Behavioral Biology: The Impact of Neuroimaging and Brain Dysfunction on the Sentencing of Sexual Offenders

I. INTRODUCTION

It is daunting to think that one’s predilections, impulses, and behaviors are the result of uncontrollable levels of hormones or neurological imperfections. Society often finds comfort in the notion that individuals are in complete control of their thoughts and actions. American jurisprudence reflects the notion of free will by fashioning its laws according to intent and personal accountability. However, substantial empirical evidence regarding the effects of neurobiology on human behavior suggests that individuals may not always be in control of their aggressive or sexual propensities.

The dramatic effects of abnormalities to the brain on behavior came to light in the 1848 case of Phineas Gage, where it was discovered that frontal lobe damage causes an emotional blunting. One hundred fifty years later, neuroimaging was introduced into the American courtroom to demonstrate the intimate relationship between the brain and criminal behavior. At John Hinckley’s trial for the attempted assassination of former President Ronald Reagan in 1981, the court allowed the defense to introduce, for the first time, Computerized Axial Tomography (CAT) scan images of the defendant’s brain to show abnormal brain shrinkage.

6. Id. at 244. The CAT scan was presented by a psychiatrist during Hinckley’s trial.
Since then, neuroimages of a defendant’s brain have been offered as evidence in both the civil and criminal contexts. Most frequently, neuroimages are presented by the defense in criminal trials to negate the mens rea of the crime, to support an insanity defense, or to serve as a mitigating factor during sentencing. The success of neuroimaging evidence is derived from its use in capital murder trials by defense attorneys who seek to provide an underlying cause for their clients’ aberrant behavior. Due to lesions in the brain, criminal defendants have been found to exhibit higher levels of aggression and impulsiveness. Empirical evidence has also shown that damage to the anterior and frontal cortices was more pronounced in violent criminals.

in order to demonstrate that the images of Hinckley’s brain mimicked that of schizophrenic brains. Bettyann Holtzmann Keles, Naked to the Bone: Medical Imaging in the Twentieth Century 170 (1998). Hinckley was declared not guilty by reason of insanity and was civilly confined. Id.


9. Id. at 1293.


11. Adrian Raine & Monte S. Buchsbaum, Violence, Brain-Imaging, and Neuropsychology, in DAVID M. STOFF & ROBERT B. CAIRNS, AGGRESSION AND VIOLENCE: GENETIC, NEUROBIOLOGICAL, AND BIOSOCIAL PERSPECTIVES 195, 208-10 (1996), available at http://www-rcf.usc.edu/~raine/ViolenceBrainImaging.pdf; Orrin Devinsky, Contributions of Anterior Cingulate Cortex to Behaviour, 118 BRAIN: J. NEUROLOGY 279, 279-306 (1995). The anterior cortex has been found to play a crucial role in conditioned emotional learning, emotional response to internal and external stimuli, affective and social behavior, initiation, motivation, and goal-directed behaviors. Id. at 279. Studies have shown that damage to the anterior cortex has resulted in impaired consciousness, altered affective states and expression, psychopathic or sociopathic behaviors, and aberrant social behavior. Id. at 279, 291; Earl K. Miller, An Integrative Theory of Prefrontal Cortex Function, 24 ANN. REV. NEUROSCIENCE 167, 167-73 (2001). The frontal cortex has also been found to be critically involved with cognitive control, behavior guided by internal goals, response to internal and external stimuli, and emotional evaluation. Id. at 168. Prefrontal cortex dysfunction in humans has led to impulsive, inappropriate, or disorganized behavior. Id. at 173; R.J.R. Blair, The Roles of Orbital Frontal Cortex in the Modulation of Antisocial Behavior, 55 BRAIN & COGNITION 198, 198, 201-02 (2004). More specifically, the orbital frontal cortex has been found to be involved in antisocial behavior and in the regulation of reactive aggression and moral socialization. Id.
Although courts have found neurological explanations for psychopathy useful in serving as a mitigating factor in capital murder cases, the use of neuroimaging in aggravated sexual assault cases is virtually nonexistent. Considering that specific acts of sexual behavior are controlled by particular areas of the brain, namely the amygdala and frontal, parietal, and temporal lobes, the probative value of neuroimaging in sexual offense cases is similarly worthwhile. Statutes mandating harsher penalties for child sex offenders and the number of states that have imposed mandatory life sentences for repeat offenders of aggravated sexual assault or aggravated child molestation evidences society's growing intolerance of aggravated sexual offenders. Accordingly, defendants have a strong interest in using neuroimaging as a mitigating factor in sentencing. Courts may also find neuroimaging beneficial in weighing the treatment options of a neurologically disturbed sexual offender against the current sentencing guidelines of highly dangerous sexual offenders: the level of violence exhibited by the offender's act and the likelihood of the sexual offender to commit the offense again.

Behavioral biology should not be a remote scientific theory with no functional role in the legal arena. Individuals are not solely influenced by social constructs but are also the products of biological processes. Thus, the interplay between biology and the law is essential to aiding lawmakers and law-interpreters in effectively understanding and treating neurologically disturbed sexual offenders. Each year, up to two million Americans suffer a traumatic brain injury, which may cause physical impairment and problems with cognition, emotion, and behavior. In addition, over 30% of individuals suffering severe traumatic brain injury are afflicted in the frontal lobes, temporal lobes, and brain stem. Considering between 200,000 and 300,000 U.S. inmates suffer from some type of mental illness, it would be beneficial to examine the deleterious effect of a defendant's mental illness on his behavior before he is incarcerated.
Part II of this Note examines empirical studies on the effects of brain lesions on the personalities and behaviors of individuals. Part III discusses the development and benefits of neuroimaging in the courtroom. Part IV addresses the legal ramifications of allowing neuroimaging and expert testimony of its results in repeat offender, aggravated sexual assault cases. An analysis of the admission of expert testimony regarding the defendant’s brain damage and mental state will help determine whether it will serve as a useful tool in determining the defendant’s propensity for aggression and likelihood for sexual recidivism. Lastly, this Note addresses the use of expert testimony regarding the defendant’s mental state as a potential defense or mitigating factor in sentencing. The admission of neuroimaging in sexual offense cases will assist defendants by providing a potential alternative defense and will assist the court with determining the placement and sentencing of highly dangerous, repeat sexual offenders who are facing criminal confinement and potentially mandatory life imprisonment. Since several empirical studies have been conducted correlating brain damage with sexual aggression and behavior, expert testimony regarding the defendant’s mental state should be admitted by the defense and given weight by courts.

II. CORRELATION BETWEEN BRAIN DAMAGE AND BEHAVIOR

A. Brain Damage and Aggressive Behavior

The brain is partitioned into several specialized areas that reference one another and work in unison to elicit responses, emotions, and actions. The frontal lobes, located at the anterior portion of the brain, behind the forehead, have been found to regulate socially appropriate behavior and suppress impulses. Damage to the frontal lobes creates cognitive and behavioral deficits, including emotionally impulsive actions and an impairment in the development of moral rules and social conventions.

The area that controls behavioral inhibition, rationality, intellect, and


22. See Barth, supra note 10, at 504.


24. See Barth, supra note 10, at 504.
morality within the frontal lobes is the prefrontal cortex (PFC). Studies have shown that damage to this area of the brain has caused an “acquired sociopathy” or “pseudopsychopathy.” In a study of violent individuals and convicted criminals, neuroscientists used positron emission tomography (PET) scanning to show a reduction in regional cerebral blood flow in their frontal lobes. When healthy volunteers were purposely evoked with anger and imagined aggressive transgressions, their brains showed a reduced capacity for regulation within their PFC. As a leading figure in neuroscience, specifically in the research of neurobiological bases of antisocial and violent behavior in humans, Adrian Raine has conducted several significant empirical studies correlating brain damage to aggression. In a study of twenty-two murderers and twenty-two control individuals, Raine and associates found selective prefrontal dysfunction in murderers. In addition, the experimental group consisting of murderers was also found to have reduced prefrontal glucose metabolism, which has been found to lead to “impulsive, irritable, short tempered and hostile behavior.” Thus, studies comparing violent individuals with normal individuals seem to suggest that a diminishment in the PFC’s inhibition

25. See Dean Mobbs et al., supra note 4, at 693.
26. Id.
27. Id. at 694.
28. Id.
30. Raine & Buchsbaum, supra note 11, at 206-08. The experimental group consisted of twenty males and two females; twenty were charged with murder and two charged with attempted murder. Id. at 206-07. The control group consisted of normal individuals matched with the same gender and age as each member of the experimental group. Id. at 206. The control group also accounted for three members of the experimental group diagnosed with schizophrenia by containing three schizophrenics who matched them in age and gender. Id. at 206-07; see also Adrian Raine et al., Selective Reductions in Prefrontal Glucose Metabolism in Murderers, 36 BIOLOGICAL PSYCHIATRY 365, 365 (1994), available at http://www-rcf.usc.edu/~raine/SelectiveReductoinPrefrontal.pdf.
system leads to impulsive violent acts.  

The connection between brain function and criminal behavior is further supported by the results of a study conducted by Raine that used an even larger experimental group. The PET scans of forty-one individuals who were charged with murder and pled not guilty by reason of insanity were examined. Compared with the brain scans of normal-brain controls, who were matched in age and sex with the experimental group and had no history of murder, the scans of “murderers” exhibited significant metabolic decreases in the frontal lobes. The noticeably inactive frontal lobes of the murderers were a stark contrast to the high levels of frontal lobe activity found in the control group. The experimental group was further evaluated according to the type of aggression exhibited by the murders. “Predatory” killers within Raine’s experimental group were deemed to act with controlled and purposeful aggression, whereas “affective” killers within the experimental group were characterized by crimes of impulsive and emotionally charged aggression. The study revealed that the “affective” group exhibited low PFC activity, while the “predatory” group’s PFC activity paralleled that of the control group. Thus, the study suggests a strong correlation between reduced PFC activity and increased aggression. Raine’s brain scans also provide positive evidence that frontal lobe deficits are correlated to impulsive, rather than purposeful, violent crimes. According to Raine’s studies, murderers who act impulsively and uncontrollably may actually be suffering from significant frontal lobe or PFC dysfunction. 

The PFC is not the only area in the brain that has been found to influence aggressive behaviors characterized as criminal or anti-social. The amygdala also serves as another area for the brain’s aggressive

33. Mobbs et al., supra note 4, at 694.
34. Adrian Raine et al., Brain Abnormalities in Murderers Indicated by Positron Emission Tomography, 42 BIOLOGICAL PSYCHIATRY 495, 496 (1997).
35. Id.
36. Id. at 497, 500.
37. Id. at 498-500.
38. Adrian Raine et al., Reduced Prefrontal and Increased Subcortical Brain Functioning Assessed Using Positron Emission Tomography in Predatory and Affective Murders, 16 BEHAV. SCI. L. 319, 319 (1997).
39. Id. at 319-20.
40. Id. at 329.
41. Id.
42. Seiden, supra note 23, at 406.
43. Id.
44. Mobbs et al., supra note 4, at 694.
behavior and ability to register fear and sadness in faces. In lesion studies of both animals and humans, it has been found that the amygdala significantly influences aggressive behavior. Considering the plethora of empirical evidence demonstrating the effect of specialized areas of the brain on human aggressive behavior, it is likely that significant damage to these areas would render the individual unable to control his own aggressive acts, or at the very least, render him markedly impaired in doing so. Accordingly, courts have acknowledged the legal validity of such scientific studies in allowing the use of neuroimaging by the defendant in capital murder cases.

B. Brain Damage and Sexual Behavior

Specialized areas of the brain have also been found to control the sexual behavior of individuals. The frontal and temporal lobes, in particular, are involved in regulating sexual behavior. While the frontal lobes aid in the expression of sexual behavior, the temporal lobes participate in the regulation of interpreting emotional expression and normal sexual arousal.

In one case, a forty-year-old man became inexplicably sexually impulsive and pedophilic. Although he had no prior history of sexual misconduct, he began to frequent prostitutes and molest his own twelve-year-old step-daughter. Charged and convicted of child molestation, he was ordered to either undergo in-patient rehabilitation in a twelve-step program.

45. Id.
46. Raine & Buchsbaum, supra note 11, at 198, 203.
49. Meston, supra note 2.
51. Id. at 75.
52. Mobbs et al., supra note 4, at 697.
53. Id.
sexual addiction program or face jail time. However, the defendant was unable to stop his sexual impulses. Eventually, after going to the emergency room due to a severe headache and history of migraines, a brain scan revealed that a large tumor was pressing on the orbitofrontal cortex of his right frontal lobe. Once the tumor was resected, the defendant’s sexual impulsiveness decreased. Later, when the defendant’s sexual proclivities returned, a brain scan showed the brain tumor had redeveloped. Upon a second excision of the tumor, the defendant’s sexual impulsiveness diminished again. This case dramatically illustrates the effect of brain abnormalities on sexual impulses and behavior.

Other studies confirm the brain’s unique role in sexual sociopathy. It has been suggested that damage to different areas of the brain may predispose an individual to differing types of crime. While frontal lobe dysfunction tends to correlate with violent offenses and rape, abnormalities to the temporal lobe tend to be associated with less violent offenses, such as incest or pedophilia. In addition, a study conducted by Benjamin Graber and associates found that PET scans of pedophiles revealed a reduction in regional cerebral blood flow.

Brain imaging studies of pedophiles reveal a correlation between neurological disorders and a higher propensity toward pedophilia. Although a predisposition for pedophilia may lie dormant in neurologically normal individuals, a pedophilic episode may be triggered by a later-developed brain abnormality. It was found that nearly one-third of 111 individuals arrested for pedophilia exhibited some type of organic brain syndrome or mental retardation. In another study, twenty-four of thirty-five individuals...
four patients with a neurological disease exhibited pedophilia.67

Because they control the motor aspects of sexual behavior and the ability to control sexual response, the temporal lobes are a "critical region in the mediation of human sexual behaviour."68 In cases of Kluver Bucy Syndrome (KBS), in which a bilateral temporal lobectomy has been performed, patients exhibit hypersexuality, hyperorality, and emotional changes.69 Collectively, these studies imply that a portion of sexual offenders may be acting in response to a deficiency or abnormality in their brains.

III. NEUROIMAGING IN THE COURTROOM

CAT scans officially became the medical standard of care in cases involving brain abnormalities during an action against the federal government in 1983.70 In Swanson v. United States, the plaintiff, Kenneth N. Swanson, was honorably discharged in 1974 from the Army due to a diagnosis of acute schizophrenia.71 Swanson's symptoms progressively worsened and a CAT scan was recommended in 1976, but it was never performed.72 A CAT scan finally conducted in 1980 determined that Swanson was in fact suffering from a massive brain tumor lodged in his brain stem.73 The Court determined that the government was negligent in failing to perform the much needed CAT scan in order to properly diagnose and treat the brain tumor.74

Critics of neuroimaging may lament the unreliability of such tests and the unfair advantages given to criminals if the images were to be subjectively read in their favor.75 Since images of the brain may be produced and read by differing neurological experts, the scans might not be uniformly interpreted.76 In addition to subjective decisions regarding the type of imaging used, degree of clarity, and difference in contrast between types of tissue, neuroimaging might also be subject to variances in brain structure and pathological expression of the brain within the population.77 Thus, it may be contended that neuroimaging is too unreliable to be

67. Id.
69. Id. at 1044.
70. KEVLES, supra note 6, at 170.
72. Id.
73. KEVLES, supra note 6, at 171.
74. Swanson, 557 F. Supp. at 1044.
75. Baskin et al., supra note 5, at 249.
76. Id.
77. Id.
admissible in courts. However, modern technology and the assistance of computer programs have advanced the use of neuroimaging in the courtroom.\textsuperscript{78} Prior to CAT scans, experts were forced to rely on clinical exams\textsuperscript{79} by examining the patient’s symptoms and prior medical history\textsuperscript{80} supplemented with standard radiographs.\textsuperscript{81} Clinical exams and the patient’s own recount of his or her symptoms may not accurately reveal underlying neurological abnormalities or disease. Similarly, radiographs fail to detail the intricacies of brain anatomy or disclose particular areas of neural activity. Thus, without a greater definitional standard to more detailed images of their patients’ brains, neurologists had to make subjective judgments regarding a patient’s condition.\textsuperscript{82} The current use of electroencephalograms (EEGs), CAT scans, Magnetic Resonance Imaging (MRIs), functional MRI (fMRI) scans, single photon emission computed tomography (SPECTs), and PET scans, allow neurological experts to examine the resulting data on a more objective basis.\textsuperscript{83} For instance, CAT scans and MRIs give a static representation of the brain’s anatomy\textsuperscript{84} by generating images of the brain’s soft-tissue structure\textsuperscript{85} and enhancing the images by the use of contrast materials.\textsuperscript{86} PET scans and fMRIs use the assistance of computer programs to provide functional images of the brain.\textsuperscript{87} Where PET scans capture the brain’s functional elements by allowing the measurement of neural activity,\textsuperscript{88} fMRIs are a hybrid between structural and functional neuroimages and work by extracting high resolution of the brain’s structural components from functional scans of the brain.\textsuperscript{89} Due to the greater definition and sensitivity of such tests,\textsuperscript{90} experts are able to make more standardized, objective evaluations of brain images.

Often, frontal lobe dysfunction has escaped diagnosis by medical experts because its symptoms are similar to personality disorders such as Attention Deficit Hyperactivity Disorder (ADHD), Antisocial Personality Disorder

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    \item \textsuperscript{78} Bitz & Bitz, supra note 16, at 236.
    \item \textsuperscript{79} Id. at 237.
    \item \textsuperscript{80} Seiden, supra note 23, at 401.
    \item \textsuperscript{81} Id.; Bitz & Bitz, supra note 16, at 236.
    \item \textsuperscript{82} Bitz & Bitz, supra note 16, at 235.
    \item \textsuperscript{83} Id. at 235-37.
    \item \textsuperscript{84} Id. at 237.
    \item \textsuperscript{85} Barth, supra note 10, at 503.
    \item \textsuperscript{86} Bitz & Bitz, supra note 16, at 237.
    \item \textsuperscript{87} Id. at 237.
    \item \textsuperscript{88} Id. at 236 n.228.
    \item \textsuperscript{89} Id. at 236 n.226, 237.
    \item \textsuperscript{90} Id. at 235-37.
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(APD), and Obsessive Compulsive Disorder (OCD). Misled by a false diagnosis, counsel frequently rely on a psychological exam in failing to request further tests that would have revealed the brain abnormality. As a result, courts reject the erroneous personality disorder as a valid defense or mitigating factor in sentencing, and the underlying brain abnormality is never considered. Therefore, courts should be made more aware of scientific studies affirming the role of the brain in atrociously offending individuals and their control over aggression and sexual impulses. In addition, the admissibility of neuroimaging to show brain lesions or other such abnormalities should be granted greater weight as sufficient evidence of the defendant’s impaired ability to control his criminal behavior.

IV. EVIDENCE OF BRAIN DAMAGE AND EXPERT TESTIMONY IN SEXUAL ASSAULT CASES

A. History of Using Evidence of Brain Damage in Capital Murder Cases

Neuroimaging and the use of evidence of brain damage to support an insanity defense and as mitigating factors in sentencing have been most successfully used in capital murder cases. Recognizing that damage to the frontal lobes can impair judgment and decrease a defendant’s ability to control his impulses, federal courts have accepted expert testimony regarding the existence of brain damage as a mitigating factor in the sentencing of a convicted murderer. In Fautenberry v. Mitchell, the Sixth Circuit Court of Appeals emphasized the value that case law placed on presenting evidence of brain impairment during sentencing. In addition, presenting evidence of frontal lobe damage would have likely changed the outcome of the defendant’s sentence.

The failure of an attorney to investigate a defendant’s brain impairment and present it to a jury was deemed to be unreasonable by the Court in

91. Seiden, supra note 23, at 402.
92. Id.
96. 515 F.3d 614, 652 (6th Cir. 2008).
97. Id.
Frazier v. Huffman. 98 The Court noted that a reasonable attorney would, at the bare minimum, compare the defendant’s medical record to current medical literature on brain damage and inquire about the injury and its effects on the defendant’s behavior. 99 In Smith v. Mullin, the Court held that defense counsel’s failure to present evidence of the defendant’s brain damage contributed to a mitigation case for capital murder that was incomplete and borderline “absurd.” 100 The Court further recognized a brain injury’s impact on cognition, impulsiveness, emotional regulation, aggression and violent outbursts, and its compelling explanation for the defendant’s horrific behavior. 101 As an established and well-respected practice in capital murder trials, presenting evidence of a defendant’s frontal lobe dysfunction in the trials of highly dangerous sexual offenders would not be a far reach.

Traditionally, courts in capital murder cases have allowed evidence of frontal lobe damage to be submitted in one of three ways. 102 Before the defendant is sentenced, the evidence may be introduced in order to establish diminished capacity or to form the basis of an insanity defense. 103 However, if the court rejects the use of such evidence as a defense, it may still be used as a mitigating factor in sentencing. 104

In contrast to forming the basis for a plea of insanity, evidence of frontal lobe dysfunction under the diminished capacity defense is the “scientific equivalent of voluntary intoxication.” 105 For crimes that require specific intent as an element of the offense, the defense must show that the frontal lobe damage affected the defendant’s ability to premeditate, and thus, the defendant could not form the requisite mental state. 106 Due to the impairment, the defendant is deficient in his ability to plan, make judgments, and control his impulses. 107 As argued in prior capital murder cases, if evidence of voluntary intoxication may be used to negate premeditation, 108 evidence of frontal lobe dysfunction should also be

98. 343 F.3d 780, 794-95 (6th Cir. 2003).
99. 379 F.3d 919, 944 (10th Cir. 2004).
100. Id. at 941, 943-44.
101. Id. at 941, 943-44.
102. Id. at 941, 943-44.
103. Id. at 941, 943-44.
104. Id. at 941, 943-44.
105. Id. at 941, 943-44.
106. See id. at 941, 943-44.
107. See id. at 941, 943-44.
108. Id. at 941, 943-44.
admissible to negate premeditation. Similarly, defendants of sexual assault crimes should be able to present evidence of brain damage in order to show diminished capacity or negate the mens rea element of the specific intent offense.

When a defense of diminished capacity is not permissible, the defendant may use the frontal lobe dysfunction in order to establish a plea of mental insanity. Unlike a plea of diminished capacity, where the defendant can provide evidence of a mental condition, the defendant who seeks to plead mental insanity must establish the existence of a mental disease. In the capital murder case of fifteen-year-old Kip Kinkel, the court allowed neuroimaging in order to support a “not guilty by reason of insanity” plea. The evidence revealed small cavities in the defendant’s frontal lobe and a history of mental disease, including schizophrenia. Putting the defendant’s criminal culpability in question, a plea of insanity often follows the M’Naghten test, which has been adopted by federal statute and most state courts. Under the M’Naghten test, a defendant may plead insanity due to mental disease if either the mental disease prevented the defendant from knowing the nature and quality of his act, or the defendant did not know that what he was doing was wrong.

While it has been difficult to establish that individuals with frontal lobe damage lacked the mental capacity to know the immorality or legal wrong of their acts, a plea of insanity may still be established by equating frontal lobe dysfunction to schizophrenia or claiming irresistible impulsiveness. Studies have shown that schizophrenics exhibit “abnormalities of frontal lobe function.” PET scans of both criminals.

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110. See id.
111. Mobbs et al., supra note 4, at 698.
112. Id.
117. See Seiden, supra note 23, at 414.
118. Id. at 413.
119. Id. at 415.
120. Id. at 413.
with frontal lobe damage and individuals with schizophrenia reveal decreased metabolic frontal lobe activity.\textsuperscript{121} The Court generally recognizes the applicability of schizophrenia as a mental disease in capital murder cases.\textsuperscript{122} In \textit{State v. Erickson}, the North Carolina Court of Appeals reviewed the trial court’s admission of expert testimony of the defendant’s schizophrenia at the time of the incident to determine whether he knew right from wrong.\textsuperscript{123} The purpose of the expert testimony was to negate the elements of premeditation and deliberation of the second-degree murder charge.\textsuperscript{124}

Under the irresistible impulse test,\textsuperscript{125} individuals may also claim mental insanity under the premise that frontal lobe damage caused irresistible impulses.\textsuperscript{126} In \textit{Bennett v. Commonwealth}, the Virginia Court of Appeals affirmed the irresistible impulse defense as an acceptable ground for a plea of insanity.\textsuperscript{127} In stating that a defendant’s actions may be excused if he was compelled by an irresistible impulse, the court recognized that an irresistible impulse resulting from mental defect was a sufficient defense.\textsuperscript{128} However, the court noted that the defense of irresistible impulse may only be applicable where there is no evidence of premeditation by the defendant.\textsuperscript{129} Frontal lobe damage in capital sexual assault cases would fit within the defense of irresistible impulse for a plea of insanity due to studies showing that individuals with such neurological deficiencies exhibit diminished impulse control.\textsuperscript{130} Diminished impulse control is also apparent in studies of damage to the amygdala.\textsuperscript{131}

Perhaps the most common method of introducing evidence of brain abnormalities is during the sentencing phase. Serving as a mitigating factor, evidence of frontal lobe damage is often introduced to reduce a possible death sentence to life imprisonment.\textsuperscript{132} Some state statutes allow the

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\item \textsuperscript{121} Id.
\item \textsuperscript{122} Ake v. Oklahoma, 470 U.S. 68, 71-72 (1985); Clark v. Arizona, 548 U.S. 735, 758 (2006). The defendants in both cases were allowed to argue an insanity defense based on mental disease due to schizophrenia. \textit{Ake}, 470 U.S. at 71-72; \textit{Clark}, 548 U.S. at 758.
\item \textsuperscript{123} 640 S.E.2d 761 (N.C. Ct. App. 2007).
\item \textsuperscript{124} Id. at 766-67.
\item \textsuperscript{125} Morgan v. Commonwealth, 646 S.E.2d 899, 902 (Va. Ct. App. 2007).
\item \textsuperscript{126} Seiden, \textit{supra} note 23, at 413.
\item \textsuperscript{127} 511 S.E.2d 439, 446 (Va. Ct. App. 1999).
\item \textsuperscript{128} Id. at 447.
\item \textsuperscript{129} Id.
\item \textsuperscript{130} Mobbs et al., \textit{supra} note 4, at 694.
\item \textsuperscript{131} Catharine A. Winstanley et al., \textit{Contrasting Roles of Basolateral Amygdala and Orbitofrontal Cortex in Impulsive Choice}, 24 J. NEUROSCIENCE 4718, 4718 (2004).
\item \textsuperscript{132} Darling v. State, 966 So. 2d 366, 374 (Fla. 2007). As a mitigating factor for
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defendant to present evidence establishing that the defendant committed the capital offense while "under the influence of extreme mental or emotional disturbance," or that the defendant’s ability to conform his actions to the law was greatly impaired. In capital cases, such evidence has been permitted by some courts in order to mitigate sentencing from the death penalty to life imprisonment without parole. In *Lockett v. Ohio*, the United States Supreme Court held that the Eighth and Fourteenth Amendments of the United States Constitution dictate that a court must, as a matter of law, consider all mitigating evidence in a capital case. Thus, a court cannot preclude evidence of frontal lobe dysfunction.

Pursuant to Rule 703 of the Federal Rules of Evidence, expert testimony may be admitted if the probative value of such evidence substantially outweighs its prejudicial effect. Accordingly, it may be permissible for the defense to admit expert testimony regarding neuroimaging, PET scans, CAT scans, and MRIs of the defendant and their results. The probative value of such evidence would be significant in repeat offender sexual assault cases due to its implications regarding the defendant's state of mind at the time of the offense. Due to the defendant's own choice in submitting evidence of his brain dysfunction, the prejudicial effect to the defendant would be negligible. Thus, evidence of a defendant's brain abnormality would be probative in helping to negate the element of premeditation or intent, or serve as a mitigating factor in sentencing.

**B. Brain Damage and Sexual Assault Cases**

Despite a recent five-four decision by the United States Supreme Court banning capital punishment for child rape, the backlash from the public, the 2008 presidential candidates, and other political leaders have brought the pressing issue of increased penalties for child sexual offenders to the forefront. In *Kennedy v. Louisiana*, the Court overruled a Louisiana state law that permitted capital punishment for the sexual assault of a child under twelve. Then presidential candidates, Senators Barack Obama and John McCain, both publicly denounced the decision and expressed their sentencing, the defendant was allowed to submit expert testimony that he suffered from an impaired frontal lobe. *Id.*

136. *See id.*
unequivocal support for the death penalty for child rape.\textsuperscript{140} Prior to the sharply divided Supreme Court decision, five other states besides Louisiana enacted statutes permitting the death penalty for child rape.\textsuperscript{141} Contrary to the majority opinion of \textit{Kennedy v. Louisiana}, the recent enactment of statutes implies a contemporary view among state legislatures that the death penalty is an appropriate punishment for child sexual offenders.\textsuperscript{142} Citing a national consensus that the death penalty for child rape is not a favored practice among several states, as well as the federal government, the majority erroneously stated there is no federal law that permits the death penalty of child molesters.\textsuperscript{143} In fact, in 2006, Congress revised the Uniform Code of Military Justice to add child rape to the military death penalty.\textsuperscript{144} The revisions were included in the National Defense Authorization Act, signed into law by former President George W. Bush, and carried out through Executive Order 13447.\textsuperscript{145} Given the recent push by Congress and state legislatures to impose harsher penalties on child sex offenders, it is unlikely the majority’s opinion in \textit{Kennedy} will deter future lawmakers from imposing increased penalties for sexual offenses.

Absent capital punishment for child sexual offenses, harsh laws for especially atrocious aggravated sexual assaults still remain.\textsuperscript{146} In states such as Louisiana, the sentence for a repeat sexual offender may be enhanced to a mandatory life sentence.\textsuperscript{147} In \textit{Tarver v. Cain}, a federal court in the Western District of Louisiana affirmed the defendant’s concurrent multiple life sentences for “30 counts of aggravated rape, 30 counts of aggravated oral sexual battery, and 8 counts of sexual battery.”\textsuperscript{148} Each

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\item \textsuperscript{140} Greenhouse, \textit{supra} note 138.
\item \textsuperscript{142} \textit{Kennedy}, 128 S. Ct. at 2665 (Alito, J., dissenting).
\item \textsuperscript{143} \textit{Id.} at 2652.
\item \textsuperscript{144} National Defense Authorization Act for Fiscal Year 2006, Pub. L. No. 109-63, 119 Stat. 3136, 3265 (2005) (codified at 10 U.S.C. § 920 art. 120 (2006)) (“Until the President otherwise provides pursuant to” UCMJ Article 56, “the punishment which a court-martial may direct for an offense under” the amended UCMJ article 120 “may not exceed the following limits: . . . For an offense under subsection (a) (rape) or subsection (b) (rape of a child), death or such other punishment as a court-martial may direct.”).
\item \textsuperscript{145} \textit{Id.}; \textit{see also} Linda Greenhouse, \textit{In Court Ruling on Executions, a Factual Flaw}, N.Y. TIMES, July 2, 2008, at A1.
\item \textsuperscript{146} United States v. Chappell, 84 Fed. Appx. 715 (8th Cir. 2003); \textit{see} Tarver v. Cain, No. 06-2280, 2007 WL 677171, at *8 (W.D. La. Feb. 2, 2007) (holding that consecutive life sentences were reasonable).
\item \textsuperscript{147} \textit{Tarver}, 2007 WL 677171, at *1.
\item \textsuperscript{148} \textit{Id.}
charge of aggravated rape was given a mandatory term of life imprisonment. 149

Texas also imposes mandatory life sentences for aggravated sexual assaults. 150 In Livings v. Texas, the Texas Court of Appeals affirmed a life sentence after the defendant was found guilty of aggravated sexual assault against his ten-year-old granddaughter. 151 Due to the defendant’s prior conviction for the felony offense of aggravated rape, the Texas Court of Appeals affirmed the sentence pursuant to the Texas Penal Code, which provides mandatory life sentences for certain repeat sexual offenders. 152 Sentencing enhancement guidelines in Texas for repeat sexual offenders was also present in White v. Quarterman, where the District Court affirmed the defendant’s mandatory life sentences for two counts of aggravated sexual assault of a child and one count of indecency with a child by contact. 153

In the most extreme cases, some states allow for mandatory life sentences for juveniles. 154 In State v. Rogers, the court found that the mandatory life sentence for a fifteen-year-old boy convicted of first-degree rape was not constitutionally barred. 155 Also failing to find such sentences as cruel and unusual punishment, the Supreme Court of North Carolina in State v. Green upheld the mandatory life sentence of a thirteen-year-old convicted of rape. 156

America’s intolerance for sexual offenses, especially for those committed against children, has become even more pronounced with the introduction of several anti-sex offender laws, such as Jessica’s Law. 157

149. Id.
150. See TEX. PENAL CODE ANN. § 12.42(c)(3) (Vernon 2008). Aggravated sexual assault includes the intentional and nonconsensual penetration of another, intentional sexual contact of a child, death or serious bodily injury or use of a deadly weapon during the course thereof, or if the victim is either younger than fourteen years of age or over sixty-five years of age. “An offense under this section is a felony of the first degree.” Id. at § 22.021.
152. Id.
Another example that reflects a legal initiative to provide harsher penalties for sexual offenders is a bill regarding repeat sex offenders that was passed through the House of Representatives in 2002. Under H.R. 2146, dubbed the "Two Strikes and You're Out Child Protection Act," Title 18 of the United States Code would have been amended to provide life imprisonment for repeat sexual offenders who prey on children.

The atrociousness of such crimes against children may indeed call for mandatory life imprisonment or the death penalty, but the maximum punishment for repeat sex offenders should not be applied uniformly. Considering the large number of inmates afflicted with mental illness, individuals charged with sexual offenses should be increasingly concerned with the possibility of admitting frontal lobe dysfunction or other brain abnormalities as evidence that they lacked the requisite intent for capital sexual assault, so it can be assessed whether civil confinement would instead increase their likelihood for effective rehabilitation.

1. Brain damage as a defense in sexual offense cases

Following in the footsteps of capital murder cases that allow evidence of brain damage, the probative value of demonstrating the existence of brain damage in sexual offense cases would be equally beneficial. In order to submit evidence of neurological dysfunction as a defense in sexual offense cases, it is necessary that such evidence negate the mens rea element of the crime. Thus, the proposed defense would only be applicable in those sexual offenses that require specific intent. Although some sexually driven crimes such as rape and criminal sexual conduct are considered general intent crimes, some state statutes have proscribed a specific intent requirement for certain aggravated sexual assaults or child molestation. In states requiring specific intent for sexual offenses, evidence of brain damage would have the same prejudicial effect as other defenses in mitigating the punishment for such crimes.


159. Id.
160. Fellner, supra note 18, at 391.
dysfunction should be allowed as a defense to negate intent.

More specifically, evidence of frontal lobe damage should be submitted as evidence of the defendant’s diminished capacity at the time the crime was committed. If such evidence is the scientific equivalent of voluntary intoxication in capital murder trials, then the same rationale should be applied in sexual offense cases. Since some states consider child molestation a specific intent crime, evidence of voluntary intoxication has been previously submitted in child molestation cases to negate the mens rea element of the offense. In State v. Stevens, the Supreme Court of Washington noted that the state of Washington included intent in its definition of second-degree child molestation. As a result, the defendant was not precluded from introducing evidence of intoxication in order to negate the intent requirement. The court in State v. Perez also recognized the validity of a voluntary intoxication defense in cases where there is a state imposed requirement of intent for child molestation.

Attempted sexual misconduct is also included in the class of sexual offenses that statutorily requires the prosecution to prove a specific intent element. In United States v. Crowley, the court affirmed the District Court’s holding that evidence of voluntary intoxication could be submitted in order to negate the specific intent element of the defendant’s charge of attempted aggravated sexual assault. Given the multitude of sexual offenses that may require proof of specific intent, and the corresponding acceptance of voluntary intoxication in such cases, evidence of frontal lobe dysfunction should also be similarly admitted to prove diminished capacity. Like voluntary intoxication, frontal lobe dysfunction would render the defendant unable to form the requisite mental state at the time the crime was committed due to the defendant’s lack of cognition.

The defendant could also present evidence of frontal lobe damage as evidence of legal insanity due to mental disease. A plea of not guilty due to insanity may be made using the M’Naghten test, a comparison to schizophrenia, or the irresistible impulse test. Currently, twenty-five states continue to use the insanity defense standard of the M’Naghten

166. Stevens, 158 Wash. 2d at 306.
167. Id. at 310.
168. Id.
171. Id.
173. Id. at 411-15.
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Three states have adopted the irresistible impulse test. However, Idaho, Montana, Utah, and Kansas have passed legislation to abolish the insanity defense altogether.

For a defense of insanity under the *M'Naghten* test, the sexual offender must prove that at the time the sexual offense was committed, he suffered from a defect of reason due to a disease of the mind. In addition, he must have been unaware of the nature and quality of the act he was doing or failed to know that what he was doing was wrong. Essentially, the perpetrator must suffer from a disease of the mind and lack a specific cognitive capacity as a result. Evidence of frontal lobe dysfunction as applied in aggravated sexual assault or child molestation cases adequately falls under this test. An accused sexual offender could present evidence of the neurological dysfunction, establishing that he suffers from a disease of the mind. Therefore, the inability of the defendant to control his impulses or regulate his cognitive functions is a defect in his ability to reason that prevents him from knowing that his conduct is wrong.

As in capital murder cases, sexual offenders need to offer expert testimony in order to satisfy the *M'Naghten* test. In order to ward against frivolous insanity plea attempts, the test limits the various types of mental diseases that qualify for a plea of not guilty by reason of insanity. Thus, experts need to testify to the extent of damage to the defendant's brain and whether the condition is a sufficient mental disease.

Schizophrenia is commonly accepted by courts as a mental disease for the purpose of forming a plea of insanity under the *M'Naghten* test. However, the admissibility of evidence differs for its use in forming a viable defense. The overriding factor that courts consider in determining whether the mental disease will ultimately be admitted in evidence involves the severity and cognitively debilitating impact of the disease on the

175. *Id.*
176. *Id.* at 210.
178. Fischette, *supra* note 177, at 1442.
179. *Id.*
181. *See id.*
182. *See id.*
183. *Id.* at 413.
offender at the time the crime was committed. Courts have recognized that the defense cannot be sustained by the mere existence of a condition alone. Rather, the mental disease or defect must be severe enough to prove that the defendant did not know that the criminal act was wrong at the time of its commission.

It is not clear whether courts apply the term of mental disease solely to widely recognized and accepted conditions or whether other disorders are included. In _Stamper v. Commonwealth_, the Supreme Court of Virginia rejected diagnoses that seemed to rely on "subtle and shifting gradations" of mental illnesses and are "frequently revised." The court seemed particularly concerned about the knowledge of the disease in the scientific field at the time of trial and the availability of fixed criterion for diagnosis. However, if neurological impairment resulting from schizophrenia may be submitted as a mental disease, frontal lobe damage would be equally debilitating and sufficient to qualify for a plea of guilty by reason of insanity. The use of frontal lobe damage in criminal trials is a relatively new concept in the legal arena, but its study has been extensive in the scientific field. For decades, scientific researchers have been intrigued by the effects of brain damage on behavior and the neurobiology behind criminal intent. Since the development of brain-imaging techniques, scientists have been able to more accurately diagnose and evaluate patients with frontal lobe dysfunction. Due to extensive empirical evidence and research on patients with frontal lobe dysfunctions, the risk of unreliable or changing diagnoses cautioned by _Stamper_ is greatly decreased.

Frontal lobe dysfunction would also likely qualify as a mental disease for the purposes of insanity due to section 310.1 of the Diagnostic and Statistical Manual of Mental Disorders (DSM). In order to qualify as a

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186. _Id._
188. 324 S.E.2d 682, 688 (Va. 1985).
189. _Id._
190. Snead, _Complexity of Capital Punishment, supra_ note 7, at 1292-94.
191. Mobbs et al., _supra_ note 4, at 693.
193. Seiden, _supra_ note 23, at 412-13. The DSM is a manual for health professionals, and widely used by clinicians and researchers in the psychiatric field, which lists various categories of mental disorders and provides the criterion for diagnosing them. _See_ DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS 2 (4TH ED. 2000).
mental disorder under the DSM, the defendant must be diagnosed with a change in personality as a result of the physiological effects of a general medical condition.\textsuperscript{194} There must be a traceable condition for which an impairment of functioning can be directly attributed.\textsuperscript{195} Changes in personality may include affective instability, poor impulse control, and outbursts of aggression.\textsuperscript{196} This change could result from head trauma, tumors, or disease.\textsuperscript{197} Frontal lobe damage likely qualifies as a mental disease since most incidences of frontal lobe damage are caused by trauma to the head or neurological disease. According to previously discussed empirical evidence, impairment in the frontal lobes of the brain have also been directly correlated with changes in cognitive and social behavior that mimic those changes in personality described by the DSM.

Critics may argue that given the various pathologies and expressions of the brain, the effect of any brain damage might vary among individuals. Thus, even if a defendant suffers from frontal lobe damage, he or she might not express the requisite level of impairment for the insanity test. However, such lack of impairment should not preclude the defendant from presenting such evidence in the first place. In cases where a specific-intent element may be negated, a defendant should be given the opportunity to present the evidence of a mental defect.

Defendants may also attempt to make a plea of not guilty by reason of insanity by comparing their frontal lobe dysfunction to schizophrenia.\textsuperscript{198} The comparative analysis of the two neurological disorders is significant in light of the scientific research available regarding the reduction of social cognition due to brain lesions and schizophrenia.\textsuperscript{199} Patients with brain lesions have been found to share the same cognitive profile with individuals suffering from schizophrenia.\textsuperscript{200} Both types of patients scored similarly on social cognition tasks and strategic thinking.\textsuperscript{201} It may be that both conditions affect the same neural regions of the brain or exhibit similar neural responses.\textsuperscript{202} Accordingly, courts that accept the validity of schizophrenia as a mental disease should be equally accepting of evidence.

\textsuperscript{194} Seiden, supra note 23, at 413.
\textsuperscript{195} Id.
\textsuperscript{196} Id.
\textsuperscript{197} Id.
\textsuperscript{198} Id.
\textsuperscript{199} See Monica Mazza et al., Deficit of Social Cognition in Subjects with Surgically Treated Frontal Lobe Lesions and in Subjects Affected by Schizophrenia, 257 EUROPEAN ARCHIVES PSYCHIATRY & CLINICAL NEUROSCIENCE 12, 12-14 (2007).
\textsuperscript{200} Id. at 12-13.
\textsuperscript{201} Id. at 15-16.
\textsuperscript{202} Id. at 20.
of frontal lobe damage. Theoretically, the cognitive impairment in both circumstances at the time of commission of a criminal act would render the defendant unable to know that what he or she was doing was wrong. Thus, the mens rea element of a specific-intent offense could be negated in a mental insanity defense.

The comparison of frontal lobe dysfunction to schizophrenia is also dependent on the court's acceptance of schizophrenia as a mental disease. Prior courts have reasoned that major depression is not a mental disease for the purposes of an insanity defense, and therefore, may not be used by the defendant to negate the mens rea of a specific intent crime. However, extensive scientific research has highlighted the neurological differences between patients with major depression and schizophrenia. Studies have revealed the significant role of the hippocampus and neurotransmitters, such as serotonin, in the neurobiology of major depression. In contrast, the brains of individuals with schizophrenia mimic brains afflicted with brain lesions, and thus produce strikingly similar results. Brains of some individuals with schizophrenia have been found to suffer great loss to the frontal and parietal regions. As exhibited in individuals with frontal lobe lesions, studies have found a correlation between schizophrenia and heightened levels of aggression. Due to the neurobiological and resulting behavioral similarities between frontal lobe damage and schizophrenia, courts should permit the evidence to be admitted as an insanity defense due to mental disease or defect.

Defendants may also attempt to make a plea of not guilty by reason of insanity under the irresistible impulse test. The irresistible impulse test seeks to expand the M'Naghten test by allowing a defendant to argue that mental disease rendered him unable to control his actions. Frontal lobe damage would likely qualify under this test because damage to the frontal lobe has been found to create an inability to regulate one's aggressive behavior.

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204. See Stephanie Campbell et al., The Role of the Hippocampus in the Pathophysiology of Major Depression, 29 J. PSYCHIATRY & NEUROSCIENCE 417 (2004).
205. Id. at 418.
206. Mazza et al. supra note 199 at 12.
210. Fischette, supra note 177, at 1444-45.
compulsions.211 Similarly, since the frontal lobes contribute to the regulation of sexual behavior and expression,212 damage to that area might cause an individual to act with uncontrollable sexual impulsiveness.

Critics have argued that conceptually, a defendant’s inability to control his actions would simply be an impairment in rationality.213 It is suggested that sexual crimes, such as child rape, lack elements of premeditation and deliberation because such acts are not the result of rational thought.214 In addition, it is contended that psychopaths are generally more impulsive than the general public.215 However, empirical evidence has found that frontal lobe damage does not simply impair the rationality of an affected individual.216 Rather, frontal lobe damage causes an impairment in cognition and the regulation of normal social and sexual behaviors.217 Studies have further found that individuals with socially unacceptable inclinations, such as pedophilia, may be able to control their behavior on their own.218 Individuals who may be afflicted with pedophilic tendencies or psychopathy may make the conscious effort not to act on their impulses. However, when an individual is affected by brain disease or lesions in the frontal lobes, that conscious effort might not be possible.219 Instead, that individual’s ability to make cognitively sound judgments and law-abiding choices would be impaired.

Where evidence regarding a defendant’s mental state is not severe enough or accepted by the jurisdiction to negate the mens rea element of the crime, courts have still allowed such evidence to be admitted if it relates to the defendant’s behavior in question. In *State v. Burr*, the New Jersey Intermediate Appeals Court ordered a new trial for a defendant who was diagnosed with Asperger’s Disorder and convicted of second-degree sexual assault of a child.220 The court found that expert testimony regarding the defendant’s impaired social judgment as a result of the disorder would help the jury to understand the nature of his crime and inappropriate behavior, and how that might differ from the traits of a

211. Barth, *supra* note 10, at 504.
212. Mendez et al., *supra* note 50, at 74-75.
217. *Id.*
218. *See id.* at 74.
219. *Id.*
"typical" sex offender. The expert in *Burr* testified that Asperger's Disorder severely impairs an afflicted individual's ability to interpret the emotions of others, and thus, to make sound social judgments. Even though the mental condition could not be introduced to negate the mens rea of the charged crime, the appeals court determined that New Jersey's diminished capacity statute did not preclude the admission of such evidence of mental disease when it is being offered for a purpose other than for a diminished capacity defense. Instead, the court measured the admissibility of the evidence on whether it rendered a desired inference more probable or logical than without the evidence. Therefore, where evidence of mental disease is inadmissible for the purposes of a diminished capacity or insanity defense, it may still be admissible if it is relevant to understanding the defendant's actions during the commission of the crime.

Other New Jersey courts have adopted the practice of "allow[ing] evidence of a mental illness, defect, or condition when such evidence was deemed relevant to an issue at trial." In *State v. Sexton*, the court permitted evidence of the defendant's mental ability as it related to the reasonableness of his perceptions at the time the crime of reckless manslaughter was committed. Evidence of a defendant's frontal lobe dysfunction would be equally beneficial to assist the trier of fact in understanding the effect of the abnormality on the defendant's cognition and behavior. Similar to the impairments noted in *Burr* and *Sexton*, frontal lobe dysfunction impairs an individual's social judgment and cognitive perceptions of external stimuli. The impairment of a sex offender's aggressive or sexual behavior and cognitive capacity would be equally relevant.

2. Brain damage as a mitigating factor in sexual offense cases

In courts where evidence of frontal lobe damage may not be accepted as an affirmative defense in pleas of not guilty by reason of insanity, or in sexual offense cases lacking a specific-intent element, such evidence should be allowed as a mitigating factor in sentencing. The admission of evidence regarding a defendant's mental disease as a mitigating factor in

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221. *Id.* at 1150.
222. *See id.* at 1144-45.
223. *See id.* at 1147.
224. *Id.* at 1147-49.
227. *See Barth, supra* note 10, at 504.
sentencing is not foreign to courts. However, courts might use the evidence to evaluate the aggressive propensity and sexual recidivism of defendants. While defendants would hope to use the evidence as a mitigating factor for reducing a possible mandatory life-imprisonment sentence, courts may use the information as an aggravating factor for incarcerating defendants for a longer period of time.

Several states have enacted involuntary commitment statutes to place especially deviant sexual offenders behind bars for an extended period of time. Expert testimony can be used by the prosecution to support the contention that the offender is likely to re-offend or cannot be a functioning part of society. In sexual offense cases, such evidence can be especially damaging when the sexual recidivism of the defendant is evaluated. For defendants with a mental defect, an expert might testify that the defendant is unable to control his or her sexual impulses and will likely offend again. Under Texas’s Sexually Violent Predators (SVP) Act, the Court of Appeals of Texas affirmed an involuntary commitment order to a mental institution. Expert evidence was submitted regarding the defendant’s likelihood to re-offend and his recent fantasies involving children. The defendant’s pedophilia was used by the court to establish that the defendant would engage in future predatory acts of sexual violence against children, and thus, should be involuntarily committed. However, the court also found that the defendant had not completed a sex offender treatment program. With proper treatment of the defendant’s sexual propensities, it is possible that the defendant would not have been subjected to involuntary civil confinement.

Through a mitigated sentence, a sexual offender may not have to endure a mandatory life sentence in a criminal facility if the debilitating effects of his or her disorder can be treated effectively through civil confinement and the offender is able to reintegrate into society. In a sex offender treatment

228. Snead, Complexity of Capital Punishment, supra note 7, at 1293.
232. Id at 846-47.
233. Id. at 854-55.
234. Id. at 854.
program, an offender may be rehabilitated through counseling and medication to control his impulses. In cases involving aggressive schizophrenics, courts have not imposed mandatory capital or life sentences simply due to the existence of the condition itself.\(^{235}\) Studies have shown that medication can help schizophrenics control their aggressive and impulsive behaviors.\(^{236}\) Subsequently, with medication and counseling, schizophrenics have been released and effectively integrated back into society.\(^{237}\) It is only when the defendant fails to take his or her medication and relapses into aggressive behavior that the court recommits the offender.\(^{238}\) In the case of *In re Todd K.*, the Appellate Court of Illinois ordered the involuntary commitment of a defendant suffering from schizophrenia due to the defendant’s sudden acts of aggression.\(^{239}\) The court determined that the defendant was a danger to others.\(^{240}\) The court also found that at the time of the defendant’s increased aggression, he had not been taking his medications for a year.\(^{241}\) If it is possible to medicate schizophrenics and reintegrate them into society, or at the least provide for their treatment in a mental institution, then the same opportunity should be afforded to defendants suffering from frontal lobe dysfunction.

In cases where schizophrenics were involuntarily committed and forced to consume medication, the lengths of time for such commitments were not necessarily indefinite or long term.\(^{242}\) Although the schizoaffective disordered patient in *In re Louis S.* had not committed any crimes, he was originally involuntarily confined and forced to medicate for a term of ninety days.\(^{243}\) An expert in psychiatry testified that medication would help subdue the patient’s aggression and help organize his thought processes.\(^{244}\)

Patients with frontal lobe lesions have also exhibited aggressive tendencies\(^{245}\) and impaired cognitive functioning.\(^{246}\) Thus, sexual


\(^{236}\) See Istvan Bitter et al., *Effectiveness of Clozapine, Olanzapine, Quetiapine, Risperidone, and Haloperidol Monotherapy in Reducing Hostile and Aggressive Behavior in Outpatients Treated for Schizophrenia: A Prospective Naturalistic Study (IC-SOHO)*, 20 *Eur. Psychiatry* 403, 403-08 (2005).

\(^{237}\) See Kanas, *supra* note 235, at 71-72.


\(^{239}\) *Id.*

\(^{240}\) *Id.*

\(^{241}\) *Id.*


\(^{244}\) *Id* at 228.

\(^{245}\) Barth, *supra* note 10, at 501.
offenders with such lesions might benefit from the services and medication provided by a mental institution. Similar to the existence of schizophrenia, the existence of the lesion itself would not necessitate a mandatory life sentence upon sexual offenders. As a mitigating factor in sentencing, expert testimony regarding the patient's medical history could be supplemented by testimony regarding treatment options. If the defendant can be effectively medicated or treated, it does not follow that such evidence should be used solely as an aggravating factor to increase the offender's sentence.

The prosecutor may, however, introduce independent evidence regarding the likely recidivism of the defendant to establish that treatment cannot effectively prevent the defendant from re-offending. However, in deciding whether to submit evidence regarding a frontal lobe impairment, the defendant might find that the benefits of mental institutional confinement outweigh a mandatory life imprisonment sentence in a criminal facility. Thus, regardless of the potentially negative impact the evidence may have on the defendant's sentence, the defendant himself should make that balancing determination and should not be precluded from submitting evidence of his brain dysfunction.

3. The practical effect of presenting evidence of brain damage in sexual offense cases

Currently, the introduction of evidence regarding a defendant's frontal lobe dysfunction or other brain abnormality is not barred from sexual offense cases. However, its use is not widespread. The general fear of the defendant is that the introduction of an irreversible and debilitating brain impairment would force the court to consider the offender's sexual recidivism in deciding to commit the offender to a longer sentencing period. The court would thereby treat such evidence as a non-statutory aggravating factor in sentencing rather than a mitigating factor. In Hood v. Cockrell, the court noted that the presentation of a mental impairment functions as a "double-edged sword": while evidence of brain damage shows the reduced moral culpability, at the same time the evidence points to the increased probability of dangerousness. Diagnosed with a brain dysfunction, the defendant was ultimately convicted of capital murder.

The fear of including such evidence, as expressed by prosecutors, is opposite from the fear posed by defense attorneys. The introduction of

246. Seiden, supra note 23, at 399.
249. 72 Fed.Appx. 171, 179 n.8 (5th Cir. 2003).
250. Id at 173.
evidence of a brain abnormality by defendants may elicit sympathy from jury members and sway them toward a more lenient verdict. Juries may assume that an organic brain injury diminishes the personal culpability of the offender, and thus the defendant should not be accountable for his actions. The prosecution may also fear that defendants in sexual offense cases will profit from negligible brain injuries with frivolous diminished capacity or insanity defenses.

Although the proposed fears of the defense and prosecution are valid concerns, introducing a defendant’s frontal lobe dysfunction would ultimately benefit all parties involved. As in capital murder cases, evidence of frontal lobe dysfunction could be used primarily in cases involving highly dangerous sexual offenders or especially atrocious acts of sexual assault. In cases where a high level of aggression or impulsiveness is not exhibited, the introduction of such evidence would not convey the extreme effects of severe frontal lobe dysfunction on human behavior. Faced with life imprisonment, the defendant might attempt to seek medical treatment by using the evidence in an effort to be civilly confined. Thus, the evidence of the brain abnormality can be most effectively used as a defense of diminished capacity, plea of insanity, or as a mitigating factor in mandatory life sentences.

Despite speculation regarding the future dangerousness of offenders with brain dysfunctions, there has been no study that frontal lobe dysfunction actually predicts violent crime among offenders. Offered simply to demonstrate an impaired mental capacity at the time of the offense, the foregoing studies and neuroimages regarding aggression and sexual impulsiveness do not provide affirmative proof of the offender’s likelihood to commit the same offense. Judges and legislators should be made aware that the risks of aggression or violence in an offender with a brain dysfunction may become attenuated if properly supervised, medicated, and counseled. Thus, sexual offenders should not fear that presenting evidence of brain dysfunction would serve as definite proof of sexual

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252. Raine & Buchsbaum, supra note 11, at 209.
256. Mobbs et al., supra note 4, at 699.
257. Barth, supra note 10, at 515.
recidivism.

The use of such evidence may be questionable in light of the greater possibility of lower sentences period sexual offense cases than in murder cases. However, in the wake of increasingly harsher penalties and statutory mandates against child sex offenders, the opportunity for the defense to make a well-informed case and for the trier of fact to impose the most reasonable sentence is pressing. Tempted by the predictive value of brain dysfunction evidence, judges and lawmakers should use the information not to dispose sexual offenders into the criminal prison system, but rather to evaluate the sufficiency of preventive interventions. In states that impose mandatory life sentences for especially atrocious sexual offenses, uniform sentencing of sexual offenders is not sound when civil confinement may better rehabilitate a sexual offender suffering from frontal lobe dysfunction. Thus, evidence of brain dysfunction should not be used as an aggravating factor, but should bring to light the underlying reasons for supporting a level of confinement that would best treat the particular sexual offender.

Due to case law emphasizing the effect of evidence of brain dysfunction on sentencing, the prosecution should embrace the opportunity to rehabilitate offenders. The fear of relaxed sentences on especially dangerous sexual offenders should be counteracted by a societal need to treat and rehabilitate offenders so that they may act as functioning members of society. Sexual offenders that may require longer periods of treatment would benefit from civil confinement as well. Without psychological or pharmaceutical treatment of an offender with a brain dysfunction, the offender will lack the necessary skills to integrate within the general prison population. The formed communities within prison walls require social adaptation, impulse control and behavioral regulation. As a large population of such prison communities, sexual offenders would benefit greatly from effective civil confinement. Especially since prisons carry a reputation for tormenting child molesters, a brain-injured defendant who might not be in complete control of his impulses should not be subjected to the prison system without effective medical treatment.

In addition, given the stringent requirements of the insanity plea
standards of the *M’Naghten* test and irresistible impulse test, as well as the plethora of expert testimony and medical records required to establish a severe mental disease, the probability that the introduction of brain injury in sexual offense cases will open a floodgate of frivolous insanity claims is likely rather low. Given that such evidence has been widely used in capital murder cases, despite the similar fear of abuse by defendants, sexual offense charges should not pose an additional barrier to defendants.

Furthermore, juvenile offenders would greatly benefit from the introduction of frontal lobe dysfunction in sexual offense trials as well. In states that do not distinguish between juvenile sex offenders and adult sex offenders, the possibility of civil confinement rather than criminal confinement might be even more beneficial. Considering the neural differences between juveniles and adults, it is possible that counseling or psychopharmaceuticals might be more effective at rehabilitating young offenders. In light of the possibility that the aggressive and sexual propensity of a juvenile suffering a brain injury might also be construed as a contributor to a higher level of sexual recidivism, the evidence would be a means for early treatment rather than a sentence of lifetime confinement.

### V. CONCLUSION

Law has evolved into a discipline of varying practices and theories. As technology and scientific knowledge of the bases of human behavior advances, the legal system should not fall behind. The amount of empirical evidence regarding damage to the frontal lobes on cognition and behavior, including aggression and sexual impulsiveness, is significant. In furtherance of better understanding human behavior, courts should embrace the insight that behavioral biology gives to the availability of defenses and the sentencing process.

In addition, due to the high prevalence of mental disease in the criminal prison system, sexual offenders should be able to use evidence of frontal lobe dysfunction in order to receive more effective treatment for their condition. The increasingly high population of sexual offenders in the prison system and the dually high population of reported mental disease reveals that the problem of untreated sexual offenses should not be ignored. The development of criminal and civil confinement depends on the treatment and rehabilitation of its inmates. The use of evidence regarding a defendant’s frontal lobe dysfunction will better aid courts in determining

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265. *Id.* at 28.
the sentences for highly dangerous sexual offenders and lead society toward a treatment plan that encompasses the social and biological duality of human behavior.

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