed a single case of dissimulation. The problem is circular. If we never investigate dissimulation, then we may never find it. I believe that our working assumption in clinical practice should be that an appreciable minority of evaluatees engage, at some time, in a dissimulative response style. If we accept this working assumption, then we also accept the responsibility to screen all referrals and actively consider the possibility of malingering and other forms of deception.

What are the day-to-day implications of this discussion for many practitioners, who spend the majority of their professional time in providing treatment? In broad terms, I am suggesting that practitioners can evaluate to what extent treatment is serving the patient’s own wants and needs versus others’ objectives. Table 1.2 summarizes in the form of four questions the salient issues that can affect honesty and openness in treatment. For purposes of clarity, responses to these salient questions are organized into three categories: “1,” autonomous involvement, “2,” partially autonomous involvement, and “3,” heteronomous involvement. Persons who are self-motivated to seek treatment, self-directed in their treatment goals, self-selecting their mental health professionals, and self-determining access to confidential information can exercise choice and autonomy in meeting their needs and wants. Obversely, when the therapeutic process is largely instigated and controlled by others, dissimulation is one understandable response to perceived coercion.

EXPLANATORY MODELS OF MALINGERING AND DEFENSIVENESS

Rogers (1990a, 1990b; Ustd & Rogers, 1996) outlined the primary motivations implicit in the three explanatory models of malingering; dissimulation occurs because malingers are (1) mentally disordered (pathogenic), (2) bad (criminalological), and (3) attempting to meet their objectives in adversarial circumstances (adaptational). Two prototypical analyses of attributes associated with each model provided empirical support for this conceptualization (Rogers, Duncan, Lynett, & Sewell, 1994; Rogers,
TABLE 1.2. Treatment Considerations Regarding the Honesty and Openness of Patients

A. What stimulated the patient to seek treatment at this point?
   1. **Self-initiated:** No one knew or influenced the patient's decision.
   2. **Other-influenced:** The patient was pressured by others to seek treatment.
   3. **Other-initiated:** Others made the decision for the patient to seek treatment.

B. What are the patient's goals?
   1. **Self-directed:** The patient is not answerable to others.
   2. **Congruent:** The patient's goals are compatible with others, including third-party reimbursers.
   3. **Incongruent:** The patient's goals are incompatible with significant others or third-party reimbursers.

C. Who selected the mental health professional?
   1. **Self-selected:** The patient chose.
   2. **Limited self-selection:** The patient chose from a limited pool that was provided by the third-party reimbursers.
   3. **Other-selected:** Either a significant other, primary physician, or third-party reimbursers have chosen.

D. Who knows about treatment?
   1. **Self:** No one else has access to patient information.
   2. **Self and reimbursers:** Beyond the patient, only the reimbuser and their health care professionals have access.
   3. **Others:** Significant others or relevant agencies (e.g., employers and courts) have access.

**Note.** Knowledge of treatment can be either formal (e.g., written consent) or informal (e.g., pressure from family members or employer access to insurance records).

Salekin, Sewell, & Goldstein, 1996). When items associated with these models were rated for their prototypicality by 320 experts, three strong factors emerged that closely corresponded with the three explanatory models. I briefly summarize the three models and discuss their implications for other response styles.

**Pathogenic Model**

The pathogenic model postulates that the underlying force behind malingering is a mental disorder. In attempts to gain control over emerging symptoms, the patient creates the symptoms and portrays them as genuine. With the onset of the mental disorder, the patients begins to lose control over the simulated symptoms. The predicted outcome is a worsening of the mental disorder and appearance of true symptoms. The pathogenic model has lost favor, because its predictions have not been borne out and because perceptions of malingering have changed in the last several decades.

The controversy over “accident neurosis” (Miller, 1961) and “compensation neurosis” (Mendelson, 1981, 1985) buttressed anecdotal observations that some persons feigning personal injuries did not continue to deteriorate. Indeed, publicity surrounding persons who appeared to be “cured” following large financial settlements led to such pejorative terms as “compensationitis” and “greenback neurosis.” Despite countervailing evidence (see Chapter 2 by Miller), the assumption, “Yo be motivated by secondary gain.”

Perceptions of malingering have been influential in the context of asylums filled with flidly psych patients, conditions, the assumption, “Yo be compelling. This early assumption establishs the depletion of community resources concerns the criminal defendants of malingering as malevolent malingerers or the development of the criminological model.

**Criminological Model**

Promulgation of the criminological model, part of the diagnostic nomenclature (DSM-III; American Psychiatric Association, 1987, p. 360) and “stro... (1994a, p. 683), DSM models present persons diagnosed with antisocial for forensic purposes, (3) persons diagnosed with antisocial for forensic purposes, (3) persons whose claims are disbelieved.

The criminological model can be observed by Rogen (1990), the view of a bad person (APD), in bad circumstances (uncooperative). As noted by Rog...ing is likely to be illusory. Although voluntary and may see their own treatment, we cannot assume that they are consistent with the adversarial nature of forensic styles. For example, a sex offender may adopt the contrary, denial and defensiveness (Geller, 1991).

The selection of “uncooperative” as an intuitive. This criterion better fits the foreign and intervention. An association... disorders are only marginally co...ers and substance abuse disorders as symptoms of target behaviors. Moreover, seek out treatment and are willing...
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such malingerers are not cooperative in absolute terms (i.e., their participation does not facilitate a true and comprehensive evaluation), they are likely to be cooperative in normative terms (i.e., their participation appears similar to bona fide patients). Therefore, uncooperativeness fails as a criterion, both in identifying malingerers and excluding bona fide patients.

The final criterion, claims discrepant with objective findings, is a notable example of a logical fallacy. It falsely assumes the existence of “objective” data against which inconsistencies can be measured. As observed by Rogers (1990b), if objective findings existed, then malingering would be a nonissue. Although we have objective measures for some medical conditions (e.g., tuberculosis), we do not have analogous measures of mental disorders. Without objective findings, this criterion is untenable. Furthermore, this criterion is likely to misclassify many persons with schizophrenic disorders who are poor historians and misremember crucial personal events (Skodol, 1989). Therefore, if “inconsistencies in self-reporting” were to be substituted for “discrepancies with objective findings,” mental health professionals would run a considerable risk of misclassifying genuine patients as malingerers.

Adaptational Model

Rogers (1990a, 1990b) proposed the adaptational model to explain how some persons respond to adversarial circumstances in which they have a substantial personal investment. According to the adaptational model, would-be malingerers engage in a cost–benefit analysis when confronted with an assessment they perceive as indifferent, if not inimical, to their needs. Malingering is more likely to occur when (1) the context of the evaluation is perceived as adversarial, (2) the personal stakes are very high, and (3) no other alternatives appear to be viable. In addition, malingerers’ cost–benefit analysis is likely influenced by their estimation of their abilities to succeed, although the available data suggest that simulators grossly overestimate their ability to feign without detection (Kropp, 1992; Linblad, 1994).

Descriptive data are generally supportive of the adaptational model, with higher prevalence rates reported in adversarial settings (e.g., forensic vs. nonforensic) or when the personal stakes are particularly high (e.g., military combat and personal injury suits). Data from group comparisons are also supportive. For example, Walters (1988) found that federal inmates were only likely to feign for a highly desired goal (i.e., single cell) but not under neutral circumstances. Similar data (Braginsky, Braginsky, & Ring, 1969; Wilcox & Krasnoff, 1967) have been reported for highly institutionalized psychiatric patients who exhibited little inclination to feign except when confronted by the threat of discharge.

The adaptational model provides the broadest and least pejorative explanation of malingering. It may assist clinicians in minimizing countertransference (e.g., anger at being duped). The model also suggests a clinical framework from which mental health professionals can explore the evaluatee’s perceptions of an adversarial relationship, stated objectives, and alternatives. Often simple inquiries will elicit whether the assessment is perceived as adversarial (e.g., “If evaluation could hurt you?”) and what the evaluator hopes to accomplish by the evaluation (“Don’t you want what they are getting what you need?”). As noted, it would be unwise to be equated with malingering itself.

Limits of Explanatory Models

Explanatory models are crucial for understanding the etiology of malingering. However, explanatory models should not be used in isolation. In other words, we cannot conclude that a person with a history of using money to mottle incentives, attorneys attempting to get money through the use of other monetary resources, will necessarily report impairment if genuine symptoms.

DSM-IV falls victim to this trap. Although primarily an explanation of the efficacy of DSM-IV indicators is the use of two or more indicators, identifying malingerers. The good news is that they are more easily identified, nearly four times as many malingerers. In other words, the only way of identifying the DSM-IV criterion of two or more indicators is by chance, 20% of all cases are misjudged. This model is likely to be overinclusive.

Explanatory Models of Defense

The pathogenic, criminological, and defensive models of malingering have been described. The pathogenic model, although little studied, is a direct result of the defense of expression (e.g., denial and repression of feelings). The defensive model, in contrast, focuses on the mechanisms by which the patient has learned to protect himself. Defensive mechanisms may result in a stable but maladaptive state (Cooper, 1985). At present, most malingering is believed to be defensive but implies greater maladjustment.

A criminological model of malingering (Watson, 1976) conceptualization of psycho
is perceived as adversarial (e.g., “Was this evaluation your idea?” “Are there ways this evaluation could hurt you?”) and the person’s stated objectives (e.g., “What do you hope to accomplish by the evaluation?” “Are there any hurdles [potential setbacks] to getting what you need?”). As noted later, the potential motivation to malinger cannot be equated with malingering itself.

**Limits of Explanatory Models**

Explanatory models are crucial to theory building and provide the necessary framework for attempting to understand why particular response styles are observed. However, explanatory models should not be confused with detection models or assessment methods. In other words, we cannot assume that a person with the potential motivation to malinger will actually malinger. For example, just because there are high financial incentives, attorneys attempting to discredit a plaintiff’s claim, and an apparent absence of other monetary resources, we cannot conclude in a personal injury case that (1) the reported impairment is not genuine or (2) the plaintiff is exaggerating/fabricating symptoms.

DSM-IV falls victim to this confusion between explanatory and detection models. Although primarily an explanatory model, Rogers (1990a) attempted to test the efficacy of DSM-IV indicators of malingering on a forensic sample. He found that the use of two or more indicators, as specified by DSM-IV, proved ineffective at identifying malingerers. The good news was that two-thirds of the malingerers were correctly classified by this criterion. The bad news was that for every malingerer correctly identified, nearly four times as many bona fide patients were misclassified as malingerers. In other words, the only available research would suggest that persons exceeding the DSM-IV criterion of two or more indicators have approximately a one-in-five chance (20.1%) of truly being a malingerer. Therefore, the clinical application of this explanatory model is likely to result in gross inaccuracies.

**Explanatory Models of Defensiveness**

The pathogenic, criminological, and adaptational models could also be applied to defensiveness, although little theoretical work has emerged. From a pathogenic paradigm, denial and repression of psychopathology could be construed as ego defenses over which the patient has little, if any, control (Laflin, 1970). From this perspective, the underlying mechanism of defensiveness is psychopathological. Unlike the pathogenic model of malingering, however, the defensiveness counterpart does not necessarily predict continued deterioration. For example, use of primitive ego defenses may result in a stable but maladaptive pattern of psychological functioning (Perry & Cooper, 1985). At present, most clinical research does not postulate a pathogenic model of defensiveness but implies greater awareness and control over defensiveness.

A criminological model of defensiveness could be propounded, based on Cleckley’s (1976) conceptualization of psychopathy. According to Cleckley, psychopaths are noted
for their superficial charm, untruthfulness, insincerity, and unreliability. Hare (1991), building from Cleckley and other sources, conceptualized the following as core characteristics of psychopathy: (1) glibness and superficial charm, (2) pathological lying, (3) conning and manipulativeness. A central theme of these criteria is a false yet positive image designed to take advantage of others. Interestingly, normative MMPI data from persons involved in forensic evaluations have indicated relatively little defensiveness in these samples (Rogers & McKee, 1995).

An adaptational model of defensiveness may be postulated to explain the denial and minimization of symptomatology. Involuntary and civilly committed patients may perceive evaluations by mental health professionals as adversarial, with potential consequences including forced mediations and longer hospitalizations. Likewise, substance abuse patients (Cox, Swinson, Direnfeld, & Bourdeau, 1994; Henly & Winters, 1988) and sex offenders (Haywood, Greenman, & Hardy, 1993) are likely to minimize their reporting of problematic behaviors in an attempt to diminish societal sanctions. Alternatively, substance abuse patients deliberately may moderate their reporting of drug use and concomitant behavior in order to make themselves appear to be “better” patients and have a greater opportunity to receive mental health services.

The adaptational model of defensiveness also applies to the impression management of persons seeking desirable occupations (e.g., Thornton & Giersch, 1980). Applicants may perceive preemployment screenings as necessary but hazardous hurdles. Even in the absence of obvious penalties (e.g., involuntary hospitalization) or external incentives (e.g., a highly sought position), some individuals are likely to find the stigmatization of mental disorders to be sufficient motivation to minimize symptoms, level of distress, and overall impairment.4

Rogers and Dickey (1991) theorized that patients coerced into psychological assessments may face two undesirable alternatives: (1) self-disclosure that will lead to unwanted consequences or (2) defensiveness that may eventuate in even more negative consequences, if discovered. For instance, should a parent in a contested child-custody case disclose depression and occasional suicidal ideation? Or alternatively, should a parent take the risk of being exposed during the assessment of being both depressed and uncooperative? The adaptational model of defensiveness may help clinicians to understand the often inescapable dilemmas confronting persons required to participate in evaluations.

**BASIC TOOLS AND TERMINOLOGY OF DISSIMULATION**

**Terms and Definitions**

The diversity of clinical and research interests in the assessment of dissimulation among persons with mental disorders has militated against consistent definitions and agreed-upon terms for describing psychological deception. Definitions represent one useful step in the standardization of this terminology. To maintain standardization, these definitions are nearly identical to those presented in the 1988 edition.

**Response Styles**

The vast bulk of clinical literature addresses malinger- ing. Other response styles also exist, with different styles of dissimulation.

1. **Malingering** (American Psychiatric Association) is the fabrication or gross exaggeration of mental or physical symptoms. It is distinguished from dissimulation in that it extends beyond a patient's ability to respond to clinical inquiries.

2. **Defensiveness** (Rogers, 1991) involves the conscious denial or gross minimization of symptoms. This term is derived from ego defenses, in which from empirical evidence, it is likely that responses are not necessarily related to other defenses of disengagement. Although most research is still in clinical interviews when a patient to clinical inquiries.

3. **Irrelevant responding** refers to responses that become psychologically engaged. The terms are not necessarily related to other defenses of disengagement, although most research is still in clinical interviews when a patient to clinical inquiries.

4. **Random responding** is a situation in which a patient is asked to respond to clinical inquiries. The responses are not necessarily related to other defenses of disengagement, although most research is still in clinical interviews when a patient to clinical inquiries.

5. **Honest responding** refers to attempts to be accurate in his or her evaluation. In light of the patient’s honesty, clinicians use forced-choice measures and other multiscale inventories to conduct psychiatric evaluations.

6. **Hybrid responding** (Rogers & Dickey, 1991) involves both response styles. Although clinical remains completely unknown. A large literature in the field of forensic evaluations is the male pedophile psychopathy and highly defensive women.

**Other Terms**

Other terms are commonly used in psychological literature. Dissimulation and unrelated tendencies in self-reporting that are dissimilar to honest responding. These terms are less frequently used in clinical practice, but have substantial research.
Introduction

Response Styles

The vast bulk of clinical literature on dissimulation focuses predominantly on malingering. Other response styles also have clinical relevance. Listed here are six distinct response styles of dissimulation.

1. Malingering (American Psychiatric Association, 1994a) refers to conscious fabrication or gross exaggeration of physical and/or psychological symptoms for an external goal. It is distinguished from factitious disorders in that the malingered presentation extends beyond a patient role and is understandable in light of the individual’s circumstances.

2. Defensiveness (Rogers, 1984a) is the polar opposite term of malingering. It refers to the conscious denial or gross minimization of physical and/or psychological symptoms. This term is derived from extensive psychometric research on patients who present themselves in the most favorable light. Care must be taken to distinguish this term from ego defenses, which involve intrapsychic processes that distort perception.

3. Irrelevant responding refers to a response style in which the individual does not become psychologically engaged in the assessment process (Rogers, 1984a). The given responses are not necessarily related to the content of the clinical inquiry. This process of disengagement, although most prevalent in psychological testing, is also observed in clinical interviews when a particular patient makes no effort to respond accurately to clinical inquiries.

4. Random responding is a subset of irrelevant responding in which a random pattern can be identified. This response style (see Chapter 8) is observed most frequently on measures with a forced-choice format. Although chiefly studied with the MMPI and other multiscale inventories, it may occur on any psychometric measure.

5. Honest responding refers to a response pattern reflecting a patient’s sincere attempt to be accurate in his or her responses. Factual inaccuracies must therefore be evaluated in light of the patient’s understanding and perceptions. A thorny problem for clinicians is how to establish honest responding; the absence of deception and dissimulation, although critical, is not sufficient.

6. Hybrid responding (Rogers, 1984a) refers to any combination of the previous response styles. Although clinically observed, the incidence of hybrid response styles remains completely unknown. An example of hybrid responding drawn from forensic evaluations is the male pedophile who is honest in response to questions of psychopathology and highly defensive with respect to his sexual behavior.

Other Terms

Other terms are commonly used to describe individuals’ lack of forthrightness. Two descriptors (dissimulation and unreliability) are sometimes applied to describe distortions in self-responding that are difficult to classify by the previous response styles. Other terms are less frequently used in clinical or other applied settings, but form the basis of substantial research.
1. **Dissimulation** is a general term to describe an individual who is deliberately distorting or misrepresenting psychological symptoms. Dissimulation may incorporate any of the previous response styles with, of course, the exception of honest responding.

2. **Unreliability** is a nonspecific term used to describe clinically the characteristics of an individual whose response style is not honest and self-disclosing, yet in which no further clarification can be made with respect to his or her intention.

3. **Deception** is an all-encompassing term to describe any and all attempts by an individual to distort or misrepresent his or her self-reporting. This term includes both dissimulation and all other forms of dishonesty. For example, some patients are dishonest about their past and current behavior, attitudes, or perceptions. Such deception may be totally separate from the patient’s described psychological functioning (i.e., dissimulation).

4. **Self-disclosure** refers to how much an individual reveals about him- or herself (Jourard, 1971). A person is considered to have high self-disclosure when he or she evidences an honest response style in addition to a high degree of openness. Lack of self-disclosure does not imply dishonesty but simply an unwillingness to share personal information.

5. **Social desirability** (Crowne & Marlowe, 1960) is a construct closely related to defensiveness, but it extends beyond the minimization of psychological impairment. It is composed of two elements: the denial of negative characteristics and the attribution of positive qualities (Carksy et al., 1991). Social desirability clearly plays an instrumental role in perceptions of medical care (Hays & Ware, 1986) and willingness to acknowledge serious mental disorders (Carksy et al., 1992; Mazmanian, Mendonca, Holden, & Duffton, 1987). In clinical practice, I would recommend the use of defensiveness to describe persons presenting themselves psychologically in a favorable light, except when scales to assess social desirability are specifically employed.

6. **Impression management** (Tesser & Paulhus, 1983) is a widely researched construct to explain social behaviors by attempting to create a positive image and avoid embarrassment and other negative emotions. Therefore, impression management is often construed as more situationally driven than social desirability, the latter which may reflect a characteristic style of presentation. Again, the term “defensiveness” is generally preferable to “impression management” in clinical settings.

7. **Simulation-malingering paradox** (Rogers & Cavanaugh, 1983) refers to the research problem exemplified by simulation studies of dissimulation in which participants are asked to comply with instructions to fake (e.g., problems or symptoms) in order to study patients who fake symptoms when asked to comply with their psychological or medical assessment.

### Gradations of Malingering and Defensiveness

Malingering and defensiveness have traditionally been treated as if they were dichotomous variables. For example, research on the MMPI has attempted to establish “fake-bad” profiles with optimal cutting scores for establishing the presence of malingering.

Although such research is valuable, it does not adequately capture the many gradations of dissimulation in certain profiles. Dissimulation of a minor degree is often an obvious indication that an individual who is not intentionally malingering may be lying about his or her true state of health. Similarly, one must be cautious in not labelling all of the signs of dissimulation as mere differences in personality without adequate evidence of malingerability. The gradations need to be understood and their relationship to the existence of malingering may be equivocal evidence of intentionally malingering.

These gradations of malingering and defensiveness are summarized in Table 1.3. The boundary between malingering and normal variability is difficult to determine, since malingering is often not fully understood.

<table>
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<th>Gradations of Malingering and Defensiveness</th>
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<tr>
<td><strong>Unreliability</strong></td>
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<tr>
<td>1. Self-report with limited reliability.</td>
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<tr>
<td>2. Self-report without reliability.</td>
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| **Malingering**                              |
| 1. Mild malingering: The patient simulates symptoms, primarily through exaggeration or distortion. |
| 2. Moderate malingering: The patient simulates symptoms, but may be limited to either a few symptoms or a more focused set of symptoms. |
| 3. Severe malingering: The patient simulates symptoms, focusing on a wider range of symptoms. |

| **Defensiveness**                            |
| 1. Mild defensiveness: The patient simulates symptoms, primarily through impression management. |
| 2. Moderate defensiveness: The patient simulates symptoms, but may be limited to a few symptoms or a more focused set of symptoms. |
| 3. Severe defensiveness: The patient simulates symptoms, focusing on a wider range of symptoms. |
Although such research is valuable, it does not address the pressing clinical need for established gradations of dissimulation. For diagnostic purposes, it is of critical importance that an individual who is mildly defensive can be differentiated from others who are engaging in gross denial. Similarly, gradations of malingering may be of considerable importance in addressing dispositional issues or making treatment recommendations. The gradations provided in Table 1.3 represent a refinement of previous theoretical work (Rogers, 1984b, 1987) for establishing gradations of dissimulation. In this model, both the terms “malingering” and “defensiveness” are reserved for cases in which there is unequivocal evidence of deliberate dissimulation. In contrast, cases in which intentionality is in doubt would be characterized by the two gradations of unreliability.

These gradations of malingering and defensiveness should be viewed as preliminary, since they have not been tested widely with mentally disordered populations and suspected dissimulators. Research with forensic patients (Rogers, 1984b) suggested that

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<tr>
<td><strong>Unreliability</strong></td>
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<tr>
<td>1. <strong>Self-report with limited reliability</strong>: The patient answers most inquiries with a fair degree of accuracy, but volunteers little or nothing and may distort or evade on circumscribed topics.</td>
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<td>2. <strong>Self-report without reliability</strong>: The patient, through guardedness, exaggeration, or denial of symptoms, convinces the clinician that his or her responses are inaccurate. Such cases may be suspected of malingering or defensiveness, although the patient’s intent cannot be unequivocally established.</td>
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<tr>
<th><strong>Malingering</strong></th>
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<tbody>
<tr>
<td>1. <strong>Mild malingering</strong>: There is unequivocal evidence that the patient is attempting to mangle, primarily through exaggeration. The degree of distortion is minimal and plays only a minor role in differential diagnosis.</td>
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<tr>
<td>2. <strong>Moderate malingering</strong>: The patient, either through exaggeration or fabrication, attempts to present him- or herself as considerably more disturbed than is the case. These distortions may be limited to either a few critical symptoms (e.g., the fabrication of command hallucinations) or represent an array of lesser distortions.</td>
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<td>3. <strong>Severe malingering</strong>: The patient is extreme in his or her fabrication of symptoms to the point that the presentation is fantastic or preposterous.</td>
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<tr>
<th><strong>Defensiveness</strong></th>
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<tbody>
<tr>
<td>1. <strong>Mild defensiveness</strong>: There is unequivocal evidence that the patient is attempting to minimize the severity but not the presence of his or her psychological problems. These distortions are minimal in degree and of secondary importance in establishing a differential diagnosis.</td>
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<tr>
<td>2. <strong>Moderate defensiveness</strong>: This defensiveness may be limited to either a few critical symptoms (e.g., pedophilic interest) or represent lesser distortions across an array of symptomatology.</td>
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<tr>
<td>3. <strong>Severe defensiveness</strong>: The patient denies the existence of any psychological problems or symptoms. This categorical denial includes common foibles and minor emotional difficulties that most healthy individuals have experienced and would acknowledge.</td>
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clinicians are able to make reliable discriminations for gradations of malingering. This conceptualization does, however, highlight the need for establishing consistent gradations of dissimulation both with respect to clinical practice and more sophisticated research designs. In this regard, simulation studies could easily be envisioned in which participants would be asked to vary the degree of feigning, consistent with these gradations. Research on feigning specific disorders (e.g., Rogers, Kropp, Bagby, & Dickens, 1992; Rogers, Ornduff, & Sewell, 1993) suggests that simulators respond differently when instructed to feign schizophrenia versus generalized anxiety disorder. One unexplored explanation is the differential level of feigning implicit with these disorders.

Examination of dissimulation studies is likewise hampered by the absence of any systematic schema for establishing the degree of certainty in either clinical conclusions or research findings. "Degree of certainty" refers to the level of empirical support and theoretical basis for justifying a diagnostic conclusion. The absence of such standardization is an important limiting factor in assessing the clinical usefulness of applied research in general, as well as its particular applications to dissimulation. As an alternative, Rogers (1986) has suggested a descriptive ranking of psychological data based on the degree of certainty established in clinical research. This paradigm is presented in Table 1.4.

Implications of this paradigm to clinical assessment are far-reaching, since many important diagnostic conclusions are based on relatively little empirical data. Even where extensive data are available, such as the meta-analyses of the MMPI (Berry, Baer, & Harris, 1991) and MMPI-2 (Rogers, Sewell, & Salekin, 1994), do they justify more than probable designation? To answer this question satisfactorily, calculations of positive predictive power (PPP) and negative predictive power (NPP) are absolutely essential. These estimates describe the efficiency of accurately classifying feigners & nonfeigners.

Germane to the study of malingering are research designs that allow for a more systematic comparison of the degree of standardization in the empirical data applied in the critical analysis of diagnostic conclusions. A general concern expressed throughout this book is the overreliance on clinical certainty as a primary basis for the determination of diagnosis.

Research Designs in the Study of Malingering

The empirical literature on dissimulation design is comprised of a variety of research methodology. Researchers have utilized comparisons, and differential prevalence of the various disorders and diagnostic biases and advantages and limitations of these approaches are discussed in these basic research approaches to dissimulation in the subsequent chapters. In addition, a detailed examination of data collection methodologies is presented in Table 1.4.

Simulation Design

Most research on dissimulation involves the use of multiple simulators or simulators offered small incentives (e.g., reward for "high scores"). The simulators are typically randomly selected from the same population groups representing disorders that are commonly designated as a simulation design.

A substantial minority of studies, however, namely, the clinical comparison studies, attempted to differentiate dissimulators from "normal" simulators without the presence of a "normal" comparison group. The absence of a "normal" comparison group can confound results.

Deception research is an important area of psychological perspective, not only in legal issues but also in the form of deception, such as presenting false information to others or hiding one's true emotions. Nonprofessional simulators, such as those used in the presentation and make judgments about the data, are used in these studies. Surprisingly, nearly all the research conclusions are derived from deception research, and it is unknown for several reasons.
essential. These estimates describe the accuracy of cutting scores and their likelihood of accurately classifying feigners (PPP) and nonfeigners (NPP).

Germance to the study of malingering and deception, these descriptive rankings allow for a more systematic comparison of research findings as well as offer a greater degree of standardization in the evaluation of dissimulation. These rankings should be applied in the critical analysis of dissimulation in both research findings and clinical applications. A general concern echoed through both the first and the current editions of this book is the overreliance on clinical indicators of speculative or tentative certainty as a primary basis for the determination of malingering or defensiveness.

**Research Designs in the Study of Dissimulation**

The empirical literature on dissimulation is richly diverse, representing a broad range of research methodology. Research methods include simulation design, known-groups comparisons, and differential prevalence design. Each design has methodological advantages and limitations in the study of dissimulation. The next paragraphs briefly outline these basic research approaches to enable the reader to better understand the subsequent chapters. In addition, a detailed analysis of these designs and potential methodological innovations are presented in Chapter 19.

**Simulation Design**

Most research on dissimulation has employed an analogue design in which participants are offered small incentives for adopting a particular response style (i.e., simulators). The simulators are typically compared to two groups: (1) controls that are randomly selected from the same population as the simulators, and (2) clinical comparison groups representing disorders that are likely to be feigned or denied. This model is designated as a *simulation design*.

A substantial minority of simulation studies are missing a critical component, namely, the clinical comparison sample. For a study to establish significant differences between simulators and “normal” controls is to offer virtually no information about malingering. Simply put, we do not know whether the differences found with simulators would not also be found with genuine patients. An inverse problem can occur in studying defensiveness among persons with mental disorders. In this instance, the absence of a “normal” comparison sample can confound the interpretation of significant results.

Deception research is an important variant of the simulation design. From a social psychological perspective, nondisordered participants are asked to engage in some form of deception, such as prevarications about their personal beliefs or masking of their true emotions. Nonprofessional participants, typically undergraduates, observe the presentation and make judgments about the genuineness of the presentation. At present, nearly all the research on nonverbal and paralinguistic cues to dishonesty is derived from deception research. Its generalizability to malingering and defensiveness is unknown for several reasons. First, no comparisons are made with mentally disor-
ditioned persons. Without these comparisons, researchers are unable to differentiate whether observed behaviors are evidence of deception, mental disorders, or both. Second, the studies address only falsifications and not specific attempts at the feigning or denial of mental disorders. Third, deception research relies almost exclusively on nonexpert observers, who may differ significantly from mental health professionals in their ability to detect deception.

Polygraph studies of deception frequently utilize a simulation paradigm. Individuals are typically asked to respond dishonestly under specific experimental instructions. Occasionally, the realism of the research is enhanced by making the participant engage in a quasi-fraudulent act (e.g., "stealing" from the experimenter).

The primary strength of the simulation design is its well-controlled experimental manipulation of response styles and systematic comparisons among criterion groups. Its main disadvantage is its generalizability to real-world applications. This lack of known generalizability has given rise to the previously described simulation-malingering paradox.

**Known-Groups Comparisons**

Studies sometimes employ persons in actual clinical or applied settings that have been independently identified by mental health professionals as engaging in dissimulation. These persons are then compared to criterion groups of persons known as (or assumed to be) honest responders. The challenge of this design is the accurate classification of dissimulating persons. Two risks are readily apparent: (1) use of extreme groups that are readily identifiable but not representative malingers or defensive persons, or conversely, (2) use of spectrum groups that include persons with features of malingering that are not sufficient to meet the classification. As an example of a spectrum group, Hanks, Barnard, and Robbins (1993) categorized any person with as few as one feigned symptom in the malingering group.

Psychophysiological studies of defensiveness are often an important application of known-group comparisons. For example, penile plethysmography compares phallic responses of known groups (e.g., persons with pedophilia and persons with sexual sadism) and compares adulterers to deniers. Similarly, hair analysis for drug detection examines structural changes in the hair shafts of known users of specific drugs and compares them to nonusers and suspected users (Kelly & Rogers, 1996).

The foremost strength of the known-groups comparison is its generalizability to applied settings. By using actual malingerers and defensive persons faced with real and concrete exigencies, the resulting data are directly applicable to similar persons in comparable settings. Its chief limitation is the establishment of the known groups themselves. Classification of dissimulation is wholly dependent on the accuracy of mental health professionals. Samples of bona fide patients may also include errors, because patients with typical presentations are often assumed to be genuine. Interestingly, simulation and known-groups comparisons complement each other's strengths and compensate for recognized weaknesses.

An extrapolation from the known-groups comparison suggests that fewer investigators present unique and unusual examination conditions to be atypical. Less frequently employed to introduce a new syndrome (by proxy). Given their essentially nature for such preliminary examinations associated with dissimulation.

**Differential Prevalence Design**

A relatively recent phenomenon is methodologically a poor substitute to only apply persons with different referral questions disparate rates of dissimulation. Next, classify persons within each group on a greater proportion of persons with dissimulation. Therefore, comparisons are conducted for a summary, the differential prevalence rate of dissimulation among dissimulators in each referral group, or correlations between dissimulating and non-dissimulating found, the ability to relate these dissimulations to the nature of its design.

**AN OVERVIEW OF**

This book has two primary objectives. The first is to offer a clear and succinct description of the nature of deception as it applies to psychological and psychiatric diagnosis. The second is an empirically based conceptual model of deception. The goal of the second objective is to provide a meaningful framework for the study of deception.

The scope of this book is determined by the available research. Based on available research as it relates to psychological and psychiatric disorders and Munchausen syndrome, it is evident that the study of purely physical dissimulation of these topics is not addressed, since a large research literature exists (see...
Although malingering is often seen as a diagnosis that is self-evident, it is not a straightforward process. The most specific attempts at the feigning paradigm are not conducted in natural or applied settings, but rather in laboratory or simulated settings. This is because of the difficulty in establishing the presence of malingering in real-world settings. The differential prevalence design, which involves comparing the differences in prevalence rates between groups, is often used to study malingering. This design allows for the comparison of groups with and without malingering, providing a way to estimate the prevalence of malingering in different populations. However, this design has limitations, as it may not accurately reflect the prevalence in real-world settings. In conclusion, the study of malingering requires a careful examination of the methods used and the limitations of the findings.
Format for the Book

This book is organized into four major parts: Diagnostic Issues, Psychometric Assessment, Specialized Methods, and Summary. Part I, Diagnostic Issues, addresses (1) specific syndromes associated with dissimulation; (2) assessment of malingering and deception with special populations, namely, sociopaths, substance abusers, and children; (3) differential diagnosis between genuine and malingered presentations for commonly feigned disorders, such as psychosis and posttraumatic stress disorders; and (4) the evaluation of feigned amnesia and memory impairment.

Part II, Psychometric Assessment, comprises chapters on objective personality measures, projective testing, and neuropsychological measures. The purpose of these three chapters is a careful review of current research findings, with the twin goals of improving clinical methods for assessing dissimulation and discarding ineffective traditional techniques.

Part III, Specialized Methods, examines an array of investigative techniques in the assessment of dissimulation. Four such techniques—hypnosis, polygraphy, integrity testing, and drug-assisted interviews—are often employed to assess nonspecific deception. Plethysmography, or phallicometric methods of assessing sexual arousal, is reviewed in the light of frequent defensiveness and denial among men who engage in aberrant sexual behavior. The usefulness of structured interviews in the identification of dissimulation is discussed, including a review of the Schedule of Affective Disorders and Schizophrenia (SADS; Spitzer & Endicott, 1978) and the specialized interview referred to as the Structured Interview of Reported Symptoms (SIRS; Rogers, 1992; Roger, Bagby, & Dickens, 1992). Finally, screens for malingering have received increased recognition; these self-report measures are reviewed comprehensively.

Part IV, Summary, provides a useful integration of clinical methods and research data. These related chapters summarize the important clinical and research issues on the assessment of dissimulation for both practitioners and applied researchers. The first of these chapters discusses how clinical procedures should be employed and proposes a workable model for their clinical applications. The research chapter explores basic research designs, their present status, and future directions in the applied study of dissimulation.

The format for each chapter allows considerable flexibility, given the breadth and diversity of topics. However, each chapter incorporates a distillation of research findings on malingering and deception with a conceptual understanding and heuristic (i.e., empirically untested but clinically accepted) approaches to the assessment of dissimula-
lation. Whenever possible, each chapter offers two research-based paradigms: the threshold model and the clinical decision model. The threshold model addresses the issue of when clinicians should thoroughly evaluate suspected dissimulation. This model employs explicit criteria for establishing at what point sufficient concern is raised (i.e., threshold) to warrant further assessment. The clinical decision model examines how clinicians arrive at their conclusions regarding dissimulation. This model presents explicit criteria for making the clinical determination of malingered and defensiveness. A cursory survey of chapters demonstrates the inherent difficulties of establishing these models when relevant research is limited. As a result, many chapters are missing one or both models, or address less precise issues, such as patients’ unreliability.

NOTES

1. An instructive analogy is the FAA inspection of aircraft. Although the FAA rarely detects unsafe planes, very few would argue that its efforts are insignificant.

2. Two possible explanations exist for this finding: (1) Police recruits were highly motivated to complete the MMPI carefully and consistently; and (2) police recruits were highly motivated not to acknowledge their carelessness.

3. The bulk of malingered research, beyond college samples, has occurred in criminal forensic settings. Obviously, common features of these settings are patients with APD who face psychosocial issues. If most research had taken place in geriatric medical settings, would we blithely assume that older age and illness are predictors of malingered?

4. MMPI research (Greene, 1991) suggests that substantial numbers of patients are likely to be defensive, even when an external goal is readily identifiable.

5. In the early development of the SIRS, Rogers, Bagby, and Dickens (1992) found differences on paralinguistic cues between simulators and normal controls. However, these differences disappeared when nondisordered controls were replaced by persons with mental disorders.
Faking Bad: The Neural Correlates of Feigning Memory Impairment

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Objective: The detection of malingering in cognitive performance is a challenge in clinical and legal environments. Neuroimaging may provide an objective method for delineation of malingering. Method: A heterogeneous with concern of gender and racial-ethnic identity of 22 healthy volunteers completed the Tombaugh Test of Memory Malingering during an fMRI scan. Subjects were either instructed to perform optimally (not feigning) or to perform “as if they had a mild traumatic brain injury with memory impairment” (feigning). Results: A voxel-based multiple regression analysis revealed that during correct responses there was greater activation in the superior and medial prefrontal cortex during the feigning versus the not-feigning responses. Conclusions: This finding suggests that falsified memory performance requires greater activation of cognitive control networks to determine a correct selection.

Keywords: fMRI, test of memory malingering, anterior cingulate cortex, mild traumatic brain injury, feigning

Based on a survey of the subjective opinions of neuropsychologists, the prevalence of malingering, or the intentional feigning of memory problems, has been estimated to range from 7% in non-forensic settings to near 30% in forensic settings involving civil cases (Mittenberg, Patton, Canyock, & Condit, 2002). In clinical populations, such as those with mild traumatic brain injury (TBI), rates of failure on performance validity tests may be considerably higher, depending on additional diagnoses and context (Clark, Amick, Fortier, Milberg, & McGlinchey, 2014; McCormick, Yoash-Gantz, McDonald, Campbell, & Tupler, 2013); however, the prevalence is difficult to approximate (Reynolds, 1998). To address poor performance validity, a number of behavioral and clinical interventions have been suggested (Weinborn, Orr, Woods, Conover, & Feix, 2003). One of the most popular approaches has been forced-choice neuropsychological testing to detect improbably poor performance, or symptom validity testing (Pankratz & Binder, 1997). Forced-choice tests appear difficult while being relatively easy even for highly impaired individuals (Hiscock & Hiscock, 1989). The Test of Memory Malingering (TOMM), one of the most researched symptom validity tasks, employs a visual memory recognition procedure, during which the assessor asks the participant to decide which of the two pictures of common objects were shown previously (Tombaugh & Tombaugh, 1996). However, it is important to note that although quite popular, there are serious concerns regarding the use of forced-choice memory tests as a methods to determine memory malingering. In a recent position paper, the Institute of Medicine (2015) highlighted that failure of a performance or symptom validity test should not directly infer a deliberate attempt to feign impairment. Indeed, these tests may be overly diagnostic in samples of individuals with validated TBI. In a study of 491 nonlitigation-seeking TBI patients, 24% were failed a forced-choice memory malingering test with verbal memory, emotional distress, age, and injury severity contributed to test failure (Sherer et al., 2015). In has been suggested that neuroimaging techniques may be key in better understanding the meaning of, and providing more objective information concerning, this ambiguous symptom and performance validity test failure (Bigler, 2014).

Although there is a large literature on the neurosubstrates of deception (Kozel et al., 2005; Kozel, Padgett, & George, 2004; Langleben et al., 2005), there is comparatively smaller literature on volitional feigning of memory deficits (Browndyke et al., 2008;
Liang et al., 2012). However, there is substantial similarity in the networks used for these different forms of deception and specifically a network including the dorsal lateral prefrontal, medial prefrontal, and anterior insular cortices. Work by Kozer and colleagues has shown very strong classification of deception using these regions as developed on a training sample and applied to multiple test samples (Kozer et al., 2005, 2009). It is thought that increased effort in these substrates is needed for effortful falsification of responding (Abe, 2011). Browndyke et al. (2008) have previously published on a small sample (n = 7) of healthy volunteers using the TOMM task in fMRI during normal effort and malingering impairment conditions. In the similarly constructed Word Memory Task, Larsen, Allen, Bigler, Goodrich-Hunsaker, and Hopkins (2010; n = 10) looked at healthy controls in full-effort and simulated poor-effort conditions. In these studies, they found increased or more pervasive activation in many of these key prefrontal areas in the simulated impaired/low effort conditions. In the current study, we looked to build upon this literature by examining in a larger sample the neural correlates of instructed malingering relative to those of maximum effort during performance of the TOMM task. We hypothesized that malingering will require greater cognitive effort than natural performance and that the brain regions required for deception (Kozer, Revell, et al., 2004) will be similar to those used in a forced-choice memory malingering trial.

Method

Subjects

Twenty-two healthy volunteers completed a computerized version of the TOMM during fMRI. Subjects completed the TOMM under two conditions: (a) not feigning, where subjects were instructed to give their optimal performance, and (b) feigning, where subjects were instructed to perform as though they “had a head injury and were experiencing memory difficulties.” This study was approved by the University of California, San Diego, Institutional Review Board. A signed informed consent was obtained from each subject. All subjects were native and fluent English speakers. Subjects received $50 for participation.

Subjects were screened with a questionnaire regarding age, education, racial/ethnic status, psychiatric and medical conditions, medical history, current medication, and substance use history. Subjects were excluded if they had a history of bipolar disorder (Type I) or any psychotic disorder, received psychotropic medication within the past 4 weeks or fluoxetine within the last 6 weeks, a history of more than 2 years of alcohol abuse, or metal in their body. Subjects were excluded if they scored over 13 on the Beck Depression Inventory–2 (BDI–II; Beck et al., 1996), and the State section of the State Trait–Anxiety Inventory (STAI), a 20-item Likert-style scale measuring current level of anxiety (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

Brain Imaging

Acquisition of images. All scans were performed on a 3T GE scanner. Each session consisted of a spoiled gradient recalled sequence (field of view [FOV] = 25 cm; matrix = 192 x 256; 172 x 1 mm sagittal slices; repetition time [TR] = 8 ms; echo time [TE] = 3 ms; flip angle = 12°) and a T2*-weighted echo-planar images (EPI; FOV = 23 cm, matrix = 64 x 64; 30 x 2.6 mm axial slices with 1.4-mm gap; TR = 2,000 ms; TE = 32 ms; flip angle = 80°).

Image processing. Structural and functional image processing was conducted with the Analysis of Functional Neuroimages (AFNI; Cox, 1996) software package. EPI images were coregistered using a 3D-co-registration algorithm that has been developed to minimize the amount of image translation and rotation relative to all other images. All slices of the EPI scans were temporally aligned following registration, and temporal spikes in the data were removed and interpolated. A multivariate regressor approach detailed below was used to relate changes in EPI intensity to differences in task characteristics.
Main task effects. The task behaviors were modeled using the three regressors of interest: (a) encoding, (b) correct response trials, and (c) incorrect response trials. In addition, eight nuisance regressors were entered into the linear regression model: three rotational-movement-related regressors, three linear-movement-related regressors, a baseline regressor, and a linear trend used to eliminate slow signal drifts. Percent signal change was calculated by dividing the beta weight for the regressor of interest by the baseline beta weight. Voxelwise percent signal change data for the whole brain was analyzed using paired t test contrasting TOMM:feigning versus TOMM:not-feigning. Threshold was based on Monte Carlo simulations to guard against identifying false positive areas of activation (Forman et al., 1995). A priori voxelwise probability of \( p < .05 \) in a cluster of 1408 mm\(^3\) resulted in an a posteriori probability of \( p < .05 \). For data presentation and post hoc correlation purposes, the average percent signal difference was extracted from regions of activation that were found to survive this threshold/cluster method. Second-level analyses were performed to determine classifying the predicted condition for each subject + condition based on a classifier built on all-other subject + conditions.

Results

Psychological and Neuropsychological Measures

Self-reported demographic information and BDI–II and STAI-S scores of the healthy volunteer population are displayed in Table 1. There was significant performance difference between feigning and not-feigning task performance in both accuracy (\( p < .001 \)) and reaction time (\( p < .05 \)), such that the not-feigning administration was faster and more accurate. Fourteen of the 22 subjects made no errors in the not-feigning condition; thus, the correct trials were compared in the brain imaging analysis.

Imaging Analysis

We performed a voxel-based paired t test between conditions (feigning/not feigning) for the encoding and correct conditions. There were no areas of significant difference in the encoding condition. However, there were three regions of significant differences in the contrast of feigning versus not feigning on correct trials in the medial and superior frontal gyrus. Correlations with performance for the feigning and not feigning correct activation and number of correct response were calculated. With a Bonferroni correction (\( \alpha/6 \)) only right superior frontal gyrus activation during the feigning condition correlated with performance (see Table 2, Figure 1), that is, subjects who activated right superior frontal gyrus the most also had the least amount of correct responses during feigning condition.

### Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>M/Count</th>
<th>SD</th>
<th>( F(1, 21) )</th>
<th>ES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>25.4</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education (years)</td>
<td>17.4</td>
<td>1.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDI–II</td>
<td>2.0</td>
<td>2.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAI-S</td>
<td>27.5</td>
<td>7.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not feigning (no. correct of 50 items)</td>
<td>48.8</td>
<td>2.2</td>
<td>190.03***</td>
<td>−4.08</td>
</tr>
<tr>
<td>Feigning (no. correct of 50 items)</td>
<td>17.9</td>
<td>10.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feigning ( d' ) (response discrimination)</td>
<td>−0.72</td>
<td>1.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feigning ( c' ) (response bias)</td>
<td>−0.12</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not-feigning reaction time (ms)</td>
<td>2.213</td>
<td>606</td>
<td>7.17*</td>
<td>.86</td>
</tr>
<tr>
<td>Feigning reaction time (ms)</td>
<td>1.756</td>
<td>438</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Racial/ethnic status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American/Caucasian</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handedness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. ES = effect size in Cohen’s \( d' \); BDI–II = Beck Depression Inventory—II; STAI-S: State–Trait Anxiety Inventory, State subscale.

\( * p < .05 \)  \( *** p < .001 \).
We performed a leave-one-out SVM based on a priori ROI activation extractions. In this analysis the feigning condition was identified at chance levels (i.e., 50%), thus this result was not significant. The not-feigning condition was identified correctly more often (i.e., 77%) but this classification rate did not achieve significance (see Table 3). An example of the SVM maps for the whole dataset are provided in Figure 2.

**Discussion**

We examined brain activation during the completion of a computerized version of a memory malingering task (TOMM) during fMRI scans. We found that subjects activated the medial and superior frontal gyrus on correct response trials more when they were attempting to feigning a memory impairment than when they were giving a legitimate effort. These results suggest that it may be possible for neuroimaging to reveal the neurosubstrates of malingering that may translate to more activation in the prefrontal cortex. One possible explanation of this may be that these areas are important for self-monitoring of performance (Greicius, Krasnow, Reiss, & Menon, 2003; Muller, Moller, Rodriguez-Fornells, and Munte, 2005). However, due to the multitude of functions of regions within the prefrontal cortex there are numerous potential reasons for activation in this area and causation cannot be inferred (Poldrack, 2011). A follow-up analysis using classification analysis based on extracted signal from ROIs defined by a verbal deception task (Kozel et al., 2009) did not achieve strong classification rates when applied to TOMM activation in the current dataset. This suggests that the increased effort used to purposefully imitate poor performance in the TOMM, although similar to situational deception, may engage a slightly different network.

In line with prior work investigating symptom validity task performance during fMRI, malingered poor cognitive performance was associated with increased activation in frontal circuits. For example a number of researchers have shown that intentional performance failure was associated with increases in the bilateral prefrontal and parietal cortices (Lee et al., 2005; Lee et al., 2002; Liang et al., 2012). Browndyke and colleagues also found that feigned recognition memory errors on the TOMM were associated with greater activity in the inferior parietal and superior temporal cortices, and that missed and incorrect selections were associated with decreased RTs and increased activation in the dorsomedial frontal, temporal, and inferior parietal regions (Browndyke et al., 2012).

![Figure 1](image_url). Clusters of significant activation for the feigning versus not-feigning administrations at x = 2. See the online article for the color version of this figure.
In the current study we showed increased activation in the right medial frontal gyrus, right superior frontal gyrus, and left superior frontal gyrus during instructed malingering relative to effortful performance. The medial frontal gyrus has been shown to be activated during effortful malingering (Larsen et al., 2010; Lee et al., 2005). The medial frontal gyrus has also been shown to be an important region in decision making and error monitoring (Carter et al., 2000; Rushworth, Walton, Kennerley, & Bannerman, 2004; van Veen & Carter, 2002). Similarly, the superior frontal gyrus has been shown to be important in decision making (Rushworth et al., 2004) and language processing (Vigneau et al., 2006). Thus this pattern of activation indicates that instructed malingering takes both recall of the correct answer and suppression of the correct response, which in combination, requires meeting a greater cognitive demand.

To test whether brain regions that have been effective at classification of situational deception also related to malingering, we took ROIs from published work by Kozel and colleagues (Kozel et al., 2005, 2009; Kozel, Padgett, & George, 2004). In our current sample, we failed to correctly classify instructed condition based on activation in these regions, although we performed better than chance levels in identification of the not-feigning condition (77%, $p = .026$). Although both the current work and the prior work by Kozel and colleagues highlight the importance of frontal circuits and show substantial overlap in medial and superior frontal gyri, the prior regions do not seem to provide the same optimal classification matrix in malingering on the TOMM as they have in situational deception tasks used by Kozel and colleagues. Specifically, the inferior frontal/insula region was not found to be significantly activated in the current sample. This region is important both in language processing (Vigneau et al., 2006) and physiological monitoring (Craig, 2011), thus activation during a situational deception task may be both more semantically encoded and/or create greater physiological arousal. These differences may be due to differences in task demands. In the deception paradigm, subjects read and answered questions as to whether or not they “stole” an item, and were told that an investigator was monitoring and evaluating this performance. Although similar to deception, malingered memory impairment in the context of a forced-choice assessment may be more dependent on the medial/superior frontal regions, perhaps due to the increased working memory demands related to tracking behavioral output and strategy adherence (Rypma, Prabhakaran, Desmond, Glover, & Gabrieli, 1999; Wager & Smith, 2003).

An important concern in the proper interpretation of the current data is whether laboratory paradigms model real-world or forensic situation of deception/false impairment. In nonlaboratory situations, behavior is self-generated and can be emotionally charged and potentially risky. Application of laboratory findings to interpret nonlaboratory samples may be further complicated if individuals are coached to take countermeasures (i.e., altering attention, breathing, arousal, level of head movement, etc.). A recent study found the accuracy of fMRI for lie detection dropped to a mere 33% when participants used countermeasures during questioning (Ganis, Rosenfeld, Meixner, Kievit, & Schendan, 2011); therefore, a great deal more work is needed.

<table>
<thead>
<tr>
<th>Administration</th>
<th>Feigning (predicted)</th>
<th>Not feigning (predicted)</th>
<th>Rating</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feigning (actual)</td>
<td>11</td>
<td>11</td>
<td>Sensitivity 50%</td>
<td></td>
</tr>
<tr>
<td>Not feigning (actual)</td>
<td>5</td>
<td>17</td>
<td>Specificity 77%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hit rate 64%</td>
<td></td>
</tr>
</tbody>
</table>

Note. $\chi^2(1) = 2.4554$, $p = .1171$. SVM = Structured Vector Machine.

![Figure 2](image-url)
needed to understand whether laboratory-based findings generalize to real-world situations.

Individual differences in behavior and brain patterns pose an additional concern. If attempts are made to forensically identify people on an individual basis, even with a machine learning approach as currently presented, then the sample characteristics of the classification group must be appropriately matched to the individual. Ideally, neuroimaging devices need to be able to identify and correct for individual variances and account for the possibility that perhaps not all brains process lies similarly (Ellenberg, 2009; Holley, 2009).

It is worthy of note that a challenge to interpretation of norms in neuropsychology is that often norms do not take into account diversity or native language concerns that would affect semantic memory of objects ( Brickman, Cabo, & Manly, 2006; Rivera Mindt, Byrd, Saez, & Manly, 2010). Although the appropriateness and interpretation of norms across all races and genders is a topic of debate and discussion in neuropsychology (Brandt, 2007), similar concerns should be applied to neuroimaging studies. Concepts of normative brain behavior are often created on samples that lack diversity. It is beneficial when assessing what brain behavior is indicative of less than optimal performance behavior, that samples are diverse as so as to suggest the overpathologizing of those outside of the anticipated normative set.

This study has a number of limitations. The primary limitation of any malingering work is that instructed malingering by healthy controls does not generalize well to suboptimal performance in a head injured sample ( Rogers & Vitacco, 2002). In addition, the level of deficit feigned in this sample was substantially lower than TOMM norms ( T. N. Tombaugh, 1997) indicating that these were blatant attempts at failure. This work suggests that intentional and substantial malingering on a simple memory task is detectable as increased frontal activation but does not generalize to more subtle overendorsement that maybe seen in compensation seeking individuals ( Rogers & Vitacco, 2002). The current protocol encouraged subjects to perform "as-if" impaired. However, no incentive or secondary gains were offered thus these results do not provide a close corollary for monetarily incentivized deception in a forensic setting. We also note that among our group of subjects with a mean level of education of one postgraduate year, the majority apparently interpreted deliberate feigning instructions to produce TOMM memory scores at chance levels. In contrast, typical samples of mild traumatic brain injury (mTBI) patients with ongoing compensation scored much higher scores (30.8; Moss, Jones, Fokias, & Quinn, 2003). Proper understanding of malingering of memory disorders requires that we study not only those without injury who feign injury (true positives) as in the current study but also those with actual brain injury who feign injury (false positives; Bigler, 2014; Spadoni, Kosheleva, Buchsbaum, & Simmons, 2015). Several important demographic aspects of the current sample should be highlighted. Primarily the current sample was very well educated (17.4 years of education) and racially/ethnically diverse, with a large contingent of Asian Americans. Opposed to prior imaging studies that used an almost entirely Caucasian sample, we looked at classification in a mixed sample. Our results show promising classification in this mixed sample, withstanding evidence that social convention of deception may vary on a cultural basis (Holley, 2009). In addition, although this is currently the largest sample of healthy volunteers performing a memory malingering task to date, only 22 subjects were recruited for this study. Future research should continue to be wary not to use a homogeneous sample that would overpathologize others outside of the samples racial, ethnic, or gender characteristics. The observed activations, especially in the prefrontal cortex from a number of reasons and in a study of this nature, should lead one to be careful regarding the inference of brain state ( Poldrack, 2011). Finally, although a leave-one-out SVM was performed validation in independent and larger samples is required.

In this study we replicate prior work on volitional deception and malingering in healthy controls and show that a frontal network, including the medial and superior prefrontal cortex, is important in memory malingering. By using regions previously identified in a situational deception task, we did not show robust identification of not-feigning and feigning conditions. We suggest that this may be due to greater semantic demands and physiological arousal necessary for deception than memory malingering. Likewise, working memory demands for tasks that require response tracking may place heightened demand on dorsolateral prefrontal regions, as seen in the current study. Although this work does not generalize to all forms of overendorsement of memory deficit, it does suggest that similar increased frontal effort is required for volitional and dramatic feigning of memory impairment.

References


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Franc Hudspeth, Editor

**Table of Contents**
January 2016, Volume 25, Number 1

Neuroscience Influences in *International Journal of Play Therapy* Articles
Edward F. Hudspeth

Neuroscience and the Magic of Play Therapy
Anne L. Stewart, Thomas A. Field, and Lennis G. Echterling

Presence and Play: Why Mindfulness Matters
Theresa A. Kestly

Integrating Interpersonal Neurobiology With Play Therapy
Naomi Wheeler and Dalena Dillman Taylor

Becoming a Neurobiologically-Informed Play Therapist
Rana Hong and Christie M. Mason

Utilizing a Metaphoric Approach to Teach the Neuroscience of Play Therapy: A Pilot Study
Tony Michael and Chad Luke

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Neural correlates of malingering in mild traumatic brain injury: A positron emission tomography study

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Abstract
The detection of malingering in cognitive performance is a challenge in clinical and legal environments. Neuroimaging may provide an objective method to determine the source of failure on tests of symptom validity. Participants comprised 45 combat veterans, 31 with mild traumatic brain injury (mTBI), not seeking medical or legal compensation, who completed the Tombaugh Test of Memory Malingering (TOMM) and a positron emission tomography (PET) scan. Based on TOMM performance (i.e., less than 45 of 50 total correct, suggesting suboptimal effort or malingering), subjects were separated into poor TOMM score (PT; n=10) and good TOMM score (GT; n=35) groups. Voxel-based multiple regression analysis with Group (GT/PT) predicting uptake of fluorodeoxyglucose revealed decreased brain metabolism in the ventromedial prefrontal cortex of poor performers. The current findings may suggest that poor TOMM performance in those with combat trauma and mTBI may be related to ventromedial prefrontal cortical dysfunction. These findings have important implications for the disentanglement of feigned versus actual memory impairment, where the latter may be secondary to neural mechanisms not consistent with forgetting or deception.

1. Introduction

Performance on measures of cognitive effort provides the context for the interpretation of neuropsychological test results. Individuals who fail effort testing may be categorized as severely impaired or malingering, and misassignment may result in failure to receive appropriate services (Lange et al., 2012). Mild traumatic brain injury (mTBI) has been widely linked to higher rates of brain injury (Willis et al., 2011), feigning impairment for external incentives (Bianchini et al., 2006) or both (Rogers and Vitacco, 2002). Further complicating matters, aside from autopsy for histopathological change directly following traumatic brain injury, a gold standard for diagnosis of a mild head injury is not clearly identified. Finally, successful malingerers, by definition, are not detected and thus cannot be included (Harley and Deal, 2006). Therefore, there is a great need for improved assessment of cognitive effort in head injury patients.

Forced-choice neuropsychological testing, or symptom validity testing, is traditionally used to detect poor cognitive effort (Pankratz and Binder, 1997). This approach often invokes the illusion of task difficulty to increase test specificity (Hiscock and Hiscock, 1989). The Test of Memory Malingering (TOMM) is one of the most researched symptom validity tasks and uses a visual memory recognition procedure during which the assessor asks the participant to decide which of two pictures of common objects was shown previously (Tombaugh, 1996). A score significantly below the mean for individuals with confirmed cognitive impairment (a criterion of 90% or 45/50, on the second recognition trial) suggests the possibility of less than optimal effort consistent with malingering (Tombaugh, 1996). While this cutoff score yields excellent sensitivity and specificity (100%) in student simulators and controls (Tombaugh,1997), in samples of clinical populations some patients score in the simulator range. Furthermore, the sensitivity and specificity for patients with a complaint of traumatic brain injury is uncertain since there may be no independent validation of the injury (e.g., histopathology). Therefore, while neuropsychological measures of suboptimal effort can be highly effective, there is concern that some individuals may be missed, and others may be coached to avoid detection. For these reasons, objective means to detect effortful deception and simulated low effort performance are needed.

The majority of studies on the neural correlates of effortful
failure have been conducted in healthy controls asked to simulate failure during functional neuroimaging. Findings indicate that the same prefrontal neural networks that support simulated task failure also underpin tasks that demand high cognitive effort (Larsen et al., 2010). Therefore, there may be substantial similarity in the neural correlates of "trying to fail" and "trying to succeed." A few studies have examined neural processes supporting unintentional memory failure. A recent meta-analysis revealed that unintentional false recognition responses (e.g., false alarms) were associated with significant activation of the medial, middle, and ventromedial prefrontal cortex, with the strongest effect in the ventral anterior cingulate cortex (vACC) (Brown dyke, 2012). These findings suggest that one potential mechanism of symptom validity test failure, with special regard to false alarms, may be associated with dysfunction of the ventromedial prefrontal cortex.

As effortful failure results in a similar pattern of neural engagement as does effortful success (Larsen et al., 2010), research on instructed malinger ing may not provide insight into dissociating depletion from other mechanisms of symptom validity test failure, such as intentional lack of effort or brain pathology. Furthermore, while conventional T1- and T2-weighted imaging techniques are relatively insensitive to the detection of mild neurotrauma, position emission tomography (PET) has been used to identify suboptimal brain function in the absence of structural lesions (Ruff et al., 1989, 1994; Chen et al., 2003; Belanger et al., 2007; Kato et al., 2007; Zhang et al., 2009; Kim et al., 2010; Provenzano et al., 2010; Peskind et al., 2011; Byrne et al., 2014; Buchsbaum et al., 2015). Thus, we examined patterns of fluorodeoxyglucose-F18 (FDG) uptake in PET studies carried out in veterans with spontaneous failure on the TOMM who participated in a research protocol, were assured of the confidentiality of their test scores, and therefore had no benefit eligibility or financial incentive for poor performance. We hypothesized that poor TOMM performance might be linked to abnormal FDG uptake in the ventromedial prefrontal cortex, consistent with this region's role in compensatory response during false alarms (Brown dyke, 2012) and memory retrieval processes (Moscovitch and McAndrews, 2002; Gilboa et al., 2006).

2. Methods

2.1. Subjects

Forty-five Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) Veteran volunteers completed a computerized version of the Tombough Test of Memory Malingering (TOMM) and a positron emission tomography (PET) scan. Based on TOMM performance (i.e., less than 45 of 50 suggesting malinger ing) subjects were separated into poor TOMM performance (PT; n=10) and good TOMM performance (GE; n=35). All subjects were male, approximately 30 years old, and on average completed 14 years of education. Groups did not differ significantly on age, education or ethnicity (see Table 1). Of the 45 Veterans, 31 reported a history of mild traumatic brain injury (mTBI). Those Veterans with mTBI were analyzed as part of the whole cohort and separately. A whole brain analysis of the effects of mTBI on this sample has been reported elsewhere (Buchsbaum et al., 2015). The study was approved by the University of California San Diego (UCSD) Institutional Review Board and the San Diego Veterans Administration Research and Development review. A signed informed consent was obtained from each subject. Subjects were informed that the results would be kept confidential within our research group and thus would not affect any VA benefits.

The acquisition of PET imaging lasted about 40 min. Before coming in for a morning PET scan, subjects were instructed not to use caffeine or nicotine, or eat any foods with a high glucose concentration (after midnight) the night before. If subjects were to be scanned in the afternoon, they were asked to omit caffeine, nicotine, food and fluids (except water) for at least 4 h before the imaging session. All subjects were asked to abstain from alcohol for 48 h before their appointments. These precautions were taken to keep plasma glucose levels consistent and within a normal physiological range to reduce potential variability in the glucose metabolic measures.

Subjects were assessed for psychiatric comorbidities using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID) (First et al., 2002). A posttraumatic stress disorder (PTSD) diagnosis was determined by the Clinician-Administered PTSD Scale (CAPS) (Blake et al., 1995) (a score of at least 65). Combat-related mTBI, common among veterans involved in the Iraq and Afghanistan conflicts (Hoge et al., 2008), was defined by the following two criteria proposed by the American Congress of Rehabilitation Medicine: (1) A traumatically induced physiological disruption of brain function as indicated by at least one of the following: any period of loss of consciousness, any loss of memory for events immediately before or after the accident, any alteration in mental state at the time of the accident, and focal neurological deficits that may or may not be transient. (2) Severity of the injury does not exceed loss of consciousness of 30 min, Glasgow Coma Scale score of less than 13 after 30 min, and posttraumatic amnesia of 24 h. Subjects were excluded if they had a history of bipolar disorder type I or any psychotic disorder, initiated psychotropic medication within the last 4 weeks or fluoxetine within the last 6 weeks, current use of mood stabilizers, current daytime dosing of benzodiazepines, multiple concurrent psychotropic medications, a history of more than 2 years of alcohol abuse or metal in their body.

2.2. Measurements

The TOMM is a 50-item recognition test designed for adults to discriminate between true memory-impaired patients and malingers. Subjects are shown 50 simple line drawings for 3 s each, at 1 s intervals. Immediately afterwards, they are given 50 recognition panels, with 2 pictures per slide, each panel containing the previously shown picture and a new picture. The subject is asked to indicate which picture was previously viewed. Feedback regarding the correctness of the subject's response is given right away. Two learning trials of all 50 items are administered one after the other. Scores range from 0 to 50 for each trial. A score lower

<table>
<thead>
<tr>
<th>Table 1 Characteristics of participants (n=45).</th>
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<tbody>
<tr>
<td>Gender</td>
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</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Level of education</td>
</tr>
<tr>
<td>High school graduate</td>
</tr>
<tr>
<td>Partial college</td>
</tr>
<tr>
<td>Bachelor's degree</td>
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<tr>
<td>Master's degree</td>
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<tr>
<td>Ethnicity</td>
</tr>
<tr>
<td>African American</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
</tr>
<tr>
<td>Caucasian</td>
</tr>
<tr>
<td>Hispanic/Latino American</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>Age (years)</td>
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<tr>
<td>Education (years)</td>
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</tbody>
</table>

Note Age and education are presented as mean (standard deviation). TOMM¼ Test of Memory Malingering; Good TOMM (n=35); Poor TOMM (n=10).
than 45 following the second trial indicates the possibility of suboptimal effort or malingering; a second trial is not required if the maximum score is achieved on the first trial (Tombaugh, 1996). Patients in this study were given a computerized version of the test to reduce variation in test delivery. A two-way analysis of variance (ANOVA) was performed, in which groups (PT/CT) were compared on TOMM results. Results were considered significant at an alpha of 0.05.

2.3. Psychological measures

The SCID without the PTSD module (First et al., 2002) was used to diagnose major Axis I disorders, including depression and substance abuse/dependence. The CAPS (Blake et al., 1995) is a structured interview with 17 items from the DSM-IV criteria B, C, and D, and it has demonstrated high levels of inter-rater reliability, and convergent validity. The CAPS can be administered in 30–60 min, and it has the advantages of categorical (diagnostic) or dimensional scoring of PTSD plus items for assessing social and occupational functioning, dissociation, and the validity of the items. The Beck Depression Inventory-2 (BDI-II) (Beck et al., 1996) is a brief and reliable measure of depression. The State-Trait Anxiety Inventory (STAI) (Spielberger et al., 1983) is a widely used measure of anxiety in adults.

2.4. Neuropsychological measures

The neuropsychological battery consisted of the following tests covering a variety of cognitive domains with particular emphasis on memory, executive function, and attention: Wechsler Adult Intelligence Scale-4th Edition (WAIS-IV) subtests: Vocabulary, Similarities, Letter Number Sequencing, Matrix Reasoning (Wechsler, 2008), and the Trail Making Test (TMT), Parts A and B (Reitan, 1955). These measures were selected as they are well validated and reliable; in addition, there is substantial population-based normative information.

2.5. Brain imaging

An anatomical scan (spoiled gradient recalled (SPGR); T1-weighted; sagittal acquisition; field of view 25 cm; matrix 256 × 176; 1.1 mm slices; repetition time 4.8 ms; echo time 4 ms; flip angle 12°) was acquired to allow for conversion to Montreal Neurological Institute (MNI) space and alignment with the PET image. For the PET scan, the subject had an intravenous line inserted when controlling for PTSD (Table 4).

A voxel-based multiple regression in the Analysis of Functional Images package (AFNI, Cox, 1996) was performed with Group (PT/CT) predicting FDG uptake, covarying for mTBI and PTSD diagnosis. The degree of spatial correlation of voxels of PET data was calculated using 3dFWHMx, and minimum cluster volume was calculated with AlphaSim within the gray matter mask. Results were considered significant at a voxelwise alpha of 0.05.

3. Results

3.1. Psychological and neuropsychological measures

There was no significant difference on the prevalence of PTSD between PT and CT groups; however, there was a significant difference in PTSD severity as measured by the CAPS. There was no significant difference on the STAI or BDI-II between the PT and CT groups. The PT and CT groups did not differ significantly on neuropsychological measures (see Table 2).

3.2. PET imaging

A voxel-based multiple regression with Group (PT/CT) predicting FDG uptake, covarying for mTBI and PTSD diagnosis, revealed that in a whole brain analysis only the right anterior cingulate cortex (ACC, Brodmann area 32, see Table 3 for MNI coordinates) produced a significant cluster of greater FDG uptake in the CT group than in the PT group (Table 3 and Fig. 1). To determine if findings were consistent within those who had reported mTBI, a secondary analysis was performed within this group. Two more regions of diminished FDG uptake in the cerebellum and middle temporal gyrus were found within the mTBI group (n=31) when controlling for PTSD (Table 4).

Table 2

<table>
<thead>
<tr>
<th>Summary of the psychological and neuropsychological results.</th>
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</thead>
<tbody>
<tr>
<td>Good TOMM</td>
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<td>--------------------------------</td>
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<tr>
<td>Psychological measures</td>
</tr>
<tr>
<td>CAPS</td>
</tr>
<tr>
<td>Beck Depression Inventory II</td>
</tr>
<tr>
<td>Spielberger State Anxiety</td>
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<tr>
<td>Neuropsychological measures</td>
</tr>
<tr>
<td>SVLT avg total correct list 1-5</td>
</tr>
<tr>
<td>Vocabulary (SS)</td>
</tr>
<tr>
<td>Trails A (s)</td>
</tr>
<tr>
<td>Trails B (s)</td>
</tr>
<tr>
<td>Similarities (SS)</td>
</tr>
<tr>
<td>Letter Number Sequencing (SS)</td>
</tr>
<tr>
<td>Matrix Reasoning (SS)</td>
</tr>
</tbody>
</table>

Note: TOMM: Test of Memory Malingering; CAPS: Clinician-Administered PTSD Scale; SVLT: serial verbal learning test; SS: Scale Scores; Good TOMM (n=35); Poor TOMM (n=10); scores represent mean (standard deviation); * significant at p<0.05.
We examined the PET scans of 45 OEF/OFF veteran volunteers, 31 with mTBI, in correlation with their TOMM scores. We observed less FDG uptake in the ventromedial prefrontal cortex (e.g., ventral anterior cingulate) in those with poorer TOMM scores after controlling for mTBI and PTSD diagnosis. This area remained significant when we examined the subgroup of individuals with mTBI, suggesting that PTSD may not meaningfully contribute to this functional profile and the mTBI may be driving these results. Performance on a small battery of neuropsychological tests was also statistically equivalent between groups, suggesting that poor TOMM performers were cognitively intact and motivated to complete other tests with effort. The current findings may provide evidence for an alternative neural mechanism of failed symptom validity testing in unincenitized individuals, particularly in those with a history of mTBI.

The results are in line with our hypothesis, in that abnormal FDG uptake in the ventromedial cortex was linked to worse performance on the recognition memory TOMM test. Specifically, we hypothesized that compromised integrity of the ventromedial prefrontal cortex might be associated with impaired ability to inhibit false alarms during recognition demands (i.e., TOMM performance). The ventromedial prefrontal cortex has been implicated in the earliest stages of memory retrieval to provide a basis of verification, or “feeling of rightness,” that guides subsequent decision-making (Gilboa and Moscovitch, 2002). This idea is supported by evidence that lesions to the ventromedial prefrontal cortex are associated with (1) indiscriminate endorsement of false memories (Schnyer et al., 1996, 2000, 2001), (2) production of false memories in response to cues (Moscovitch and Melo, 1997), (3) increased false recognition during word list learning (Melo et al., 1999), and (4) increased false positive responses during a visual recognition task (Gilboa et al., 2009). The temporal resolution of event-related potential measures provide additional evidence that the rapid decision to reject or endorse an item is associated with an early ventromedial prefrontal response (Bennett et al., 2002; Gilboa et al., 2006, 2009), a response that may precede more elaborate cognitive processing in dorsal and lateral prefrontal regions. Further support for this regional specificity comes from event-related potential findings in healthy controls, wherein successful visual recognition has been associated with a rapid ventromedial prefrontal response (Wahlen et al., 2011) and from deficit-lesion findings wherein the “feeling of knowing” has been linked to integrity of the pregenual anterior cingulate cortex (Schnyer et al., 2005). Given the location of less PET signal within PT subjects (i.e., pregenual ACC extending into the medial prefrontal cortex), we speculate that dysfunction of this region may have influenced subjects’ ability to effectively monitor during retrieval processes, resulting in a higher rate of TOMM false alarms.

Our findings are also consistent with the results of the meta-analysis by Browndyke (2012) that identified the ventral anterior cingulate as consistently active to non-deceptive false memory retrieval errors in cognitively normal individuals (Browndyke, 2012). Greater ventromedial prefrontal activation observed by Browndyke and colleagues during unintentional false recognition may be associated with compensatory engagement as individuals attempt to monitor for false positives. The current pattern of results may suggest that the PT scorers were less effective at engaging this region during a memory recognition task, and that mTBI contributes to this profile. Indeed, a recent meta-analysis by our group points to a widely distributed network of structures that may be affected by mTBI (Simmons and Matthews, 2012) and suggests that mTBI may be associated with dysregulated functional activation in prefrontal regions (Matthews et al., 2011). Recent work by Bonnelle also suggests that mTBI is associated with alteration of the ventral anterior cingulate (Bonnelle et al., 2011). Finally, mTBI-related disruption to the ventromedial prefrontal cortex has been echoed by other researchers examining both its structural and functional neural correlates (Matthews et al., 2011; 2012).

Table 3
Areas with improved FDG-18 binding potential with better performance on the TOMM in all 45 subjects, controlling for PTSD and mTBI.

<table>
<thead>
<tr>
<th>Direction</th>
<th>Vol (mm³)</th>
<th>x</th>
<th>y</th>
<th>z</th>
<th>s-Stat</th>
<th>Within</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTo GT</td>
<td>552</td>
<td>0</td>
<td>48</td>
<td>0</td>
<td>2.671</td>
<td>Right anterior cingulate</td>
</tr>
</tbody>
</table>

Table 4
Areas with improved FDG-18 binding potential with better performance on the TOMM in all 31 subjects with mTBI controlling for PTSD.

<table>
<thead>
<tr>
<th>Direction</th>
<th>Vol (mm³)</th>
<th>x</th>
<th>y</th>
<th>z</th>
<th>s-Stat</th>
<th>Within</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTo GT</td>
<td>552</td>
<td>0</td>
<td>48</td>
<td>0</td>
<td>2.654</td>
<td>Right anterior cingulate</td>
</tr>
<tr>
<td>PTo GT</td>
<td>290</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2.8</td>
<td>Left cerebellum</td>
</tr>
<tr>
<td>PTo GT</td>
<td>263</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>9.09</td>
<td>Right middle temporal gyrus</td>
</tr>
</tbody>
</table>

Note: Coordinates reported in Montreal Neurological Institute space; FDG= fluorodeoxyglucose; TOMM= Test of Memory Malingering; PTSD=posttraumatic stress disorder; mTBI=mild traumatic brain injury; GT=Good TOMM (n=35); PT=Poor TOMM (n=10).
Consistent with the extant literature, our findings may suggest that mTBI relates to disrupted ventromedial prefrontal functioning and memory monitoring difficulty. Such an insult may in turn create inconsistent performance resulting in failure on symptom validity tests, especially in recognition memory format. False recognition hits that occur as consequence of damaged ventromedial prefrontal cortex could be misinterpreted as poor effort or an attempt to deceive. Of note, this mechanism may provide an alternative explanation for some of the high rates of effort test failure in mTBI samples (e.g., Lange et al., 2012), especially as the most widely used symptom validity tests are based on the magnitude of false recognition responses (e.g., the Word Memory Test, TOMM). While we have no way of verifying that memory encoding problems were not the mechanism of poor performance, if this had been the case, we would have expected to see decreased brain metabolism in regions such as the medial temporal lobes (Wang et al., 2013). We would also expect PT subjects to have worse scores on the test of word list learning (SVLT), which was not the case (Table 2).

This study has a number of limitations. First, while we cannot rule out simple forgetting as a potential mechanism by which these groups differed on their TOMM performance, differences in attention and memory were not observed during neuropsychological testing. Second, this is a relatively small sample of individuals who performed below 45 on the TOMM (n=10). However, this study represents the first inspection of the neural correlates of naturalistic failure on a test for memory malingering. Future work is needed to determine the robustness of these effects. Third, the population used in this study was entirely composed of Veterans, half whom also had comorbid PTSD and most whom have current or past depression or anxiety. The reported severity, but not frequency, of PTSD was significantly different between the PT and GI samples. Even though we controlled for these factors in our analysis, more complex PTSD symptoms in the PT group may have influenced these results via a third and uncontrolled variable (Greiffenstein and Baker, 2008). Fourth, we cannot determine in this sample if performance was intentionally or unintentionally poor; thus it may not generalize to a forensic and motivated population. Fourth, PET images were not acquired during performance of the TOMM, so the PET findings are indicative of general neural functioning during a verbal memory task. Future research should look at PET-FDG activity during TOMM performance to determine the more acute aspects of this association. Finally, the computerized administration of the TOMM may not be representative of the standard administration. Again, future studies examining brain imaging in other populations and with other tasks are needed before definitive determinations can be made.

This study is a first step in presenting the neural processes that characterize symptom validity test failure. More studies are needed to examine the deployment of neural resources during cognitive and affective processes, and to investigate how these patterns contribute to deliberate malingering by simulators and unintentional poor performance by patients, as well as how factors such as mTBI and psychiatric diagnosis affect these processes. This study shows that with a relatively small group of subjects one can begin to delineate the neural regions that are associated with effort test failure. The ultimate goal of these studies is to better understand the neural circuits involved in effort testing, and to develop more targeted measures that will further aid identification of malingering in forensic settings.

Contributions

A.N.S., M.S.B., E.K., and A.D.S. conceived and designed the experiments. M.S.B. and E.K. performed the experiments. A.N.S., M.S., B, and E.K. analyzed the data: A.D.S., E.K., M.S.B., and A.N.S. wrote the manuscript.

Acknowledgments

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References

ADMISSIBILITY OF EVIDENCE OF MALINGERING

The connotations of that term [malingering] readily can conjure up negative concepts of a person’s intentionally wrongful conduct, deceit, greed, evasion of duty, or criminality. To brand a person a “malingeringer” is essentially to declare him or her a faker, a liar, a slacker, or a sloth.

• systolic blood pressure deception test: *Frye v U.S.* (D.C. Cir. 1923)

• sodium butathol: *Ziegler v State* (Fla 1981)

• polygraph; *Robinson v Cwth.* (Va. 1986); *State v Shively*, 268 Kan 573 (Kan 2000)

• fMRI: *Wilson v Corestaff Svs.*, (Sup Kings 2010); *U.S. v Semrau* (6th Cir 2012)

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**Expert Testimony On Credibility**

- invades the province of the jury – the sole and ultimate decision makers on the issue of credibility.

- turns trial into an expert battle on issue of credibility

- might be admissible (in NY) if methodology yields *conclusive* results (but it doesn’t)
“[c]redibility is, as the cases have repeated and insisted from the dawn of the common law, a matter solely for the jury.”

People v Williams, 6 NY2d 18 (1959)

“How complex and confusing would a trial become for the jury if it were faced with conflicting expert opinions, each with scientific authority to support it, upon the collateral matter of credibility. The first question would be the credibility of the experts, and then the credibility of the witness. The battle of the experts might well be such that the jury would lose sight of the issues...”

People v Williams
FOR EXAMPLE – discount the malingering test due to the IQ or discount the IQ test due to the malingering?

Dr. Call disagreed with Dr. Hopewell’s conclusion that Petitioner was not malingering. To determine if Petitioner was malingering, Dr. Hopewell administered two tests, the Test of Memory and Malingering (TOMM) and the 15-Item Memory Test. Petitioner’s results on both of these tests showed that Petitioner was malingering; however, Dr. Hopewell discounted these results due to Petitioner’s low score on the WAIS-III. Dr. Call testified that there was no research to support Dr. Hopewell’s disregard for the malingering test results based on Petitioner’s low I.Q. (id. at 12-22, 24-25, 37). When Dr. Call himself administered the WAIS-III and the TOMM to Petitioner, he received the same results as Dr. Hopewell; however, giving appropriate consideration to Petitioner’s scores on the TOMM, Dr. Call testified that Petitioner’s WAIS-III score must be deemed invalid due to malingering. In sum, because there was evidence that Petitioner was malingering during both testing sessions, Dr. Call testified that neither his results nor Dr. Hopewell’s results could be considered valid I.Q. assessments (id. at 25-26, 38-39, 69-70).


Kravitz v LIJ-Hillside Med Ctr, 113 AD2d 577 (2d Dept 1985)

“When credibility is at issue, however, expert testimony has been held to a higher standard than is normally true for other types of expert testimony and is admissible only if the methodology applied by the expert is so reliable that he or she can testify that the results are conclusive and not merely accurate within a reasonable degree of certainty…”

The court acknowledged that this is a very high standard that is most likely unattainable.

“Obviously, the requirement that the methodology be of such nature that its results are conclusive is extremely difficult to fulfill, and it is questionable at best whether the present state of the art is so exact as to allow such testimony in any case.”
• **People v Graydon** (2d Dept 1974) [precluding psychiatrist’s opinion that D’s account of events was incredible (and why) as equivalent to allowing opinion that D was guilty];

• **People v Kampshoff** (4th Dept 1976) [precluding expert opinion that another witness had lied on the stand];

• **People v Maynard** (4th Dept 2016) [precluding expert opinion as to the credibility of a child abuse victim].

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Allowing psychiatrist to testify that P had an “undifferentiated somatoform disorder”, “poor psychiatric credibility”, and that her accounts of what had occurred were affected by “secondary gain” and “malingering” was **plain error**

“a thinly veiled comment on witness credibility.”

“[o]pinions of this type create a serious danger of confusing or misleading the jury, ... causing it to substitute the expert’s credibility assessment for its own common sense determination.”

“[W]e shall assume for the purposes of our analysis that qualified expert opinion on malingering or cognate concepts could have some probative value in evaluating whether a personal injury plaintiff is telling the truth about his or her claimed injuries.

“The expert’s opinions about symptom magnification (and equivalent technical-sounding medical terms) stamp an erudite imprimatur upon a defense attack on plaintiff’s overall credibility.”

“Such opinion evidence from a doctor inherently has a clear capacity to deprive a plaintiff of a fair jury trial. Consequently, we hold that such testimony at a civil jury trial should be categorically disallowed…”

“We are mindful that here, unlike the scenario in Nichols, the trial court issued a limiting instruction reminding the jurors of their exclusive role in assessing witness credibility. We do not believe such an instruction can sufficiently ameliorate the undue harm of admitting the expert opinion in the first place. As we have recognized, sometimes jury instructions about the misuse of evidence are simply inadequate to effectively blunt the risks of significant prejudice.”

Rodriguez

“Laymen, even with the aid of a charge by the court, may not reasonably be expected to apply all of the refined legal reasoning which would be necessary to place such testimony in its proper perspective and give it only its limited significance.”

Peo. v Williams
The End
And he changed his behavior before them, and feigned himself mad in their hands, and scrabbled on the doors of the gate and let his spittle fall down upon his beard.†

“In response to the question: ‘Is that your conclusion that this man is a malingerer?’ Dr. Unsworth responded: ‘I wouldn’t be testifying if I didn’t think so, unless I was on the other side, then it would be a post traumatic condition.’”‡

TABLE OF CONTENTS

I. INTRODUCTION........................................................................................................................................339

II. DESCRIBING AND DETECTING MALINGERING........................................................................342
   A. A Brief Description of Malingering .................................................................................................342
   B. Detecting Deceit in the Legal System Generally ........................................................................344
      1. Systemic Safeguards ..................................................................................................................344
      2. Expert Scientific Testimony ........................................................................................................345
         a. Scientific reliability ..................................................................................................................345
         b. Helpfulness ...............................................................................................................................348
   C. Detection Methodology ...................................................................................................................349
      1. Lay Observation and Experience ..............................................................................................349
      2. Scientific Methods ......................................................................................................................349
         a. Behavioral evaluation ..............................................................................................................350
         b. Psychological tests ...................................................................................................................352
         c. Physiological techniques .........................................................................................................356
            (1) The polygraph ......................................................................................................................357

* Professor of Law, Nova Southeastern University. I would like to thank Dr. Larry Liechter and Jeff Warshow for able research and assistance.
† 1 Samuel 21:13 (King James).
(2) Hypnosis .......................................................... 361
(3) "Truth serum" .................................................. 364
(4) Other methods .................................................. 365
3. Assessing the Scientific Method ............................. 366
D. Categorizing Evidence of Malingering .................... 366
  1. Direct Evidence of Malingering ............................ 367
  2. Indirect Evidence ............................................. 367
E. Special Contexts—The Most Likely Forums For Malingering
   Issues in the Legal System .................................... 369
   1. Mental Deficit Claims Generally .......................... 371
   2. Criminal Defendants ........................................ 372
      a. The insanity defense ....................................... 373
      b. The penalty phase in capital proceedings ............... 376
      c. Competency to stand trial ............................... 376
      d. Competency at other stages of a prosecution ........... 379
   3. Workers’ Compensation and Personal Injury Cases ....... 380

III. RESTRUCTURING THE LEGAL GEOGRAPHY: A REVISED APPROACH
   TO THE SCIENTIFIC DETECTION OF MALINGERING ............. 384
   A. Inadequacy of the Current Approach ...................... 384
   B. The Real Problem: Differences in Law and Science ........ 385
      1. Different Objectives ....................................... 386
      2. Different Methods of Operation ........................ 387
      3. Different Definitions of Truth ........................... 388
   C. Reconciling the Cultures of Law and Science in the Context
      of Malingering ................................................ 389

IV. A PROPOSAL ......................................................... 392

V. CONCLUSION ....................................................... 395
I. INTRODUCTION

The problem of malingering has weighed heavily on the American legal system. Such feigned injury or illness for personal advantage has significant ramifications, damaging the lives of individuals, weakening the financial well-being of companies, and undermining the public's confidence in the legal system. False charges of malingering may be equally as damaging to individuals, the business community, and the system as a whole.

Far from serving only as an obscure academic debate, malingering issues abound on the daily docket. Workers' compensation or personal injury claims often involve "soft tissue" injuries. Many individuals receive a variety of governmental benefits due to physical and psychological injuries such as stress. Criminal defendants raise insanity defenses and competency to stand trial issues. In these contexts, there is often no clearly discernible cause of the disease or condition, leading readily to the inference that such injuries are phantom ones, without validity. For example, thousands of Gulf War veterans suffered the stigma of disbelief and denial by authorities about their claimed symptoms of injury or illness, only to have two separate studies several years after the War declare their problems to be legitimate.

With so much at stake, there is strong interest in accurately detecting feigned illness or injury in the legal system. The modern judicial system has maintained its reliance on the judge and jury to evaluate the veracity of claimed illness or injury. The fact finders have been expected to ferret out malingering based on experience rather than formalized training. The general view has been that the detection of malingering can be faithfully left to the common sense of jurors.

There has been increasing dissatisfaction with lay jurors' ability to detect deception, however. This disenchantment has many sources, including the controversial outcomes of highly publicized trials, the increasing rates of Workers' Compensation insurance, and the public's diminished confidence in the legal system overall. These factors, coupled with significant scientific

3. Many doctors as well as laypersons have agreed with this assessment. See generally, e.g., Dewey G. Cornell & Gary L. Hawk, Clinical Presentation of Malingers Diagnosed by Experienced Forensic Psychologists, 13 Law & Hum. Behav. 375 (1989).
advances, such as DNA print identification, suggest that science should play a greater role in the trial system's truth-finding function. This paper discusses the propriety of expanding the use of science and its experts in the legal system to detect malingering, either by replacing or assisting the jury's common sense evaluation.\(^4\)

Science offers a variety of direct and indirect methods of detecting intentional deception. These methods include the observation of behavioral cues, the classification of individuals through psychological syndromes,\(^5\) psychological testing techniques such as the revised Minnesota Multiphasic Personality Inventory,\(^6\) ("MMPI-2"), and physiological techniques, including hypnosis, polygraphs and sodium amytal, the so-called "truth serum."\(^7\)

The difficulty in ascertaining "the truth" and distinguishing it from intentional deceit is an historical problem of considerable magnitude, on the level of the mind-body or subject-object dichotomies. While philosophers such as Descartes, Kant, Heidegger and Husserl each sought to provide a coherent and consistent structural framework of thought processes and the known world, different models of truth were woven into their grand designs.

The modern truth-finder is not so much the philosopher but the scientist. The scientist has attempted to provide the lawyer and the court system with a more objective, and consequently more reliable, detection system for malingering. If the scientific approach serves to add clarity to an obfuscatory area, the benefits would be considerable, relieving (at least

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4. In light of the use and interest in scientific assistance in detecting malingering in judicial proceedings, this article essentially will address three questions: (1) Is there a scientific method by which the malingering witness or claim can be unmasked for the jury, some "magic test" that can supplant the jury's assessment; (2) What test for novel science should be used to guide courts in determining admissibility; and (3) What type of evidence should be admitted?

5. Syndromes legitimize a set of symptoms occurring without a readily detectable physiological cause.

6. The Minnesota Multiphasic Personality Inventory, (MMPI), one of the most widely used personality tests consists of many statements requiring a true or false answer. It measures a variety of personality traits and psychopathologic behavior, comparing the results with established norms. By correlating responses of known psychiatric patients with normal controls, the MMPI is felt by many to be more secure statistically than any other psychological test. See PHILLIP SOLOMON & VERNON D. PATCH, HANDBOOK OF PSYCHIATRY 105 (1971).

7. Sodium amytal is a barbiturate sedative that lessens the frontal lobes' inhibition on the control of thoughts. This substance is unreliable in determining the truth, although it may stimulate repressed memories. See Phillip J. Resnick, The Detection of Malingered Mental Illness, 2 BEHAV. SCI. & L. 21, 24 (1984). According to Dr. Resnick, "[o]ne half of the subjects in Redlich's (1951) study were able to maintain a lie under the influence of sodium amytal." Id.

Hypnosis is an artificially induced passive state in which there is an increased responsiveness to suggestion, provided these do not conflict seriously with the subject's own unconscious wishes. See DORLAND'S ILLUSTRATED MEDICAL DICTIONARY 709 (24th ed. 1965).

Polygraph testing is based on so-called emotional responses of increased heart rate, blood pressure, and the overall sympathomimetic effect.
partially) the fact finder of one of the most demanding tasks at trial—evaluating the credibility of claims or witnesses.

This Article argues that despite great strides, science has not yet discovered the magic elixir for distilling truthfulness from malingering and has not yet rendered the philosophers obsolete. The objectives, methodologies and even the definitions of truth diverge in the cultures of science and law. In particular, law is designed around an adversary system that produces truth through zealous advocacy by opponents. “Truth” in this advocacy system is telic or instrumental in nature—it is used as a means to an end, one focused on the particular dispute and limited by time and evidentiary rules. By contrast, the scientific method seeks more in the way of ultimate truths, those that describe the known world. This truth is testable and repeatable, and is free from the legal system’s time constraints and dispute requirements. Because of the difference in objectives, methods and formulations, the instrumental or telic truth of the adversary system sometimes clashes with the “work-in-progress,” testable truth of the scientific method. These differences often yield uncertainty and difficulty in the efforts to detect malingering.

To best promote the coalescence of law and science and their disparate formulations of “truth,” scientific detection methods should be viewed primarily as a supplement to common experience, not as a substitute. In particular, the tendency to assign the label of “malingering” may distort the evaluation of credibility and be antithetical to detecting intentionally false behavior. To assume that behaviors encompassing malingering reside under a single label or are detectable through a single scientific method misunderstands the scientific method and scientists, who, when asked, may provide a wide variety of responses and approaches to detecting malingering. Thus, to maintain the integrity of credibility determinations, experts in this area should first provide the basis of the testimony and the nature of the method used.

The primacy of the legal system should be safeguarded from loose rhetoric in other ways as well. Several factors should govern the admissibility of the evidence in addition to the imposition of this anti-labeling requirement. Several other factors should govern the analysis, such as whether the evidence is offered to the judge or to the jury and how central the evidence is to the case. Until scientific methodology provides unequivocal diagnostic criteria, science should be used only to minimize the myths and prejudices of everyday life about malingering, not as the sole affirmative proof of deception. Scientific evidence thus may be admitted to help juries understand that illness or injury without a known scientific cause does not mean that the illness or injury is fake.

This paper has five parts. Following this introduction, Part II
describes malingering and the attempts to detect it through science and law. Part III explores the differences in the cultures of science and law and how those differences impact the legal system's approach to malingering. Part IV includes a proposal for integrating the scientific detection of malingering into the legal system. Part V concludes the article by suggesting that the clash of science and law will be minimized if the adversary system and its culture of truth is accorded primacy.

II. DESCRIBING AND DETECTING MALINGERING

A. A Brief Description of Malingering

Malingering can be defined as the conscious feigning or exaggeration of physical injury or mental illness for personal benefit. It has been more formally defined by the American Psychiatric Association as "the intentional production of false or grossly exaggerated physical or psychological symptoms, motivated by external incentives such as obtaining financial compensation." Thus, malingerers possess "a deceitful state of mind."

Malingering generally involves the fabrication of pain, psychiatric symptomatology, or disease. Different types of malingering behaviors exist:

_Dissimulation_ is the concealment or minimization of existing symptoms. _Pure malingering_ is the feigning of disease or disability when it does not exist at all. _Partial malingering_ is the conscious exaggeration of symptoms which do exist. _False imputation_ is the ascribing of actual symptoms to a cause consciously recognized to have no relationship to the symptoms.

8. _See Diagnostic Manual, supra note 1, at 683; see also Black's Law Dictionary 959 (6th ed. 1990)._  
10. Sometimes, although not for the purposes of this paper, the person who unconsciously makes false claims without any intentional deception is considered to be a malingerer as well. An example is the hypochondriac who fabricates symptoms of illness or injury due to excessive anxiety.  
12. _See Lees-Haley, supra note 11, at 66. For example, "Simulation . . . is feigning symptoms which do not exist." Resnick, _supra_ note 7, at 23._  
13. _See Lees-Haley, supra note 11, at 66._  
Some experts in the medical community look at malingering as a type of mental disease. Others believe "[t]here is a strange, entirely unfounded superstition even among psychiatrists that if a man simulates insanity there must be something mentally wrong with him in the first place." The *Diagnostic and Statistical Manual of Mental Disorders* does not resolve this dispute. Yet the location of malingering in the *Manual* may be illustrative of whether malingering is considered a mental illness—it is listed in a chapter titled "Additional Conditions That May Be a Focus of Clinical Attention," following another category entitled "Noncompliance With Treatment."

The traditional paradigm of the malingering, who feigns illness or injury encompasses people asserting or defending against a compensable claim of abuse or injury. False claims of abuse may be raised to explain one's own behavior or to retaliate against claims asserted by another. Claims of victimization often boil down to a question of who is telling the truth, so the detection of malingering becomes paramount.

The malingering should be distinguished from those with genuine psychopathology, such as those who have various personality disorders. These personality disorders include: (1) the uncooperative patient; (2) the person with factitious disorder; and (3) the person with mixed malingering and factitious disorder. While malingers consciously and volitionally feign illness for some personal gain, by contrast, "uncooperative patients" have no clear motive for behaving in such a manner. Uncooperative patients might behave as they do because they distrust the physicians evaluating them or they enjoy the power it appears to provide them. Persons with factitious disorder may have voluntary control over their behavior. Such a disorder, however, is caused by a psychological problem in which the individual needs to obtain relief from emotional conflict and does so by mimicking physical or psychological illness or injury. This mimickery, therefore, is in a sense without blameworthiness. The American Psychiatric Association describes the difference as follows:

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15. See id. at 22.
16. *Id.* (quoting FREDRIC WERTHAM, *THE SHOW OF VIOLENCE* (1949)).
17. *DIAGNOSTIC MANUAL*, *supra* note 1, at 675.
18. *Id.* at 683.
20. See id.
In malingering, the individual also produces the symptoms intentionally, but has a goal that is obviously recognizable when the environmental circumstances are known. For example, the intentional production of symptoms to avoid jury duty, standing trial, or conscription into the military would be classified as malingering. Similarly, if an individual who is hospitalized for treatment of a mental disorder simulates an exacerbation of illness to avoid transfer to another, less desirable facility, this would be an act of Malingering. In contrast, in Factitious Disorder, the motivation is a psychological need to assume the sick role. 

Patients with mixed malingering and factitious disorder both consciously and unconsciously desire to appear ill.

B. Detecting Deceit in the Legal System Generally

1. Systemic Safeguards

The legal system has various safeguards to detect intentional deceit. These include the cross-examination of witnesses, the requirement that witnesses swear or affirm that their testimony is truthful, and the opportunity to observe the demeanor of testifying witnesses. The Federal Rules of Evidence, which govern the admissibility and consideration of evidence at trial, are premised on these safeguards. The Advisory Committee’s Note to the Hearsay Rule states as follows:

The factors to be considered in evaluating the testimony of a witness are perception, memory, and narration. ... Sometimes a fourth is added, sincerity, but in fact it seems merely to be an aspect of the three already mentioned. The demeanor of the witness traditionally has been believed to furnish trier and opponent with valuable clues. ... Willingness to testify falsely may reasonably become more difficult in the presence of the person against whom directed.

Cross-examination, according to Wigmore, is “the greatest legal engine ever invented for the discovery of truth.” Cross-examination is permitted under

22. Diagnostic Manual, supra note 1, at 471.
23. See Drob & Berger, supra note 19, at 533.
25. FED. R. EVID. 802 advisory committee’s note.
26. 5 JOHN H. WIGMORE, EVIDENCE IN TRIALS AT COMMON LAW § 1367, at 32 (James H. Chadbourn ed., rev. ed. 1974); see also Steven I. Friedland, On Common Sense and Witness
the Federal Rules of Evidence in both criminal and civil cases, and in criminal cases is protected by the Confrontation Clause of the Sixth Amendment. It is used in both criminal and civil cases to probe and test the witness’ assertions and to expose any inaccuracies that may exist in the witness’ factual statements, assumptions or inferences. Requiring a witness to swear or affirm indicates the solemnity of the occasion to all concerned. It also should indicate to the witness the importance of accuracy and truthfulness. Finally, the opportunity to observe a witness’ demeanor offers the fact finders numerous behavioral clues about the witness’ sincerity. Based on common experience, it is often not what a person says, but how it is expressed that matters.

2. Expert Scientific Testimony

Expert testimony is admissible at trial subject to several significant limitations. These limitations include the techniques used by the expert to inform the testimony, the qualifications of the witness, the substance of the testimony and the effect it has on the jury.

Federal Rule of Evidence 702 and most state evidence codes permit an expert to be qualified based on scientific, technical or other specialized knowledge. There are two linchpins of admissibility—reliability and helpfulness. The testimony must be based on a reliable science and helpful to the trier of fact.

a. Scientific reliability

The Federal Rules of Evidence permit expert testimony based on scientific or technical knowledge provided that the scientific basis for the evidence is reliable. Determining the meaning of “scientific reliability” has been a daunting task for courts.

Until recently, many jurisdictions decided the admissibility of such


27. See FED. R. EVID. 611.
30. This rule governs the admissibility of expert witnesses generally.
31. See FED. R. EVID. 702; see also, e.g., FLA. EVID. CODE § 90.702.
32. If both of these subtests are not met, the evidence is excluded, often pursuant to FED. R. EVID. 403.
33. See FED. R. EVID. 702.
evidence based on criteria established in the 1923 case, *Frye v. United States*. According to *Frye*, the technique underlying scientific evidence must be generally accepted by the scientific community to be eligible for admissibility. Expert opinion based on methodology diverging from authoritatively recognized practices in the field could not be accepted as reliable.

The *Frye* test originally applied only to the admissibility of polygraph evidence, but was expanded by courts to apply to all novel scientific evidence. The *Frye* standard had its detractors, who claimed that its “nose counting” approach had outlived its usefulness and that *Frye*’s conservative nature required courts to exclude relevant and perhaps important evidence pending a predicate acceptance by the scientific community.

In 1993, the United States Supreme Court held in *Daubert v. Merrill Dow Pharmaceutical, Inc.* that *Frye* was superseded by the Federal Rules of Evidence. According to *Daubert*, the Federal Rules of Evidence did not adopt *Frye*, but rather firmly placed the question of admissibility within the domain of the trial court. It was the judge’s responsibility to determine “whether the testimony’s underlying reasoning or methodology is scientifically valid and . . . properly can be applied to the facts in issue.”

In determining whether scientific validity exists, the Supreme Court opined that trial judges must focus their attention on the scientific principles and methodology, not the end results. The Court in *Daubert* held that a flexible approach governed the Rules, and offered the following four factors as guidance: (1) whether the scientific theory or technique can be or has been tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) what is the known or potential rate of error in the application of the theory or technique; and (4) whether the theory or

35. 293 F. 1013 (D.C. Cir. 1923).
36. The *Frye* court said “[j]ust when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. . . . [T]he thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.” *Frye*, 293 F. at 1014. In *Frye*, a systolic blood pressure deception test is described. The test is based on the fact that fear, rage, and pain produce a rise in systolic blood pressure, and concealment of facts or guilt of a crime accompanied by fear of detection raised the systolic blood pressure corresponding to the emotional struggle in the subject’s mind. See id.
37. Critics alleged that the “general acceptance” standard was a “nose-counting” test because it appeared to inflexibly ask a court to decide whether more than 50% of the scientists in the field supported the principle or technique (much like a preponderance of the evidence standard).
39. Id. at 592-93.
40. See id. at 594-95.
technique has been generally accepted in the particular scientific field.\textsuperscript{41}

In accepting the possibility that trial judges may unnecessarily deprive juries of useful evidence, the Supreme Court in \textit{Daubert} revealed its view on the differences between law and science:

We recognize that, in practice, a gatekeeping role for the judge, no matter how flexible, inevitably on occasion will prevent the jury from learning of authentic insights and innovations. That, nevertheless, is the balance that is struck by Rules of Evidence designed not for the exhaustive search for cosmic understanding but for the particularized resolution of legal disputes.\textsuperscript{42}

\textit{Daubert} not only excluded evidence based on unreliable theories, but also theories that may prove to be valid in the future but lack current substantiation. As one court observed:

Plaintiff asks, "Given the dearth of research on the neurotoxic effects of fragrances and fragrance chemicals, what is a plaintiff to do?" Unfortunately for plaintiff, the answer is: Wait. When a plaintiff can't prove her case with reliable scientific evidence, she can't prove her case. This is as true when her inability is due to science's laggardly pace in researching a legitimate problem as it is when the inability is due to the fact that her theory is "so bizarre" that no one has bothered to test it. "Scientific controversies must be settled by the methods of science rather than by the methods of litigation."\textsuperscript{43}

While attempting to provide guidance and uniformity, \textit{Daubert} created uncertainty in the lower courts. In some circuits, for example, per se exclusions of novel scientific evidence were overruled and other methods, such as DNA fingerprint identification, were soon found to be more reliable.\textsuperscript{44} The scope of \textit{Daubert} also proved to be perplexing. For example, it is unclear whether \textit{Daubert} applies only to the natural sciences or is it broader in its application. No definitive answer exists. The Seventh

\begin{itemize}
\item 41. \textit{See id.} at 593-94.
\item 42. \textit{Id.} at 597.
\item 44. \textit{See United States v. Cordoba,} 104 F.3d 225, 227-28 (9th Cir. 1996) (overruling prior cases adopting a per se exclusion of expert testimony on the credibility of eyewitness identification and unstipulated polygraph evidence); \textit{see also} United States v. Hicks, 103 F.3d 837, 846 (9th Cir. 1996) (upholding the trial court's admissibility of PCR DNA testing after a \textit{Daubert} hearing); United States v. Black Cloud, 101 F.3d 1258, 1261 (8th Cir. 1996) (finding that DNA testing met the \textit{Daubert} criteria). \textit{See generally} United States v. Galbreth, 908 F. Supp. 877 (D.N.M. 1995) (providing for the admissibility of a properly conducted polygraph examination by a competent examiner pursuant to \textit{Daubert}).
\end{itemize}
Circuit, in considering this question, found that the framework created by Daubert applies to social science experts as well as to the testimony of experts in the “hard sciences.”

Yet many cases have been easily decided under the stewardship of Daubert. One case involved a claim that exposure to fragrance products caused plaintiff’s injuries. The expert offered testimony that “to a reasonable scientific and toxicologic probability, [the fragrance products were a] substantial factor in causing [plaintiff’s] current medical condition.” In explaining what “reasonable scientific and toxicologic probability” meant, the expert stated “51 percent or greater” without providing any basis for his conclusion other than his intuition. The testimony was held to be insufficiently reliable and consequently improper.

b. Helpfulness

Expert testimony also must be helpful to the trier of fact to be admitted. The helpfulness requirement has been used to exclude evidence that invades the province of the jury on grounds that it is either unfairly prejudicial or irrelevant. Since jurors are responsible for evaluating the credibility of witnesses or claims, direct expert testimony on the credibility of specific witnesses likely invades the domain of the jury. Testimony to judges, on the other hand, is less likely to be similarly invasive. Thus, expert testimony often is permitted in proceedings such as competency hearings, not only due to nature of the issue but also to the court’s ability to overcome any potential taint from the evidence.

The admissibility of expert testimony also may depend on whether the testimony directly or indirectly reflects on a party’s or witness’

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45. See generally Tyus v. Urban Search Management, 102 F.3d 256 (7th Cir. 1996) (involving expert psychological testing on the racial impact of an ad campaign).
46. Sanderson, 950 F. Supp. at 999 (quoting one of the plaintiff’s experts, Dr. Thrasher).
47. Id. “Thrasher explained that there is no difference between a ‘scientific’ probability and a ‘toxicological’ probability, and that he used both words because ‘I think it looks nice.’” Id. at n.18. After being asked how he arrived at the 51 percent figure, he stated “that’s a judgment call rather than a calculation call. It’s like a medical opinion call, 51 percent. It’s a scientific call at 51 percent.” Id. at 999.
49. Evidence will invade the province of the jury if it substitutes the opinion of the witness for that of the common sense of the jury. Decisions that can be drawn from everyday experience, life, and logic are to be made by the jurors themselves. An expert is not needed nor called to give his or her opinion about such a matter. Only if the specialized knowledge, training, or skill of the expert can assist the jury in evaluating that evidence should such an opinion be allowed. See, e.g., Fed. R. Evid. 702.
50. See Fed. R. Evid. 403.
51. See Fed. R. Evid. 401.
credibility.\textsuperscript{52} Indirect testimony, such as that of the battered women's syndrome concerns general traits that are considered less prejudicial and more readily evaluated than direct testimony.

\textbf{C. Detection Methodology}

It may be difficult, even insuperable,\textsuperscript{53} to detect malingering. Yet the legal system can not avoid it. One judge noted that his toughest challenge is deciding who is telling the truth.\textsuperscript{54} Many lay persons and scientists would undoubtedly agree.

1. Lay Observation and Experience

Perhaps the most common method used by lay persons to detect malingering occurs through the insights and observations of everyday experience. This experience includes the evaluation of behavioral clues. The variability of such clues often means that individuals employ their own standards, sometimes yielding anecdotal and stereotypical results. In popular parlance, for example, intentionally deceitful persons often are depicted with perspiration on their brows, handkerchiefs in their hands to dab at the perspiration, and nervous, shifting eyes.\textsuperscript{55}

Just as lay evaluations of malingering use common experience as a baseline for judging whether malingering is occurring, malingerers feign illness and injury in keeping with popular expectations. In a way, "[e]very malingerer is an actor who portrays an illness as he understands it."\textsuperscript{56}

2. Scientific Methods

A variety of scientific methods are available to detect malingering. The most popular methods include behavioral evaluation, psychological testing and physiological techniques.

\textsuperscript{52} Credibility is the equivalent of the witness' character for truthfulness. \textit{See} \textit{Fed. R. Evid.} \textsuperscript{404}(a) \& \textsuperscript{608}(a).

\textsuperscript{53} Even "experts" are admittedly fooled. \textit{See infra} text accompanying note 178.


\textsuperscript{55} For popular culture's view, see, for example, Jack Lemmon in \textit{The Fortune Cookie} 1966.

\textsuperscript{56} Cornell & Hawk, \textit{supra} note 3, at 382 (quoting V. P. Ossipov, \textit{Malingering: The Simulation of Psychosis}, \textit{Bulletin of the Menninger Clinic} 40 (1944)).
a. Behavioral evaluation

Psychologists, psychiatrists and other scientists often study behavior to detect malingering. The scientists hope to create uniform criteria or at least identify habituated signals that may assist in distinguishing between truthful and deceptive behaviors. The techniques used range from interviews with persons suspected of malingering to closed circuit monitoring of patients' behavior as they await trial.

Scientists believe that malingerers who attempt to mimic mental or physiological illness may err. For example, those who counterfeit psychosis may accurately copy the content of such illness, but not its form. This means that the malingerer may omit some of the more subtle symptoms of a mental illness, even though those symptoms are widely found. Omitted symptoms include blunted or inappropriate affect and formal thought disorders such as loose or tangential speech patterns.\(^57\)

Just as it is difficult to examine people's "mental states," devising ways to study malingering has been problematic. Research studies often involve asking people to "fake it." In one study, college students were directed to fake memory impairments to compare results with those individuals who in fact had impaired memories.\(^58\) These instructions create variables in the subjects and not just in the malingering subject matter. One commentator noted, that it was difficult to determine whether the outcome of the experiments were attributable to the level of compliance of the subjects or the experimental conditions.\(^59\) An additional concern has been, how much influence, if any, a psychologist or psychiatrist has on a malingerer's behavior.\(^60\)

Despite the variables inherent in the research protocols, some scientists claimed to have located tell-tale signs of malingering, including hesitation in responses and longer as compared to shorter answers. Also, unpremeditated lies were more easily discerned than premeditated ones.\(^61\) Other diagnostic personality cues of malingering included evasive or defensive behavior,

\(^{57}\) See id. (citing Resnick for the proposition that malingerers may correctly mimic the content but not the form of psychosis. Resnick, supra note 7, at 21-38).


\(^{60}\) See id. at 449.

an over idealized perspective. . . . [R]esistance to or failure to seek reasonable remedies. . . . [A]ttributing all of life's problems to the accident in question, or they blame others for difficulties. . . . [E]ndorsement of an unusually large number of symptoms, or absurd complaints . . . deficits that continue to worsen over time. . . . [O]r refusal or reluctance to go to an independent medical evaluation.

While these and other personality variables have been proposed as linchpins of malingering by some researchers, others have labeled the evidence merely "anecdotal." 63 Ironically, one team of researchers concluded they were better able to detect deception when they were either reading statements or listening to what was said, instead of visual observation: The visual cues were "destructors," adversely affecting the accuracy of the evaluation. As Benjamin Disraeli observed a century ago, "[t]here is no index of character as sure as the voice." 64

Multiple causes of particular symptoms complicate behavioral evaluations of alleged malingering. To detect malingerers in a clinical forensic context, some experts suggest that a simple review of symptomatology is insufficient. 65 For example, depression can effectively impair memory in ways similar to those caused by brain damage. 66 Instead, considerations of motives for malingering must be factored into the calculus as well. One group of researchers proposed asking three questions to ascertain malingering:

1. Does the patient exhibit "classic signs" of feigning psychological symptoms?
2. Does the patient have a conscious motive for, or at least believe that he/she gains some advantage from being mentally ill?
3. Does the patient suffer from any actual mental defect or illness which would cause him to produce what appears to be voluntary symptomatology? 67

Opinion testimony based on an interpretation of a claimant's or

62. Cahn, supra note 9, at 321.
63. Cornell & Hawk, supra note 3, at 376 (referring to studies by Ossipov in 1944, Resnick in 1984 and Rogers in 1984).
64. Resnick, supra note 7, at 25 (citing N. R. Maier & J. A. Thurber, Accuracy of Judgments of Deception When an Interview is Watched, Heard, and Read, 21 PERSONNEL PSYCHOL. 21-30 (1968).
65. See Drob & Berger, supra note 19, at 520-21.
66. See generally Cahn, supra note 9.
67. Drob & Berger, supra note 19, at 521.
witnesses' behavior is sometimes admitted, even though it might consist of the expert's "common sense" or intuitive judgment. In one case, an expert on post traumatic stress disorder testified that she was able to determine the credibility of others and whether they were malingering by looking at the consistency in the delivery of basic information. If the individual could consistently describe an event, the expert would believe the person. In another case, two psychiatrists testified the defendant was so uncooperative during interviews they were unable to determine if he was competent to stand trial or malingering. Both psychiatrists said they would have to observe him further to decide if his mental disorder was genuine or feigned. The judge had the defendant called as a witness and allowed defense counsel to ask questions. Based on this testimony, the judge determined that the defendant was malingering and that further questioning was unnecessary. The judge consequently assigned the case for trial.

The unusual nature of a person's behavior is often a factor in an expert labeling behavior as malingering. If the behavior does not fit a "profile" or an experienced expert's expectations, it may be more likely the behavior is evidence of malingering.

b. Psychological tests

Since a person's mental state is crucial to determining whether malingering is present, psychological testing has constituted a major avenue of scientific inquiry. Psychologists for years have relied on the Minnesota Multiphasic Personality Inventory ("MMPI") and its revised form, the MMPI-2, to detect malingering as well as the legitimacy of other psychological injuries.

The MMPI uses various uniform measures to test personality. The

68. This may include observing the individual when he does not expect it, perceiving the subject's interactions with his peers, eye contact, and hand movements, etc. See generally id.
69. See Hutton v. State, 663 A.2d 1289, 1292 (Md. 1995) (Ms. Gail Jackson was the victim's therapist).
70. See Homes v. King, 709 F.2d 965, 966 (5th Cir. 1983).
71. See id.
72. See Morrison v. State, 795 S.W.2d 276, 278 (Tex. App. 1990, no writ) (in which the expert testified that the defendant was deliberately uncooperative and malingering, and therefore was competent to stand trial). In Cooper v. State, 889 P.2d 293 (Okla. Crim. App. 1995), the defendant's attorneys thought the defendant might be incompetent at the conclusion of a criminal case because he "refused to communicate with them, seeing them as evil forces seeking his death." Id. at 302.
73. For discussion about the MMPI, see, for example, Rogers & Cavanaugh, supra note 59, at 450-51.
74. See Lees-Haley, supra note 11, at 66.
test uses "lie detecting" questions that attempt to reveal whether individuals are trying to "fake bad" or exaggerate their problems. The test includes 567 true-false items. The questions are subtle and sophisticated. Instead of being scored together on a scale from 0-567, questions are subdivided into smaller groups or "scales" representing tests of various conditions, including anxiety, hypochondria and depression. The higher a person scores, the more likely the person possesses the condition tested. Results are not scored automatically, but must be interpreted by the examiner. There may be dozens of scales relevant to malingering for a particular injury, but thirteen scales generally are used in court cases.

One such scale is the "L" or Lie Scale. While those who are dishonest generally get high scores, the manual on the MMPI-2 notes that "examinees who faked or overemphasized psychopathological symptoms may score in the low range, at 49 and below." The manual also notes "that a high score suggests that the patient was trying to present himself or herself in an unrealistically favorable light." Thus, sometimes both high and low scores can be associated with lying.

Another scale is the "F" or Frequency Scale, which determines whether the respondent "has an unusual way of answering the questions." Psychotic patients and malingerers often have high scores. Individuals with low level reading skills or those who desire to reject the process, however, may score high as well.

In assessing the accuracy of the MMPI, it was found that while subjects can fake responses in an interview situation, manipulation is more difficult with regard to specific or more subtle items. By categorizing questions in the MMPI as "very subtle, subtle, neutral, obvious, [and] very obvious," researchers claim to have successfully substantiated the role of item subtlety in the detection of the malingering patient.

Other psychological tests have been used to detect malingering. These include the Wechsler Adult Intelligence Scale ("WAIS"), the Bender-
The comprehensive section of the revised WAIS has been perceived as an intelligence test with the easier questions early on and the latter questions ascending in degree of difficulty. Malingerers attempting to pass as mentally retarded will answer the early questions correctly and purposely answer questions near the end of the test incorrectly, such as, “Why do we wash clothes?” Believing these questions to be of greater difficulty, they will purposely give wrong answers, unaware the deceiver is being deceived.

Other malingering detection tests often depend on probability theory. Probability theory is premised on the assumption that a person asked to answer a large number of basic true-false questions will, based on random chance alone, answer approximately fifty percent of the questions correctly. If a person answers less than fifty percent of the questions correctly—which is worse than random chance—this yields an inference of intentional failure. One example of such an instrument is the “Memorization of 15 Items Test.” This test was created to detect fabricated claims of memory loss. The test asks the respondent a series of questions, forcing the respondent to choose from two alternatives, only one of which is correct. Studies have shown that deceptive respondents intentionally answer a greater percentage of the questions incorrectly, while those with genuine memory loss perform at or above the level of chance. Yet the test is admittedly affected by the motivation of the respondents. It has been suggested that those administering the test also should consider the strength of the incentive to malinger: The administrator should be cognizant of the fact that how believable the circumstances are under which the text is taken affects the

84. See generally id. at 451. The Wechsler Adult Intelligence Scale is used to measure intelligence level. This includes general information, vocabulary, short term memory, abstract thinking capacity to perform psychomotor and perceptual tasks. These provide an IQ score based on a national standard.

The Bender-Gestalt measures the ability to remember and reproduce complex geometric designs. The examiner looks for specific performance deficits as well as the individual’s approach to the problems and his methods of adjusting to psychomotor impairment.

The Rorschach is the most widely used protective test. These tests require the subject to supply his own stimuli and apply what he perceives in his environment. The absence of large scale diminish the utility of such tests. See SOLOMON & PATCH, supra note 6, at 103-04.

85. See Rogers & Cavanaugh, supra note 59, at 451.

86. See Cahn, supra note 9, at 320 (“As the odds become increasingly long, it is safer to assume that such a poor performance was not accidental but deliberate. That is, the person made a conscious effort to do badly on the task”).

87. See Iverson et al., supra note 58, at 668. The test was first developed in 1941 (by Rey), reported in 1983 (by Lezak) and modified in 1991 (by Paul, Franzen, Cohen, and Fremouw).

88. See id. Citing work with memory loss by Binder & Pankratz in 1987 and Pankratz in 1983, and work on above-average performance levels by Binder & Pankratz in 1987. Some scientists recommended that 100 questions be put to the respondents to promote accuracy (Pankratz).
research results. Despite its promise, such a test has been called "overly simplistic" and "accepted based more on past hope than current research."

Some tests are used specifically to detect malingers who exaggerate legitimate symptoms of illness or injury. This is because malingers exaggerate too much, tending to be "blinder than the blind, deafener than the deaf." Thus, an individual faking or exaggerating brain damage may claim not to know his or her own name, age, or birth date—information that even truly head-injured individuals typically retain the ability to recall correctly.

Many psychologists and psychiatrists use a battery of psychological tests to buttress or serve as the basis for their conclusions on the subject of malingering. For example, in Miles v. Dorsey, the defendant was charged with rape and murder. The defendant took a polygraph test as well as the Wexler Memory Scale, the Rorschach Ink Blot, the Thematic Apperception, the Bender Gestalt Perceptual Motor, and the WAIS-R Test. Defendant's results indicated he was malingering because the scores were too low. "On one test, defendant scored below chance, while subjects with verified memory problems generally do not. Intentional malingerers, however, score below chance more than 80% of the time." The petitioner's responses to the expert concerning details about family life and interactions with inmates and others also counteracted the petitioner's claims of "global amnesia." The test results, including a prior MMPI, combined with the petitioner's behavior, convinced defense counsel not to pursue an incompetency or insanity claim on behalf of the defendant.

89. See id. Stating that future research on memory deficit malingering "simulate a 'believable' condition or be given explicit instructions to malinger . . . [and] . . . should be provided stronger incentives to malinger." Id. at 675.
90. Cahn, supra note 9, at 321.
91. Id. (citing J. Boone, Detection of Malingering on Neuropsychological Memory Tasks 57 (1989) (unpublished dissertation, University of South Florida)). Guilmette stated "the evidence does not in fact support that such tests catch malingerers, and the clinician who uses them is simply unaware of this fact." Guilmette et al., Detecting Simulated Memory Impairment: Comparison of the Rey 15-Item Test and Hiscock Forced Choice Procedure, 8 The Clinical Neuropsychologist 283, 291 (1994).
92. Cahn, supra note 9, at 320 (noting also that brain impairment typically affects the ability to recall information far more than the ability to recognize information presented in a multiple choice format, so that "malingerers who fake or exaggerate the inability to perform recognition tasks give themselves away in the process").
93. 61 F.3d 1459 (10th Cir. 1995).
94. See id. at 1473.
95. Id.
96. Id.
97. See id.
In *United States v. Denny-Shaffer*, defendant had been employed as a labor and delivery nurse in New Mexico. She disguised herself as a medical student on a pediatric rotation and while pretending to examine an infant in the nursery, hid the baby under her arm, left the building, and drove to Texas. She was eventually captured with the child and charged with kidnapping. She contended that she was the victim of multiple personality disorder ("MPD"). At trial, testimony was given that an individual with multiple personalities can have abnormal electroencephalograms and have divergent scores on Rorschach tests and the MMPI, depending on which personality is taking the test. The defendant took five MMPI examinations, with fairly drastic fluctuations. The administrator of the MMPI tests, Dr. Foote, testified that he conducted the tests while the subject was "Bridget" and again when she was an alter personality. One personality showed a depressive pattern, the other did not. Dr. Foote maintained it would be impossible to fake such a result on the MMPI due to the anti-malingering features built into the test.

The trial judge rejected the MPD defense and refused to instruct the jury on it, implicitly concluding that the defendant may have been malingering. The defendant was convicted and she appealed. The Tenth Circuit Court of Appeals reversed the conviction, indicating the question of whether she was suffering from MPD or malingering was properly for the jury.

c. **Physiological techniques**

All of the psychological methods discussed above involve the interpretation of human behavior. Consequently, such methods are vulnerable to charges of subjectivity and inconsistency. Physiological methods, on the other hand, have the superficial allure of being "hard science," which appears to minimize problems of discretion. Several of the more prominent physiological methods are described below.

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98. 2 F.3d 999 (10th Cir. 1993).
99. See id. at 1002-03.
100. See id. at 1002. MPD is also known as dissociation. Certain aspects of the personality escape from the control of the individual, become separated from normal conscience, and when segregated, function as a unitary whole. See Lawrence Wolb, Noyes' Modern Clinical Psychiatry 74 (1968).
101. See Denny-Shaffer, 2 F.3d at 1009 n.8.
102. See id.
103. See id. at 1021-22.
104. On the other hand, since deception does not have a distinctive physiological sign such as a lesion or bacterium, human interpretation exists here as well. This assertion will play a major role in the cautious view taken of these methods by the legal system.
(1) The polygraph

Perhaps the most widely known scientific device used to detect malingering and the one which many believe holds the greatest promise of objectivity, is the polygraph or so-called "lie detector test." In the early twentieth century, a systolic blood pressure test was developed to detect intentional deception, including malingering. This test and the modern polygraph rely on two major assumptions: telling lies is more stressful than telling the truth; and truth can be distinguished from deception through physiological responses.¹⁰⁵

According to one expert, the modern polygraph machine is a sophisticated instrument capable of continuously and simultaneously measuring and recording various autonomic responses. It measures respiration at two points on the body; on the upper chest, the thoracic respiration, and on the abdomen, the abdominal respiration. Movements of the body associated with breathing are recorded such that the rate and depth of inspiration and expiration can be measured. The polygraph machine also measures skin conductance or galvanic skin response. Electrodes attached to the subject's fingertip or palm of the hand indicate changes in the sweat gland activity in those areas. In addition, the polygraph measures increases in blood pressure and changes in the heart rate. This measurement, known as the cardiovascular measurement, is obtained by placing a standard blood pressure cuff on the subject's upper arm. Finally, the polygraph may also measure, by means of a plethysmography, blood supply changes in the skin which occur as blood vessels in the skin of the finger constrict due to stimulation.¹⁰⁶

Even though the test has evolved in its sophistication from the systolic blood pressure test of the early 1900s, lack of uniform analysis and substantive questions about the underlying science have led courts¹⁰⁷ to question the reliability of results obtained from the polygraph.¹⁰⁸

The theoretical underpinnings of polygraphs—that telling lies is more stressful than telling the truth and that lies can be distinguished through

¹⁰⁵. See United States v. Piccinonna, 885 F.2d 1529, 1537 (11th Cir. 1989) (Johnson, J., concurring in part and dissenting in part).
¹⁰⁸. See Piccinonna, 885 F.2d at 1535; see also NEY, EXPRESSING EMOTIONS AND CONTROLLING FEELINGS IN THE POLYGRAPH TEST: LIES, TRUTH AND SCIENCE 65 (A. Gale ed., 1988) (cited in Piccinonna, 885 F.2d at 1537).
physiological responses—have been widely questioned. The skepticism has led many federal and state courts to exclude the evidence at trial. Three major reasons have been advanced for excluding the evidence:

1. the test itself is considered unreliable;

2. insufficient standards govern the administration of polygraph tests; and

3. the evidence prejudices the jury.

The reliability of the test has been the subject of particular attention. Some polygraph examiners claim their administrations are between 92 and 100% accurate. Others claim that percentage is much lower, perhaps not much greater than chance. While standards vary, the American Polygraph Association ("APA") has formulated its own standards of administration. Many jurisdictions have followed the APA's lead. No widespread uniform standards currently exist to ensure a common ground of review, however. The problems with standards have contributed to the unfairly prejudicial impact the polygraph is believed to have on juries. It is thought that without the proper means of assessing the legitimacy and strength of such evidence, juries will be unable to correctly evaluate the significance of test results and may abdicate their own responsibility to weigh the


110. See Piccinonna, 885 F.2d at 1537. See, e.g., OFFICE OF TECHNOLOGY ASSESSMENT, supra note 107, at 43 (citing Piccinonna, 885 F.2d at 1537); see also NEY, supra note 108, at 65.

111. See, e.g., Piccinonna, 885 F.2d at 1529; Sullivan v. State, 303 So. 2d 632, 634 (Fla. 1974).

112. See Gloria, 494 F.2d at 483.


114. That is, juries will distort the accuracy of the conclusions of the polygraph evidence and place undue weight on such evidence. See United States v. Alexander, 526 F.2d 161, 168-70 (8th Cir. 1975).

115. See Piccinonna, 885 F.2d at 1533 n.12.

116. See id.


118. See generally id.

119. See generally Piccinonna, 885 F.2d at 1537 (Johnson, J., concurring in part and dissenting in part) (citing Employee Polygraph Protection Act: Hearing on H.R. 208 Before the Educational Labor Committee, 100th Cong. 51 (1987) (testimony of John F. Beary, III, M.D. on behalf of the American Medical Association)). Circuit Judge Johnson states, "[t]he assumption that individuals cannot control their physiologies is subject to serious debate. Some theorists argue that individuals can learn to control their physiological responses and that by producing physiological responses at opportune times during the polygraph test these people could portray themselves as truthful when they are not." Piccinonna, 885 F.2d at 1538 (citing NEY, supra note 108, at 67).
Other courts recognize that the polygraph may still provide useful
evidence, especially since, as Professor McCormick noted, "a great deal of
lay testimony routinely admitted is at least as unreliable and inaccurate, and
other forms of scientific evidence involve risks of instrumental or judgmental
error." 120 In some jurisdictions, the evidence may be admitted only if a
proper stipulation exists between the parties. 121 Other jurisdictions have
created forms of partial admissibility.

In United States v. Galbreth, 122 for example, a defendant tried for
willful income tax evasion took a polygraph test. The court held that
polygraph examinations meeting the standard of Daubert v. Merrill Dow
Pharmaceuticals, Inc. 123 could be admitted. Even though the polygraph
evidence was not presented to the jury in Galbreth, because the government
dismissed all criminal charges after its case-in-chief, the court wrote an
extensive opinion in this case of first impression. The court first questioned
which standard it was to follow after Daubert:

It is not entirely clear whether Daubert requires as a prerequisite to
admissibility that the proponent establish the validity of the specific
application of a scientific technique. Thus, it is unclear after
Daubert whether this Court must scrutinize the specific application
of the polygraph technique, if the Court initially determines that the
polygraph technique in the abstract is a valid scientific technique. 124

In evaluating the reliability of the polygraph technique, the court
stated that autonomic responses are the type that a person generally cannot
control, such as sweating on the brow or the palms of the hands. 125 Because
these responses are not discretionary, the polygraph is less subject to
manipulation. 126

The court also observed that the polygraph examiner is very
important to the test's reliability, since the examiner creates the questions,
sets the atmosphere and circumstances of the exam and then interprets the
results. The expert examiner in the case testified that it was not true that
certain personality types could defeat the test, that there was no evidence that
drugs work as a counter-measure to the test or that other kinds of physical

120. EDWARD W. CLEARY, MCCORMICK ON EVIDENCE § 206, at 629 (3d ed. 1984).
121. See Davis v. State, 520 So. 2d 572, 574 (Fla. 1988); Miami Herald Publ'g Co. v. City of
125. See id. at 883 n.9.
126. See id.
counter-measures could defeat the test. The court found that since the technique is now generally accepted in the field and that when properly conducted it produces a high rate of accuracy, tests conducted by a well-qualified examiner should be permitted.

An earlier case shows how the development of polygraphs led courts to craft special rules. In *United States v. Piccinonna*, the Eleventh Circuit Court of Appeals held in 1989 that the Circuit’s per se exclusionary rule for polygraph evidence was no longer warranted. The court observed that polygraphs had gained increasingly widespread acceptance as a reliable science and did not unduly sway juries. The court noted that because of advances in polygraph testing, investigative agencies such as the FBI, the Secret Service, military intelligence, and law enforcement had come to rely on its use. As a result, the court said it was time to replace the per se exclusion with a rule “more in keeping” with advances in polygraph technology. The court cautioned that because polygraph testing was still “developing,” however, it should not be treated like other forms of expert testimony, which are admitted at the discretion of the trial court. The court consequently decided polygraph evidence could be admitted in two separate situations: upon a stipulation; and to impeach or corroborate the testimony of a witness at trial.

The court provided several conditions of admissibility. The first was adequate notice to the opposing party about the proposed expert testimony. The second was that the opposing party must be given a reasonable opportunity to have its own polygraph expert administer a similar test. Finally, the testimony must still comply with all relevant Federal Rules of Evidence, whether the testimony is used to corroborate or impeach.

Regardless of the uncertainty that propels it, polygraph evidence will not disappear. In the never-ending desire to determine whether a witness is telling the truth, the polygraph comes the closest to being a dispositive scientific tool. Polygraph evidence appears to make assessments of sincerity

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127. See id. at 889-90.
128. See id. at 893.
129. 885 F.2d 1529 (11th Cir. 1989).
130. See id. at 1535.
131. See id. at 1532.
132. Id.
133. See id. at 1535.
134. See id. at 1535-36. The court balanced “the need to admit all relevant and reliable evidence against the danger that the admission of the evidence for a given purpose will be unfairly prejudicial.” Id. at 1535.
135. See id. at 1536.
136. See id.
cleaner, more reliable, and to take the doubt away from those afraid of making inaccurate decisions. In sum, it is difficult to resist. As the Eleventh Circuit’s decision in Piccinonna shows, it is easier perhaps to compromise and leave the door to admissibility ajar. Yet after all is said and done, the same conflict as in other physiological measures such as hypnosis occurs—does the polygraph lead to greater truth telling, or is it just an easy way out of difficult, complex and necessary discretionary judgments?

(2) Hypnosis

Hypnosis is used to facilitate recollection of an event, condition or occurrence. Because a hypnotized person appears “possessed” or “otherworldly,” hypnotic techniques at various times have been referred to as “black magic” or “one of the dark arts.” Modern techniques have evolved considerably from those portrayed in the movies, where a gold watch was swung back and forth in front of an enchanted victim’s face. Two major techniques are currently used: (1) hypnotic age regression and (2) hypnotically suggested increased recall, called the “television” technique because it plays back the event.

Hypnosis allegedly taps “the unconscious mind,” breaking down the barriers to recalling a blocked traumatic or emotional event. As a result, the subject is believed to speak the truth. If a person is consciously feigning illness or injury, hypnotic exploration of the person’s unconscious should reveal the illegitimacy.

Studies have shown, however, that some memories recalled under hypnosis are altered or distorted. Alterations result from confabulation, which is the tendency to fill in details from one’s imagination to make answers more complete. Confabulation may be provoked by leading questions from the hypnotist or simply by inaccurate memories regarding confused and suppressed events from the past. The opportunity to confabulate occurs, according to many expert psychologists, because “human memory does not operate like a camera, gathering every detail for

138. Hypnosis is often used in the investigation of crimes to obtain leads or flush out information. See id. at 637-38.
139. Id. at 636 n.3.
140. See id.
141. See id. at 637.
142. See, e.g., People v. Guerra, 690 P.2d 635, 642 (Cal. 1984); see also Rozzano, supra note 137, at 642.
143. See Rozzano, supra note 137, at 642.
later recall exactly as it was perceived. Rather, it is an active, reconstructive process in which images are constantly altered through the integration of new experiences and interpretations. 144 The unconscious process of memory in itself—encoding, retention, and retrieval—can alter the information originally perceived. 145 The tendency to fill in gaps in memory occurs for many reasons, including the witness’ suggestible expectations. The post-event information, which may be prompted by cues from the hypnosis, is woven into the original memory, serving to alter it. 146 Because the memory process is unconscious, the improperly modified or supplemental memory that results from filling in the gaps is unknown to the subject. The subject believes that memory as much as any valid memory he or she may have. Furthermore, hypnosis may create over-confidence in both the added and original memories, called “memory hardening.” 147 Pre-hypnosis uncertainty becomes doubt-free recall. 148

Courts have significant problems with hypnotically refreshed testimony, generally on grounds of unfair prejudice. 149 Despite the popular opinion that hypnosis effectively improves memory, at times hypnosis has absolutely no effect on a person’s memory 150 and at other times it can alter memory. 151 The alteration of memories raises questions of reliability and diminishes the likelihood that hypnosis can detect malingering.

Given the lack of understanding of the mechanics of hypnosis and how it works, it may be difficult to distinguish between a person who is hypnotized and a person who is pretending to be. The malingerer knows exactly what he wants to remember, and the potential for abuse is considerable. For all of these reasons, hypnotically refreshed testimony—and the corollary expert testimony explaining it—in most jurisdictions 152 is
considered unreliable and excluded, especially in criminal cases.

Exceptions, of course, exist. Exceptionally, in civil cases, the question of admissibility remains wide open. In some jurisdictions, a compromise is reached in criminal cases. These courts permit hypnotically-refreshed testimony if procedural safeguards are followed. In other jurisdictions, testimony is permitted on the issue of a witness' credibility, so long as there are assurances of reliability. Further, in Rock v. Arkansas, the United States Supreme Court held in a 5-4 decision written by Justice Blackmun that a per se rule of inadmissibility was unconstitutional if it compromised the criminal defendant's right to testify on his or her own behalf. The Court found that pursuant to the Due Process Clause of the 14th Amendment, the Compulsory Process Clause of the 6th Amendment, and the 5th Amendment Privilege Against Self Incrimination, a per se rule of exclusion sweeps too broadly. The Court noted that restrictions on the defendant's constitutional right to testify cannot be arbitrary or disproportionate in relation to the government's goal.

In Rock, the defendant was charged with manslaughter for shooting her husband. On separate occasions after the incident she was hypnotized by trained neuropsychologists. They succeeded in flushing out the details of the incident, including the fact that when the gun discharged, there was a struggle and the defendant did not have her finger on the trigger. Arkansas at the time had adopted a per se rule of exclusion for all hypnotically-

153. See id. at 58 n.16.
154. One major exception involved testimony by the accused in a criminal case. See id. at 58 n.15.
157. Rock, 483 U.S. at 62. The per se rule of inadmissibility had been approved by the Arkansas Supreme Court below. See Rock v. State, 708 S.W.2d 78, 79 (Ark. 1986). The court stated that "the dangers of admitting this kind of testimony outweigh whatever probative value it may have." Id. at 81.
158. See Rock, 483 U.S. at 51-53.
159. See id. at 55-56.
160. See id. at 45.
161. According to the Court:
That night a fight erupted when Frank refused to let petitioner eat some pizza and prevented her from leaving the apartment to get something else to eat. When police arrived on the scene they found Frank on the floor with a bullet wound in his chest. According to the testimony of one of the investigating officers, petitioner told him that "she stood up to leave the room and [her husband] grabbed her by the throat and choked her and threw her against the wall... and at that time she walked over and picked up the weapon and pointed toward the floor and he hit her again and she shot him."

Id. at 45-46.
refreshed testimony. Consequently, the defendant was not allowed to testify about these newly remembered details.\textsuperscript{162} Every time she attempted to describe her husband’s activities on the day of the shooting, the prosecutor objected and the testimony was excluded.\textsuperscript{163} As the Court stated, “ninety-nine percent of everything [petitioner] testified to in the proffer” was inadmissible.\textsuperscript{164} The Court found that the defendant’s right to testify could not be compromised by a flat ban on hypnotized testimony.

(3) “Truth serum”

Modern culture, particularly in the movies, has popularized the idea of a “truth serum.” The so-called “serum” really consists of sodium amytal injections or similar medications. Their effectiveness is unknown and the law often casts a skeptical eye towards this methodology.\textsuperscript{165} In one case, for example, the court excluded serum evidence because such tests “have not yet attained scientific acceptance as reliable and accurate means of ascertaining truth or deception.”\textsuperscript{166}

Narco-analysis, or “truth serum,” was first performed with sodium pentothal, a predecessor of sodium amytal.\textsuperscript{167} Regardless of its form, this testing technique suffers from many of the same reliability and unfair prejudice questions as polygraphs, and courts have been reluctant to receive it. Malingers, especially drug abusers resistant to sedative effects, may also fake sedation and deceive the test administrator. Some courts, however, have permitted the tests under limited circumstances.

In \textit{United States v. Solomon},\textsuperscript{168} the court affirmed convictions based on evidence obtained through the use of sodium amytal. Katherine Piel Heath was offered a ride home by the defendant, Solomon, and Solomon’s brother. The defendants’ seventeen-year-old nephew joined them. The

\begin{thebibliography}{99}
\item[162.] The prosecution was not given notice of the hypnotherapy, however. \textit{See id.} at 47-48.
\item[163.] The Supreme Court noted that “[e]ach time she attempted to describe an event on the day of the shooting, she was unable to proceed for more than a few words before her testimony was ruled inadmissible.” \textit{Id.} at 48 n.4.
\item[164.] \textit{Id.}
\item[166.] Cain, 549 S.W.2d at 712.
\item[167.] The first “truth serum,” sodium amytal is a barbiturate sedative that lessens the frontal lobes’ inhibition on the conscious control of thoughts. This substance is unreliable in determining the truth, although it may stimulate repressed memories. \textit{See} Resnick, \textit{supra} note 7, at 24. According to Dr. Resnick, “[o]ne half of the subjects in Redlich’s (1951) study were able to maintain a lie under the influence of sodium amytal.” \textit{Id.}; \textit{see}, \textit{e.g.}, \textit{United States v. Solomon}, 753 F.2d 1522, 1526 (9th Cir. 1985).
\item[168.] 753 F.2d 1522.
\end{thebibliography}
defendants decided to rob Heath. After knocking Heath unconscious, they set her house on fire and left. Heath died as a result of carbon monoxide poisoning. Solomon's brother was indicted for the crime. After granting the nephew immunity and questioning him under the influence of sodium amytal administered by a trained psychiatrist, Solomon was indicted as well. Solomon was convicted at trial of first degree murder and robbery based on this evidence.  

The court concluded that the examination of the nephew under the influence of the serum was neither suggestive nor leading, and was permissible. The psychiatrist testified at trial that narco-analysis is a generally accepted investigative technique, but that safeguards against suggestion of memories by the examiner are essential. The psychiatrist further claimed he could determine whether the witness would be more likely to tell the truth under narco-analysis than if not so treated.

(4) Other methods

A plethora of scientific and technologically-based techniques have been studied, proposed, and created, some of which have been better received than others. For example, in 1990, two machines were developed that, according to news reports, detected "with absolute certainty, malingering in any patient who has low back pain." One skeptic, writing in the magazine *Physical Therapy*, cautioned, "[n]ew treatments and new evaluation tools should be evaluated through use of scientific methods, and reports on these breakthroughs deserve rigorous peer review. Purveyors of devices and promoters of treatments should adhere to responsible standards . . . if we rush to publicize and promote ideas and products, we may lose the opportunity to bring our patients the best quality care." Very little has been heard about the unlimited promise of these devices since their initial introduction.

Another recent technological development has been the thermogram, a photograph of an individual that allegedly portrays the individual's pain. Technically, a thermogram is a "photograph of body heat that measures

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169. *See id.* at 1524, 1528.
170. *It would be useful, for example, if the information could be verified through other sources to minimize the possibility of fabricated memories. See generally id.*
173. *Id.* at 15.
differentials in local skin temperature." 175 While thermography can help in determining whether soft tissue injuries exist, one commentator has argued that "its extreme sensitivity and tendency to give false positives have forced courts to limit its admission until the technology improves and it becomes independently reliable." 176

Of all the direct scientific methods, there is one that has been proven to be exceptionally reliable. The test asks the subject to stare at a rotating drum with lines. This method is used to determine whether a person is in fact suffering from hysterical blindness, a conversion disorder. Eye movements known as nystagmus will distinguish the malingering subject from the good faith sufferer. 177

3. Assessing the Scientific Method

Do these scientific methods work in detecting malingering? While many psychologists and scientists swear by at least some of the methods described above, others remain skeptical. One psychologist believed that those experts who think they cannot be deceived might have been fooled already without knowing it. 178 This comment appears to echo the opinion of many scientists, lawyers and judges—that scientific tools, while helpful, are not ready to replace the lay person’s common sense and experience in detecting malingering for the adversary process.

D. Categorizing Evidence of Malingering

Questions of malingering permeate the case law. Courts have been widely split on whether to admit such evidence and on the proper rationale for admissibility. The analyses have considered whether the decision-maker is the judge or the jury, whether the testimony is a direct opinion on malingering or an indirect inference about it, whether the case is criminal or civil, whether the injury or illness in question is mental or physical, and what type of detection methodology the expert used, among other factors.

175. Id. at 420.
176. Id. at 452. If this view is accepted, courts might admit thermographic findings if other reliable diagnostic tools are corroborative. See id. at 451-52.
177. See Interview with Burton Cahn, M.D., Chief of Psychiatry, former Chief of Staff, Memorial Hospital, in Hollywood, Florida (Sept. 22, 1994).
1. Direct Evidence of Malingering

Courts have given direct evidence of malingering, which attempts to measure a claimant's or witness' sincerity, an uneven reception. The admissibility of expert witness opinions on malingering has depended on the form of the testimony, the nature of the case and the jurisdiction, and other variables. When excluded, courts generally find expert testimony on malingering to be irrelevant or unfairly prejudicial.\textsuperscript{179} If the testimony is simply based on common sense and a lay person would be able to detect deception based on observations of the witness' demeanor, the expert's testimony is excluded as duplicative.\textsuperscript{180} Other courts have focused on the potential impact of the expert testimony on the jury, especially the implicit assumptions jurors may make about the expert's neutrality and superior knowledge.

The assumption about expert neutrality is not always warranted. One expert, for example, testified in twenty-seven different cases that personal injury claimants were malingering. Each time, the expert testified against both the claimant and the treating physician.\textsuperscript{181} The consistency of the expert's opinion casts suspicion on the expert's objectivity and led to the expert's exclusion.

While bias may exist in expert testimony, testimony on malingering has been a part of the legal system for more than a century. In \textit{Ney v. Troy},\textsuperscript{182} an 1888 New York slip and fall case, the court permitted opinion testimony relating to the validity of the prolonged duration of the injured party's pain. In \textit{Hickenbottom v. Delaware, L. & W. R. Co.},\textsuperscript{183} decided in 1890, an accident resulted in an amputated hand. The Court permitted opinion testimony on whether claimed phantom limb pain was real or feigned.\textsuperscript{184}

2. Indirect Evidence

Perhaps the most significant form of indirect evidence of malingering involves testimony about psychological syndromes. While such indirect

\textsuperscript{179} See \textit{FED. R. EVID.} 403.
\textsuperscript{180} See \textit{FED. R. EVID.} 403.
\textsuperscript{181} See \textit{Rowe v. State Farm Mut. Auto. Ins. Co.}, 670 So. 2d 718, 723 (La. Ct. App. 1996) (in which the court noted that the expert consistently showed "extreme bias against personal injury plaintiffs").
\textsuperscript{182} 3 N.Y.S. 679 (1888).
\textsuperscript{183} 25 N.E. 279 (N.Y. 1890).
testimony is less prejudicial than direct evaluations of witness credibility, it
too has had an uneven reception in the courts due to questions of relevance
and unfair prejudice.

Psychological syndromes\(^{185}\) are offered to help explain behavior,
illness, or injury when there is no traceable, specific biological cause. The
syndromes, in effect, provide a rational explanation for behaviors that may
appear to be contrary to common sense and experience.

Several of the syndromes are sometimes viewed as variants of post-
traumatic stress disorder, including battered women's syndrome and rape
trauma syndrome.\(^{186}\) Whether a person is malingering a syndrome is often
difficult to detect, although tests such as the MMPI have been used to
determine truthfulness. An MMPI test was used, for example, to assess
malingering in a criminal case brought against a Vietnam War veteran for
attempted murder.\(^{187}\)

Syndrome evidence based on social science research is sometimes
considered to invade the province of the jury and to be of questionable
reliability. The receptivity of courts depends on what the evidence is offered
to prove. In one case, the court permitted expert testimony on the rape
trauma syndrome in a prosecution for deviate sexual conduct, but found that
the expert's opinion on the credibility of the child rape victim was an
improper invasion of the province of the jury.\(^{188}\) The court also held that the
expert's testimony about malingering, particularly the statistical percentage
of false accusations, was improper comment.\(^{189}\) In another case, statistical
data on the percentages of false accusations in cases was found to cross the
line and invade the province of the jury.\(^{190}\)

Some courts have found that classifying a particular behavior in the
form of a syndrome is improper in and of itself. For example, an expert
who testified on child sexual abuse syndrome was found on appeal to have
invaded the province of the jury.\(^{191}\) However, in that case, \textit{State v. Schimpf},
Justice Daugherty, in dissent, concluded:

Dr. Breitstein's testimony was really no different from that we see

\(^{185}\) These are essentially collections of common behaviors, illnesses, and symptoms without a

\(^{186}\) \textit{See id.}

(Tex. App. Feb. 28, 1994)}.

\(^{188}\) \textit{See State v. Schimpf, 782 S.W.2d 186, 193-95 (Tenn. 1990)}.

\(^{189}\) \textit{See id.}

\(^{190}\) \textit{See Brodniak v. State, 779 P.2d 71, 72-73 (Mont. 1989)} (stating that although rape
trauma syndrome testimony is generally admissible, the percentages of false accusation improperly
comments on the credibility of witnesses).

\(^{191}\) \textit{See Schimpf, 782 S.W.2d at 193-95}. 
offered routinely by psychological experts, who, for example, observe the characteristics or "symptoms" of a mental patient, compare them to others in their experience, and decide whether or not the patient is delusional and therefore insane. In some cases, these experts are also called upon to determine whether or not a mental patient is faking or "malingering." . . . When this occurs, the analogy to the situation before it is particularly apt: the question in both instances is whether or not the patient is "making it up." If the expert's opinion is helpful to the jury in the case of a suspected malingering, it is equally valuable—and admissible—when the claim is made that a young child is "making up" reports of sex abuse. 192

For these reasons, Justice Daugherty found that the admission of expert testimony on child sexual abuse syndrome was proper and not reversible error.

How a party comes to offer the evidence matters as well. Evidence of syndromes might be permitted to rebut a defense even when it may not be allowed to bolster credibility initially. For example, testimony about post-traumatic stress disorder in a rape case was considered improper because it invaded the province of the jury in determining credibility issues. 193 The court would have upheld the admission of such testimony, however, had a defense of consent been raised to the charge of sexual assault. 194

E. Special Contexts—The Most Likely Forums For Malingering Issues in the Legal System

Malingering appears in a wide variety of court cases. These include divorce proceedings in which a party's illness is alleged to have been exaggerated; 195 a teacher termination claim asking whether a teacher was terminated due to incompetency or a learning disability; 196 and even civil rights actions by prisoners. 197 In Madrid v. Gomez, 198 for example, inmates

192. Id. at 199 (Daugherty, J., dissenting).
194. See id. at 1301.
196. See Beck v. James, 793 S.W.2d 416, 418-19 (Miss. Ct. App. 1990). In Beck, the court permitted experts to testify that the learning disability diagnosis was an incomplete measurement because it did not rule out other possible causes for the behavior such as anxiety, memory loss, dementia, or malingering. See id. at 419.
198. Id.
challenged the constitutionality of the conditions of their confinement, claiming there was a lack of adequate medical and mental health care. The presence and misdiagnosis of malingering were significant issues before the court. The court observed that “in a system that is already understaffed, for example, having to decipher disorganized records reduces the amount of time physicians can spend with each patient; if no quality control is in place, no one will stop MTA’s from inappropriately ‘diagnosing’ sick inmates as malingers.”

The court noted that the Pelican Bay Hospital staff provided inconsistent treatment as well:

Dr. Grassian found that Inmate C’s situation is one that particularly shocks the conscience. “[T]here has been no consistency regarding the clinicians who saw him, nor was there adequate supportive psychotherapeutic contact: he appears to have been seen only a handful of times during the entire period. Finally, there was no consistency from visit to visit as to diagnosis. He was at various times diagnosed as suffering from schizophrenia . . . , organic hallucinosis, a personality disorder, an organic mental disorder, or to be malingering. There is no continuity in these assessments; it is though each interview was a unique event unrelated to prior contacts.”

Even labels of malingering at the Hospital did not prevent patients from being treated with strong medications. The medications these “malingers” were given were to be taken only if medically necessary and had strong side affects. The court specifically mentioned the negligent treatment of one inmate who received toxic doses of seizure medicine when “[p]hysician notes referred to ‘probable malingering’ . . . in spite of overwhelming evidence to the contrary.”

The court observed that the label of malingering should not have prevented care of the inmates.

As Dr. Grassian also notes, the act of “malingering” may itself be a symptom of mental illness. An inmate “faking” a symptom complained of may well be so ill in another sense that he is desperately seeking help in any way possible. Also, a patient may

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199. Id. at 1212. The court agreed with Dr. Stark’s report that “there is a rampant pattern of improper or inadequate care that nearly defies belief.” Id.
200. Id. at 1224.
201. “There is also evidence that inmates are labeled malingerers even though the inmate has been prescribed strong anti-psychotic medication, which should not be taken unless medically necessary given the potentially dangerous side effects.” Id. at 1225-26.
202. See id.
203. Id. at 1210.
both be manipulating and at the same time very ill.\textsuperscript{204}

In light of all the evidence before it, the court found that the mental health care provided the inmates was constitutionally inadequate.

Unlike the setting of Madrid, malingering issues are most likely to appear in the legal system in cases involving allegations of pain, injury, or symptoms without any explicable or traceable causality. Several specific contexts stand out. Perhaps the most visible context concerns the assertion of mental illness. In criminal cases, mental illness is relevant to, if not dispositive of, whether the accused is competent to stand trial or was insane at the time of the act in question. Mental illness malingering, however, may occur in other contexts as well, such as attempts to obtain insurance coverage for psychological therapy visits. Another significant context involves workers' compensation and personal injury actions. These often contain assertions of back, head, or neck injuries and other deficits where there appears to be no physiological proof of injury.

Another significant context involves individuals seeking benefits, often from the government, for inexplicable injuries, illnesses or behaviors. Chronic fatigue, post-traumatic stress, battered women, and carpal-tunnel are just a few of the syndromes afflicting numerous people that may encompass unknown illnesses or injuries.

1. Mental Deficit Claims Generally

Malingering issues often arise in the context of claimed mental deficits.\textsuperscript{205} Various motives propel attempts to manipulate the legal system in this area. For example, a reluctant eyewitness to an event may falsely complain about memory loss or sensory deficits. Individuals involved in child custody or divorce cases, involuntary civil commitment cases, personal injury cases, and those who raise the insanity defense in criminal cases may stand to gain by malingering.\textsuperscript{206} People may be motivated to feign illness out of a desire for pecuniary advantages.\textsuperscript{207} For example, patients may attempt to obtain "payment for psychological services, ... [and] want to be perceived as 'sick enough' to qualify for insurance, reimbursement, workman's compensation, or Social Security disability, but not so severely

\textsuperscript{204} Id. at 1226 n.158.

\textsuperscript{205} Because mental illnesses have no known lesions or biological sources, they are easier to malinger than those diseases with distinct physiological causes, such as viruses.

\textsuperscript{206} A criminal defendant could gain freedom or a reduced penalty. See generally Drob & Berger, supra note 19, at 519.

\textsuperscript{207} See Rogers & Cavanaugh, supra note 59, at 444.
impaired as to require hospitalization or lose the legal right to handle their own affairs. Those with the greatest motivation to malinger mental deficits, however, are criminal defendants, particularly those facing serious charges.

2. Criminal Defendants

Criminal defendants, aware that their liberty and even lives may be at stake, malinger for several purposes. They may attempt to avoid prosecution and be declared incompetent to stand trial by manifesting a serious mental disease or defect such as a psychosis. If a case reaches trial and the defendant is found competent, the accused also may defend against the prosecution's case by arguing diminished mental capacity or insanity. Even if convicted, the accused could argue that she is incompetent to be sentenced or, if the sentence already has been imposed, incompetent to be executed.

In one study, it was estimated that eight percent of the criminal defendants referred for pretrial forensic evaluations were malingering. The same study observed that the typical person diagnosed as malingering had a tenth-grade education, was charged with a crime against a person rather than a property crime, and had a history of several previous charges, most commonly other crimes against persons. Approximately half of the diagnosed malingerers had a history of prior psychiatric hospitalization, which may have provided some basis for them to emulate psychotic patients.

A criminal defendant might malinger mental illness using a variety of symptoms. One frequent form involves faked auditory hallucinations. As one court noted:

It is no new thing for criminals to attempt to justify their conduct upon the excuse that they acted on the command of God. They have frequently claimed to have seen visions, to have gotten

208. Id.
209. The federal government and many states impose the death penalty for various offenses.
210. Diminished capacity is a defense that negates the mental state of the defendant. The insanity defense admits the mental state as well as the act, but serves as a negation of criminal responsibility due to a lack of moral blameworthiness. See generally JOSHUA DRESSLER, UNDERSTANDING CRIMINAL LAW (Matthew Bender ed., 1987).
211. See Cornell & Hawk, supra note 3, at 380.
212. Id. at 381-82.
instructions from the Almighty to do wicked things. We are told of such men in the Old Testament, and of them it is said, “they speak a vision of their own heart, and not out of the mouth of the lord.” . . . Men cannot put themselves beyond the reach of the law by the indulgency of such vain imaginations. 213

a. The insanity defense

The context the public most likely believes has been infiltrated by malingering is the insanity defense. A successful insanity defense excuses otherwise criminal conduct, generally resulting in a verdict of not guilty by reason of insanity. 214 In the attempted murder trial of John Hinckley, brought for shooting President Ronald Reagan, the law required the defense to produce evidence of insanity, and then the prosecution had the burden of persuading the jury that Mr. Hinckley was sane beyond a reasonable doubt. That law has since been changed, leaving the burden of persuasion on the defense to prove the defendant’s insanity. Since an acquittal by reason of insanity in most jurisdictions leads to an indefinite involuntary detention in an institution for the criminally insane, this defense generally is raised only by those defendants facing lengthy sentences on serious charges, such as murder or attempted murder. A criminal acquittee committed to the psychiatric hospital has the burden of proof for obtaining his or her release.

Especially in the wake of the not guilty by reason of insanity verdict in the John Hinckley trial, the insanity defense has remained highly controversial. Because the public harbors suspicions of malingering and believes acquittees are “getting away with crimes,” 215 such defenses are seldom successful. Questions of malingering arise often in the context of the insanity defense and on the question of the defendant’s mental state during the commission of a crime generally. 216 Malingering issues include how to

213. Resnick, supra note 7, at 27.
214. While the burden of proof usually is placed on the defense to prove the defendant’s insanity as of the time of the criminal charge, that has not always been the case. In some jurisdictions, verdicts of guilty but mentally ill are available as well. See DRESSLER, supra note 210, at 7.
215. This belief persists despite the fact that criminal acquittees are committed indefinitely to the hospital and may spend the rest of his or her life there, even after their sentence would have ended.
216. See, e.g., United States v. Johnson, 994 F.2d 980, 981-82 (2d Cir. 1993) (affirming defendant’s conviction of attempted murder, assault with intent to commit murder and carrying a firearm, and rejecting his claims that he was mentally impaired); State v. Zmich, 770 P.2d 776, 778 (Ariz. 1989) (in which four experts testified, three found the defendant to be legally insane at the time of the crime and one found him to be malingering and feigning mental illness); State v. Medina, 636 A.2d 351, 365 (Conn. 1994) (where experts testified pursuant to defendant’s insanity
treat the defendant's lack of cooperation,\textsuperscript{217} unusual symptoms,\textsuperscript{218} or even the more commonly alleged hallucinations or delusions.\textsuperscript{219} The significance of distinguishing malingering from insanity appears not to be lost on criminal defendants, courts, and the mental health profession alike. In \textit{State v. Widenhouse},\textsuperscript{220} a Louisiana Court of Appeals concluded that there was enough evidence for a jury in a criminal case to reject the insanity defense. The court stated:

\begin{quote}
During an interview on October 4, 1989, defendant was worried about the doctor's interpretation of him because defendant knew it could make a difference between freedom and prison. This became even more interesting when the state's expert witness testified on rebuttal there were indications that defendant was "malingering" and feigning symptoms. . . . Even Dr. Vigen [the defendant's expert] agreed there was some evidence indicating defendant was trying to manipulate the MMPI score.\textsuperscript{221}
\end{quote}

While malingering is an alternative diagnosis to many types of mental illness, it is almost an automatic inference when the claim of multiple personality disorder ("MPD") is made.\textsuperscript{222} In MPD, a person has a "primary" or "host" personality and at least one "alter" personality.\textsuperscript{223} The

and were properly cross-examined on previous diagnosis of the defendant as a malingering); State v. Gary, 913 S.W.2d 822, 830 (Mo. Ct. App. 1995) (permitting an expert psychiatrist to explain why he diagnosed the defendant as a malingering and as suffering from a mental disease or defect); State v. Lado, 645 A.2d 1197, 1201 (N.J. Super. Ct. App. Div. 1994) (permitting the state's forensic expert to testify that the defendant was diagnosed as malingering and having a personality disorder but not organic brain disorder or schizophrenia as rebuttal to the defendant's insanity defense).

\textsuperscript{217} See \textit{Wallace v. Kemp}, 757 F.2d 1102, 1105, 1110 (11th Cir. 1985). The court noted that a defendant's refusal to take psychological tests may undermine the expert's conclusion of malingering. \textit{See id.} at 1110.

\textsuperscript{218} See \textit{Commonwealth v. Kappler}, 625 N.E.2d 513, 514-15, 519 (Mass. 1993), in which an expert testified at the defendant's murder trial that the defendant's unusual symptoms could be due to malingering. Several of the experts found the defendant to have a personality or character disorder and all noted the inconsistencies in his statements and that his symptoms were unusual or atypical. \textit{See id.} at 519.

\textsuperscript{219} See \textit{United States v. Medved}, 905 F.2d 935, 937 (6th Cir. 1990), in which a defendant charged with bank robbery offered expert witnesses who testified he was suffering from a paranoid or delusional disorder at the time. The government psychiatrist stated that the defendant was malingering. \textit{See id.}

\textsuperscript{220} 582 So. 2d 1374 (La. Ct. App. 1991).

\textsuperscript{221} \textit{Id.} at 1387-88.

\textsuperscript{222} See, e.g., \textit{State v. Moore}, 550 A.2d 117, 131 (N.J. 1988) (permitting expert testimony stating that the defendant did not suffer from multiple personality disorder but rather was malingering); \textit{Frederick v. State}, 902 P.2d 1092, 1095-96 (Okla. Crim. App. 1995) (finding that it was constitutional error to permit a psychiatric expert to offer the conclusion that the defendant did suffer from multiple personality disorder but could not counter with its own expert testimony).

\textsuperscript{223} \textit{United States v. Denny-Shaffer}, 2 F.3d 999, 1006 (10th Cir. 1993) (citing \textit{BENNETT G.}}
primary personality has control over the body for the greatest amount of time during any particular time period.\textsuperscript{224} The alter personality consists of a personality or part of personality other than the host.\textsuperscript{225} Because of the apparently thin line between malingering and multiple personality disorder, expert testimony is routinely permitted about the distinction between MPD and malingering, why an expert concluded it was one and not the other, or why a malingering defendant also had a lesser form of mental illness such as an anti-social personality disorder.\textsuperscript{227} Hypnosis and other methods such as the MMPI are often used to determine if the MPD is real or malingered.\textsuperscript{228} Sometimes, however, an opinion on whether a person was malingering is permitted as a lay opinion on the issue of sanity.\textsuperscript{229}

In one case, the expert stated that the defendant "was a pathological liar and that his multiple personality was malingered."\textsuperscript{230} In another case, three defense experts testified that the defendant suffered from a multiple personality disorder that "rendered her legally insane,"\textsuperscript{231} while three state experts testified that the defendant was malingering and not legally insane.\textsuperscript{232}

The question of malingering also arises with novel forms of mental illness. In one case, the defense expert testified about the "psychotic trigger syndrome theory" to explain the defendant's conduct in a trial on murder, assault and burglary charges.\textsuperscript{233} The court found that this theory was not generally accepted, and even if it was, it did not apply to the defendant. The court stated "[t]he state effectively demonstrated these weaknesses and presented the testimony of two experts that Defendant was not insane at the time of crimes and was probably malingering."\textsuperscript{234} The court noted that there

\begin{thebibliography}{99}

\bibitem{224} See id.
\bibitem{225} See id. Personalities may be distinguished by their languages, which hand is the primary one, and how they respond to personality tests such as the MMPI. See id. at 1009.
\bibitem{226} See State v. Smith, 872 P.2d 966, 972 (Or. 1994). "In this case, that fact question—malingering or mentally ill—is much like the question that the law asks the jury, not the judge, to decide where the defense is guilty except for insanity." Id.
\bibitem{227} See, for example, \textit{State v. Moore}, 550 A.2d 117, 131 (N.J. 1988), in which the expert rebuttal witness for the state on the question of the defendant's diminished capacity suggested that she suffered from personality disorder and was malingering as well.
\bibitem{228} See, for example, \textit{State v. Alley}, 776 S.W.2d 506, 510 (Tenn. 1989), in which Dr. Allen Battle testified that he had treated more than a dozen cases of MPD and hypnotized the defendant three times to determine the proper diagnosis, which in this case was MPD.
\bibitem{229} See id. at 514. A psychiatric technician was permitted to give his opinion that defendant was malingering and did not act like an insane person. See id.
\bibitem{230} People v. Wade, 729 P.2d 239, 243 (Cal. 1987).
\bibitem{231} Moore, 550 A.2d at 130.
\bibitem{232} See id.
\bibitem{233} State v. Cornell, 878 P.2d 1352, 1362, 1368 (Ariz. 1994).
\bibitem{234} Id. at 1368.
\end{thebibliography}
was an apparent motive for these crimes, namely the defendant's anger and jealousy about the termination of his relationship with his girlfriend. 235

Not all experts welcome the opportunity to testify about whether a defendant is malingering mental illness. In Commonwealth v. Lake, 236 a criminal responsibility examination of a defendant charged with murder and kidnapping occurred at Bridgewater State Hospital. The director of the forensic services unit at the hospital, who saw the defendant multiple times during a six month period, "felt so strongly that the defendant was malingering or fabricating his symptoms, that he recused himself from the defendant's criminal responsibility examination." 237 In the same case, another expert who felt comfortable testifying asserted "that the defendant was a malingerer who had mixed personality disorder with narcissistic and histrionic features." 238

b. The penalty phase in capital proceedings

Questions of malingering often arise in the penalty phase of capital cases. A sentencing recommendation depends on both mitigating and aggravating factors, including the defendant's mental state. In one case, expert witnesses were offered to show that the defendant was a "dangerous malingerer" in full control of his faculties at the time of the murder. 239 The experts were permitted to testify that the defendant "was sane at the time of the offenses, was a sociopath and malingerer." 240 In other cases, experts were allowed to testify that the defendant was malingering to avoid taking responsibility for his acts, 241 and to show that the defendant's poor performance on neurological tests and lack of recall were due to malingering and not any real mental illness. 242

c. Competency to stand trial

While the insanity defense is an affirmative defense that may be knowingly and voluntarily waived by a criminal defendant, competency to stand trial can not be waived by the defendant or prosecutor under any

235. See id. at 1368 n.8.
237. Id. at 1018.
238. Id.
239. Del Vecchio v. Illinois Dep't of Corrections, 31 F.3d 1363, 1387 (7th Cir. 1994) (en banc).
240. Id. at 1384.
242. See Davis v. State, 604 So. 2d 794, 798 (Fla. 1992). The expert noted that the defendant "showed no problems when he did not suspect that he was being evaluated." Id.
circumstances. Instead, it operates as the equivalent of a jurisdictional prerequisite to any stage of the criminal proceedings, from pre-trial motions to sentencing. If an accused is incompetent at any stage of these proceedings, any subsequent proceedings are void. Thus, upon the motion of judge, prosecution or defense, an accused may be examined to determine if he or she is competent to stand trial and, if not, whether competency will be regained in the foreseeable future. In the seminal case of *Dusky v. United States*, the United States Supreme Court held that an accused was incompetent to stand trial if he was unable to assist his attorney in the defense of the case or unaware of the nature of the proceedings.243

A motive to malinger incompetency exists because an accused facing serious charges stands to gain considerably from a delay in the proceedings. A delay could affect the witnesses and other evidence, prejudicing the case or postponing the case indefinitely. The net result could be a failed prosecution and a legal loophole waiting to be exploited by others.244

Malingering issues regularly arise on the subject of competency to stand trial in criminal cases; evidence on malingering is just as routinely admitted. Several reasons for routine admissibility exist. Courts generally make a competency determination without the assistance of lay fact finders, thus reducing the potential for prejudice.245 Also, competency proceedings often involve imprecise assessments. The Supreme Court acknowledged this conclusion in *Cooper v. Oklahoma*, in which the Court struck down an Oklahoma law requiring the defendant to prove incompetency to stand trial by clear and convincing evidence.246 Justice Stevens approvingly quoted the Court of Appeals, which stated "it can be difficult to determine whether a defendant is malingering, given the 'inexactness and uncertainty attached to


244. In some jurisdictions, the charges are held open. In others, the charges are voluntarily dropped, but may be reinstated. Delay, however, generally benefits the defense and is often considered a defense victory.

245. *See, e.g.*, United States v. Soldevila-Lopez, 17 F.3d 480, 487-90 (1st Cir. 1994) (finding that the district court abused its discretion by denying a continuance in the competency hearing after the prosecution's psychological expert offered a last minute diagnosis of malingering); United States v. Kokoski, 865 F. Supp. 325, 329-36 (S.D. W. Va. 1994) (in which experts reported defendant as malingering and that the defendant's idiosyncratic religious beliefs was an attempt to avoid trial), aff'd 82 F.3d 411 (4th Cir.), cert. denied 117 S. Ct. 233 (1996); United States v. Espinal, 769 F. Supp. 116, 119-21 (S.D.N.Y. 1991) (in which several experts testified at a competency hearing that the defendant was likely malingering because he did not display any physiologic or neurological deficits); Carter v. State, 929 S.W.2d 690, 691 (Ark. 1996) (four experts who concluded the defendant was malingering and without psychosis, were permitted to present their opinions, that the defendant was competent to proceed to trial).

Some courts permit malingering "experts" in competency hearings. In *United States v. Kokoski*, the court stated that in a competency hearing, the district court "approved the United States' request to have the case reviewed by an expert in the field of malingering. . . . The government's expert, Richard Rogers, Ph.D., rendered an opinion that Kokoski was competent to stand trial and that he was malingering."249

Courts allow expert competency testimony based on a wide variety of evidence. Many of the experts based their conclusions on their observations of the defendant's behavior, particularly the fact that the behavior was not what they would expect from someone truly suffering from mental illness. For example, in *Ray v. Duckworth*, the trial court found the defendant competent to stand trial.251 The court noted that it was making a "credibility determination" of the experts who stated that the defendant "was feigning psychiatric illness and not at all characteristic of person [sic] who has true psychotic thought process. . . . Just the fact that he alleges that he cannot remember the facts around which this offense arose does not on its face give the court . . . reasonable grounds for [reexamination]."252

In some cases, experts pointed to psychopathic behavior, such as exaggerated symptoms, as an indication of malingering.253 In other cases, the expert's experience in evaluating individuals on questions of competency to stand trial was significant.254

Expert testimony in some competency hearings concerned the uncooperative nature of the defendant.255 The lack of cooperation cut both ways, suggesting malingering or that the defendant suffered from mental illness because he or she refused to participate in the defense.256

Testimony on malingering in competency hearings sometimes implicated constitutional rights. The First Circuit Court of Appeals concluded in one case that the defendant was denied due process of law when, during a competency hearing, an expert offered a new and unexpected

247. Id. at 351.
248. 82 F.3d 411 (4th Cir. 1996).
249. Id. at 416.
250. 881 F.2d 512 (7th Cir. 1989).
251. The defendant did not establish, pursuant to *Dusky v. United States*, reasonable grounds for believing he was not able to understand the nature of the proceedings or that he could not assist in the preparation of his defense. See id. at 514-15.
252. Id. at 516.
256. See id.
conclusion that the defendant was malingering. The First Circuit held that the last minute diagnosis of malingering "improperly denied a continuance that would have allowed [defendant] Soldevila to be examined by his own expert and subsequently erred in finding that Soldevila was competent to stand trial."

**d. Competency at other stages of a prosecution**

Competency issues arise throughout the course of a criminal prosecution. If at any time a defendant is incompetent, the proceedings must cease or will be considered void. For example, in a case where a defendant convicted of murder claimed that his confession was invalid because he was mentally retarded and unable to voluntarily waive his Miranda rights, one expert had no problem diagnosing the defendant as malingering. The expert testified,

> Now, I must say that his—his efforts at presenting himself as having some type of severe mental problem were not very sophisticated. Okay, that is, they were pretty readily transparent to myself and to any other mental health professional, and they were borne out by the results of the Memory Malingering Test.

A Miranda Rights issue arose in *Smith v. State*. There, the defendant claimed he had a severe head trauma that prevented him from remembering many of the details of the circumstances at the time in question. One doctor stated that the defendant was malingering this injury just like "when a child pretends he or she has the flu on a day he or she has a test in order to avoid taking the test." The court held that the testimony violated the defendant's Fifth Amendment rights because the doctors had not given the defendant any Miranda warnings prior to their interactions with him.

The existence of malingering has been used to infer that a valid Miranda waiver occurred. In *State v. Brooks*, evidence that the defendant

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257. *See* United States v. Soldevila-Lopez, 17 F.3d 480, 482, 490 (1st Cir. 1994).

258. *Id.* at 487. The court stated that "[o]n May 25, doctor Duncan presented an addendum to his previous evaluation of Soldevila, stating for the first time that Soldevila was 'malingering' (i.e., feigning incompetency). The district court denied Soldevila's motion for a continuance, found Soldevila competent to be sentenced and imposed sentence." *Id.*


260. *Id.*


262. *Id.* at 977.

was a malingerer was used to support the conclusion that even though the defendant may have been retarded or brain damaged, he waived his Miranda rights knowingly and intelligently.264

Another competency context is the imposition of the death penalty. If a death row convict is not competent at the time of execution, the death sentence will be postponed. Questions of malingering routinely surface in this area, and courts regularly reject requests for a delay based on the presence of malingering.265 In one case, a defendant who had been convicted of murder and sentenced to death moved for a delay of execution.266 The delay was denied after finding the petitioner was competent. Mental health experts concluded that the defendant was malingering because he knew that an incompetency claim could delay his execution.267

3. Workers’ Compensation and Personal Injury Cases

Testimony about malingering has been very favorably received in the area of disability claims, most notably in workers’ compensation and personal injury cases. These actions seek compensation for injuries, including difficult-to-detect neck, back and head injuries.

In the workers’ compensation field, experts are routinely permitted to offer conclusions about malingering, since it is often central to the outcome of workers’ compensation actions.268 The issue usually arises on rebuttal, when an employer charges that a worker’s employment-related

264. See id. at 374-75. In Brooks, the defendant was found to have knowingly and intelligently waived his Miranda rights despite claims of being retarded or brain damaged. Defendant had taken several IQ tests in which his scores diverge up to 23 points, which is considered “unusual.” See id. at 374. Divergence was explained through the conclusion of malingering. The court stated “this picture of Brooks as a man capable of selectively exercising discernment when it suited his purposes accords with the consistent and uncontroverted testimony of Detective Reynolds concerning Brooks’ apparent frankness and coherence during the course of his confession.” Id.

265. See Fearance v. Scott, 56 F.3d 633, 639-41 (5th Cir. 1995).

266. See id. at 639.

267. See id.

268. For example, one doctor testified that an individual who claimed injury “may have been magnifying her symptoms for whatever reason, but I didn’t have the impression that she was intentionally trying to deceive me.” Stuart v. Douglas County, Kansas, 907 P.2d 919, 923 (Kan. Ct. App. 1996); see also Cameron v. Holiday Inns of Am., Inc., 1995 WL 319053, at *1 (Tenn. May 24, 1995) (in which the expert testified that the claimant was not a malingerer); Sudduth v. Department of Transp. and Dev., 619 So. 2d 618, 626 (La. Ct. App. 1993) (in which two experts testified that the claimant was not a malingerer).
injuries are malingered. For example, in response to a claimed injury, the medical experts in one case compared the claimant's assertions with evidence of the types of activities and chores claimant could perform to conclude that the claimant was malingering or at least exaggerating those injuries.

When the issue of malingering is raised, experts have disagreed on the cause of alleged injuries. In one case, several experts testified that problems of pain and dysfunction resulted from a dependency on medication as well as malingering. Another expert stated that the employee had a partial permanent impairment and a legitimate injury, labeled "post lumbar laminectomy syndrome."

Not all experts called upon to give their opinion on malingering have enough of a basis to do so. In a workers' compensation case in which the claimant asserted he had lost peripheral vision from a trucking accident, an expert opthamologist could not explain the claimant's vision test results. When asked whether the results may be attributable to psychological, malingering or unexplained problems, the expert could not relate the problem to any pathological process, but could not say it was malingered behavior, either. The administration of an MMPI exam by a clinical psychologist in the same case tended to eliminate malingering as a conclusion, although the opthamologist suggested that a physiological test, a "tangent screen" exam that detects whether a patient is malingering or imagining a loss of field vision, should be performed.

In Treat v. McDonald's, a finding of no damages was sustained by an appeals court when the evidence below indicated malingering. The worker's claim of neck and shoulder injuries as a result of a cooler falling on his head was found to be untrue, since he could not have secured the key to

269. As one doctor testified, "[t]he malingering that one sees occasionally in the Workers' Compensation case—if someone insists they are permanently damaged by some accident and then after they leave the examination scene they move around quite normally—I have had that happen a couple of times." State v. Smith, 872 P.2d 966, 975 (Or. 1994) (regarding the testimony of psychiatrist Dr. Janzer).


272. Id. at *1.


274. Id. at 344. As stated by Dr. Wirtschafter, a malingering patient will be stuck on the fact that they ought to see ten degrees and doesn't know that when you move them back double the distance they should be able to see a wide area, so they stick with the 10 degrees even though they're now further away and ought to be able to see a wide field.

275. Id. The test in this case was administered improperly to claimant.

the closet from which the cooler allegedly had fallen. The worker had suffered such pain prior to the alleged accident and expert testimony indicated that there was no injury but rather malingering.

Other forms of disability actions have involved claims of malingering. In one case, an insured brought a breach of contract action claiming that the out-of-state insurer failed to pay on his disability claim and acted in bad faith. The insurance company defended in part by claiming the insured was malingering. The insured's expert responded by stating "I don't think he's malingering because his behavior is self-defeating, which is not common in malingerers. . . . [I]f his goal were to fake [mental illness] in order to get an insurance payment, . . . [he would] cooperate with the people who could help him to achieve his goal."278

In some workers' compensation cases, courts defer to experts testifying about psychiatric disability claims. In one case, the court stated: "In the last analysis, the problem of malingering is one of fact, which must be left to the skill and experience of medical and psychiatric experts, and of compensation administrators, who usually manage in time to develop considerable facility in detecting malingerers at the factfinding level."279 Yet this view is not universal. Noted one court, "[t]here is no proof of special validity of credibility judgments made by psychiatrists."280

Aberrational physical symptoms of illness or injury have long preoccupied the psychological and medical communities. Without identifiable causes, treatment modalities have been difficult to create. When classified as syndromes, however, this permits better research and a greater likelihood of benefits for resulting losses.

A telling example of unexplained illness has occurred with Gulf War veterans. Veterans of the 1991 Persian Gulf War were found to be more than three times more likely than others to suffer from problems such as "chronic diarrhea, joint pain, skin rashes, fatigue, depression and memory loss."281 This conclusion, based on a study by the Centers for Disease Control and Prevention, could not locate a source or reason for such problems, just that these problems were occurring in veterans in unusual numbers.282

278. Id. at 1249 & n.9.
282. See id.
The study focused on approximately 4000 military personnel, including large numbers of reservists from Pennsylvania. Comments from specific veterans were illustrative. One Gulf War veteran, Matthew Conaway, stated, “I’ve often been curled up in a ball with stomach pain.” Another, David L. Wickes, said,

Before I left for the gulf, I was in perfect health. As soon as I got back, I started getting these big lumps on my legs, and the rashes. Now I get serious diarrhea at least once a week. My joints ache—shoulders, knees, ankles—so bad that I wake up maybe three times a week in the middle of the night.

Although no known cause has been found, the Centers for Disease Control anticipated that these ailments were related to Chronic Fatigue Syndrome and Battle Field Stress. Ironically, the scientific community has remained divided on potential causes. A different major study suggested that chronic fatigue and stress are not the root of the problems, but rather an infectious agent to which veterans were exposed during the war.

Yet, at the very least, these studies refuted one explanation of the alleged health problems—that it was simply malingering. This conclusion is significant to the government, which may be financially liable to the veterans for medical care and disability payments. The monetary outlay could be significant—80,000 Gulf War veterans have asked for follow-up medical examinations to determine if a causal link exists between their own health problems and their service in the Gulf War.

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283. See id.
284. Id.
285. See id. “The CDC study is expected to link some of the veterans’ health problems to chronic fatigue syndrome and the physical after effects of battle field stress.” Further, a study by the Navy of approximately 1500 sailors also substantiated health-related problems of those who served in the Gulf War. Id.
286. Dr. Katherine Murray Leisure, who first noticed the unusual number of health complaints at the Veterans Affairs Medical Center in Lebanon, Pennsylvania, stated, “[o]ut of the hundreds of people I’ve seen, there’s been fewer than half a dozen who had post-traumatic stress disorder. That’s not to say it doesn’t exist completely as a diagnosis. But it’s negligible.” Id. at A10.
287. See id. at A10.
III. RESTRUCTURING THE LEGAL GEOGRAPHY: A REVISED APPROACH TO THE SCIENTIFIC DETECTION OF MALINGERING

A. Inadequacy of the Current Approach

The current partnership between science and law to detect malingering has been characterized by uncertainty, inconsistency, and cross-purposes. Significantly, legal standards have not meshed well with scientific evidence. Far from resolving problems created by the Frye test, Daubert has opened doors to a whole new set of concerns, particularly with what factors should be considered in the legal analysis and how those factors should be applied. In essence, the flexibility of the Daubert test has produced a byproduct of uncertainty.288

The legal standards pertaining to reliability also have not been able to accommodate the striking advances in medical and scientific technology, which have ranged from discoveries in rescuing traumatic brain injury patients, to the creation and refinement of thermography, to increased knowledge of how stress affects rape victims or Gulf War veterans. Furthermore, the amount and nature of scientific evidence, from the natural science to the social sciences, is at an all-time high.289 While the Frye test "bean-counter" approach to general acceptance was widely criticized, it at least created an apparently administrable measure for admissibility. Courts are now struggling to find even perceived satisfactory standards.

Another problem with attempts to mesh law and science in the effort to detect malingering has been how the legal system deals with disagreements within the scientific community. The fact that courts recognize the soundness of scientific methodology does not mean science critics agree on the appropriate applications of that methodology. This has resulted in unsightly partisan disagreements between experts about scientific evidence, and diverse assessments about such evidence in the legal system. All of these changes have affected the intersection of science and the legal system. In the past several decades, the law trusted science to police itself as it advanced in technology and knowledge. The Frye test was used as an exclusionary tool, but deferred considerably to the scientific assessment of the methodology used. This led to a reliance on much evidence that did not

289. Social science data was excluded by the law for a long time. In 1908, it was affixed to a brief in the case of Muller v. Oregon (the famous "Brandeis Brief") and has ballooned since. See John Monahan & Lawrens Walker, Social Authority: Obtaining, Evaluating and Establishing Social Science In Law, 134 U. PA. L. REV. 477, 477-82 (1986).
appear to have testable, reviewable bases—so-called "junk" science. Such reliance was often misplaced and its impact was difficult to control. Thus, Daubert appropriately sought a more flexible but also more active judicial review of proposed scientific evidence.

With science taking over the paradigm of truth in the 1990s, scientific advice has proliferated, from science segments on the national news, to the distribution of the results of scientific studies, and to the courtroom as well. One result of this proliferation of scientific experts has been the emergence of a cadre of experts with differing rationales and a wide diversity of conclusions.

This "mainstreaming" of scientific study and analysis has led to science being viewed as "correct," a far cry from the experimentation-oriented, "hit-and-miss" model firmly rooted in the earlier part of the twentieth century. Courts have attempted to harness the "new science" for use in the legal system, but have done so with inconsistency and hesitation. All too often, science has led the way in the courtroom, not vice versa.

While courts and the public have clamored for more scientific information, there has been a backlash resulting from science's elevated role. The greater control by science over the direction of society has produced higher and often unreasonable expectations, leading in turn to resentment by the lay population of scientific "orthodoxy."

B. The Real Problem: Differences in Law and Science

Faith is an island in the setting sun, But Proof, yes proof is the bottom line for everyone.290

While the new "mainstream" role of science in society has caused problems with the use of science to detect malingering in the legal system, the real problem likely lies much deeper. While law and science are both disciplines designed to solve problems, and both seek the truth about reality as part of their problem-solving functions, a tension exists between the descriptions of law and science,291 including their objectives, methods, and definitions of truth. In more general terms, the two fields have created different cultures that rely on disparate orthodoxies. "Culture" is used here to mean either a distinctive intellectual perspective or a "group of persons living in the same environment, linked by common habits, common

assumptions, [and] a common way of life."

1. Different Objectives

The Supreme Court aptly stated in Daubert that "the balance struck by the Rule of Evidence [is] designed not for the exhaustive search for cosmic understanding but for the particularized resolution of legal disputes." This grand assertion reveals an essential disparity between the objectives of law and science. Law works to solve disputes that arise between people or between a state and its people. Law functions as an institutional dispute resolution mechanism. In this capacity, its objective is to resolve disagreements brought before it within restrictive time limitations. Science, on the other hand, functions to solve problems about reality, whether disputed or not. Science demonstrates the state of the external world. It aims for an enhanced understanding of the world—either as an end in itself or to maintain and improve the quality of life and society. In this regard, science is heavily bound up in social progress. The scientific utility function may operate in academia, business, government or other areas.

In addition, while both law and science seek the truth about reality, many believe the law has another, and sometimes conflicting, objective—justice. Justice involves the functioning of the legal system as a voice of society, as fairness; the end of justice includes moral blameworthiness as

299. See Shelia Jasanoff, What Judges Should Know About the Sociology of Science, 77 JUDICATURE 77, 80 (1993) (stating that "the ultimate goal of the courts is the attainable one of dispensing justice, not the impossible one of finding objective truth").
part of its calculus. This moral element, or truth tempered by justice, is perhaps most clearly seen in the area of criminal law, where the jury is acting on behalf of the community.

2. Different Methods of Operation

Even the Supreme Court has noted that science and law have different methods of operation. According to the Court, "procedure is to law what scientific method is to science." Natural and social sciences find legitimacy in empirical, objective inquiry. These sciences attempt to shed values and subjectivity through repeatable processes that eliminate falsehood and confirm truth. At least in the natural sciences, the process may be repeated numerous times to discard false hypotheses. The scientific inductive method is precise, requires controlled conditions, and often takes considerable amounts of time for the processes of elimination and confirmation to lead to acceptable results. The method can be characterized as a work-in-progress, not limited by a certain time-line except within the experiments themselves.

Social science methods straddle the poles between natural science and law methodology. Social science experiments often are not subject to exact replication because they are based on experiential data. Yet this branch of science also attempts to be as neutral and value-free as possible. To ensure objectivity it uses control groups, representative samples and testable hypotheses.

Law on the other hand, operates through a generally non-repeatable process called the adversary system, which also attempts to eliminate false hypotheses through its own mechanisms. Yet this system has many


302. Science attempts to operate in a value-free environment. See Etlinger, supra note 291, at 1278.

303. See Dreyfuss, supra note 295, at 1789.

304. See generally SIR FRANCIS BACON, NOVUM ORGANUM (1676). This treatise "introduced the inductive method which later culminated in the Positivism Theory." Cf. Kester, supra note 297, at 542-43.


variables, from the judge to counsel, to which evidence is admitted, and even to which types and nature of errors are committed. Accuracy is safeguarded by cross-examination, the oath or affirmation of witnesses, and zealous advocacy of counsel. But there is no control group and no set regimentation, particularly given the discretion of counsel to present the case and the secrecy and lack of structure in jury deliberations. To counter this variability, the law has adopted formalized procedures throughout the trial process, and permits reviews through an appeals process. A verdict will be acceptable even if facts must be proven under procedural constraints and despite the fact that some relevant evidence has been excluded.

3. Different Definitions of Truth

While both law and science seek the truth through differing cultures, they have embraced disparate definitions and ways of obtaining it. The legal culture of truth is predicated on the belief that rigorous representation and oppositional argument will separate truth from falsehood. Thus, the “truth” in law is structured not as an inquiry by a panel of experts or as an indefinite process, but as the product of a “fight,” the processes of the adversary system. The Supreme Court has recognized the possibility that truth “will emerge from the confrontation of opposing versions and conflicting data.” It is an unstated axiom in the legal system that proper process generally creates fairness and truth, regardless of substantive results. Cross-examination, oaths, and observations of demeanor are some of the major processes used as tools to test the truth, not the numerous hypotheses, tests, trials, repetition, and confirmations used in science. There is no replication of legal truth, even on appeal.

Law seeks the truth about events, but concedes that facts are contingent. That is, facts are offered and accepted generally on a case-by-case basis. There are few transcendent facts not needing proof. The law’s model of truth is normative and not necessarily provable. The key question under this model is “truth related to what?” The answer lies in the parameters of the case at hand. The law embraces its role as exercising the

307. Cf. id. “Such a method can yield no more than a guess, nevertheless an educated guess.”
309. Deliverance is given on appeal to the finder of fact.
310. See Jasanoff, supra note 299, at 78-81.
311. See, e.g., FED. R. EVID. 201 (concerning facts of which a court may take judicial notice).
312. See Schuck, supra note 292, at 33.
community's moral authority. This telic approach accepts that truth, like the facts of the case, is dependent on circumstances, context and time, among other "environmental" factors. Furthermore, while the truth need not be testable, its finality is essential. This can be seen in a jury's verdict, which is taken as the surrogate for the truth of what happened.

In addition to the finality of the "truth," the law's version is not subject to publication, at least regarding the particular facts upon which it is based.\footnote{A key feature of the culture of law, however, is the publication of court opinions. See Murray Levine & Barbara Howe, \textit{The Penetration of Social Science into Legal Culture}, 7 LAW & POL'Y 173, 174 (1985); see also Francis Mootz, \textit{Desperately Seeking Science}, 73 WASH. U. L.Q. 1009, 1023 (1993).} This view is reflected in the secrecy requirement of jury deliberations and the lack of reporting by juries in their verdicts about particular facts.

The judges of truth in the legal system are not the experts but the lay triers of fact.\footnote{See, e.g., Duncan v. Louisiana, 391 U.S. 145, 157 (1968).} These judges of fact, particularly jurors, play a passive role in the process to preserve neutrality. Yet their own experience and common sense are an essential part of the evaluation process and determination of the truth.

The disparate cultures of law and science, particularly their determinations of truth, are thrown together every time scientific evidence is offered in a court of law. If both science and law are believed to be engaged in similar inquiries to ascertain the truth about reality, scientific data will prosper as an aide to the adversary process. But if these methods and cultures of truth-finding conflict, and consequently compete for primacy in method and truth definition, the question of how to reconcile these cultures becomes paramount.

\section*{C. Reconciling the Cultures of Law and Science in the Context of Malingering}

Some commentators take a dim view of the possible reconciliation of the disparate cultures of law and science. One such commentator said "the relationship between science and the courts is described these days in language more appropriate to an epic battle between the forces of light and the power of darkness."\footnote{Shelia Jasanoff, \textit{What Judges Should Know About the Sociology of Science}, 32 JURIMETRICS J. 345, 345 (1992).} Yet the existence of differences in law and science does not mean that one descriptive will necessarily succumb to the primacy of the other in the context of detecting malingering. Science, for
example, is not dependent on acceptance in a court of law for its continued legitimacy. Legal rules, moreover, will still determine what is admissible in a court of law, including the permissibility of scientific evidence.\(^{316}\)

Recognizing that law and science have different objectives, methods, and cultures of truth appears to be a first step towards a cohesive theory of testimony on malingering. A second step is understanding that the inquiry, which method is "better," is probably the wrong question to ask. The answer is probably neither. Instead of viewing law and science as competing for primacy in the detection of malingering, they should be conceived of as different modes of experience or perspectives, each of which reveals a part of the truth, but not the entire description. Thus, to reconcile the two, it is best to diminish the view of these as competitive opposition, and to observe that each disciplinary methodology offers a piece of the truth but not the totality.\(^{317}\) This is where the philosophers become helpful, because this fragmented notion of truth, "or particle theory," permits scientific testimony on malingering to simply be a part of the whole and serve as a useful guide or supplement to common experience.

An illustration of why this "particle theory" is appropriate involves the quest for reliable evidence.\(^{318}\) If the law ensures reliability by asking whether the scientific perspective can add to the perspectives of common sense, then admit the evidence. On the other hand, if the law attempts to use science to directly and precisely measure malingering, creating a yardstick when there is none, the attempt may well be quixotic. As Robert Pirsig once wrote, "I think there is such a thing as Quality, but that as soon as you try to define it, something goes haywire."\(^{319}\) Precisely the same can be said about attempts to directly measure sincerity through malingering testimony.

The salient point on reconciling the cultures of law and science is that the real primacy lies in the adversary system and its telic definition of truth, not in science or law per se. It is this process that constitutes "an intelligent inquiry into all the practically available evidence, in order to ascertain, as near as may be, the truth about the facts of that suit."\(^{320}\) The overarching determinants of admissibility should remain the helpfulness and

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\(^{316}\) See Levine & Howe, supra note 313, at 193.


\(^{318}\) See, for example, Fed. R. Evid. 403, excluding unfairly prejudicial evidence, and Fed. R. Evid. 801, excluding hearsay.

\(^{319}\) ROBERT M. PIRSIG, ZEN AND THE ART OF MOTORCYCLE MAINTENANCE 184 (Bantam Books 1985).

\(^{320}\) FRANK, supra note 306, at 80.
reliability of the evidence. Helpfulness should mean that the evidence enhances accurate decision-making, not that the decision is entirely taken out of the hands of the trier of fact. Another way of looking at this issue is that malingering testimony would be helpful if it furthers the dual goals of finality and accuracy. Reliability, on the other hand, is judged based on the safeguards of the adversary process—can the evidence be tested, examined, and rebutted? Can the evidence be dissected and sifted so the jury can observe its construction and underlying assumptions? These questions are all in keeping with the primacy of the adversary system and its telic version of truth.

The general theoretical approach translates into requiring experts to avoid or at least to delay offering the label of malingering until or unless several things occur. To protect the integrity of the credibility determination, an expert first should provide specific disclosure of the facts upon which the expert relied and a statement about the particular methodology used. While this ordinarily occurs in the adversarial process either on direct or cross examination, the importance of minimizing the influence of the word “malingering” and shifting the focus to the subtle distinctions in methods and context suggests that prior disclosure by the expert should be made a predicate requirement. Such a requirement maintains due process and at the very least serves as a reminder to the court that the particular rhetoric used by the experts counts, and counts quite a bit.

Another way to reconcile conflicts in law and science regarding malingering testimony is to focus on the educational function of expert witnesses. 321 Expert assistance often involves an educational function—teaching the jury about the meaning of evidence or principles relevant to interpreting the evidence. 322 If, as Oliver Wendell Holmes once remarked, the lifeblood of the law is experience, 323 then experts serve the important purpose of correcting the flaws in and distortions of popular perceptions. Especially with malingering issues, lay experience may include numerous distortions or stereotypes. Expert testimony about data, tests or observations could be offered for the jury to create a clearer and more accurate structural analysis of a witness’ sincerity.

Yet, not only is the question posed whether science is capable of creating understandable and workable evaluations, but there also is the issue of how to approach a question in which the scientific evaluation intersects

322. See generally FED. R. EVID. 702 advisory committee’s note.
with lay issues. In malingering, for example, even if scientific techniques assist in the assessment of the genuineness of conduct, the motive of the individual actor remains at issue—was the false behavior intentional and if so, to what end? A malingerer, by definition, is someone faking injury or illness for personal gain. The question of personal gain is certainly within common sense and should not be left to scientific analysis. Whether the motive component of malingering should be separated from the rest of the analysis remains an open matter.

Given the intersection of the genuineness of conduct and the evaluation of motive, the scientific inquiry should be understood as focusing on the question of whether the individual's conduct correlates with a genuine “disease profile” to determine whether the individual is likely faking. This assessment is of course probabilistic, based on how deviations from the profile likely involve the intentional creation of false behavior. Lay persons, meaning jurors, should not be excluded from the analysis of individual motive. The basis of our legal system is free will and individualistic action, and until that foundation is replaced or shown to be improper or unworkable, it portends a role for jurors in the malingering analysis. The same can be said for judges assessing a malingering claim, but even more so, since judges have greater leeway in ascertaining facts.

These kinds of intersectionality issues should be understood as such, and treated that way by the courts, making sure to focus the scientific inquiry on that which it is competent to decide. Much like evidence admitted for limited purposes, malingering evidence should be admitted to assist in the overall inquiry of whether conduct has occurred for the purpose of false gain.

IV. A PROPOSAL

Pursuant to Federal Rule of Evidence 611, which allows judges to control the method and order of the testimony, judges should be strongly urged to voluntarily adopt policies asking experts in this area to spell out the basis for their opinions and the methodology used prior to offering conclusory language about intentional deception. That conclusory language, and the label of malingering, provide a shortcut to a proper analysis of credibility. Further, in recognizing the primacy of the adversary process, a multiple factor analysis relating to the admissibility of malingering testimony should be used to screen evidence offered to assist in detecting malingering.

324. See Fed. R. Evid. 404(b), for example, permitting evidence of other acts or events for non-propensity purposes.
This analysis is intended to augment *Daubert*, not oust it from its position as gatekeeper of expert scientific testimony. The inquiry a court should make includes the following questions:

1) Is the evidence offered to a judge or jury? Evidence offered to a judge is much less likely to taint the decision-maker and should be allowed more readily.

2) If malingering evidence is offered to a jury, does the evidence augment the jury’s common experience or substitute for it? Since the adversarial process relies on the trier of fact to assess sincerity, augmentation is strongly preferred. A presumption of unreliability exists if the evidence replaces common sense evaluation of credibility. The determination will be similar to others made by the judge in considering whether testimony has invaded the province of the jury.

3) Does the evidence promote the adversarial process? The adversarial process favors a “level playing field.” Thus, if the evidence is offered in rebuttal, it is preferred.

4) Which party offered the evidence? If the evidence is offered by the party with the burden of going forward or the burden of persuasion, it should be favored.

5) Is it a criminal or civil case? The evidence may be much more important to an accused than a civil litigant, because personal liberty, even life, may be at stake.

6) What is the form of the evidence? If the evidence is a direct opinion on malingering, it will be disfavored more than indirect evidence such as syndrome testimony because of the greater potential for unfair prejudice. Direct opinion, such as those based on behavioral analysis, psychological testing or physiological techniques, have the potential to significantly affect the jury and cause them to abdicate their responsibility to determine if malingering exists. The procedure and techniques used should be reliable and the inference drawn from the data both reasonable and useful to a jury.

7) How central or important is the evidence to the case? If malingering is a central issue in the action—which it might be in a competency hearing or workers’ compensation claim, for example—then it should be admitted. The importance of the evidence may overcome its likely prejudice, although
with increasing centrality there also may be greater incentive to malingering. Yet, admitting the evidence, especially before a judge, may be necessary for a “complete picture.”

8) Is the malingering testimony other act evidence used to show causation? If so, determinations of admissibility should depend on the “doctrine of chances” pursuant to Federal Rule of Evidence 404(b). This doctrine is premised on the belief that the more an accusation is made, the less likely it will be false.\(^{325}\) That is, if an event is reoccurring, such as being charged with the commission of a crime, then it is less likely the reoccurrence is a mere coincidence.\(^{326}\) When the sincerity of a person’s behavior is measured by other acts, then the doctrine of chances should help in assessing admissibility.

9) Does the evidence of malingering minimize myths and prejudices the jury might have? Does it correct distortions in common experience? If offered for these purposes, there should be a presumption of admissibility. The correction of a jury’s distortions or myths promotes accuracy in the verdict and greater public confidence in the outcome.

By including these factors in any malingering analysis, the adversarial process subsumes the scientific evidence, not the other way around. Yet, the effects of the adversarial process on scientific evidence of malingering must also be recognized. It is predictable that plaintiffs arrange psychiatric evaluations tending to maximize the severity of the psychiatric disability while defendants procure psychiatric evaluations minimizing psychiatric disability and impairment. Taking sides is contagious. Further, the nature of the adversary process might lead to science being utilized by overzealous parties perhaps before it is sufficiently reliable. Juries should be made aware of these propensities through instructions from the judge.

Scientific culture and truth are strongly rooted in American society. The inclusion of scientific evidence on malingering in some form is inevitable and proper. Arbitrary exclusion to protect jurors not only stigmatizes the ability of jurors but mystifies science in the process. Thus,

\(^{325}\) There is a relationship between similarity and probability. If the relationship is more similar, it is more probable. See Mark Cammack, *Using the Doctrine of Chances to Prove Actus Reus in Child Abuse and Acquaintance Rape: People v. Ewoldt Reconsidered*, 29 U.C. DAVIS L. REV. 355, 405 (1996). See generally, the newly adopted FED. R. EVID. 413-415.

\(^{326}\) See, e.g., Tucker v. State, 412 P.2d 970, 970-71 (Nev. 1966) (in which the defendant claimed a man died on his couch while he slept in another room, and that the same thing happened to him six years before); 2 WIGMORE EVIDENCE 302 (James H. Chadbourn ed., rev. 1979).
the scientific culture can and should be welcomed into the legal process if the additional factors relating to admissibility noted above are marshaled in its favor.

V. CONCLUSION

Will the legal system ever discover a magic truth-telling technique that will take malingering questions out of the subjective and biased realm of lay experience? Despite the momentum created by recent scientific discoveries and the persistent belief that science will assuredly provide an answer, at least in the reasonably foreseeable future, no such technique will be uncovered. This won’t stop attorneys and the legal system, however, from using science to participate in detecting intentional deceit; the allure and value of science are too great to pass by.

While the march of science may be inevitable, it should be received with caution in a system predicated on lay decision-making in an adversarial setting. If enhancing the function of the adversarial system is viewed as paramount, then the key issue is how to use science to further the methods and goals of the adversarial process. As such, science should be used as a supplement to and not as a substitute for jury assessments of sincerity. Factors to consider in determining the admissibility of malingering evidence for the purpose of supplementing the jury’s common sense include helpfulness to the jury, whether the case is criminal or civil, whether the evidence is central to an issue in the case, how reliable is the evidence, and whether the evidence on malingering is offered to dispel common myths, stereotypes and inaccuracies about the subject. By using this multiple factor test, the primacy of the legal system will be maintained all the while embracing the use of scientific knowledge.
ABSTRACT

The United States is currently facing a “concussion epidemic.” Concussions, also known as mild traumatic brain injuries, have increased in numerous settings, including transportation accidents, military combat, workplace injuries, domestic abuse, falls, and sports. The epidemic imposes huge costs on society. At the same time, our understanding of the injury remains limited. Currently, no proven way exists to physiologically detect concussion risk or damage. Determining whether a concussion has occurred and been resolved remains largely a clinical diagnosis, relying mostly on self-reported symptoms. Our knowledge of long-term implications of repetitive concussions is also limited. Science is racing to develop objective measures, or biomarkers, of concussive injury that will tell us who is more likely than not to be susceptible to harm and the extent of harm they may have already suffered. The availability of biomarkers will lead to a deeper understanding of changes to the brain that occur in a concussion and enable us to trace back earlier into what we think of as a diseased state.

These scientific developments will have enormous implications for questions of risk and loss distribution in society. In particular, they portend a major reexamination of fundamental tort issues of duty, breach, causation, and fault allocation. Applying the developing research to the legal landscape will shed light on duties, as well as causal issues, and may help substantiate latent injury claims. This Article examines those questions in the context of youth
sports. The development of biomarkers will modify responsibilities for mitigating risks, screening, and monitoring players. It will affect the ability of the player to assume risks and will also implicate certain privacy interests. In general, the development of these biomarkers will shift responsibilities in the diagnosis and management of concussions, as well as long-term injuries, to those most directly involved in the player's participation.

TABLE OF CONTENTS

INTRODUCTION .......................................................... 1912
I. CONCUSSIVE INJURY ................................................. 1921
   A. Defining and Diagnosing Brain Injuries ................. 1921
   B. Defining CTE ..................................................... 1925
   C. Advances in Biomarker Research ....................... 1928
      1. Biomarkers of Effect ........................................ 1930
      2. Biomarkers of CTE .......................................... 1938
      3. Biomarkers of Susceptibility ............................ 1941
II. TRANSFORMING THE LEGAL LANDSCAPE ..................... 1944
   A. Legal Implications of Biomarkers of Effect .......... 1944
      1. Duty and Breach .............................................. 1945
          a. Return-to-Play Determinations Under State Law ......... 1946
          b. Private Law Remedies .................................. 1950
          c. Duty to Screen and Monitor ............................. 1955
      2. Medical Monitoring and Increased Risk Claims .......... 1957
      3. Causal Proof .................................................. 1965
      4. Defenses ....................................................... 1968
   B. Legal Implications of Biomarkers of Susceptibility .... 1970
      1. Duty to Screen for, Warn, and Potentially Exclude from Activities Individuals with Increased Concussion Risk .......... 1971
      2. Balancing the Duty to Screen and Warn Against Privacy Interests ............................................. 1974
      3. Comparative Fault Implications ........................... 1977
CONCLUSION ..................................................................... 1979

INTRODUCTION

Our nation is facing an epidemic of concussive brain injuries, usually referred to in the medical world as mild traumatic brain
This epidemic of mTBI imposes enormous human and economic costs on society. A major impediment to preventing, diagnosing, and treating such brain injuries is the lack of objective and feasible medical tests to detect such injuries. Over the past few years, scientific research has begun to develop accurate, objective diagnostic measures of the injury—especially concussive injury. The advances from this explosion of research will upend assumptions that underlie current medical and policy approaches to mTBI, and will create a myriad of new legal applications, opportunities, and challenges. In particular, the potential development of objective diagnostic tests of concussive injury through biomarkers, as well as potential tests of susceptibility, requires us to reexamine fundamental issues of risk, duty, causation, and allocation of fault.

A few cases illustrate the nature of the TBI problem. Curtis Parker was an amateur wrestler who went to a local gym to improve his wrestling. His trainer instructed him to leave the ring due to his complaints of a headache; Curtis returned six days later and, after falling to the mat, went into a seizure. He died nine days later. Curtis’s parents brought a wrongful death action against the club and the trainer, alleging that they “failed to exercise reasonable care in not requiring Curtis to obtain medical clearance before allowing him to resume his lessons.” The plaintiffs’ expert testified that Curtis’s subdural hemorrhage resulted from second-impact syndrome, in which individuals who suffer a second concussion before fully recovering from a prior concussion are more susceptible to serious brain injury. On cross-examination, the expert acknowledged that

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1. Kimberly G. Harmon et al., American Medical Society for Sports Medicine Position Statement: Concussion in Sport, 47 BRIT. J. SPORTS MED. 15, 16-17 (2013). A note on terminology: most lay people, policymakers, athletes, and coaches use the term “concussion” to refer to a constellation of neurological symptoms, such as dizziness, clouded thinking, and even unconsciousness, that can result from a head trauma. However, the term concussion is not a medically precise or defined term. Rather, specialists refer to mild traumatic brain injury, with the word “mild” distinguishing concussive injuries from more severe brain injuries resulting from major traumas, such as a bullet, explosion, or car accident that permanently disfigures the brain. While all concussions are considered mTBIs, not all mTBIs are concussions. More background on this terminology and definitions is provided in infra Section I.A.
3. Id. at 644.
4. Id.
5. Id.
6. Id. at 644-45; see infra note 80 and accompanying text.
many kinds of headaches occur, not all of which stem from a concussion, and that other symptoms of concussions exist, none of which Curtis complained of. The trial court held that the plaintiffs did not establish that the club knew or should have known that Curtis had sustained a concussion at the earlier lesson and entered judgment in favor of defendants, which was affirmed on appeal.

Chris Benoit, nicknamed “The Canadian Crippler,” was a champion professional wrestler with World Wrestling Entertainment. In 2007, after having twenty-two years of experience in the ring, he murdered his wife and seven-year-old son and then hanged himself. Although there was much speculation about the cause of this shocking event—ranging from steroids usage to a failing marriage—Dr. Julian Bailes, Jr., then the Chair of Neurosurgery at West Virginia University, and his colleagues suspected brain damage from repeated concussive injury and received permission to examine slices of Benoit’s brain. They discovered that Benoit’s brain was severely damaged and, like an Alzheimer’s patient, his brain was riddled with aggregates of a neural protein called tau. These tangled deposits were consistent with severe chronic traumatic encephalopathy (CTE), a progressive degenerative neurological disease found in individuals who have been subjected to multiple concussions and other forms of head injuries. Currently, this form of brain damage can be confirmed

7. Parker, 230 S.W.3d at 645.
8. Id.
11. Id.
Biomarkers, Concussions, and the Duty of Care

only by autopsy.\textsuperscript{14} Symptoms of the disease, which include memory loss, depression, suicidal thoughts, and aggressive behavior,\textsuperscript{15} also have been noted in ice hockey players, soccer players, boxers, and professional football players.\textsuperscript{16}

San Francisco 49ers linebacker Chris Borland, twenty-four and fresh off his first season of playing in the NFL, announced his retirement from football because of his concerns about the long-term effects of repetitive head trauma.\textsuperscript{17} As he explained, “I just honestly want to do what’s best for my health. . . From what I’ve researched and what I’ve experienced, I don’t think it’s worth the risk.”\textsuperscript{18} He was explicit about his apprehension about brain injuries,\textsuperscript{19} stating, “I don’t want to have any neurological diseases or die younger than I would otherwise.”\textsuperscript{20}

These three examples illustrate the types of challenges presented by this enormous public health problem facing our nation today, which include the difficulty of accurately diagnosing concussions and determining who is qualified to do so, the search for other diagnostic measures, and the growing medical and public awareness of the long-term effects of concussions. Experts at the

\begin{itemize}
\item \textsuperscript{14} Sports Legacy Institute, \textit{supra} note 13; Omalu et al., \textit{American Wrestler, supra} note 13, at 135.
\item \textsuperscript{15} Helen Ling, John Hardy & Henrik Zetterburg, \textit{Neurological Consequences of Traumatic Brain Injuries in Sports}, 66 \textit{MOLECULAR \& CELLULAR NEUROSCIENCE} 114, 119-20 (2015) (reviewing these symptoms and other consequences of TBI across a range of contact sports).
\item \textsuperscript{16} Id. at 118-19; see also Jeffrey G. Caron & Gordon A. Bloom, \textit{Ethical Issues Surrounding Concussions and Player Safety in Professional Ice Hockey}, 8 \textit{NEUROETHICS} 5, 6 (2015) (reviewing data on concussion incidence rates in ice hockey); Chadwick Hales et al., \textit{Late-Stage CTE Pathology in a Retired Soccer Player with Dementia}, 83 \textit{NEUROLOGY} 2307, 2307 (2014); Paul McCrory, Tsharni Zazryn & Peter Cameron, \textit{The Evidence for Chronic Traumatic Encephalopathy in Boxing}, 37 \textit{SPORTS MED.} 467, 467 (2007).
\item \textsuperscript{18} Id.
\item \textsuperscript{20} Mark Fainaru-Wada & Steve Fainaru, \textit{SF’s Borland Quits over Safety Issues}, ESPN (Mar. 17, 2015), http://espn.go.com/espn/otl/story/_/id/12496480/san-francisco-49ers-linebacker-chris-borland-retires-head-injury-concerns. He explained that “when you read about Mike Webster and Dave Duerson and Ray Easterling, you read all these stories, and to be the type of player I want to be in football, I think I’d have to take on some risks that, as a person, I don’t want to take on.” \textit{Id.} He was referring to prominent NFL players who were diagnosed with CTE after their deaths. \textit{Id.} “Duerson and Easterling committed suicide.” \textit{Id.}
Centers for Disease Control and Prevention (CDC) estimate that 2.5 million people sustain a traumatic brain injury (TBI) every year in the United States, many in contact sports, such as football, hockey, and soccer, but also as a result of military combat, workplace injuries, domestic abuse, vehicle crashes, falls, head injuries during seizures, and other accidents.\(^\text{21}\) Resulting brain damage can have short-term effects in learning and memory, as well as long-term effects.\(^\text{22}\) The CDC report estimates that the total costs to society as a result of these injuries exceed $76 billion per year.\(^\text{23}\)

Society has begun to respond to this TBI epidemic, from policy making at the front end to litigation at the back end. At the front end, policymakers at the federal, state, and local levels all have acknowledged the national health problem. The Department of Defense and the Department of Veterans Affairs have expanded their funding for research in brain injury.\(^\text{24}\) States have addressed concussion management in high school sports through legislation and regulations.\(^\text{25}\) Local school districts and sports programs have changed their rules for participation in those programs.\(^\text{26}\)

On the litigation front, professional and collegiate athletes have brought lawsuits against their leagues. More than 5,000 former players in the National Football League (NFL) sued the NFL, claiming it failed to take reasonable steps to protect them from concussive brain injuries, while at the same time concealing the


\(^\text{22}\) CDC, Addressing Critical Gaps, supra note 21, at 3.


\(^\text{25}\) See infra Subsection II.A.1.a.

long-term risks associated with concussion. The settlement of that class action lawsuit covers all retired former professional football players and provides individual payments of up to $5 million for certain neurological disorders and medical monitoring of all players.

The National Collegiate Athletic Association (NCAA), the National Hockey League, soccer’s Federation Internationale de Football Association (FIFA), and World Wrestling Entertainment are all currently embroiled in lawsuits involving athletes’ head injuries. These claims are reaching the high school level as well. The reverberations of these legal clashes are changing how head injuries are handled in football and other sports, across all ages. Professional sports organizations, high school programs, and

28. In re Nat’l Football Players’ Concussion Injury Litig., 307 F.R.D. at 366. The neurological conditions include different levels of neurocognitive impairment, Alzheimer’s disease, Parkinson’s disease, Amyotrophic Lateral Sclerosis, and death with CTE. Id. The settlement also includes $10 million for education about concussions. Id. at 368-69. A $75 million fund provides eligible retired players with baseline assessment examinations of their neurological functioning and cognitive decline. Id. at 368. About 200 players have opted out of the settlement. Id. at 369.
33. See Class Action Complaint, Bukal v. Illinois High School Ass’n, No. 2014-CH-19131 (Cook Cty. Cir. Ct., Ill., Dec. 1, 2014) (alleging that the association did not do enough to protect players from concussions). These claims are likely to grow. See Michael Tarm, High School Head Injury Lawsuit Filed, HUFFINGTON POST (Dec. 18, 2014), http://www.huffingtonpost.com/2014/11/30/high-school-head-injury_1_6245374.html. The attorney who filed the class action lawsuit against the NCAA says that his “goal is to bring the fight to the high school level.” Sara Ganim, Class-Action Lawsuit Filed over High School Football, CNN (Dec. 2, 2014), http://www.cnn.com/2014/12/01/us/concussion-lawsuit-high-school-football.
35. See supra note 33.
youth football organizations have already introduced new policies on concussions and increased the penalties for helmet-to-helmet hits.

Recognizing the epidemic of acquired brain injury is just part of the problem; understanding and diagnosing the injury itself presents enormous challenges. Unlike the readily apparent nature of certain injuries like broken bones or torn skin, brain injury is subtle and generally not obvious to an untrained observer. The human brain can be injured in many ways, and the type of brain injury that results from hits to the head, or acquired brain injury, can occur in numerous ways as well—from a single major impact (such as a car accident or wartime blast) or from lesser but frequent impacts (such as football tackles).

Diagnosing an mTBI is particularly difficult. Although there are some objective measures to assist in the diagnosis of mTBIs, in the end, it remains currently a clinical diagnosis based mainly on self-reported symptoms. The symptoms vary among individuals and may manifest at different times. The ability to diagnose CTE is limited as well; we do not yet have an objectively verifiable neurocognitive measurement for diagnosis and prognosis of CTE with an established link to acquired brain injury. Epidemiological studies have associated repetitive head injuries to Alzheimer’s, Parkinson’s, and Amyotrophic Lateral Sclerosis (ALS) diseases as well as CTE, but that does not definitively answer whether an individual suffers from those diseases as a result of head injuries or other risk factors.

The methodology for diagnosis of mTBIs and CTE is changing, however, as scientists are starting to discover and develop tools to

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38. Id. at S17-18.


40. Id.


42. See Gardner & Yaffe, supra note 39, at 78.
detect the subtle damage that occurs when individual molecules are disturbed by brain injury.\textsuperscript{43} Scientists expect this research to lead to objective measures—biological markers or “biomarkers”—of these acquired brain injuries in the living brain.\textsuperscript{44} They seek to identify biomarkers of effect and susceptibility. For biomarkers of effect, scientists hope to develop novel techniques to understand exactly how the brain is damaged and how it might be repaired.\textsuperscript{45} The aim is that these biomarkers will not only signal the presence of a concussion, but also the extent of it. The objective is also to detect the continued presence of the concussion even when outward symptoms have disappeared.\textsuperscript{46} Similarly, the goal is that biomarkers can be used to detect long-term effects such as CTE, rather than waiting for the definitive test from an autopsy.\textsuperscript{47} For biomarkers of susceptibility, scientists hope to determine whether certain people are more susceptible to suffering concussions and CTE.\textsuperscript{48} The difficulties that inhere in the current approach to diagnosis of concussive injury, as well as the advances in biomarker research that may change that approach, are discussed in Part I.

Developing biomarkers of effect and susceptibility for concussive injury will have enormous legal and policy implications. This is the focus of Part II. The scientific developments will challenge courts and policymakers to rethink when civil liability should be imposed, how brain injury cases are litigated, and when and how governments should regulate social activity in efforts to reduce the incidence and harms of brain injury. These questions are examined in the context of youth sports.

Part II specifically examines how development of biomarkers of effect will transform the duty of care of those involved in youth sports, including schools, private leagues, trainers, coaches, parents, and the players themselves, leading to an overall increase of concussive management duties. The change will be implemented on two levels—both through common law duties as well as in legislation aimed at concussive management. Not only will expectations regarding timely and accurate diagnosis of concussive

\textsuperscript{44} \textit{Id.}
\textsuperscript{45} \textit{Id.}
\textsuperscript{46} \textit{See infra} Subsection II.A.1.c.
\textsuperscript{47} \textit{See infra} Subsection I.C.2.
\textsuperscript{48} \textit{See infra} Subsection I.C.3.
injury increase, but a commensurate increase in the duties to both avoid and mitigate risks, including an increase in screening and monitoring duties, will occur as well. Availability of biomarkers of effect will fundamentally change the way the elements of causation and injury are proved and may be used by both plaintiffs and defendants as objective evidence to prove or disprove those elements. These biomarkers will give us greater understanding of disease progression and may also lead to recognition of earlier claims for subclinical injuries revealed by those biomarkers. Biomarkers of anticipated long-term effects, such as CTE, will raise the specter of latent injury claims, which are based on the premise that a plaintiff has incurred an injury that puts him or her at increased risk of future disease. These types of claims often seek recovery for medical monitoring or emotional harm, but remain controversial because of their speculative nature and the fear of limitless liability. Biomarkers will make these claims less speculative.

Part II also considers how development of biomarkers of susceptibility will have an impact on the duties owed to players, as well as the duty the player owes to himself or herself. The development of these biomarkers will likely generate a duty for schools and other sports sponsors to screen and possibly to exclude those individuals with susceptibility biomarkers from participating in those sports. At a minimum, it will likely engender duties to monitor them more closely, provide accommodations, and implement additional preventive measures. Screening will also raise significant privacy issues, since releasing results of susceptibility screening to third parties—such as parents, insurance companies, and employers—can have a broad, long-term impact. The duty to inform of risks, as well as the ability to accept those risks in play, will also be transformed.

Part III concludes that the development of biomarkers of effect and susceptibility will transform the legal landscape of concussive injury, both from a public policy and a litigation perspective. Examination of these issues requires both a deep understanding of the science involved and an explication of the theoretical basis and purpose of tort claims and recovery. Given the anticipated increased accuracy in diagnosis, prognosis, and cessation of injury, as well as susceptibility to injury, the availability of biomarkers should lead to a more accurate and just result in litigation. At the same time, development of biomarkers may open the door to requiring more demanding evidence in court. At the meta-level, the combination of the medical and legal applications of mTBI biomarkers will
Biomarkers, Concussions, and the Duty of Care

hopefully lead to fewer injuries and safer practices in sports and elsewhere, but it is sure to cause significant disruption and risk exposure to sports teams, employers, the military, and product manufacturers.

I. CONCUSSIVE INJURY

A. Defining and Diagnosing Brain Injuries

Traumatic brain injury occurs when an external force, such as impact or rapid acceleration or deceleration, causes damage to the brain. Although research on acquired brain injury continues to advance, a single, universal definition of TBI has yet to be determined. Aside from being caused by an external source, the definition can encompass various scenarios. The damage can be focal (occurring at the local site of impact with neurological effects specific to the area affected) or diffuse (often delayed and widespread). It can be based on a direct or indirect blow to the head, with a sudden acceleration to the brain. It can be a closed head injury or penetrating head injury (when an object pierces the skull). It can be from a single blow or a series of smaller repeated impacts. Scientists seek to develop a consensus in diagnosing and treating TBI as awareness of the injury increases in both the public as well as the medical field.

To understand acquired brain injury, a brief overview of the biomechanics involved is useful. The brain is made of soft tissue and is cushioned by spinal fluid and encased in the protective shell of the skull. The brain tissue is often described as a “Jell-O-like” substance. When an individual sustains trauma, the impact to the head can jolt the brain and cause it to move around within the skull and even make contact with it. These shocks to the brain can result in

50. Decuypere & Klimo, supra note 21, at 941-42.
51. Id.
52. Id. at 941.
54. See, e.g., id.
chemical changes in nerve cells, mechanical disruption of axons, changes in brain blood flow, and neuro inflammation.\textsuperscript{55}

Fundamentally, the brain uses neurons (or nerve cells) to communicate with different systems of the brain. All neurons have three main parts: (1) the cell body; (2) the axon; and (3) the dendrites.\textsuperscript{56} Much of the recent research on brain trauma focuses on axons.\textsuperscript{57} Axons, which exit the cell body, are used to communicate with other neurons through nerve impulses.\textsuperscript{58} Axons extend across the different layers of brain tissue—from gray matter (cerebral cortex) to white matter (subcortical area)—to connect the neurons in both areas.\textsuperscript{59} When there is trauma to the brain, the different layers of the brain slide across each other, which causes unnatural stresses on the axons.\textsuperscript{60} Research reveals that stretching or tearing an axon causes the nerve impulse not to transmit or to transmit less efficiently.\textsuperscript{61} Common cognitive deficits caused by the damaged axons are attention and concentration difficulties, fatigue, and impaired short-term memory.\textsuperscript{62}

The terms “concussion” and “mTBI” are often used interchangeably,\textsuperscript{63} although mTBI is considered by some to be a broader term than concussion.\textsuperscript{64} Medical diagnosis of acquired brain trauma usually distinguishes between severe and mild TBIs.\textsuperscript{65} This

\begin{thebibliography}{56}
\bibitem{55} Douglas H. Smith & David F. Meaney, \textit{Axonal Damage in Traumatic Brain Injury}, 6 \textsc{Neuroscientist} 483, 484-87 (2000); Esteban Toledo et al., \textit{The Young Brain and Concussion: Imaging as a Biomarker for Diagnosis and Prognosis}, 36 \textsc{Neuroscience & Biobehavioral Revs.} 1510, 1513-14 (2012).
\bibitem{56} See \textsc{Harvey Lodish et al., Molecular Cell Biology} § 21.1 (4th ed. 2000).
\bibitem{59} See \textit{id.} at 64-66.
\bibitem{60} Smith & Meaney, \textit{supra} note 55, at 484-87.
\bibitem{61} See \textit{id.}
\bibitem{62} See Fumihiko Yasuno et al., \textit{Decision-Making Deficit of a Patient with Axonal Damage After Traumatic Brain Injury}, 84 \textsc{Brain & Cognition} 63, 63 (2014).
\bibitem{63} The terms “concussion” and “mTBI” are used interchangeably in the literature and are often treated as synonymous. See Paul McCrory et al., \textit{Consensus Statement on Concussion in Sport: The 4th International Conference on Concussion in Sport Held in Zurich, November 2012}, 47 \textsc{Brit. J. Sports Med.} 250, 250 (2013).
\bibitem{64} See Harmon et al., \textit{supra} note 1, at 16-17 (“[A]ll concussions are MTBIs, not all MTBIs are concussions.”).
\bibitem{65} Approximately 20% of the TBIs diagnosed each year are classified as moderate or severe, and 80% are classified as mild. See Malanowski & Baima,
distinction, although widely accepted, is inexact; TBI is considered a spectrum, and the precise distinction between the two levels of brain injury lacks consensus in both medicine and law. By definition, “mild” or “minor” traumatic brain injury will not cause the injured survivor to die, but beyond that, the terminology “mild” or “minor” can be misleading:66 even a “minor” TBI can cause significant damage.67 Some definitions distinguish a TBI from mTBI by how long a person loses consciousness.68 Yet a person can incur a concussive injury and potentially serious long-term consequences even without losing consciousness, so consciousness is not a requirement for diagnosing an mTBI.

There is no agreed-upon definition of mTBI or concussion, because there is no consensus on objective criteria for defining and diagnosing this type of injury.69 Rather, mTBI currently remains a subjective clinical diagnosis based primarily on patient history and observable behavioral symptoms.70 These symptoms can include confusion, lightheadedness, blurred vision, dizziness, ringing in the ears, fatigue, nausea, and trouble with memory.71 The person may feel dazed and have a vacant stare.72 Sometimes, but not always, there is loss of consciousness.73 The symptoms often resolve within

66. Semyon Slobounov et al., Sports-Related Concussion: Ongoing Debate, 48 BRITISH J. SPORTS MED. 75, 75 (2014) (“[T]here is nothing mild about mTBI at the cellular level.” (emphasis omitted)).
67. Smith, Hicks & Povlishock, supra note 57, at 313.
68. See, e.g., CDC, Addressing Critical Gaps, supra note 21, at 17 (defining loss of consciousness of thirty minutes or less as “mild,” thirty minutes to twenty-four hours as “moderate,” and greater than twenty-four hours as “severe”).
70. Dutton et al., supra note 69, at 554.
72. Edwards & Bodle, supra note 71, at 128.
73. Id.
minutes to days after a concussion, but in some cases there are more enduring symptoms such as persistent headaches, sleep disturbance, poor attention and concentration, irritability, and depression that can last for several weeks or longer. It is not surprising that this spectrum of symptoms exists, considering the diverse ways in which a brain injury can happen, as well as the different brain structures that could be affected by the external trauma.

Mild TBIs do not show up on standard imaging studies, such as a CT scan or MRI, since the injuries are typically not structural injuries to the brain, but rather, are functional problems caused by swelling or bruising. Sometimes the injured person can appear “normal.” Moreover, some symptoms are evident immediately; others surface days or even weeks later, and it has become clear that some head injuries occur that have no immediate cognizable symptoms, which are now classified as subconcussions. As noted earlier, there is no universally accepted definition of concussion.

The accuracy of identifying mTBIs and determining whether an individual is fully recovered is critical. Most significantly, the risk of severe injury can increase with repeated concussions, producing a rare, and sometimes disputed, phenomenon referred to as the Second

74. Harmon et al., supra note 1, at 17 (noting that 80%-90% of athletes have symptom resolution within seven days of injury).
75. Id. at 24.
76. McCrory et al., supra note 63, at 250-51 (“Concussion may result in neuropathological changes, but the acute clinical symptoms largely reflect a functional disturbance rather than a structural injury and, as such, no abnormality is seen on standard structural neuroimaging studies.”); see also Erica D. Bruce et al., Neuroimaging and Traumatic Brain Injury: State of the Field and Voids in Translational Knowledge, 66 MOLECULAR & CELLULAR NEUROSCIENCE 103, 104 (2015) (presenting evidence that CT imaging is not generally effective for mTBI, but may be effective in identifying severe cases of TBI).
77. See Omalu et al., American Wrestler, supra note 13, at 132 (discussing an autopsy report stating that visual examination of the brain showed no sign of trauma, and trauma was only visible under microscopic examination).
78. Thomas W. McAllister et al., Effect of Head Impacts on Diffusivity Measures in a Cohort of Collegiate Contact Sport Athletes, 82 NEUROLOGY 63, 66 (2014) (finding a relationship between magnitude and timing of head impacts and effects on white matter in brains of athletes who had no reported concussions).
79. See Annette Greenhow & Jocelyn East, Custodians of the Game: Ethical Considerations for Football Governing Bodies in Regulating Concussion Management, 8 NEUROETHICS 65, 69 (2015) (listing differences in approaches, such as whether it is a “head injury” or a “brain injury”; whether it is a functional issue or structural injury; whether it is an mTBI; and the extent of the association between head trauma and long-term cognitive issues).
Impact Syndrome. Furthermore, therapy for brain repair is controversial; the type of care the individual should receive during recuperation is not agreed upon. Some doctors prescribe brain silence (no reading, no math, no computers), while others say some brain stimulation is therapeutic. Some researchers suggest that treatment may depend on what part of the brain received the trauma. And even harder is determining whether chronic brain damage has occurred (and its cause) or whether certain individuals might be more susceptible, as discussed below.

B. Defining CTE

CTE is a progressive chronic neurodegenerative disease associated with a person sustaining repeated blows to the head with

80. See Tareg Bey & Brian Ostick, Second Impact Syndrome, 10 W. J. EMERGENCY MED., 6, 6-7 (2009). Because of the difficulties inherent in collecting data on this type of injury, some scientists challenge the diagnosis of Second Impact Syndrome. See, e.g., Paul R. McCrory & Samuel F. Berkovic, Second Impact Syndrome, 50 NEUROLOGY 677, 679-83 (1998) (challenging the clinical support as insufficient to establish Second Impact Syndrome as a risk factor for cerebral swelling). However, most scientists agree that risk of exacerbated injury increases with subsequent impact before one is fully recovered. See Matthew P. MacFarlane & Thomas C. Glenn, Neurochemical Cascade of Concussion, 29 BRAIN INJ. 139, 147-49 (2015) (acknowledging the potential controversy, but nonetheless supporting that successive injuries have shown cumulative effect, and cautioning about the risk of Second Impact Syndrome, particularly among the younger population).

81. See Meier & Ivory, supra note 24.


83. Id. at 1160 (outlining that some studies have identified portions of the brain that showed abnormalities thirty days post-injury, suggesting a need to consider location of injury in recovery timing).

84. What is CTE?, BU CTE CTR., http://www.bu.edu/cte/about/what-is-cte (last visited Feb. 13, 2016). Scientists of the BU Center, through dozens of case studies involving deceased athletes whose brains exhibit the distinct tau pattern of CTE, have concluded that there is a “clear environmental etiology” and that “repetitive mild traumatic brain injury” may cause CTE. See, e.g., Johnson, supra note 41, at 16. Not everyone agrees: The 2013 Zurich consensus statement on concussion in sport finds such a conclusion speculative and states that the causal link between concussive injury and CTE “remains unproven.” See McCrory et al., supra note 63, at 254. Critics point to the lack of epidemiological studies and evidence that deals with the roles of other factors, such as genetic vulnerability, alcohol, drug use, and risky behaviors outside of sports. Brad Partridge & Wayne Hall, Repeated Head Injuries in Australia’s Collision Sports Highlight Ethical and Evidential Gaps in Concussion Management Policies, 8 NEUROETHICS 39, 41 (2015). The link between CTE and concussion injury is still being debated. See
a group of symptoms that include memory loss; movement disorders, including Parkinson's disease; and mood disorders, aggressive or violent behaviors, depression, suicidality, substance abuse, and cognitive decline. Most athletes who have suffered concussions go on to live normal, apparently healthy lives, so it is not clear why some individuals develop CTE and others do not. Repeated head trauma seems to be a key risk factor, as the condition was originally known by the name of "punch drunk syndrome" and associated with boxers, but has now been found in others with a history of repeated brain trauma. Although it is not yet clear whether CTE is a signature disease that is specific to repetitive head injuries, autopsy research on CTE suggests this possibility. CTE manifests symptoms similar to those found in Alzheimer's and can take years or even decades after the brain trauma has occurred to manifest. Researchers suggest that CTE results in progressive cognitive decline and aberrant behavior in affected individuals. As one researcher noted, "the progression of neurological impairment seen in athletes diagnosed post-mortem with CTE suggests that it is


85. What is CTE?, supra note 84 (defining CTE as a "progressive degenerative disease of the brain found in athletes (and others) with a history of repetitive brain trauma, including symptomatic concussions as well as asymptomatic subconcussive hits to the head").

86. Edwards & Bodle, supra note 71, at 132.


88. Gilbert, supra note 84, at 47 (acknowledging that symptoms of this disorder have been observed across multiple sports platforms where participants are at risk for repeated head injury and exploring how that risk is interpreted); Bennet I. Omalu et al., Chronic Traumatic Encephalopathy in a National Football League Player: Part II, 59 Neurosurgery 1086, 1087 (2006); Bennet I. Omalu et al., Chronic Traumatic Encephalopathy in a National Football League Player, 57 Neurosurgery 128, 129 (2005) [hereinafter Omalu et al., National Football League Part I].

89. Assuming that a causal relationship is established, the injury threshold—the number and types of trauma to the brain—will also need to be determined. See, e.g., Ann C. McKee et al., The Spectrum of Disease in Chronic Traumatic Encephalopathy, 136 Brain 43, 61-62 (2013).

90. Id. at 60.

91. Some recent research suggests that CTE can also develop over only a few years. Christine Baugh et al., Chronic Traumatic Encephalopathy: Neurodegeneration Following Repetitive Concussive and Subconcussive Brain Trauma, 6 Brain Imaging Behav. 244, 252 (2012); see also Benoit C. Mouzon et al., Chronic Neuropathological and Neurobehavioral Changes in a Repetitive Mild Traumatic Brain Injury Model, 75 Annals Neurology 241, 250-51 (2014) (describing mouse study of neurobiological deficits in months following a TBI).
inevitable that the capacity for autonomous decision making will eventually be impaired in athletes with CTE.92

CTE can be diagnosed definitively only through autopsy; there is currently no available way of diagnosing it in the living brain.93 Although the studies of CTE are not nearly as advanced as those of Alzheimer’s disease,94 scientists have discovered that CTE is marked by the abnormal buildup of a protein called tau in the brain, a protein also associated with Alzheimer’s.95 Importantly, recent research suggests that the threshold for developing CTE may be lower than previously thought. Subconcussive impacts, ones that do not manifest symptoms identified with concussions, may be sufficient to develop CTE.96 This is a significant change in the medical field’s understanding of brain trauma.97 Risk factors for CTE, beyond brain trauma, remain unknown.98

92. See Johnson, supra note 41, at 17. At this point, it may not be possible to determine exactly when that autonomy has been impaired or disappears completely. Id.


95. What is CTE?, supra note 84 (explaining that CTE “triggers progressive degeneration of the brain tissue, including the build-up of an abnormal protein called tau”).

96. Baugh et al., supra note 91, at 245; Brandon E. Gavett, Robert A. Stern & Ann C. McKee, Chronic Traumatic Encephalopathy: A Potential Late Effect of Sport-Related Concussive and Subconcussive Head Trauma, 30 CLINICS SPORTS MED. 179, 184 (2011).

97. See McKee et al., supra note 89, at 62 (“[F]or some athletes and war fighters, there may be severe and devastating long-term consequences of repetitive brain trauma that has traditionally been considered only mild.”); Gilbert, supra note 84, at 51-52 (calling for a precautionary approach to addressing policy change despite uncertainty of CTE causation); see also Ray W. Daniel, Steven Rowson & Stefan M. Duma, Head Impact Exposure in Youth Football, 40 ANNALS BIOMEDICAL ENGINEERING 976, 976 (2012) (demonstrating that even subconcussive impacts in youth football practice can produce the same kinds of forces as concussive impacts).

98. Philip H Montenigro et al., Clinical Subtypes of Chronic Traumatic Encephalopathy: Literature Review and Proposed Research Diagnostic Criteria for Traumatic Encephalopathy Syndrome, 6 ALZHEIMER’S RES. & THERAPY 68, 69 (2014); McCrory et al., supra note 63, at 257 (“[T]he speculation that repeated
C. Advances in Biomarker Research

There is a growing recognition that the current approach for the diagnosis and prognosis of mTBI, based on a graded-symptoms checklist, is ineffective and needs to be replaced by more objective biomarkers. A "biomarker" is an objective physiological indicator of a biological disease, injury state, or disease predisposition. Biomarkers may be developed from a blood test, saliva, spinal fluid, brain scans, eye tracking, or urine. These biomarkers may measure a genetic variant, ribonucleic acid (RNA) levels, a protein, a metabolite, an image, or any other subclinical marker of disease predisposition, status, or progression. Because diagnoses of both mTBI and CTE are based largely on self-reported clinical symptoms, scientists have been searching for biomarkers associated with those injured brain states to allow medicine to move beyond a subjective clinical diagnosis.

Many things can turn up as "markers," but to be effective, measurements of brain injury must demonstrate acceptable levels of certainty to warrant sufficient confidence in the test and establish scientific validity. Biomarkers are likely to be probabilistic rather than determinative. It is also likely that they will work in conjunction with other measures, such as clinical features and patient history. Biomarkers of effect may interact with biomarkers of concussion or subconcussive impacts cause CTE remains unproven.

In addition to athletes, CTE has been "found in non-athletes who have experienced repetitive head impacts, including epileptics, developmentally disabled individuals who head-bang," "victims of physical abuse," and military members who have served in combat. Montenigro et al., supra, at 68. CTE may have a high incidence of comorbidity with other diseases, including Parkinson’s and Alzheimer’s. See McKee et al., supra note 89, at 61.

99. Slobounov et al., supra note 66, at 76.
100. See NCI Dictionary of Cancer Terms, Nat’l Cancer Inst., http://www.cancer.gov/dictionary?CdrID=45618 (last visited Feb. 13, 2016). The National Cancer Institute defines a biomarker as a “biological molecule found in blood, other body fluids, or tissues that is a sign of a normal or abnormal process, or of a condition or disease. A biomarker may be used to see how well the body responds to a treatment for a disease or condition.” Id.
102. See id. at 301-02.
103. See id. at 302, 305.
susceptibility such as genetics and previous brain injuries, as well as confounding factors such as sex, age, and ethnicity.

Two fundamental types of error can occur in determining the validity of a test involving its accuracy and reliability. The first, called a Type I error, or false positive, occurs when the effect that is being studied is identified when in fact the effect does not exist.\textsuperscript{104} The second, called a Type II error, or false negative, occurs when a true effect is not detected.\textsuperscript{105} Establishing acceptable levels of Type I and Type II errors is important to determine the validity of a test. These levels are related to the sensitivity and specificity of a test. Sensitivity is a measure of the proportion of true positives that are correctly identified; the fewer the false negatives, the higher the sensitivity of the test.\textsuperscript{106} Specificity measures the proportion of negatives that are correctly identified; the fewer false positives the test produces, the higher the specificity of the test.\textsuperscript{107}

Setting the levels of acceptable errors is a critical issue in the search for biomarkers in concussive injury. Many things can be potential “markers” for head trauma, but they are generally not very sensitive or specific tests.\textsuperscript{108} Other limitations exist as well.\textsuperscript{109} Studies of biomarkers tend to be small, with selected subjects, which brings selection bias into question.\textsuperscript{110} And with regard to CTE in particular, the subjects may also have other potential risk factors for long-term cognitive impairment, which may be hard to separate out.\textsuperscript{111}

Yet even with these limitations in mind, the advances in research are real and developing rapidly.\textsuperscript{112} The search for

\textsuperscript{104} Type I and II Errors and Significance Levels, COMMON MISTAKES IN USING STATISTICS: SPOTTING AND AVOIDING THEM (May 12, 2011), http://www.ma.utexas.edu/users/mks/statmistakes/errortypes.html.
\textsuperscript{105} Id.
\textsuperscript{106} Tze-Wey Loong, Understanding Sensitivity and Specificity with the Right Side of the Brain, 327 BMJ 716, 716-17 (2003).
\textsuperscript{107} Type I and II Errors, supra note 104.
\textsuperscript{108} Linda Papa et al., Protein Biomarkers for Mild Traumatic Brain Injury, in BIOMARKERS OF BRAIN INJURY AND NEUROLOGICAL DISORDERS 221, 222 (Kevin K.W. Wang, Zhiqun Zhang & Firas H. Kobeissy eds., 2015).
\textsuperscript{109} Imaging such as CT and MRI can find damage when it exists, but these tests are typically used to confirm an already strong clinical suspicion or localize the problem to a specific brain region. Id. Additionally, CT scanning generally has a low sensitivity to detect diffuse injury, and while MRI technology can detect diffuse injury, it is often cost-prohibitive for widespread use. Id.
\textsuperscript{110} See McKee et al., supra note 89, at 44, 61.
\textsuperscript{111} Id. at 61.
\textsuperscript{112} Enormous funding has been designated for research into concussive injury biomarkers. See, e.g., The Head Health Initiative Overview, HEAD HEALTH
biomarkers falls into two main types: (1) biomarkers of effect, which indicate if an individual has suffered a concussion and whether it has been resolved; and (2) biomarkers of susceptibility, which indicate that an individual is at increased risk of suffering from concussive injury. Biomarkers of effect are not stable over time, so the timing of the test is critical.\textsuperscript{113} Set forth below are examples of recent research on biomarkers of effect that may be used for diagnosis and prognosis of concussive injury, including biomarkers of CTE and biomarkers of susceptibility to concussive injury. All of these different types of biomarkers will have a direct impact on the legal landscape of concussive injury.

1. \textit{Biomarkers of Effect}

Biomarkers of effect have the potential to detect mTBIs and determine whether the concussion has been resolved. They also have the potential to detect CTE and the progression of the disease, which will be discussed in the next Subsection. This Subsection reviews some recent developments in the biomarker of effect research generally.

As discussed above, TBI is a spectrum. More specifically, it is generally considered in four categories: mild, moderate, severe, and vegetative state.\textsuperscript{114} Mild and moderate TBI typically result in concussion,\textsuperscript{115} whereas severe TBI typically results in coma or death.\textsuperscript{116} Researchers have found biomarkers to be accurate in


\textsuperscript{114} See Glasgow Coma Scale, supra note 65.


\textsuperscript{116} See Glasgow Coma Scale, supra note 65. The traditional clinical diagnostic for distinguishing between mild, moderate, and severe TBI is the Glasgow Coma Scale (GCS). \textit{Id.} GCS scores below 9 indicate more serious injury, while 9–12 are considered moderate and 13–15 are considered mild (mTBI). \textit{Id.}
identifying severe TBI, including serum-based markers\textsuperscript{117} as well as brain scanning tools, such as computed tomography (CT) and magnetic resonance imaging (MRI). Biomarkers that can indicate mild injury are especially needed as CT and MRI scans have more difficulty detecting these injuries.\textsuperscript{118}

While validated biomarkers of mTBI are not currently available, scientists have made rapid progress in recent years in developing a number of possible biomarkers.\textsuperscript{119} Those developments

\textsuperscript{117} See Emine Meric et al., *The Prognostic Value of Neuron-Specific Enolase in Head Trauma Patients*, 38 J. EMERGENCY MED. 297, 300 (2010) (finding increased levels of Neuron-Specific Enolase (NSE) coincide with more severe trauma, specifically for lower Glasgow scores indicating severe trauma); Yoshinori Yamazaki et al., *Diagnostic Significance of Serum Neuron-Specific Enolase and Myelin Basic Protein Assay in Patients with Acute Head Injury*, 43 SURGICAL NEUROLOGY 267, 271 (1995) (finding that Myelin Basic Protein (MBP) in serum was an accurate marker for severe trauma); Stefania Mondello et al., *All-Spectrin Breakdown Products (SBDPs): Diagnosis and Outcome in Severe Traumatic Brain Injury Patients*, 27 J. NEUROTRAUMA 1203, 1206 (2010) (finding SBD145 provided detection as early as six hours after injury, while SBDP120 was comparable to SBDP145 after seven days from injury).


\textsuperscript{119} One problem with these studies is that the biomarker results are tested by reference to conventional measures. The biomarkers being developed do not yet answer the question whether an individual has suffered a concussion or has CTE; the researcher must look to other indicia. Most of the biomarker studies thus far have only been validated when compared to controls (without trauma) and those with trauma verified by neuropsychological or other conventional testing, which is based on clinical observations (whether drawing from subjective reports of the patient, observations of neurological symptoms, or results of other tests). See Ali Alawieh et al., *Neuro-Proteomics and Neuro-Systems Biology in the Quest of TBI Biomarker Discovery*, in *BIOMARKERS OF BRAIN INJURY AND NEUROLOGICAL DISORDERS*, supra note 108, at 21-22 (describing problems with validation in biomarker research); Papa et al., *supra* note 43, at 661 (stating no consensus has yet been reached for how to validate biomarkers). While some approaches compare biomarkers with the current clinical and observational diagnostic methods, others seek to also validate fluid biomarkers against other, non-invasive tests, such as MRI data. E.g., Matthew T. McCarthy & Barry E. Kosofsky, *Clinical Features and Biomarkers of Concussion and Mild Traumatic Brain Injury in Pediatric Patients*, 1345 ANNALS N.Y. ACAD. SCI. 89, 93 (2015).

In other words, we validate our new tools with our old tools. We have not yet reached the point at which these variables are an independent (and presumably more dependable) measure. This is new research, and we need further longitudinal studies to tie validity to longer term outcomes. Another problem is that we have begun to measure physiological changes that have no (or not yet any) manifestation in cognition or behavior. Uzma Samadani et al., *Sensitivity and Specificity of an Eye Movement Tracking-Based Biomarker for Concussion*, CONCUSSION 7, 17 (2015) (stating that biomarker and imaging testing appear to
are the focus of this Article, given that these injuries are more prevalent than severe TBI among athletes and the military, as well as the general population. We outline below a few of the more prevalent biomarkers that are currently under study.

S100B, a calcium binding protein that regulates cell development and degradation, has some potential as a blood-based biomarker of concussive injury. It is well documented that elevated levels of the S100B protein are present in the blood after brain injury. In one study, researchers found that S100B levels in serum correlated with the severity of TBI and were consistent with the results of CT scans, but found that S100B levels were less sensitive indicators of injury in cases of mTBI. In contrast, another study suggested that measurement of S100B in serum could accurately predict recovery from mTBI. Finding some middle ground, a 2013 study found that S100B could detect “subclinical” injury, even though the patient continues to have cognitive function levels that pass neurocognitive testing procedures. And there is always a danger that juries or policy-makers will prefer the evidence of biomarkers over other forms of evidence, given our cultural addiction to faith in what is “physical,” although other studies suggest otherwise. See Nicholas J. Schweitzer et al., Neuroimages as Evidence in a Mens Rea Defense: No Impact, 17 PSYCHOL., PUB. POL'y, & L. 357, 366 (2011) (finding no evidence that neuroimaging unduly influences juries over verbal, neuroscience-based evidence; neuroscience evidence was more effective than clinical psychological evidence but that effect did not translate into differences in juries). But while these limitations may be fodder for evidentiary challenges or cross-examination, they do not justify an absolute bar to using biomarkers in legal or policy decisions.


122. Stephen M. Bloomfield et al., Reliability of S100B in Predicting Severity of Central Nervous System Injury, 6 NEUROCRITICAL CARE 121, 124 (2007). Higher levels of S100B indicate significant injury, while slightly elevated levels may be present from activity such as jogging. Id. at 125. Although it may be difficult to determine at what level S100B presence indicates injury, at high levels it is highly correlative with injury. Id.

123. Lynn Babcock et al., Ability of S100B to Predict Severity and Cranial CT Results in Children with TBI, 26 BRAIN INJ. 1372, 1378 (2012).

124. Id. at 1379. In those cases, additional symptoms, such as nausea, were useful in determining the severity of the injury prior to a CT scan. Id. at 1378.

125. WJ Townsend et al., Head Injury Outcome Prediction in the Emergency Department: A Role for Protein S-100B?, 73 J. NEUROLOGY NEUROSURGERY PSYCHIATRY 542, 544 (2002). The authors found that levels of S100B could accurately predict patient outcomes at one month from injury. Id. at 542.
Biomarkers, Concussions, and the Duty of Care

study compared S100B accuracy with traditional prognosis techniques and found that while S100B was not as accurate in determining the severity of injury, the use of S100B along with these other prognostic tools created a more effective test than the traditional prognostics alone.126

Scientists are studying glial fibrillary acidic protein (GFAP), another protein released upon TBI, as a potential biomarker of effect.127 Presence of GFAP in serum may indicate intracranial hemorrhage and damage to the blood-brain barrier (BBB).128 In a 2012 study, researchers took serum samples of individuals hospitalized for TBI and measured the GFAP levels in the serum.129 The study found that the amount of GFAP in the serum increased with the severity of TBI and correlated with more significant injury discovered by CT scans.130 The researchers also found that GFAP levels were elevated within an hour after injury.131

The human brain can be injured in many ways, and the type of injury that results from hits to the head (acquired brain injury) can occur in many ways as well—from a lone but powerful impact (such as a transportation accident or battlefield injury) or from less powerful but more frequent impacts (such as shaken baby syndrome

126. Mehdi Moazzez Lesko et al., Comparison of Several Prognostic Tools in Traumatic Brain Injury Including S100B, 28 BRAIN INJ. 987, 991 (2014). Traditional prognostic tests include CT scans, pupillary reactivity, and Glasgow. Id. at 987.
127. See Di Pietro et al., supra note 121, at 996.
128. Zhifeng Kou et al., Combining Biochemical and Imaging Markers to Improve Diagnosis and Characterization of Mild Traumatic Brain Injury in the Acute Setting: Results from a Pilot Study, 8 PLOS ONE 1, 10 (2013); Praveen Ballabh, Alex Braun & Maiken Nedergaard, The Blood-Brain Barrier: An Overview: Structure, Regulation, and Clinical Implications, 16 NEUROBIOLOGY DISEASE 1, 1 (2004) (“The blood-brain barrier (BBB) is a diffusion barrier, which impedes influx of most compounds from blood to brain.”). Dysfunction of the BBB may result in stroke, neuroinflammatory disorders, and other neurologic diseases. See id. Authors of a 2013 study measured serum GFAP levels of nine patients with mTBI injury and compared these levels with the results of MRIs. Id. at 3. The authors found that certain levels of GFAP in serum may indicate bleeding across the BBB at small levels beyond MRI detection. Id. at 10.
130. Id. at 476.
131. Id.
or football tackles). One study of patients suffering TBI found that UCH-L1 levels were significantly increased in serum six to twenty-four hours after injury and through the next seven days. Another study found that UCH-L1 is an accurate marker in mTBI as well. The study found significantly higher levels of UCH-L1 compared to the control group, even in those with mTBI. A separate study found that measuring both UCH-L1 and GFAP levels could lead to a highly effective biomarker test.

Total tau (T-tau), a protein secreted by the axons of unmyelinated nerve cells when they are injured, is another potential biomarker of concussion. A study by Dr. Pashtun Shahim suggested that the blood levels of T-tau could be used to gauge the

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133. Mondello (2012), supra note 132, at 668-69 (studying ninety-five patients). The authors also found the levels of UCH-L1 could be predictive of patient survival. Id. at 670 (finding UCH-L1 may predict survival in patients even as soon as six hours from injury).

134. Papa et al., supra note 132, at 1339.

135. Id. at 1336. They sampled eighty-six patients with mild TBI and ten with moderate TBI. Id. at 1337.

136. Id. at 1338 (finding that levels of UCH-L1 could differentiate between control and very mild cases of TBI, including patients with a GCS of 15).

137. Mondello (2011), supra note 132, at 156. In the 2010 study, researchers measured both UCH-L1 and GFAP levels in eighty-one patients with GCS scores of 8 and lower (severe TBI). Id. They found both biomarkers to be much higher in those patients than in the control group. Id. at 158. Interestingly, UCH-L1 levels were higher in diffuse injury than mass lesion, whereas GFAP levels were higher in mass lesion than diffuse injury. Id. at 161. While the study did not include patients with mTBI, it still leads to the conclusion that the two biomarkers are released on different biochemical pathways and suggests that the combination of both could result in a highly effective biomarker test. Id. at 164.

severity of concussions in athletes and to assess when it is safe to return to play.\textsuperscript{139} Measuring blood levels of T-tau to determine brain injury is a new concept; Dr. Shahim noted that studies show that T-tau is usually found only in the cerebrospinal fluid but may get into the blood at detectable levels after concussion with axonal injury.\textsuperscript{140}

Dr. Shahim’s study involved 288 professional ice hockey players in Sweden.\textsuperscript{141} The researchers measured serum levels of three potential biomarkers, all of which have been previously associated with brain injury: neuron-specific enolase (NSE), S100B, and T-tau.\textsuperscript{142} To create a baseline, the researchers took blood tests from the athletes for the three biomarkers at the start of the season.\textsuperscript{143} Half of these players were tested again after a friendly game, in which there were no concussions, to assess the effect of exercise.\textsuperscript{144} Results showed that the levels of two of the biomarkers—S100B and NSE—increased after the friendly match, but there was no change in T-tau levels.\textsuperscript{145}

Researchers then measured the T-tau level of players who sustained concussions during the season at different times.\textsuperscript{146} The plasma levels of T-tau increased in the concussed hockey players, with the highest concentrations immediately after the injury, with a second peak between twelve and thirty-six hours later.\textsuperscript{147} Significantly, the T-tau concentrations at one hour after concussion

\textsuperscript{139.} Pashtun Shahim et al., \textit{Blood Biomarkers for Brain Injury in Concussed Professional Ice Hockey Players}, 71 JAMA NEUROLOGY 684, 684 (2014).
\textsuperscript{140.} \textit{Id.} at 690; see Jeffrey Randall et al., \textit{Tau Proteins in Serum Predict Neurological Outcome After Hypoxic Brain Injury from Cardiac Arrest: Results of a Pilot Study}, 84 RESUSCITATION 351, 352 (2013).
\textsuperscript{141.} Shahim et al., \textit{supra} note 139, at 686.
\textsuperscript{143.} See Shahim et al., \textit{supra} note 139, at 685.
\textsuperscript{144.} \textit{Id.}
\textsuperscript{145.} \textit{Id.} at 686. This result casts doubts on the usefulness of NSE and S100B as biomarkers for mTBI. That the levels of both were elevated after a friendly match that did not result in a concussion (which was presumably a consequence of exertion and bruising of muscles and peripheral tissue) suggests a lack of specificity for brain injury. \textit{Id.} at 690.
\textsuperscript{146.} \textit{Id.} at 685. The players’ tau levels were measured at one hour, twelve hours, thirty-six hours, six days, and when the athlete returned to play. \textit{Id.}
\textsuperscript{147.} \textit{Id.} at 686-87, 689.
predicted the number of days it took for the concussion symptoms to resolve. T-tau measurements remained significantly elevated in players who had suffered a concussion compared with preseason levels at all time-points measured in this study, even when the concussion symptoms resolved and players were safe to return to play.

These results suggest that serum levels of T-tau may prove to be a useful biomarker to diagnose and predict the outcomes of concussions among athletes. Further studies may show how long it takes for plasma T-tau levels to normalize and whether persistently elevated levels of plasma T-tau can identify athletes who have sustained multiple concussion.

Scientists from the University of Pennsylvania used the same Swedish ice hockey players’ study to investigate a different biomarker for potential diagnostic use. They found that a blood protein called SNTF, a protein that is present at undetectable levels in healthy human brains but is produced under conditions where nerve cells are traumatized and begin to die, surged and stayed elevated in the professional hockey players with persistent concussion symptoms, but not in players whose symptoms subsided within a few days. The increased levels of SNTF were strongly correlated with diffuse axonal injury and long-term cognitive dysfunction. Other results showed that when used in conjunction with the biomarker T-tau, the diagnostic accuracy was improved and was more effective than tau alone.

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148. *Id.* at 687, 689.
149. *Id.* at 686.
150. *Id.* at 689-91.
151. T-tau levels may also be able to identify individuals who are at risk for developing CTE. See *infra* notes 166-78 and accompanying text.
154. Siman et al., *supra* note 152, at 1295.
155. *Id.* at 1298.
156. *Id.* Researchers concluded that concussions that lead to long-term brain dysfunction cause SNTF to accumulate in the axon tracts of the brain, and that elevated blood levels of SNTF are a measure of this diffuse axonal injury. *Id.*
157. *Id.* at 1299.
Blood serum is not the only area of focus. Research in ophthalmology also has promising results. Researchers at NYU have developed new technology to assess the location and impact of brain injury by tracking the eye movements of patients as they watch music videos for less than four minutes. In the neurologically healthy subjects, the ratios of how the eye moved vertically and horizontally were close to one to one. But in the participants with damage in the nerves that move the eyes or with brain swelling adjacent to those nerves, all showed abnormal eye movement ratios correlating to the nerve that was affected. In every case where the abnormal eye movement was due to swelling in the brain, surgery to correct the brain problem also restored the eye movements to normal range.

There has also been important progress in applying new brain scan technologies for detecting mTBI, which as discussed above is usually not detected by conventional CT or MRI scans. Magnetoencephalography (MEG) is a functional brain imaging technique that measures the neuronal current in the grey areas of the brain. Scientists are increasingly seeking to develop minimally invasive or non-invasive means of reliably detecting both the presence and severity of concussive injury that still rely on biological systems and are considered types of biomarkers. Measuring a subject’s movement and balance is one recent development that shows potential. See Jasper O. Chang et al., An Alternative to the Balance Error Scoring System: Using a Low-Cost Balance Board to Improve the Validity/Reliability of Sports-Related Concussion Balance Testing, 24 CLINICAL J. SPORT MED. 256, 261 (2014).

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159. Uzma Samadani et al., Detection of Third and Sixth Cranial Nerve Palsies with a Novel Method for Eye Tracking While Watching a Short Film Clip, 122 J. NEUROSUGERY 707, 708-09 (2015).

160. Id. at 709.

161. Id. at 709-15.

162. Id. at 707, 709-17. In a subsequent study, researchers tracked eye movement of seventy-five trauma subjects and sixty-nine non-injured control subjects. Uzma Samadani et al., Eye Tracking Detects Disconjugate Eye Movements Associated with Structural Traumatic Brain Injury and Concussion, 32 J. NEUROTRAUMA 548, 549 (2015). As in the previous study, subjects with abnormal results gradually returned to baseline values during the follow-up period with recovery. Id. at 551. Results indicated that measures of horizontal disconjugacy were significantly increased in the trauma patients relative to the control group. Id. at 550-51. These findings suggest that methods such as eye tracking may prove to be consistently more sensitive to detecting brain injury than the currently employed methods of CT scan or observation by simple finger or pen-light tracking administered by a physician.

163. See Bruce et al., supra note 76, at 103-04; Erin D. Bigler, Neuroimaging Biomarkers in Mild Traumatic Brain Injury (mTBI), 23 NEUROPSYCHOLOGY REV. 169, 170 (2013).
brain that in one study was able to accurately diagnose over 80% of mTBI patients, compared to less than 10% for MRI scanning for the same patients. Several other neuroimaging modalities are also being investigated for providing biomarkers of mTBI.

2. Biomarkers of CTE

Researchers have focused on a number of potential biomarkers for CTE. In particular, they have focused on the abnormal tangles of neural protein tau that accumulate in neurons of brains of individuals with CTE and with Alzheimer’s, and which can be measured using brain-imaging technologies in living patients. A recent study involved fourteen retired NFL football players, all of whom had sustained at least one concussion, and with various degrees of suspected CTE. Their results were compared with participants with healthy brains and participants who met the standard diagnostic criteria for Alzheimer’s.

The researchers scanned the brains of participants using Positron Emission Tomography (PET) after injecting them with a specially developed radioactive tracer called [F-18] FDDNP, which binds to deposits of the tau. Using these PET scans, the researchers were able to pinpoint where in the brain these abnormal proteins accumulated. They found that the imaging pattern in people with suspected CTE differs significantly from healthy volunteers and
Biomarkers, Concussions, and the Duty of Care

those with Alzheimer’s. The researchers identified four distinctive patterns of tau tangles in the brains of the former football players that did not appear in the normal brains of the controls in the study. In particular, they found that the former athletes had higher levels of FDDNP in the amygdala and subcortical regions of the brain. The researchers suggested that these patterns mimic the damage that occurs from a concussion, starting in the midbrain, moving toward the subcortical areas and amygdala, and then advancing to the cerebral cortex. In contrast, the tau tangles in the brains of the Alzheimer’s-diagnosed participants appeared to start in the cerebral cortex.

The study was small and not without controversy. There have been a small number of other studies using PET or other brain imaging technologies that have differentiated CTE from Alzheimer’s in living, at-risk individuals. These findings indicate a promising

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172. Id. at E2044.
173. Id. at E2043-44.
174. Id. at E2045-46.
175. Id. at E2044. Researchers intend to expand the study to determine whether there is a “blast variant” version of CTE. Id. at E2045-46.
176. A panel of experts convened by the National Institute of Neurological Disorders and Stroke concluded that the pathological signature of CTE is found in the cerebral cortex. Report from the First NIH Consensus Conference to Define the Neuropathological Criteria for the Diagnosis of Chronic Traumatic Encephalopathy, Nat’l Inst. Health, http://www.ninds.nih.gov/research/tbi/ReportFirstNIHConsensusConference.htm (last updated Mar. 31, 2015). Furthermore, some of the lead scientists on the study charged several former NFL players with suspected CTE a fee to get a PET scan with their FDDNP tracer, which led to a warning from the FDA because FDDNP has not been approved for clinical use. Ken Belson, Researchers Seeking to Find a Brain Disease in Living Patients Are Under F.D.A. Scrutiny, N.Y. Times, Apr. 12, 2015, at SP4. The PET scans cost about $10,000 to administer. Id.
177. Christine M. Baugh et al., Current Understanding of Chronic Traumatic Encephalopathy, 16 CURRENT TREATMENT OPTIONS NEUROLOGY 306, 313 (2014). [F18]-T808 is another tau-specific ligand biomarker researchers have found that may be detected with PET imaging. Id. at 314. While this study used [F18]-T808 detection as an indicator of Alzheimer’s disease, it could be useful in detecting other tauopathy neurodegenerative diseases, including CTE. Chien et al., supra note 170, at 171; Baugh et al., supra note 91, at 251.

Diffusion tensor imaging (DTI) is another imaging technique that may prove useful. Michael H. Chappell et al., Distribution of Microstructural Damage in the Brains of Professional Boxers: A Diffusion MRI Study, 24 J. MAGNETIC RESONANCE IMAGING 537, 537 (2006). DTI differs from MRI or CT imaging because it is sensitive to diffusion (molecules traveling across areas of differing concentrations), making it sensitive to microstructural changes. Id. Detecting these microstructural changes may give insight to brain injury that other imaging
way to diagnose CTE in the living brain, but more validation is needed before they can be used to diagnose CTE reliably in living patients.\textsuperscript{178} This may require long-term, longitudinal epidemiological studies.\textsuperscript{179}

While there are fewer studies regarding in vivo biomarkers for CTE than TBI, research of bodily fluid biomarkers in TBI and mTBI may also prove useful in diagnosing CTE.\textsuperscript{180} Researchers have found that various biomarkers are expressed for differing periods of time after injury. In a 2012 study, researchers found that levels of neurofilament light protein and GFAP were elevated in the cerebral spinal fluid of amateur boxers two weeks after a bout.\textsuperscript{181} In another study, the investigators measured the NSE levels in serum of amateur boxers who spent two months without boxing\textsuperscript{182} and found those boxers still had higher levels of NSE compared to controls.\textsuperscript{183} These biomarkers that are still expressed weeks and months after injury (and may be prolonged in those with prior injury) have potential for diagnosing CTE in the living brain.\textsuperscript{184} Thus, repeat measurements of markers that have previously been used to diagnose mTBI and TBI may be useful in identifying individuals at higher risk for developing techniques cannot. \textit{Id.} In a study of eighty-one professional boxers, researchers found certain abnormalities in the brain shown by DTI indicated damage due to the boxer’s history. \textit{Id.} at 538. These abnormalities were present even if the subject had no history of major trauma, suggesting that DTI may be useful in detecting CTE in a patient without a history of TBI. \textit{Id.} at 538, 540.

\textsuperscript{178} See \textit{In re Nat’l Football Players’ Concussion Injury Litig.}, 307 F.R.D. 351, 399 (E.D. Pa. 2015) (describing limitations of studies of abnormal tau protein in living brains of individuals with histories of repetitive mTBI, including the small size of the studies, the bias in the selection of the subjects, and the failure to control for other potential risk factors, such as higher weight, lifestyle changes, age, or substance abuse).

\textsuperscript{179} \textit{Id.}


\textsuperscript{181} Sanna Neselius et al., \textit{CSF-Biomarkers in Olympic Boxing: Diagnosis and Effects of Repetitive Head Trauma}, 7 PLOS ONE 1, 3 (2012).

\textsuperscript{182} Zetterberg et al., \textit{supra} note 142, at 724.

\textsuperscript{183} \textit{Id.} The study noted that the half-life of NSE is only forty-eight hours. \textit{Id.} at 725. The same research group found in an earlier study that neurofilament light protein levels were elevated in the cerebral spinal fluid even after three months resting time. Henrik Zetterberg et al., \textit{Neurochemical Aftermath of Amateur Boxing}, 63 \textit{ARCHIVES NEUROLOGY} 1277, 1279 (2006).

\textsuperscript{184} Ryan C. Turner et al., \textit{Repetitive Traumatic Brain Injury and Development of Chronic Traumatic Encephalopathy: A Potential Role for Biomarkers in Diagnosis, Prognosis, and Treatment?}, 3 \textit{FRONTIERS NEUROLOGY} 1, 7 (2013).
Biomarkers, Concussions, and the Duty of Care

CTE. Since those with a concussive history have almost a six-times greater risk of future concussive injury, mTBI and TBI biomarkers and repeated measurement after injury could help predict and diagnose CTE.186

3. Biomarkers of Susceptibility

Some people may have a genetic or other predisposition to concussion and CTE. Although several genetic biomarkers potentially may be connected with an increased risk of concussion,187 most of the research has focused on the apolipoprotein E (APOE) gene because of its association with Alzheimer’s.188 More specifically, research has focused on the ε4 allele of the APOE gene, which may impose greater concussion risks on carriers of the allele.189 Other studies have indicated that the APOE ε4 allele may contribute to genetic susceptibility of CTE.190

The APOE gene regulates apolipoprotein (Apo E) production. Apo E helps lipid transportation in the brain, maintains neural structural integrity, and promotes recovery after neural injury.191 Scientists believe that the normal ε3 allele promotes neural recovery, while ε4 inhibits neural growth.192 Some studies have suggested that the ε4 allele inhibits recovery from TBI and results in a poorer patient outcome.193 In one study, those with the ε4 allele were found to have a worse recovery six months after injury, and those who were ε4 homozygotes had a significantly higher chance of death resulting from their injuries.194 Another study surveyed the results of seventy children who suffered TBI and found that the possession of the ε4 allele resulted in worse recovery than children with the ε3 / ε3 and

185. Id.
186. Mez, Stern & McKee, supra note 180, at 412.
188. Id. at 666; Baugh et al., supra note 91, at 249.
189. Jeter et al., supra note 187, at 666.
190. See Mez, Stern & McKee, supra note 180, at 413.
191. Finnoff, Jelsing & Smith, supra note 118, at 454.
194. Teasdale et al., supra note 192, at 1070.
c3 / c2 genotypes.\textsuperscript{195} Other studies have suggested, however, that there is no connection between the c4 allele and the frequency of mTBI.\textsuperscript{196} Given these conflicting results, no consensus exists at this time on whether Apo c4 is a useful susceptibility biomarker of mTBI risk.\textsuperscript{197} While the evidence suggests that Apo c4 does not increase the incidence of mTBI, it may increase the severity of or delay recovery from mTBI, at least in adults.\textsuperscript{198} However, most researchers believe additional research is needed before the Apo c4 allele can be used as a biomarker of concussion susceptibility.\textsuperscript{199}

For CTE, a study of sixty-eight CTE cases noted that CTE occurred with no greater frequency in APOE c4 carriers compared to the normal U.S. population.\textsuperscript{200} In contrast, another review of CTE injuries found that in the ten cases of CTE where the APOE genotype was reported, five individuals carried at least one APO c4 allele.\textsuperscript{201} Other studies have found that older football players who carry the APOE c4 allele scored lower on cognitive tests than similarly aged players without the allele or less experienced players

\textsuperscript{196} Terrell et al., supra note 193, at 14; Vicki L. Kristman et al., Does the Apolipoprotein c4 Allele Predispose Varsity Athletes to Concussion? A Prospective Cohort Study, 18 CLINICAL J. SPORT MED. 322, 327 (2008).
\textsuperscript{197} Sam Gandy & Steven T. DeKosky, APOE e4 Status and Traumatic Brain Injury on the Gridiron or the Battlefield, 4 SCI. TRANSLATIONAL MED. 1, 1 (2012) (finding, through informal poll, that two-thirds of TBI experts are opposed to using APOE status at this time to screen for participation in high school or college sports).
\textsuperscript{198} David W. Lawrence et al., The Role of Apolipoprotein E Epsilon (ε)-4 Allele on Outcome Following Traumatic Brain Injury: A Systematic Review, 29 BRAIN INJ. 1018, 1027 (2015); Lisa M. Moran et al., Apolipoprotein E4 as a Predictor of Outcomes in Pediatric Mild Traumatic Brain Injury, 26 J. NEUROTRAUMA 1489, 1490 (2009).
\textsuperscript{200} Mez, Stern & McKee, supra note 180, at 416. The study found, however, that those who were c4 homozygotes were overrepresented compared to the U.S. population. Id. Because the study’s results were ambiguous, the researchers concluded that further research is needed to determine whether there is a link between the c4 allele and CTE. Id.
\textsuperscript{201} Ann C. McKee et al., Chronic Traumatic Encephalopathy in Athletes: Progressive Tauopathy After Repetitive Head Injury, 68 J. NEUROPATHOLOGY EXPERIMENTAL NEUROLOGY 709, 732 (2009).
of any genotype, suggesting that the combination of APOE ε4 and repeated impacts may contribute to long-term cognitive effects. These results indicate that the ε4 allele may be a genetic risk factor for CTE, but more studies are needed to determine whether the ε4 allele is actually a genetic risk factor in CTE.

A more promising genetic marker for mTBI susceptibility may be the rare type APOE promoter allele G-219T. The G-219T promoter allele (specifically the T/T genotype) is associated with lower transcriptional activity (the first step of gene expression in which a segment of DNA is copied onto RNA), reducing the amount of ApoE expressed. In a 2008 study, scientists took genetic samples from student-athletes and sequenced their genomes. The authors found that the presence of the T/T genotype resulted in a three-fold higher risk of concussion compared to the normal G/G genotype. Authors of another study found further evidence of the T allele's genetic susceptibility. They surveyed 196 college athletes, taking saliva samples to determine their APOE genotype, and found that individuals with the rare T allele have more than eight times greater chance of concussion.

The search to identify biomarkers is diverse, widespread, and advancing rapidly. Scientists are testing different serum-based markers to give us new tools to understanding whether an individual’s brain has been injured, how extensive the injury is, whether it has been resolved, and whether certain people are more susceptible to suffering concussions and CTE. Identifying and measuring the presence of biomarkers such as the T-tau protein or

203. Id. at 655-56.
204. Ryan T. Tierney et al., Apolipoprotein E Genotype and Concussion in College Athletes, 20 CLINICAL J. SPORTS MED. 464, 466 (2010). The G-219T allele alters transcription, changing the amount of ApoE expressed, which may influence concussion susceptibility in some cases. Id. at 466-67.
205. Terrell et al., supra note 193, at 11.
206. Id. at 13. The authors also found those with the G/T genotype did not have a statistically higher risk of concussion compared to the G/G normal genotype. Id.
207. Tierney et al., supra note 204, at 466.
208. Id. at 465-66. Those with the rare promoter allele, and the two rare APOE alleles (ε2, and ε4) were found to be at a ten times higher risk factor. Id. at 464, 466. This suggests that the rare-type allele in the promoter region may be a better indicator of concussive susceptibility than just the ε4 allele alone, but the ε4 allele may still be a significant genetic factor in concussive susceptibility.
the APOE gene look particularly promising. Use of these biomarkers will undoubtedly begin to seep into the legal landscape and change how we evaluate risk and responsibility in law.

II. TRANSFORMING THE LEGAL LANDSCAPE

The development of reliable biomarkers of effect and susceptibility will significantly inform courts and policy makers as they wrestle with the complex questions regarding the nature of concussive injury, the need for regulation in the area, and the allocation of fault and duties with regard to head injuries. In the litigation context, biomarker evidence will be judged against admissibility standards as embedded in the Daubert principles. These admissibility tests may be difficult to meet, but even so, they may delay but ultimately not forestall the effect of biomarkers seeping into the legal landscape. And as biomarker evidence enters the courtroom, the consequences for tort analysis are likely to be dramatic.

A. Legal Implications of Biomarkers of Effect

The ability to detect biomarkers of effect of concussive injury long before clinical symptoms appear may have an impact on each element of tort liability. As every first year law student knows, the required elements for recovery of damages in tort are: (1) duty; (2) breach of duty; (3) causation; and (4) damages. Although the development of biomarkers will affect these elements in torts involving acquired head injury in all settings, this Article focuses these issues in the context of torts involving youth sports and

209. See Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579 (1993). The tests include whether the technique can be tested, whether it has been subjected to peer review and publication, whether the potential or known error rate of the technique has been determined, and whether the technique has gained general acceptance within the scientific community. Id. at 593-94.


Concussive injury. Sports present unique challenges in torts because the sanctioned athletic activity (such as tackling in football or body checking in hockey) would be considered tortious conduct under other circumstances. In addition, state legislative action has modified standards of care and legal duties in the school sports area.

1. Duty and Breach

Duty in the youth-sports area stems from the general common law obligation to provide a relatively safe environment to engage in the activity. Concussive management on the playing field is the first area of concern. This may include the duty of sports sponsors to inform players about the risks of concussions, provide equipment, implement both rules and a playing environment that do not impose unreasonable risks of injury, accurately diagnose concussions, and remove players from play and not to allow them to return until their concussions have resolved.

Legal duties for concussive injury prevention and management trace to a mixture of legislation and common law principles. This Subsection examines both, including examination of return-to-play legislation under state law, as well as the rise of the use of athletic trainers as the front line for concussive management. These approaches to concussion management only address management of “acute” concussion and do not address the long-term issues associated with concussion, except in a general sense.

Significant challenges exist to concussive management. Concussive management depends on the cooperation of the player and candor in reporting symptoms. Some players simply may not

212. It is generally accepted that two populations are at a heightened risk for concussion and mTBI: athletes and military combat personnel. L. Syd M. Johnson, Brad Partridge & Frédéric Gilbert, Framing the Debate: Concussion and Mild Traumatic Brain Injury, 8 NEUROETHICS 1, 2 (2015) [hereinafter Johnson, Framing the Debate]. This Article focuses on legal duties for concussive management with regard to athletes. Legal duties involved in combat personnel are dominated by sovereign immunity issues. Jonathan Turley, Pax Militaris: The Feres Doctrine and the Retention of Sovereign Immunity in the Military System of Governance, 71 GEO. WASH. L. REV. 1, 1-2 (2003). Furthermore, diagnosis and treatment of mTBI for combat victims are complicated by the similarity of symptoms with PTSD. Johnson, Framing the Debate, supra.

213. See, e.g., Searles v. Trs. of Saint Joseph’s Coll., 695 A.2d 1206, 1209 (Me. 1997).

214. Long-term issues will be discussed infra at Subsection II.A.2.

recognize the symptoms of a concussion. In addition, there are powerful, coercive social and economic pressures to underreport symptoms. The resistance to reporting concussion symptoms exists at all levels of sports, including high school.

A further challenge to concussive management is the lack of consensus regarding the definition, diagnosis, and treatment for concussions. The current approach generally only addresses clinically evident concussions.

a. Return-to-Play Determinations Under State Law

States have been at the forefront in regulating concussive injury in the youth-sports area. All fifty states and the District of Columbia now have legislation to prevent concussions and to limit further injury to student–athletes who sustain concussions. States

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219. Johnson, supra note 41, at 19; see also Frederick P. Rivara et al., The Effect of Coach Education on Reporting of Concussions Among High School Athletes After Passage of a Concussion Law, 42 AM. J. SPORTS MED. 1197, 1197 (2014) (discussing a study of Washington State, the first state to adopt return-to-play legislation, which found that over two-thirds of high school athletes who suffered mTBI reported playing with symptoms); Emily Kroshus et al., Concussion Under-Reporting and Pressure from Coaches, Teammates, Fans and Parents, 134 SOC. SCI. & MED. 66, 66 (2015) (quantifying, in study of 328 players at four colleges in seven sports, the pressure from coaches, teammates, parents, and fans to continue to play after head impact).


221. Johnson, supra note 41, at 15-16.

222. Various concussion management protocols have also been voluntarily adopted by sports teams and leagues. Critics argue that these protocols are vague, “wide open to interpretation by trainers and medical staffs,” and not empirically validated. Johnson, supra note 41, at 19.

have dominated legislative action in this area, since there is no federal law that regulates youth athletic concussions, nor is there a central governing body to promulgate health and safety standards.

The goal of return-to-play legislation is to ensure that student-athletes recover from concussions and do not play with an injured brain. The legislation is generally focused on managing single instances of concussion and is based on the assumption that preventing concussed players from returning to play before their symptoms have resolved will lower the risk of developing long-term cognitive impairment. Most state statutes have three major components: (1) removal from play, (2) medical clearance for return to play, and (3) education. Generally, the statutes charge the school districts, the state department of health or board of education, or the athletic association to implement the statutes.

Although these statutes have much in common, their most noteworthy characteristic is their lack of uniformity.

The vast majority of these laws mandate that student-athletes who experience a concussion be removed from play and obtain a specified individual's permission before returning to play. The statutes vary on who can grant that permission, although most statutes require a health care provider trained in the evaluation and management of concussions to make the determination. States differ on whether the health care provider is required to be "licensed" or a neutral decision maker. In other words, some states allow

224. Breck, supra note 216, at 218.
226. See, e.g., N.M. STAT. ANN. § 22-13-31(D) (West 2015) (charging school districts with development and implementation responsibilities); OKLA. STAT. ANN. tit. 70, § 24-155(A) (West 2015) (charging school districts and athletic associations with implementation responsibilities).
229. For example, Arizona’s definition of a health care provider includes physicians, athletic trainers, nurse practitioners, and physician’s assistants who have been trained in the evaluation and management of concussions and head injuries. See § 15-341(24)(b). Alabama and Texas require a licensed physician to make the
anyone who has been trained to be an evaluator, and even a coach may suffice.230

Although most states require training in head injuries, the states vary on who is responsible for developing the training protocols and who is required to receive the training.231 The majority of states simply delegate education initiatives to the state’s school districts with no further instruction.232 Although most of the statutes require distribution of information to coaches and students regarding concussions, only some of them require in-depth training for coaches.233 Many states do not require students to complete training, even though diagnosis currently depends heavily on the player recognizing internal symptoms.234

Most states do not mandate a waiting period before returning to play.235 Only a few states require the schools to collect concussion data, and significantly, not a single statute requires baseline testing of student-athletes before the season.236


230. A few states do not address who will make the determination. See, e.g., 2011 Ill. Laws 97-0078.


234. Most of the statutes require distribution of information to parents, and most—but not all—of the statutes require students and parents to sign a form confirming the receipt of concussion information. Brandwein, supra note 233, at 46; see, e.g., Wis. Stat. Ann. § 118.293(3)(a) (West 2015) (requiring only a parent’s signature prior to preseason under Wisconsin law).


This diversity of approaches reflects the lack of consensus on the best approach to concussive management. Some commentators question the efficacy of these types of concussive management legislation altogether, especially when the risks and mechanics of mTBI injuries are not fully understood. Furthermore, current laws and regulations do not specify how to determine the presence of a concussion, leaving it to the discretion of the evaluator, who may or may not be a licensed health care provider.

Development of biomarkers of effect will reshape this legislative landscape. It will lead the way toward establishing evidence-based guidelines for making return-to-play decisions after concussions and in reducing the problems created by the dependence on self-reporting by the player. As use of biomarkers becomes standard medical procedure, regulatory bodies are likely to incorporate these tests into their requirements, which should lead to greater standardization, particularly in the requirements for removal from play, medical clearance, and education. Legislation or regulations may specify the use of biomarkers for the return-to-play determination, as well as require evaluators who are trained in the use of biomarkers and qualified to interpret them. Furthermore, statutes may require the creation of baselines for each athlete, once a biomarker gives us something to measure. In this way, when there is evidence of a potential concussion, trained personnel can compare the levels of the biomarkers post-injury to those baseline measurements.

237. Johnson, supra note 41, at 24 ("To be effectively neuroprotective . . . it is likely RTP protocols would have to be significantly more conservative and restrictive, and require a much longer period of rest and recovery.").

238. See Johnson, Partridge & Gilbert, supra note 212, at 2-3. Critics point out that the statutes do not require changes to how the sport itself is played. Johnson, supra note 41, at 24.

239. Some leagues have begun to use neuropsychological testing to create baselines. Christopher Randolph, Baseline Neuropsychological Testing in Managing Sport-Related Concussion: Does It Modify Risk?, 10 CURRENT SPORTS MED. REP. 21, 21 (2011). These are subject to “sandbagging,” or intentional manipulation by the players, to avoid later detection of concussions. For example, Peyton Manning admitted to deliberately sandbagging the baseline test. See Rick Reilly, Talking Football with Archie, Peyton, Eli, ESPN (Apr. 27, 2011, 9:32 AM), http://sports.espn.go.com/espn/news/story?id=6430211.

240. As mentioned above, no statute currently requires baseline testing of student-athletes. Some athletic programs have adopted a form of baseline testing through cognitive testing programs. Some programs, such as imPACT, implement baseline testing, but this test is adopted solely on a voluntary basis. See About ImPACT, IMPACT, https://www.impacttest.com/about/ (last visited Feb. 13, 2016).
Similarly, collection of concussion data, both pre- and post-season, will likely become standard through legislation, regulation, or protocol. The data will allow schools and sports leagues to identify individual, at-risk players as well as to discern overall group patterns that may have an impact on policies on concussive management, such as how long a waiting period appears most effective. The availability of such data will help shape future public health measures as well.

At the same time, the development and validation of biomarkers will create their own set of new complexities and questions. With so many different types of biomarkers in different stages of development, there will be issues as to which biomarkers should be used and when. It is likely that there will be frequent changes in best practices with regard to the choice and application of biomarkers as the science in this area rapidly changes. Who should specify which biomarkers are the state of the art and should be used? If it is the legislature, there may be problems keeping the statutes up to date with constantly shifting science. If that responsibility is delegated, there may be problems with consistency and accountability. Another set of issues is how much reliance should be placed on rapid, real-time “on the sidelines” biomarker assays, such as a blood screen, versus more expensive and rigorous tests—involving brain scans or other technologies—that can only be conducted away from the playing field.

On a broader scale, with the identification of biomarkers, there may be more calls for uniform federal legislation, regulations, or creation of a uniform model code for the states to follow. This alignment could lead to a minimum standard of concussion prevention, care, and management and could incorporate—either directly or indirectly—the use of biomarkers. Standardization would likely include requiring baseline testing at the beginning of each season and requiring schools and teams to report concussion incidents to a registry. Such legislation could potentially include civil liability or penalties for noncompliance.

b. Private Law Remedies

Individuals will continue to seek private law remedies against the sponsors of sports activities and those involved in managing players. These claims will be made in professional malpractice lawsuits or in negligence claims against the entity sponsoring the athletic event.
The standard of care is typically determined by the conduct of a reasonable person of ordinary abilities under the same circumstances, but this duty is generally enhanced when the defendant possesses special knowledge, skill, training, or experience that is superior to the ordinary person. Accordingly, coaches, trainers, and other professionals may be held to this higher standard of care. Practicality and costs of using biomarkers will enter into the equation of whether a given duty exists and whether the failure to use them might constitute the breach of duty to provide a safe environment. An important dynamic in addressing these questions is: “What are other teams and leagues doing?” Thus, if one or two college-based or high school teams start baseline biomarker testing of their players, will that set a standard of care that may create liability risks for similar teams or leagues? Will this potential to create new standards of liability act as a deterrent to prevent teams or leagues from adopting new biomarker tests and baseline testing?

The duty and breach issues that could arise in these lawsuits include the failure to create a baseline, the failure to timely screen for a concussion, the misdiagnosis of a concussion, and the misdiagnosis of treatment and cessation of a concussion, including allowing a student athlete to return to play with the continued presence of concussion biomarkers. These claims may arise even if the state statute does not address these issues; but if the legislation does address them, plaintiffs will argue that the statute creates a minimum standard of care. Some of these claims are discussed below in the context of athletic trainers, whose use is on the rise.

Athletic trainers are certified health care professionals who work closely with physicians to “provide preventative services,

241. Dobbs, supra note 210, at 288-90; see Cerny v. Cedar Bluffs Junior/Senior Pub. Sch., 628 N.W.2d 697, 706 (Neb. 2001) (finding the standard of care regarding diagnosis of concussive injury owed by members of coaching staff to be that of a reasonably prudent person holding a state teaching certificate with coaching endorsement; dismissing complaint seeking to recover injuries allegedly resulting from negligence of coaches who allowed concussed player to reenter game).

242. See United States v. Carroll Towing Co., 159 F.2d 169, 173 (2d Cir. 1947) (discussing the “Learned Hand formula” of duty; balancing the magnitude of the loss if an accident occurs, the probability of the accident’s occurring, and the burden of taking precautions that would avoid it).

243. Colin Poitras, Pressing Need for Full-Time Athletic Trainers in High Schools, UCONN TODAY (Mar. 27, 2015), http://today.uconn.edu/2015/03/pressing-need-for-full-time-athletic-trainers-in-high-schools (reporting that the use of athletic trainers has doubled in the last two decades and that about 70% of public high schools have athletic trainers).
emergency care, clinical diagnosis, therapeutic intervention and rehabilitation of injuries and medical conditions.” Generally, athletic trainers work continuously with players and usually are the first-responding health care providers when injury strikes. As first responders on the playing field, the diagnosis and treatment of concussions are often solely shouldered by athletic trainers. The exact responsibilities given to athletic trainers, however, vary depending on the state, school, and skill levels of the trainers.

Athletic trainers are often given specialized duties with regard to concussive injury management. Trainers initially diagnose concussions, evaluate the player and determine when it is safe to return to play, and oversee the rehabilitation and treatment of the concussion. While trainers are encouraged to send the injured athlete to a physician, they often manage the injury themselves. The largest accrediting organization, the National Athletic Trainer’s Association (NATA), provides continuing education, which can include concussive injury management.

244. Athletic Training, NAT’L ATHLETIC TRAINERS’ ASS’N, http://www.nata.org/athletic-training (last visited Feb. 13, 2016). Athletic trainers work under various job titles such as occupational health manager, physician extender, or rehabilitation specialist. Id. To become an athletic trainer, students must complete a collegiate academic major and then be certified by the national organization, National Athletic Trainer’s Association (NATA). Id. The Commission on Accreditation of Athletic Training Education accredits the college program. Students who finish their baccalaureate degree then must pass the NATA Board of Certification (BOC) examination to be nationally certified. NAT’L ATHLETIC TRAINERS’ ASS’N, ATHLETIC TRAINING EDUCATION OVERVIEW 1, http://www.nata.org/sites/default/files/AT-EducationOverview.pdf (last visited Feb. 13, 2016). Forty-seven states require this certification to practice athletic training. Id. at 2.

245. Schools, training facilities, clinics, physicians’ offices, and sporting venues employ athletic trainers to help athletes condition and perform. Athletic Training, supra note 244. At the secondary school level, schools generally hire the trainers as independent contractors. Id.


247. Broglio et al., supra note 225, at 245.

248. Id.

Some states specify the use of athletic trainers as qualified health care professionals under return-to-play legislation, but many schools, especially at the high school level, do not hire them due to lack of funding, small school size, rural location, or a belief that coaches will suffice. Despite the inevitable risks of not having a physician present throughout the stages of a concussive injury, some studies suggest that use of athletic trainers helps student-athletes more than it hurts them. The studies indicate that high schools that employ athletic trainers have lower overall injury rates, and concussions are more likely to be properly diagnosed.

At the same time, the effectiveness of using athletic trainers in concussive management may be undermined by conflict-of-interest pressures. In an informal 2013 survey of athletic trainers working for college football programs, nearly half of the trainers responded that they have felt pressure from the coaches to return the injured player to play before the players were medically approved to do so. This problem is exacerbated by the fact that athletes, who also feel pressure to return to play, may misreport their symptoms to the trainer.

Trainers may be subject to tort liability for failing to adhere to recognized practices for concussive management. Determining the

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251. Svokos, supra note 246.
253. Id.
254. Brad Wolverton, Coach Makes the Call: Athletic Trainers Who Butt Heads with Coaches over Concussion Treatment Take Career Hits, CHRON. HIGHER EDUC. (Sept. 2, 2013), http://chronicle.com/article/Trainers-Butt-Heads-With/141333. Of the 101 trainers surveyed, thirty-two reported that the coaching staff had hiring and firing power over their position, fifty-three reported they felt pressure to return a student to play faster than they feel they should have, and forty-two said they felt pressure to return a student to the field even after he experienced a concussion. Jerry Hinnen, Survey: 42 Percent of Trainers Pressured to OK Concussed Players, CBS SPORTS (Sept. 4, 2013, 1:28 PM), http://www.cbssports.com/collegefootball/eye-on-college-football/23476122/survey-42-percent-of-trainers-pressured-to-ok-concussed-players.
255. Id.; see supra note 213-19 and accompanying text.
legal standard of care is difficult, however, if there is no universally
accepted standard for concussion diagnosis and treatment by athletic
trainers.\textsuperscript{257} While courts generally take into account NATA’s
guidelines, these guidelines are not determinative.\textsuperscript{258} Courts have
already recognized that athletic trainers owe players a duty of care in
concussive management.\textsuperscript{259} For example, the plaintiff in \textit{Pinson v. State}\textsuperscript{260} suffered a blow to the head during football practice, walked
to the sideline, and then collapsed unconscious.\textsuperscript{261}

The school’s athletic trainer sent him in an ambulance to the hospital\textsuperscript{262} but failed to properly inform the physician of Pinson’s
symptoms and the time he lost consciousness.\textsuperscript{263} After his release,
Pinson repeatedly complained of headaches and nausea to the trainer,
but the trainer nonetheless cleared him to return to play.\textsuperscript{264} When he
collapsed at another practice, Pinson remained in a coma for several
weeks and suffered severe, permanent neurological damage.\textsuperscript{265} After
Pinson brought suit, the court held that the athletic trainer did not
exercise the required standard of care and breached his duty when he
failed to report Pinson’s headaches to the physician.\textsuperscript{266} The court
found that the athletic trainer was responsible for 30\% of the
plaintiff’s damages.\textsuperscript{267}

As the use of athletic trainers continues to rise, the duty of care
imposed on them almost certainly will encompass biomarker testing
257. Osborne, \textit{supra} note 256, at 317.
259. If a team does not have a medical trainer, the coach will likely be
identified as the responsible party and be subject to potential liability. The absence
of an athletic trainer could be a source of culpability for the team or league if the
judge or jury finds that the standard of care requires a properly trained athletic
trainer to be on the sidelines.
261. \textit{Id.} at *1.
262. \textit{Id.} The athletic trainer found palsy on the left side of Pinson’s face,
noting that he had no control of the left side of his body and no response to pain,
sound, or movement. \textit{Id.}
263. \textit{Id.}
264. \textit{Id.} at *1-2.
265. \textit{Id.} at *2.
266. \textit{Id.} at *7.
267. \textit{Id.} at *3.
once it can be practically employed on or near the playing field. Availability of such tests will encourage schools to employ athletic trainers to administer them. NATA may require training and use of the biomarkers in concussive management, but regardless, the tests’ availability will raise and perhaps clarify the professional standard of care of athletic trainers.\textsuperscript{268} The availability of objective measures may also serve to protect athletic trainers from liability, since they currently rely mostly on subjective measures. Moreover, the use of such tests will make it easier for trainers to consistently adhere to proper procedures, as well as enhance their ability to resist conflict-of-interest pressures. At the same time, increasing the exposure to liability for concussive management may have the unintended consequence of discouraging organized sports in schools.

c. Duty to Screen and Monitor

The availability of biomarkers of effect may expand the concussive management duties of schools or other sponsors of youth sports teams to include periodic testing of their players for biomarker indications of concussive injury. These duties may include testing players before play, during the season, and after the season. Pre-play screening will establish an individual player’s baseline, while monitoring will help determine whether the player has suffered concussive injury and whether the concussion is resolved, making it safe to return to play. This duty may arise even if a player does not manifest outward symptoms of brain injury.

Pre-season and periodic screening for mTBI with biomarkers will pose many challenges. The high incidence of concussive injury\textsuperscript{269} may engender a greater duty to screen and monitor youth athletes. However, what constitutes this duty may change based on the type of testing available. The cost of a serum assay (to determine the amount of a particular biomarker in blood) is estimated to be

\textsuperscript{268} Again, the issue of which biomarkers are the current state of the art will complicate decisions on which biomarkers to use and the relevant standard of care.

\textsuperscript{269} For example, the rate of concussive injury in NCAA football was 3.1/1,000 athletic exposures in the 2004 to 2009 season. NCAA, GUIDELINE 2: CONCUSSION OR MILD TRAUMATIC BRAIN INJURY (mTBI) IN THE ATHLETE 1 (2010), http://www.muhlenberg.edu/pdf/main/athletics/athletic_training/2010-11ncaaconcussions_mtbi.pdf. An athletic exposure includes both games and practices. Although the statistics between SCD and concussion incident rate are not the same measure, it is readily apparent that concussive injury is much more frequent.
Although this cost is not large on an individual basis, it may become a large burden with widespread implementation. Regardless, this cost is much lower than the cost of a CT or MRI scan. Additionally, the cost also depends on when the duty to screen arises—only pre-season, regularly throughout the season, or only after injury. While there is clearly a duty for teams to check their athletes for injury as part of their reasonable duty of care, the extent of this duty is undetermined. What particular advantage or benefit would screening athletes prior to a season and during a season provide? Should all athletes be screened, and how

270. The cost of a S100B assay was estimated to be from $15 to $25. Shuolun Ruan, Katia Noyes & Jeffrey J. Bazarian, *The Economic Impact of S-100B as a Pre-Head CT Screening Test on Emergency Department Management of Adult Patients with Mild Traumatic Brain Injury*, 26 J. Neurotrauma 1655, 1658 (2009).

271. *See id.* Outside of a biomarker assay, an athletic association could also submit a questionnaire to athletes regarding previous concussive injury and current symptoms and also evaluate them using the Glasgow Coma Score throughout and before the season. These questionnaires and self-reporting methods would be low-cost, but are less objective than a biomarker assay or imaging scan, as they rely on self-reporting symptoms as opposed to an objective measure.

272. *See* Searles v. Trs. of Saint Joseph’s Coll., 695 A.2d 1206, 1209 (Me. 1997) (holding that coaches and athletic trainers have a duty to exercise reasonable care for the health and safety of athletes that may include monitoring a knee injury during the season and overturning defendant’s motion for summary judgment).

273. For example, would a regular test require only self-reporting symptoms and determination of a Glasgow Coma Score, or would it require assays of serum for biomarkers or comprehensive imaging tests? Settlement negotiations from a recent lawsuit against the NCAA may give insight into how the duty may be analyzed. The proposed settlement requires that

First, the NCAA will institute a policy requiring all student-athletes to undergo pre-season baseline testing for each sport they play prior to beginning practice or competition. Second, the NCAA will revise its return-to-play guidelines to provide that “[s]tudents with a diagnosed concussion will be prohibited from returning to play or participation in any practice or game on that same day and must be cleared by a physician before being permitted to return to play in practice or competition.” Third, medical personnel, who are trained in the diagnosis, treatment, and management of concussions, will be present at all games of Contact Sports—defined as football, lacrosse, wrestling, ice hockey, field hockey, soccer, and basketball—and be available during all Contact Sports practices.

In re NCAA Student-Athlete Concussion Injury Litig., 2014 U.S. Dist. LEXIS 174334, at *16-17 (N.D. Ill. Dec. 17, 2014) (citations omitted). The proposed settlement also requires reporting of a concussion and providing concussion education to athletes and faculty. *Id.* at *18.

274. Hopefully, injuries would be prevented by tracking down those already symptomatic of concussive injury and preventing them from returning to play.
often should the screening occur? What is the duty to a student who
starts late in the season? Questions like these will have to be
addressed to determine screening and monitoring duties and
consequent liability risks. Furthermore, this duty may also depend on
the development of other new devices to detect concussive injury
and determine severity on the sidelines, potentially used in
conjunction with biomarkers.275

2. Medical Monitoring and Increased Risk Claims

Although advances in biomarker research will directly affect
concussive management duties on the playing field, these advances
also implicate other, less obvious, concussive management duties.
Biomarkers will give us a deeper understanding of the disease
process and trace back earlier into what we think of as the diseased
state. In this way, successive concussive injuries implicate a potential
latent risk for CTE, since CTE is a progressive condition associated
with repetitive brain injury that may take years to develop.

275. Kara E. Schmid & Frank C. Tortella, The Diagnosis of Traumatic Brain
Injury on the Battlefield, 3 FRONTIERS NEUROLOGY 1, 2 (2012). A variety of tests are
being developed. Currently, one may take ELISAs (enzyme-linked immunosorbent
assays) to measure the amount of a biomarker in serum. Id. at 3. An ELISA is a
laboratory technique in which samples are plated onto a tray, and the concentration
of a marker in the sample is calculated. See An Introduction to ELISA, AbD
Feb. 13, 2016). However, ELISAs can take four to twenty-four hours to complete.
Schmid & Tortella, supra, at 3. A cartridge for an I-STAT (a handheld blood reader)
is in development that may detect concussions using UCH-L1 and GFAP
biomarkers (mentioned above), which are present as soon as fifteen minutes after
injury. Michele D. Sullivan, Biomarker Test May Allow Immediate Diagnosis of
clinicalneurologynews.com/index.php?id=9868&tx_ttnews%5Btt_news%5D=294465
&cHash=b99dda1fa2164b3a2190d785a83e45f7. Should these devices become
available to the public, athletic organizations may have a duty to carry them in
sports competitions to quickly and efficiently determine if concussive injury
occurred. These devices may be deployed in the military as early as 2016. Id.
However, due to the high cost of an I-STAT, requiring such a device at all games
and practices may be too burdensome. See I-STAT Portable Clinical Analyzer,
CjwKEAjwxMelBRDhx6Sz2p7DsQ0SJADJHAp81nFP6aQajRQIxyqgk4dCTIIL
Po98sNxy2rz997Pjco211Dw_wcB (last visited Feb. 13, 2016). Another portable
device that may be able to detect concussions is a portable functional near-infrared
spectroscopy device. Researchers Find Portable, Low-Cost Optical Imaging Tool
Useful in Concussion Evaluation, SCIENCE DAILY (June 26, 2014),
http://www.sciencedaily.com/releases/2014/06/140626022036.htm. The device
accurately indicated concussive injury and would be low cost. Id.
Latent injury claims confront the fundamental tort principle that the plaintiff must demonstrate "harm" (typically a physical harm) before being allowed to recover damages. In addition, the time gap between exposure and disease creates significant practical hurdles in recovery, such as statutes of limitations and proof problems from dated evidence. Despite these jurisprudential and practical problems, courts have recognized in latent injury toxic tort cases a set of compensatory damages during the latency period that may exist between exposure and disease. These latent injury torts reflect the view that certain injuries follow a continuum between an initial event, such as exposure, and a medically diagnosable disease.

Latent injury claims permit a claimant to receive compensation before a serious disease has been manifested. Proponents argue that the claims promote the public health interest in fostering access to medical testing, stressing the value of early diagnosis and treatment for many types of diseases. Similarly, by mitigating serious future illnesses, the claims can reduce the overall costs to the responsible parties as well as to society. Moreover, the claims can enhance deterrence for risk creation. Finally, they reflect basic societal notions of fairness and elemental justice by allowing the individual who has been wrongfully exposed to a likely future injury to receive compensation for the fear of getting the future injury, as well as avoid bearing the expense of medical monitoring. Other supporters suggest that, by allowing recovery for the latent risk itself rather than waiting for the serious disease manifestation, the claims address practical problems such as access to proof.

Critics argue that latent injury claims are brought by individuals who, despite exposure to a hazard, have not yet been significantly injured and, therefore, are not yet entitled to

277. The latent injury claims emerged out of asbestos claims, among others. See id. at 1682-83.
280. Marchant, Genetic Susceptibility, supra note 278, at 85.
282. Marchant, Genetic Susceptibility, supra note 278, at 85.
compensation. They contend that this claim should not be recognized too readily for fear of flooding the courts with frivolous claims and disproportionately burdening defendants. A major concern is limited resources, so that if money is allocated now for these damages, sufficient money may not be available later for recovery by those who actually suffer from the disease in question.

Three types of claims generally arise in the latent risk area. Claimants may seek recovery for: (1) the increased risk of a disease; (2) the fear of developing future disease; and (3) medical monitoring costs. All of these claims are based on the premise that the plaintiff has either incurred some injury or has been exposed to a hazard and, as a result, is now at an increased risk of future disease. These claims all require that the increased risk be significant. Aside from these commonalities, these are distinctive claims, however. The first, increased risk, seeks compensation for the fact of the increased risk itself, assigning a value to the increased risk without any certainty that the disease will later manifest; the second, fear of future injury, is an emotional harm claim for the fear and anxiety of getting the more serious disease; and the third, medical monitoring, is seeking payment for the cost of monitoring the at-risk, exposed plaintiff to detect and prevent the onset of disease.

Medical monitoring is the most widely used of these claims, although no consensus exists regarding the elements of the claim.

283. Id.
284. Id.
285. Id.
286. Marchant, Genetics and Toxic Torts, supra note 113, at 976.
287. In Donovan v. Philip Morris USA, Inc., the plaintiffs alleged that Marlboro cigarette smoke, with excessively high levels of carcinogen, caused physiological changes and lung tissue damage that led to significantly increased risk of lung cancer in the future. 914 N.E.2d 891, 899 (Mass. 2009). The court recognized subcellular injury as a present physical injury. Id. at 901. The court stated that “[w]e must adapt to the growing recognition that exposure to toxic substances and radiation may cause substantial injury which should be compensable even if the full effects are not immediately apparent.” Id.; see also Werlein v. United States, 746 F. Supp. 887, 901 (D. Minn. 1990), vacated in part on other grounds, 793 F. Supp. 898 (D. Minn. 1992) (denying the defendant’s motion for summary judgment because “[b]ased on the record before it, this Court cannot rule as a matter of law that plaintiffs’ alleged injuries are not ‘real’ simply because they are subcellular”).
288. Pizzirusso, supra note 281, at 198-204.
289. Generally, plaintiffs are required to prove: (1) exposure greater than normal; (2) to a proven hazardous substance; (3) due to defendant’s negligence; (4) plaintiff has a significantly increased risk of contracting a serious latent disease as a proximate result of the exposure; (5) a medical monitoring procedure exists that
An early case that influenced the development of the doctrine involved potential brain injury. In *Friends for All Children, Inc. v. Lockheed Aircraft Corp.*, the court examined a claim brought on behalf of 150 Vietnamese orphans who survived a military transport plane crash. The plaintiffs sought injunctive relief to require the plane’s manufacturer to fund a medical surveillance program to determine whether depressurization of the plane’s cabin caused the children to suffer brain injury. The court agreed that the manufacturer should compensate the children for the monitoring costs, reasoning that such compensation was no different from an ordinary tort damage award:

[E]ven in the absence of physical injury [the plaintiff] ought to be able to recover the cost for the various diagnostic examinations proximately caused by [the defendant’s] negligent action... The cause of action... accords with commonly shared intuitions of normative justice which underlie the common law of tort... [I]n this case, the crash exposed the plaintiffs to the risk of serious brain damage... [and] comprehensive diagnostic examinations are needed to determine whether and to what extent treatment may be necessary.

Courts and commentators used the language in the case to suggest that it opened the door to a new claim of medical monitoring. The claim was more firmly established by the New Jersey Supreme Court in *Ayers v. Township of Jackson.* There, the New Jersey Supreme Court upheld a jury’s decision to award medical monitoring costs for plaintiffs who were exposed to toxic

makes early detection of the disease possible; and (6) the monitoring regime is reasonably necessary according to accepted scientific principles. See Redland Soccer Club, Inc. v. Dep’t of Army, 696 A.2d 137, 145-46 (Pa. 1997). States generally require expert testimony to support the claim with proof that the monitoring is reasonable and necessary. They also allow traditional defenses to the claim, such as assumption of risk and contributory negligence. The relief ordered may vary: Some courts will order court-supervised programs; others will order defendants to pay plaintiffs certain sums of money; and others will require defendants to pay plaintiffs’ medical expenses directly. See generally Jonathan I. Handler et al., *A Growing Number of States Recognize Medical Monitoring Claims*, 25 BNA INSIGHTS 222 (2010).

290. 746 F.2d 816 (D.C. Cir. 1984).
291. *Id.* at 819.
292. *Id.* at 822.
293. *Id.* at 825.
pollutants from a landfill that had leached into residential drinking water:

[We] hold that the cost of medical surveillance is a compensable item of damages where the proofs demonstrate, through reliable expert testimony predicated upon the significance and extent of exposure to chemicals, the toxicity of the chemicals, the seriousness of the diseases for which individuals are at risk, the relative increase in the chance of onset of disease in those exposed, and the value of early diagnosis, that such surveillance to monitor the effect of exposure to toxic chemicals is reasonable and necessary.\(^{296}\)

A number of courts followed suit, using the Ayers court’s factors to permit post-exposure, pre-symptom medical monitoring damages.\(^{297}\) The United States Supreme Court reached a different conclusion in a case arising under a federal statute. In *Metro-North Commuter Railroad Co. v. Buckley*,\(^{298}\) the Court construed the Federal Employers’ Liability Act (FELA) to require a showing of physical symptoms before medical monitoring costs can be awarded.\(^{299}\) The Court did not want to create “a new, full-blown, tort cause of action” for a variety of policy reasons, in particular to protect the interests of potential future plaintiffs not before the court.\(^{300}\)

Although *Buckley* is not binding on the states, a number of states have followed the Supreme Court’s lead, requiring a showing of physical injury before allowing a medical monitoring claim or a claim for emotional distress for increased risk to go forward.\(^{301}\) For

\(^{296}\) *Id.*


\(^{299}\) *Id.* at 440 (interpreting FELA, 45 U.S.C. §§ 51-50 (1997)).

\(^{300}\) *Id.* at 443. The Court found that mere exposure to a substance is insufficient, in light of concerns of a “‘flood’ of less important cases (potentially absorbing resources better left available to those more seriously harmed) and the systemic harms that can accompany ‘unlimited and unpredictable liability’ (for example, vast testing liability adversely affecting the allocation of scarce medical resources).” *Id.* at 442.

\(^{301}\) See, e.g., *Genereux v. Raytheon Co.*, 754 F.3d 51, 56 (1st Cir. 2014) (denying claim for medical monitoring for beryllium-related diseases because plaintiffs did not demonstrate subcellular change). The court distinguished risk and
states that require a showing of physical injury, some (but not all) states allow plaintiffs to satisfy the requirement by demonstrating asymptomatic subcellular changes to indicate exposure and increased risk of future disease.\(^{302}\)

Under either view—requiring physical symptoms or not—development of biomarkers of effect, both of concussive injury in general and CTE in particular, may make a medical monitoring claim more viable in the youth sports area. Like the plaintiffs in *Friends for All Children*, claimants can show exposure by physical impact. For those states that require physical symptoms stemming from exposure, the plaintiff may be able to demonstrate through biomarker evidence that these repeated blows resulted in objectively measurable concussive or even (asymptomatic) subconcussive harm and found that plaintiffs’ expert “disclaimed any ability to state that any one plaintiff . . . had already suffered harm (that is, subcellular or other physiological change).” *Id.*; Paz v. Brush Engineered Materials, Inc., 949 So. 2d 1, 5-6 (Miss. 2007) (rejecting claim “for mere exposure to a harmful substance without proof of current physical or emotional injury from that exposure”); Sinclair v. Merck & Co., 948 A.2d 587, 595-96 (N.J. 2008) (rejecting claim in pharmaceutical products case); Lowe v. Philip Morris USA, Inc., 183 P.3d 181, 187 (Or. 2008) (rejecting claim in absence of current physical injury). A subsequent Supreme Court case, *Norfolk & Western Railway Co. v. Ayers*, suggested that workers suffering from asbestosis, a non-malignant respiratory disease that arises from exposure to asbestos, would be sufficient to satisfy the physical injury requirement for latent injury claims. 538 U.S. 135, 148 (2003).

In *Donovan v. Philip Morris USA, Inc.*, the plaintiffs alleged that Marlboro cigarette smoke, with excessively high levels of carcinogen, caused physiological changes and lung tissue damage that led to significantly increased risk of lung cancer in the future. 914 N.E.2d 891, 895 (Mass. 2009). The Court recognized subcellular injury as a present physical injury. *Id.* at 898. The Court explained, “We must adapt to the growing recognition that exposure to toxic substances and radiation may cause substantial injury which should be compensable even if the full effects are not immediately apparent.” *Id.* at 901; see also Werlein v. United States, 746 F. Supp. 887, 901 (D. Minn. 1990), vacated in part on other grounds, 793 F. Supp. 898, 901 (D. Minn. 1992) (denying the defendant’s summary judgment because “[b]ased on the record before it, this Court cannot rule as a matter of law that plaintiffs’ alleged injuries are not ‘real’ simply because they are subcellular”). A federal district court, in approving the recent NFL settlement, refused to recognize a claim for subclinical injury compensation. *In re Nat’l Football Players’ Concussion Injury Litig.*, 307 F.R.D. 351, 409 (E.D. Pa. 2015). Although objectors to the settlement argued that retired football players should receive compensation for CTE before death, the district court denied the claim. *Id.* at 399. The court found that, even assuming a biomarker of abnormal tau protein during life will be available in the next decade, the presence of a marker alone does not indicate that the individual has or will develop symptoms of CTE. *Id.* at 402. (“The Settlement compensates symptoms that cause Retired Players to suffer, not the presence of abnormal tau protein (or any other irregular brain structure) alone.”).
Injuries. If biomarkers of CTE are developed, then that will strengthen the latent injury claims even more.

From a broader perspective, development of biomarkers will challenge what we mean by a showing of physical symptoms of disease connected to the exposure in latent injury claims. Professor Jamie Grodsky has argued, for example, that courts generally need to rethink the concept of “physical injury” as advances in genetic science make it easier to detect the consequences of toxic exposure before the manifestation of clinical symptoms of disease. The same challenge will be presented here.

Biomarker evidence will also be used to fulfill another element—demonstrating a significant increased risk of disease. Availability of this evidence could be a double-edged sword, however, making a latent injury claim even harder to prove if the biomarkers are not present in an exposed plaintiff. For example, in Sheridan v. NGK Metals Corp., plaintiffs claimed that exposure to beryllium dust and particulates increased their risk of developing chronic beryllium disease (CBD) and asked the court to establish a fund to have beryllium manufacturers and suppliers pay for the costs of medical surveillance. The Third Circuit upheld the lower court’s dismissal of the claim, holding that the plaintiffs failed to provide medical tests demonstrating that they had immunological markers showing a predisposition to developing CBD after exposure to beryllium. Comparing the case to a prior case (Pohl), the court explained:

Because the plaintiffs in Pohl were not beryllium sensitized and had not otherwise made a plausible showing that they faced a ‘significantly increased risk’ of developing CBD, the [Pohl court] held that these plaintiffs had failed to make a prima facie showing of their medical monitoring claim under [the increased risk test].

The injury threshold for CTE—the severity and number of injuries that is required to trigger brain changes that lead to CTE—is still not known. Not everyone who has been subjected to repetitive concussive injury develops CTE; other risk factors, such as genetic

303. See Grodsky, supra note 276, at 1712-14; Marchant, Genetics and Toxic Torts, supra note 113, at 950.
305. 609 F.3d 239 (3d Cir. 2010).
306. Id. at 247.
308. Sheridan, 609 F.3d at 248.
309. See Johnson, Partridge & Gilbert, supra note 212, at 16.
background, age, sex, or substance abuse, may come into play as causal factors. Like the court in Sheridan, a court may require a showing that the plaintiff has a detectable predisposition to develop a particular disease after exposure. We may reach agreement on general causation—that repeated blows to the head can lead to CTE. It may be still be difficult, however, to show specific causation—the specific, increased risk to the individual—without demonstrating that the individual has biomarkers to indicate individual susceptibility. Existing biomarkers for CTE may or may not address this individual increased risk; the detection of abnormal tau tangles in the living brain may not necessarily indicate the development in the future of CTE. Long-term longitudinal studies may be needed to demonstrate this higher risk among the “exposed” population.

Relatively, plaintiffs who seek damages for emotional harm will need to demonstrate that they have a genuine fear of developing the future disease, which is objectively reasonable. Although plaintiffs may be able to demonstrate the individual subjective fear through traditional proof, such as sleeplessness and other indications of anxiety, this may not be sufficient to meet the objective element of the claim. The objective criterion requires proof on the likely increased risk for an individual developing CTE. When biomarkers of CTE, in conjunction with epidemiological studies, enhance our knowledge of the increased risk, this may indicate the “reasonableness” of the fear of harm. In contrast, the absence of a biomarker may indicate that the fear is unreasonable and bar recovery for the emotional-harm claim.

The paramount challenge is to determine whether a biomarker is sufficiently predictive to qualify for any type of latent injury claim. In other words, we need to separate valid from speculative claims, dividing those who are “injured” from those who are merely

310. Id.
311. See Dobbs, supra note 210, at 535-36 (explaining general and specific causation).
313. See Potter v. Firestone Tire & Rubber Co., 863 P.2d 795, 811 (Cal. 1993) (requiring a showing of significant increased risk of contracting future injury to support an emotional harm claim).
at some “risk.” As science can get us closer to a more accurate predictive measure, the recognition of these claims should be commensurate. This approach would comport with the policy reasons behind the claims—to detect disease at an early stage and to allow for medical intervention to reduce or eliminate the impact of the disease, ultimately reducing overall health care costs, as well as to serve social policy.

Of course, the development of biomarkers to detect early signs of CTE does not address the effectiveness of early intervention. At this stage, medicine does not have a way to arrest the development of CTE, other than ceasing additional impacts. The lack of proven treatments challenges—at least partially—the objective behind awarding damages for post-exposure but pre-clinical symptom claims, since the plaintiff may not be able to demonstrate a need for special testing or medical intervention. Presumably, advances in discovering biomarkers will also spark development in subcellular interventions.

Even with these reservations, development of biomarkers of effect should serve to address the jurisprudential and practical concerns of the courts in this area. They should help identify who is likely to develop certain diseases among those exposed to risk. This will serve the values of deterrence as well as the utilitarian concern of adequate resources.

3. Causal Proof

In proving the causal element of a tort claim, plaintiff bears the burden of showing that an injury can be caused by defendant’s negligence (general causation) as well as showing that the defendant’s negligence did cause plaintiff’s harm (specific causation). This was an area of significant dispute in the settlement between players and the NFL. See In re Nat’l Football Players’ Concussion Injury Litig., 307 F.R.D. 351, 365-66, 396-423 (E.D. Pa. 2015).

While this Article does not address class action litigation per se, the advances in biomarker research should help to individualize claims rather than require remedies based on exposures and general averages.

Biomarkers of effect can provide powerful evidence of both elements of causation. The lack of such biomarkers can be used by the defendant to argue against causation.

314. This was an area of significant dispute in the settlement between players and the NFL. See In re Nat’l Football Players’ Concussion Injury Litig., 307 F.R.D. 351, 365-66, 396-423 (E.D. Pa. 2015).

315. While this Article does not address class action litigation per se, the advances in biomarker research should help to individualize claims rather than require remedies based on exposures and general averages.

316. DOBBS, supra note 210, at 535-36 (2000). Sometimes we do not need to separate out these two questions, since it is obvious that the action can and did cause the injury, such as a broken limb stemming from a car accident.
Proving causation of injury is a major hurdle in bringing a lawsuit to recover for concussive injuries. The first issue is whether the plaintiff has actually incurred a concussion. Using self-reported symptoms to show causation of concussive injury is naturally subject to attack as self-interested testimony. As an objective measure, biomarkers will help to demonstrate whether an actual concussive injury has occurred, leaving less room for challenge.

Next, plaintiffs must prove their symptoms were caused by an activity associated with the defendant. In the simple case of a concussion that immediately results from a single impact, the nexus between exposure and effect will be straightforward. However, proving causation of long-term injuries like CTE presents more difficult challenges. Most concussions do not result in long-term effects. For those concussions that do result in cognitive and other effects, these results may take a long time to manifest, which makes proof of causation and injury even more challenging. Long latency periods open the door to problems of multiple causal factors. Moreover, the passage of time between the initial “exposure” and the manifestation of the full-blown disease may erode the plaintiff’s ability to prove the amount and length of exposure to concussive injury. Furthermore, we do not yet know precisely the amount of repetitive concussive injuries required to produce CTE or how long CTE takes to manifest. The latency period for CTE is likely to vary from individual to individual. This indeterminacy adds to causal problems.

Development of biomarkers for CTE may address some of these challenges. It may turn out that CTE is a signature disease—only stemming from repetitive head trauma—with a signature

abnormal pattern of the tau protein. Even more significant, the development of biomarkers of CTE may allow plaintiffs to bring suit during their lifetimes, without having to wait for a definitive autopsy. Challenges will continue to exist, however, even with that development. The paramount question is whether the biomarker, which will likely be probabilistic and not determinative, is sufficiently predictive of the full-blown disease to qualify as proof of causation. In other words, testing to determine the presence of a specific protein does not yet tell us how likely it is that an individual will develop cognitive disorders because of exposure to head trauma. This evidence may need to be supplemented by traditional, population-based epidemiological studies that estimate exposure and risk of disease.

Defendants facing civil liability will use the absence of biomarkers to argue the lack of causal proof. This may create an even higher hurdle for plaintiffs in meeting their burden of proof. Further, as more biomarkers are identified, plaintiff’s burden on this element of their claim may only be increased.

Defendants may also use biomarkers of effect to argue alternative causation. Plaintiffs claiming that they acquired CTE through the negligent behavior of defendants will need to demonstrate that their symptoms stem from defendants’ activities. Defendants will argue that the symptoms stem from other diseases, like Alzheimer’s, which the plaintiff may have acquired anyway. Given that 20% of the population may develop Alzheimer’s, the absence of a biomarker of effect in that individual patient may buttress the defendants’ arguments. Furthermore, a plaintiff may have been serially exposed to head trauma—in youth, college, and professional sports, for example—and therefore, linking the plaintiff’s condition to any particular defendant could be problematic. Advances in biomarkers research may not resolve the causal indeterminacy problem presented in this context. This may be

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321. See, e.g., Fisher v. United States, 705 F. Supp. 2d 57, 67-68 (D. Mass. 2010) (discussing whether a seizure disorder could have been caused from prior football concussions or from another cause).


323. See Julie M. Stamm et al., Age at First Exposure to Football Is Associated with Altered Corpus Callosum White Matter Microstructure in Former Professional Football Players, 32 J. NEUROTRAUMA 1768, 1768 (finding a greater risk of brain-development alterations for players who played tackle football between the ages of ten and twelve than those who started playing later).
further complicated when a plaintiff’s own negligent conduct, such as failure to report symptoms of a concussion, may be a competing potential cause of his harm, as discussed below.

4. Defenses

Affirmative defenses such as assumption of risk and contributory fault, which can limit the duty of schools, sports teams, and leagues to participants, will also be affected by the development and implementation of biomarkers.324 The assumption-of-risk defense focuses on a participant’s subjective, individual awareness of the risk and the voluntary nature of consent to encounter that known risk.325

324. The classic defense of assumption of risk or informed consent in this context raises a host of questions about the validity of and power to consent, as well as absolving the sponsoring entity from liability. The underlying premise of the doctrine is that individuals have fully consented to incur a risk which they thoroughly comprehend. Dobbs, supra note 210, at 535-37. If the consent is valid, it will ordinarily relieve the defendant of the duty that may have otherwise existed. Id. at 541-43. This means that the consent may overcome duties like the duty to screen, inform, accommodate, or exclude. For example, although the NCAA requires testing for SCT, the athlete can waive the right to receive the results of the testing. Sickle Cell Trait, NCAA, http://www.ncaa.org/health-and-safety/medical-conditions/sickle-cell-trait (last visited Feb. 13, 2016). But there are public policy limits on consent. See Dobbs, supra note 210, at 542 (“Possibly . . . schools should not be allowed to condition a student’s participation rights on a general release of all liability for negligence.”). At the other extreme, courts generally view participation in interscholastic sports as a privilege rather than a legally protected right, so that a school can refuse to allow an athlete to play, even if the athlete or parent proffers a waiver. See, e.g., Farver v. Bd. of Educ., 40 F. Supp. 2d 323, 324 (D. Md. 1999) (noting the Due Process Clause does not protect a student’s interest in extracurricular activity participation, including sports); Peterson v. Indep. Sch. Dist., No. 811, 999 F. Supp. 665, 674 (D. Minn. 1998) (finding there is no protected interest in student’s extracurricular activities); Mancuso v. Mass. Interscholastic Athletic Ass’n, Inc., 900 N.E. 518, 527-28 (Mass. 2009) (finding no constitutionally protected right to participate in extracurricular athletics). Full comprehension of risks and voluntariness of consent raises a host of questions. For example, how well-known are the risks and the extent of the risks? Would the athlete need to know the nature and extent of the eventual harm, such as CTE, or is it sufficient that the player be willing to undergo risks of some brain injury, like a mild, temporary concussion? As knowledge of the science of concussions changes, how will the duty to warn affect informed consent? What if the student athlete wants to sign the waiver, but the parents do not, or the parents are divorced and disagree about consent? These questions will increase with the development of biomarkers and the expanded understanding of concussions as a spectrum of injury.

325. See Restatement (Second) of Torts § 496(C) (Am. Law Inst. 1965).
Defendants have traditionally been successful in asserting assumption of risk defenses in sports, including football.\textsuperscript{326}

Availability of biomarkers may affect the assertion of an assumption-of-risk defense. This is because these scientific developments will affect the knowledge of the parties involved with regard to the prevention, diagnosis, and treatment of concussive injury.\textsuperscript{327} Use of biomarkers will change the diagnostic process and remove much of the ambiguity surrounding “medical clearance” to play.\textsuperscript{328} A player’s subjective knowledge of injury may become more readily provable with the development and availability of biomarkers. A player who goes on the field despite that knowledge may be deemed to have subjectively and deliberately assumed the concussion risk. Similarly, use of biomarkers may help clarify the validity of the player’s consent, since neither the player nor the evaluator will need to rely solely on the player’s processing of his own symptoms.\textsuperscript{329} With more precise information will come a more informed consent to play.

At the same time, a significant question is whether the decision to participate can be truly autonomous, especially when the injuries themselves might impair the ability to consent in the future.\textsuperscript{330} Neurocognitive impairment may be delayed. This raises questions, in turn, about the extent to which participants understand the risks of acquired brain injury and the extent to which they can voluntarily


\textsuperscript{327} See MacGillivray, supra note 326, at 551 (noting that the “devastating long-term effects of concussions have become glaringly clear due to an explosion of scientific research and public attention” to lawsuits against sports leagues).

\textsuperscript{328} See cf. Joseph M. Hanna & Daniel Kain, NFL’s Shaky Concussion Policy Exposes the League to Potential Liability Headaches, 21 N.Y. ST. B. ASS’N ENT. ARTS SPORTS L.J., Fall/Winter 2010, at 33, 36 (2010) (explaining that the NFL could argue that plaintiffs were contributorily negligent “by (1) failing to report their concussive conditions to team doctors, and (2) returning to play before their concussion symptoms completely disappeared”).

\textsuperscript{329} See Alex Taylor, Neuropsychological Evaluation and Management of Sport-Related Concussion, 24 NEUROLOGY 717, 717 (2012) (citing evidence that suggests that “up to 90% of sports-related concussions may go undetected or unreported”).

\textsuperscript{330} See generally MacGillivray, supra note 326 (arguing that an athlete in a concussed state cannot validly assume the risk of continued play).
assume those risks. This issue is also plagued by questions of coercion and competing interests. Even if a player can knowingly and voluntarily assume the risk of a concussion, this does not speak to the awareness and knowledge of the heightened risk of a second concussive injury or the long-term effects of repetitive concussions and cognitive decline. Nor does it speak to the risk of subconcussive impacts that may have similar effects but do not present with observable concussive symptoms. In that case, the player is not aware of the risks presented, particularly of playing in a concussed state. These problems throw the player’s capacity to consent into question.

Furthermore, given the quickly changing developments of science in this area, it is unclear whether parents and students can ever validly consent to exposure to such an uncertain and changing risk. Would consent that is knowingly and voluntarily given still be binding when new risks come to light?

Similarly, if individuals are found to be susceptible to concussion, whether by biomarkers or because of previous injury, then this finding will pose the question whether the individuals (or their parents) can lawfully assume the risk of injury. This may depend on the degree of susceptibility the test indicates. Certain levels of susceptibility may always require exclusion from assumption of risk and participation. These questions are explored below.

B. Legal Implications of Biomarkers of Susceptibility

Development of biomarkers of susceptibility will help distinguish individuals more susceptible to concussive injury than the general population. Biomarkers of susceptibility are subject to the same constraints as biomarkers of effect: They are likely to be probabilistic rather than determinative, so there are unlikely to be bright-line demarcations between affected and non-affected, and susceptible and non-susceptible, individuals. A further complication is that susceptibility may be affected by various circumstances such

331. See Benitez v. N.Y. City Bd. of Educ., 541 N.E.2d 29, 33 (N.Y. 1989) (“Though the risk is foreseen, an assurance of safety generally implicit in the supervisor’s direction supplants the plaintiff’s assumption of the risk by requiring action despite prudent cautionary concerns.”).

332. See McAllister et al., supra note 78, at 66.
Biomarkers, Concussions, and the Duty of Care

as the number and type of concussive injuries suffered, gender, age, or even ethnic background, or a combination of these factors.\textsuperscript{333}

Notwithstanding these variables, recent findings suggest that biomarkers of susceptibility are likely to be identified in the near future, as discussed above. In particular, the presence of the genetic variant APO c4 may be an important biomarker for susceptibility to concussions.\textsuperscript{334} In addition, concussion susceptibility is present in those who have previously suffered brain injuries.\textsuperscript{335} With the growing capability to determine concussion susceptibility based on biomarkers, we can anticipate a commensurate impact on the legal landscape.

1. Duty to Screen for, Warn, and Potentially Exclude from Activities Individuals with Increased Concussion Risk

Whether a duty to screen players for susceptibility to concussive injury exists involves implementation of the classic cost–benefit analysis in tort law: The likelihood of injury must be high enough and the risk severe enough that that the “costs” of the potential injury outweigh the cost of screening.\textsuperscript{336}

While it is not yet established whether the c4 allele actually increases susceptibility to TBI and CTE,\textsuperscript{337} this Article assumes that it does to demonstrate the complexity of this analysis. The frequency of the c4 allele is approximately 14% in the general population.\textsuperscript{338}

\textsuperscript{334} See supra Subsection I.C.3.
\textsuperscript{335} See supra note 80 and accompanying text.
\textsuperscript{336} See United States v. Carroll Towing Co., 159 F.2d 169, 173 (2d Cir. 1947) (discussing the “Learned Hand formula” of duty; balancing the magnitude of the loss if an accident occurs, the probability of the accident’s occurring, and the burden of taking precautions that would avoid it).
\textsuperscript{337} See supra Subsection I.C.3.
\textsuperscript{338} Alzgene - Meta-Analysis of All Published Ad Association Studies (Case-Control Only) APOE E2/3/4, ALZFORUM, http://www.alzgene.org/meta.asp?geneID=83 (last updated Jan. 29, 2010); Nader Ghebranious et al., Detection of ApoE E2, E3 and E4 Alleles Using MALDI-TOF Mass Spectrometry and the Homogeneous Mass-Extend Technology, 33 NUCLEIC ACIDS RES. e149, e149 (2005) [hereinafter Alzgene Meta Analysis]. The allele frequency is the percentage of a particular allele among all chromosomes. Allele Frequency, SCIENCE DAILY, http://www.sciencedaily.com/terms/allele_frequency.htm (last visited Feb. 13, 2016). In this case, 14% of chromosomes in the general population contain the APO c4 allele, as opposed to carrying the c2 or c3. Alzgene Meta Analysis, supra, at e149.
The homozygous c4 genotype is found in approximately 2% of the population. These data show that the c4 allele is relatively rare and the c4 genotype is only found among a small percentage of the population, suggesting a lower percentage of the population is at risk. Severity of injury must be taken into account as well, however, which could be substantial in the concussive injury area.

An analogous precedent of this analysis is the obligation of the NCAA football teams, pursuant to a settlement agreement in litigation brought by the family of a deceased college football player, to genetically screen their players for sickle cell trait (SCT). Carriers of SCT may be at an increased risk for serious harm from strenuous activity. SCT affects approximately 1.3% of the population and 8.3% of African Americans in the United States. As 34% of college football players are African Americans, it could then be estimated that approximately 3% of college football players have SCT. While this is a small percentage of the overall population and also football players, the risk is significant enough that the NCAA has adopted program-wide screening for SCT for all contact sports. Researchers have estimated that one death would be prevented within four years of implementing the program and that seven would be saved in ten years, with the cost of implementation estimated to be between $1,441,810 and $2,883,620 (based on estimating the cost of testing for SCT to be between $10 and $20) over the course of 1972-2015:1911.

339. Alzgene Meta Analysis, supra note 338, at e149. As previously noted in the Article, the c4 genotype has been found to correlate to an even higher risk of TBI and CTE than a single copy of the c4 allele. See supra notes 193-207 and accompanying text.


341. See Beth A. Tarini, Margaret Alison Brooks & David G. Bundy, A Policy Impact Analysis of the Mandatory NCAA Sickle Cell Trait Screening Program, 47 HEALTH SERVS. RES. 446, 454-55 (2012) (explaining that “[t]he relationship between exercise-related death and SCT has long been debated,” although case reports “suggest a compelling pattern”).


343. Id. at 341.


345. Tarini, Brooks & Bundy, supra note 341, at 453.
four years. This is in comparison to the cost of determining one’s APOE genotype, which is available commercially as an Alzheimer’s susceptibility test for $150 per test. While this cost could be lowered by large-scale purchasing, it may still be significantly higher than the cost of SCT screening.

The duty to screen may vary depending on the sport involved, since concussion injury is more common in certain high-risk sports than others. Furthermore, screening may require more than testing for the presence of biomarkers of susceptibility, since susceptibility to concussive injury also increases with further head injuries. Screening for both medical history and biomarkers could more effectively narrow the list of players where action may be taken.

Even assuming the development of biomarkers of susceptibility to concussive injury will engender a duty on school and sports organizations to screen athletes for susceptibility, questions remain about when to screen and what to do with this information. At one extreme, conducting screening may implicate a duty to exclude from play those individuals with susceptibility biomarkers. Short of exclusion, the activity sponsors may have a duty to warn those individuals of increased risk, monitor them more closely throughout the season, provide accommodations, and implement additional preventative measures to avoid concussion.

346. Id. at 451, 453.
351. The SCT provides a relevant precedent here too. The University of California at Berkeley football team offered SCT screening to its players, and player Ted Agu tested positive for the sickle cell trait. Nanette Asimov, Cal Football
depend on whether effective intervention measures are available and cost-effective.

Another approach to susceptibility, and one commonly followed, is universal warnings and intervention, rather than universal screening and exclusion or accommodation. In other words, whatever warnings and accommodations are administered to reduce the likelihood of concussion during play (such as changing rules of play or requiring certain equipment) could be applied across the board to all players. In general, information on individual susceptibility will allow policy makers, as well as schools and other sports sponsors, to make concussive risk management decisions based on the probability of injury.

2. Balancing the Duty to Screen and Warn Against Privacy Interests

Screening for biomarkers of susceptibility will raise confidentiality and privacy concerns regarding a patient’s health information similar to those raised with the development of new technologies and medical tests, such as functional magnetic resonance imaging (fMRI) or genetic testing. The entity performing or ordering the screening for susceptibility will likely be held to a duty to warn the susceptible individual of an increased risk, and this may include disclosure to third parties, such as the

Player Ted Agu’s Family Files Suit against UC, SFGATE (Aug. 6, 2014), http://www.sfgate.com/collegesports/article/Family-sues-UC-over-Cal-football-player-s-death-5670060.php. During an intense practice session, Agu died from his sickle cell condition, and his family has sued the team for its failure to take appropriate action to protect the susceptible player. Id.

352. See Tarini, Brooks & Bundy, supra note 341, at 457-58 (concluding that universal SCT screening will identify a substantial number of sickle cell carriers). It is unclear whether screening is a necessary step to prevent exercise-related sudden death in student-athletes, and successful intervention measures are needed as well. Id.


individual’s parents, coach, or employer.\textsuperscript{355} Releasing that information to others may conflict with the privacy interests of the susceptible individual in his medical information.\textsuperscript{356} At the same time, the results may have important implications for family members and others, and the issue arises whether those individuals have a right to that information as well.

One important question is whether this information requires special or heightened privacy protections.\textsuperscript{357} This argument has been made regarding neuroimaging data and genetic testing in general.\textsuperscript{358} Like genetic testing, biomarkers of susceptibility will be newer and more complex than other medical tests and therefore will require careful consideration of privacy concerns associated with it. A significant issue is whether this information is likely to carry a stigma, so that other policy reasons may dictate that it is important to control access to this health information.\textsuperscript{359}

A number of third parties, like parents, employers, coaches, and insurers, will likely have a countervailing interest in obtaining the results of susceptibility testing. Generally, the Department of Health and Human Services (HHS) regulates information privacy through its Privacy Rule,\textsuperscript{360} but this only applies to “covered

\textsuperscript{355} See Stanley v. McCarver, 92 P.3d 849, 856 (Ariz. 2004) (holding that a doctor performing a screening test owed a duty of care to the patient even in the absence of a doctor–patient relationship because he was in a unique position to prevent future harm).


\textsuperscript{357} For example, HIV and AIDS test results have been treated with “exceptionalism” with regard to confidentiality and privacy. See, e.g., 35 PA. STAT. AND CONS. STAT. ANN. § 7607(a) (West 2015) (making it unlawful for persons in control of HIV-related information to disclose or be compelled to disclose such information except in limited circumstances); Joyce J. Shin, Comment, Closing the Gap: Protecting Predictive Neuroscience Information from Health Insurance Discrimination, 64 EMORY L.J. 1433, 1435-36 (2015). Other health-related records receive special protection as well. See, e.g., 42 U.S.C. § 290dd-2(a) (2012) (specifying that records maintained in relation to substance abuse research, rehabilitation, or programs should remain confidential); 50 PA. STAT. AND CONS. STAT. ANN. § 7111 (discussing privacy of mental health records).

\textsuperscript{358} Tovino, supra note 354, at 416.

\textsuperscript{359} In reaction to the stigma attached to seeking help for substance abuse issues, for example, Congress enacted confidentiality regulations relating specifically to substance abuse patient records. 42 U.S.C. § 290dd-2(a); Emily Shrift, Subpoenas of Substance Abuse Patients Records, 39 MD. B.J. 49, 49 (2006).

\textsuperscript{360} 45 C.F.R. § 164.500 (West 2015).
entities,” such as physicians, hospitals, and health insurers. This leaves employers, leagues, courts, educational institutions, and others without many regulations and with strong potential interests in obtaining private medical information. The Genetic Information Nondiscrimination Act (GINA) prohibits employers and health insurers from accessing or utilizing genetic information, but it does not apply to other entities, such as life and disability insurers and schools, and does not apply to non-genetic information, such as brain scans.

The use of concussion biomarkers in litigation could present some significant privacy concerns. In some cases, plaintiffs may seek to use their own biomarker data to make their case, but in other cases, the defendant may seek to discover sensitive biomarker data from the plaintiff. If the plaintiff objects, a judge must decide whether the defendant can gain access to the biomarker data under Rule 35. Because the plaintiff has put his or her health at issue, and given that plaintiffs may use the biomarker data themselves if the results favored their arguments, the court will likely allow the defendants to discover the plaintiffs’ biomarker data if there has been a basic showing of likely relevance.

This compelled disclosure of biomarker status could have adverse consequences for the plaintiff. For example, APOE status not only discloses concussion risk, but also indicates risk of

361. 45 C.F.R. §§ 162.1101-1802, 164.104(a) (West 2015); see also Tovino, supra note 354, at 448.

362. Tovino, supra note 354, at 449. The Privacy Rule also contains many exceptions allowing health care providers to use or disclose health information for law enforcement purposes, adjudicative proceedings, disease prevention and control, and even to prevent serious threats to the health and safety of the public or an individual person. 45 C.F.R. § 164.512 (West 2015).


364. Some states have adopted their own privacy laws that go beyond the federal protections. See generally Tovino, supra note 354, at 457. For example, Arizona and California prohibit life and disability insurers from requesting genetic information from their clients. ARIZ. REV. STAT. § 20-448.02 (2015); CAL. INS. CODE § 10143(a) (West 2015).

365. Fed. R. Civ. P. 35 (authorizing courts to order physical and mental examination of party where that condition is in controversy).

366. See Favale v. Roman Catholic Diocese of Bridgeport, 235 F.R.D. 553, 555, 558 (D. Conn. 2006) (compelling examination when condition of party is in controversy and there is good cause for ordering an examination).
developing Alzheimer’s disease, something plaintiffs may not want to know about themselves and almost certainly would not want others to know. A college-level player hoping to be drafted may not want professional teams to learn that he has a susceptibility to concussions, as it may diminish his chances of being drafted. These privacy and disclosure issues are likely to create delicate situations for litigants, attorneys and judges.

3. Comparative Fault Implications

Susceptibility information will raise unique comparative fault questions. Typically, once liability is determined, damages in a tort lawsuit are based on restoring plaintiffs back to their prior position before the defendant breached his or her duty of due care to them. This rule applies to harms that are foreseeable, but in applying the foreseeability test, courts distinguish between the nature of a harm and its extent. Under the eggshell skull common law rule, courts hold that negligent actors take plaintiffs as they find them, even if the extent of injury is not foreseeable. Under that rule, the award of damages does not take into account whether the plaintiff is more susceptible to injury, even if the defendant had no reason to know of the plaintiff’s susceptibility.

Even under this doctrine, however, the question remains whether a susceptible individual has the same right to recovery as a non-susceptible individual, or whether the injured party’s compensation should be reduced based on comparative fault or assumption of risk. In any event, measuring harm from concussive

367. Baugh et al., supra note 91, at 249.
368. A professional sports team likely has an employer-employee relationship with its players, and so it could not require genetic testing of players under GINA. However, such information could be publicly released if disclosed during a court case or through testing by a college team, which likely is not considered an employer under GINA. While a protective order may be available to help protect the information disclosed in judicial proceedings, there will remain some risk of disclosure.
369. See generally Dobbs, supra note 210, at 1047-53.
370. Id. at 464-66.
371. Id. at 464.
372. Id. at 464-65.
373. Id.
374. See, e.g., Marchant, Genetic Susceptibility, supra note 278, at 79, 88 (discussing the “thin skull” doctrine and susceptibility versus non-susceptibility in the context of toxic injury litigation as well as the possibility of an assumption of risk defense).
injury is difficult when the long-term consequences of concussion remain uncertain and yet can be so severe.

Alternatively, a defendant may potentially assert the idiosyncratic response defense when an individual’s susceptibility to concussion is rare and unpredictable. The defense would be that the defendant cannot be held liable for an injury resulting from the plaintiff’s unusual susceptibility that a substantial portion of the population does not share. This defense has been applied in products liability actions. Defendants in toxic tort litigation have

375. See Marchant, Genetics and Toxic Torts, supra note 113, at 960-61 (describing defense in products liability cases).
376. There are two early cases recognizing the defense. Griggs v. Comb, Inc., 456 So. 2d 790, 790-93 (Ala. 1984) (noting that the manufacturer “could not have known ‘by the application of reasonable, developed human skill and foresight’” that its product could cause the type of injury suffered by the plaintiff; the product was not defective when the plaintiff suffered an allergic reaction to benzocaine, the active ingredient in a topical analgesic); Bennett v. Pilot Prods. Co., 235 P.2d 525, 527 (Utah 1951) (dismissing plaintiff’s action against beautician for applying a hair cold wave solution containing ammonium thioglycolate, which caused blistering and inflammation, reasoning that the court “cannot require the merchant to assume the role of absolute insurer against physiological idiosyncrasy”).
377. See Mather v. L’Oreal USA, Inc. 695 S.E.2d 693, 693-95 (Ga. Ct. App. 2010) (addressing a self-tanning lotion that caused pus-filled abscesses; noting that L’Oreal did not know that the product could cause such a reaction since its active ingredient, hydroxyacetone, was commonly used and accepted in dermatology as safe, and the manufacturer did not receive similar complaints during testing; summary judgment for manufacturer affirmed); see generally David G. Owen, Products Liability Law § 9.4 (2015); Thomson Reuters, American Law of Products Liability § 32:52 (3d ed. 2015).

The idiosyncratic plaintiff defense originates in the Restatement (Second) of Torts, which states that a manufacturer has duty to warn of an allergic reaction to an ingredient where a “substantial number of the population are allergic” to the ingredient, and “the ingredient is one whose danger is not generally known, or if known is one which the consumer would reasonably not expect to find in the product.” See Restatement (Second) of Torts § 402A cmt. j (Am. L. Inst. 1977). The Restatement (Third) of Torts maintains the defense. It recognizes that “virtually any tangible product can contain an ingredient to which some persons may be allergic,” and thus,

The general rule in cases involving allergic reactions is that a warning is required when the harm-causing ingredient is one to which a substantial number of persons are allergic. The degree of substantive liability is not precisely quantifiable. Clearly the plaintiff in most cases must show that the allergic predisposition is not unique to the plaintiff. In determining whether the plaintiff has carried the burden in this regard, however, the court may properly consider the severity of the plaintiff’s harm. The more severe the harm, the more justified is a conclusion that the number of persons at risk need not be large to be considered “substantial” so as to require a warning.
argued successfully that they are not liable for harm from products that affect only genetically hyper-susceptible individuals. The difficulty in applying this defense is determining what responses are considered idiosyncratic and the applicable percentage cutoff.

CONCLUSION

This is a transformative moment in society with regard to concussive injury. We are confronted with a public health crisis: Substantial risks of concussive injury already inhere in a variety of settings, ranging from sports injury, transportation accidents, military combat service, workplace injuries, falls, and domestic relations. The lack of objective tests for diagnosis, prognosis, and tracking of concussions, as well as the inability to measure individual susceptibility and response to concussions, is impeding effective policies for preventing and allocating responsibility for this concussion crisis. Yet the explosion of research to meet this public health crisis is leading to the identification of biomarkers that tell us who is more likely than not to be susceptible to harm and the extent of harm they may have already suffered. These developments have dramatic implications for the distribution of loss in terms of fault allocation, duty, and causation.

Arriving at this inflection point demands that we reexamine how we apply basic tort doctrine to concussive injury cases and

Restatement (Third) of Torts § 2 cmt. k (Am. L. Inst. 2012).

378. See Marchant, Genetics and Toxic Torts, supra note 113, at 961 (The “defense represents a policy judgment that a non-negligent manufacturer should not be held liable for producing a product that is beneficial and harmless to most persons, even if it may injure a small number of unusually susceptible individuals.”). See generally Marchant, Genetic Susceptibility, supra note 278, at 80-84.

379. Although it is beyond the scope of this Article, availability of this defense will have implications for products manufacturers of equipment in sports, such as helmet manufacturers. Manufacturers are held to a duty of producing a non-defective product, which includes a duty to adequately test their products, as well as to warn of the limitations of the safety of the product. See generally Restatement (Third) of Products Liability § 2 (1998) (describing three types of product defects). Manufacturers may also have a duty to test their products on individuals with different genetic susceptibilities. Manufacturers may be charged with providing a warning to an identifiable subgroup of susceptible individuals, especially if the individuals constitute a significant proportion of the product users. See Marchant, Genetic Susceptibility, supra note 278, at 79, 88 (discussing the “thin skull” doctrine and susceptibility versus non-susceptibility in the context of toxic injury litigation as well as the possibility of an assumption of risk defense). This would assume that the susceptible individuals have access to information that would identify their susceptibility.
make broad social policy decisions as well. Recall the examples in
the Introduction. We need to reexamine whether athletes like Curtis
Parker should reasonably expect his coach to be able to determine
accurately whether he suffers from concussive injury. We also need
to reconsider the implications of long-term damage. Should an
athlete like Chris Benoit be entitled to a latent injury claim, such as
medical monitoring, to address his increased risk of CTE? Could
either Curtis Parker or Chris Benoit have made an informed choice to
confront the risks of concussive injury in sport? And do players like
Chris Borland have an obligation to be tested for susceptibility to
concussive injury? In general, we need to confront whether the
availability of biomarkers of effect and susceptibility should limit the
players’ recovery in tort, or whether the primary responsibility for
this population should be placed on the gatekeepers of the athletic
field, such as athletic trainers, coaches, and schools.

The biggest challenge in this area has always been one of
imperfect scientific information, but we are on the cusp of making
the unobservable observable.\textsuperscript{380} Scientific advances likely will bring
further recognition of diseased states of concussive brain injury,
which will dramatically alter what we mean by injury, risk, as well
as causation in tort suits involving concussive injury. These elements
may lose their sharp definitions as we are able to trace back earlier
into what we think of as a diseased state. Proof of biomarkers of
effect should shed light on causal issues in tort lawsuits, as well as
duties, and may help to substantiate latent injury claims through the
ability to examine long-term effects and injuries. Development of
these biomarkers will shift legal responsibilities in the diagnosis and
management of youth sports-related mTBIs to those most directly
involved in the player’s participation, including trainers, schools,
parents, and the players themselves.

Biomarkers of susceptibility will identify a vulnerable
population. This development will modify responsibilities in the duty
to mitigate risks, the duty to monitor players in the short term as well
as the long term, the duty to exclude or provide accommodations, the
duty to inform, as well as the ability of players to consent to risks of
head trauma. Practical concerns will also influence these
responsibilities through application of the classic cost–benefit

\textsuperscript{380} See cf. Daniel A. Farber, \textit{Toxic Causation}, 71 \textit{Minn. L. Rev.} 1219,
1247 (1987) (“The only real difference between the automobile case and the toxics
case is that better information is available about the events in the automobile case
whereas the relevant biological events in the toxics case are unobservable.”).
analysis that permeates tort law and public policy decisions. As the availability of biomarkers increase and their costs decrease, their use will become standard in concussive injury management. At the same time, increasing reliance on biomarkers will raise concerns relating to privacy and confidentiality.

Ultimately, development of biomarkers should lead to a more accurate and just result in litigation surrounding concussive injury. At the same time, courts will be challenged to deal with the data presented in appropriate ways, since the data will be presented in ranges, and will likely not be determinative but rather probabilistic. Furthermore, these data may be complicated by other factors, such as gender, ethnicity, and age. Moreover, because use of this data may be unduly persuasive, courts will need to evaluate the information presented carefully in their role as gatekeepers of admissibility of scientific evidence. Finally, concussion biomarkers are likely to raise difficult privacy issues, which courts will need to address on a case-by-case approach given the lack of applicability of most federal medical privacy laws to the litigation context.

Identification of biomarkers will also have an impact on the normative questions generated by activities that involve the risk of repetitive head trauma. Safety is a relative term. As we increase our understanding of the risks involved, society will confront on a more informed basis what risks are acceptable and for whom. Development of biomarkers may confirm that the risk of mTBIs or the associated risks of CTE changes depending on the age or gender of the individual or other factors. This will make us confront questions as fundamental as whether parents, coaches, schools, and others owe a duty to restrict children from the playing field.
The Epidemiology and Impact of Traumatic Brain Injury
A Brief Overview

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Traumatic brain injury (TBI) is an important public health problem in the United States and worldwide. The estimated 5.3 million Americans living with TBI-related disability face numerous challenges in their efforts to return to a full and productive life. This article presents an overview of the epidemiology and impact of TBI. Key words: closed head injury, craniocerebral trauma, epidemiology, traumatic brain injury

Traumatic brain injury (TBI) is an important global public health problem. At least 10 million TBIs serious enough to result in death or hospitalization occur annually. An estimated 57 million people worldwide have been hospitalized with one or more TBIs, but the proportion living with TBI-related disability is not known.

In the United States, an average of 1.4 million TBIs occur each year, including 1.1 million emergency department visits, 235,000 hospitalizations, and 50,000 deaths (Fig 1). However, routinely reported US national data underestimate the true burden of TBI for several reasons. First, they do not include persons treated for TBI in other settings. A recent study suggests that an additional 200,000 Americans with TBI are treated each year in hospital outpatient settings or physicians’ offices. Second, TBIs treated in military facilities both in the United States and abroad are not included. Finally, the number of persons who receive medical care but the TBI is not diagnosed, or who sustain a TBI but do not seek care, is not known.

Overall, males are about twice as likely as females to experience a TBI. For emergency department visits, hospitalizations, and deaths combined, children aged 0 to 4 years and older adolescents aged 15 to 19 years are more likely to sustain a TBI than persons in other age groups. For hospitalizations only, adults aged 75 years or older have the highest incidence of TBI.

Traumatic brain injury is an increasing concern among certain groups. On the basis of studies of convenience samples, as many as 87% of persons incarcerated in prison or jail report a history of head injury, including TBI. Military personnel serving in Iraq and Afghanistan and rescue workers and victims of terrorism-related attacks are also at risk of sustaining a TBI.

The leading causes of TBI are falls, motor vehicle crashes, struck by or against events, and assaults, respectively (Fig 2). Blasts are a leading cause of TBI among active duty military personnel in war zones.

Sports and recreation activities are also a major cause of TBI, including concussions, and are severely underestimated using existing national data sets. Although a previous
Centers for Disease Control and Prevention study estimated that approximately 300,000 such injuries occur each year,\textsuperscript{12} it included only TBIs for which the person reported a loss of consciousness. Other studies suggest that injuries involving loss of consciousness may account only for between 8\%\textsuperscript{13} and 19.2\%\textsuperscript{14} of sports-related TBIs. Taking this into account, a more accurate approximation may be that 1.6 million to 3.8 million sports-related TBIs occur each year, including those for which no medical care is sought. This estimate might still be low because many of these injuries go unrecognized and thus uncounted.

Traumatic brain injury can result in long-term or lifelong physical, cognitive, behavioral, and emotional consequences.\textsuperscript{15} Even mild TBI, including concussion, can cause long-term cognitive problems that affect a person’s ability to perform daily activities and to return to work.\textsuperscript{16–18} As a result of these consequences, TBI is one of the most disabling injuries. Although similar to that for several other types of injuries, the percentage (15.7\%) of injury-related productivity loss attributed to TBI is 14 times that associated with spinal cord injury,\textsuperscript{3} another important disabling condition. At least 5.3 million Americans, approximately 2\% of the US population, are living with long-term or lifelong disability associated with a TBI that resulted in hospitalization.\textsuperscript{19} Because the prevalence of disability associated with TBIs treated in other healthcare settings and those that are not treated is not known, the true number of persons living with TBI-related disability likely is much higher.

In addition to disability, TBI can lead to increased risk for other health conditions. Results from a recent population-based study indicate that from 1 to 3 years postinjury, compared with the general population, people with TBI are 1.8 times as likely to report binge drinking,\textsuperscript{20} 11 times as likely to develop epilepsy (P. L. Ferguson, written communication, February 2006), and 7.5 times as likely to die.\textsuperscript{21} Furthermore, new health problems associated with TBI may also arise in conjunction with the aging process. These include a 1.5 times increased risk of depression,\textsuperscript{22} and a 2.3 and 4.5 times increased risk of Alzheimer’s disease associated with moderate and severe head injury, respectively.\textsuperscript{23} Future studies are needed to further quantify the increased risk of health problems, both short- and long-term after TBI, and their relationship to aging.

To facilitate recovery, minimize the adverse outcomes of TBI, and promote overall health, timely and appropriate access to both medical care and nonmedical services are critical.\textsuperscript{24} According to the Surgeon General’s Call to Action to Improve the Health and Wellness of Persons With Disabilities,\textsuperscript{25} all persons with
disabilities must have “accessible, available, and appropriate healthcare and wellness promotion services [to ensure that] they have a full life in the community.” Although we estimate that 1 in 10 (5.3 million)\textsuperscript{19} of the 54 million Americans with disabilities\textsuperscript{25} have a disability related to TBI, little is known about the difficulties obtaining appropriate healthcare among persons with TBI compared with other disabilities.\textsuperscript{25,26} However, anecdotal reports and the limited research to date suggest that the “invisible disability” that persons with cognitive but not obvious physical problems experience poses unique problems for persons with TBI in accessing health services and maintaining a healthy lifestyle.\textsuperscript{26,27} Other barriers include lack of medical insurance\textsuperscript{28} and the limited awareness of TBI among some healthcare providers.\textsuperscript{27}

Until these and other challenges are met, TBI will continue to exact an enormous toll. The lifetime costs of TBI in the United States, including medical costs and lost productivity, total an estimated $60 billion annually.\textsuperscript{3} This does not begin to address the indirect impact on friends, families, and caregivers and the community. The medical, public health, and brain injury communities must work together to prevent TBI and to ensure a healthier future for persons with TBI.

REFERENCES

subjective complaints and return to employment. *


