

TOWSON UNIVERSITY
OFFICE OF GRADUATE STUDIES

Innocent by Reason of Brain Injury: Perceptions of Morality,
Guilt, and Sentencing for Defendants with Traumatic Brain Injury

by

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A thesis

Presented to the faculty of

Towson University

in partial fulfillment

of the requirements for the degree

Masters of Arts

Department of Psychology

Towson University
Towson, Maryland 21252

May, 2016

Towson University
Office of Graduate Studies

Thesis Approval Page

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entitled Innocent by Reason of Brain Injury:
Perceptions of Morality, Guilt, and
Sentencing for Defendants with Traumatic Brain Injury

Has been approved by the thesis committee as satisfactorily completing the thesis
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Abstract

Innocent by Reason of Brain Injury: Perceptions of Morality, Guilt, and Sentencing for Defendants with Traumatic Brain Injury

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Individuals with traumatic brain injury (TBI) tend to be predisposed to be aggressive tendencies because the injury enables impulsivity, loss of self-control, and the inability to modify behaviors. These behavior changes often lead to criminal involvement; for example, the majority of the prison population has sustained at least one TBI in their lifetime compared to the prevalence of brain injuries in the general population. However, there is little research investigating the perceptions of legality and criminality in this population. These three experiments that follow investigated public perceptions of morality, level of guilt, and appropriate sentencing for crimes committed by defendants with different severity of TBI (i.e., mild, severe, and no TBI). Overall, results showed that defendants with TBI were perceived as being less guilty, being morally justified, and receiving milder punishments relative to the no-TBI defendants. Therefore, in a courtroom, it is pertinent that the defense attorney educate the judge and/or the jury regarding the effects brain injuries have on the cognition, behavior, and the emotions of an individual.

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Chapter One:

Introduction

President George H.W. Bush announced that the 1990s were to be known as the “Decade of the Brain,” an initiative that increased emphasis on brain science and newly-developed fields such as neuroscience and forensic psychiatry (Library of Congress). Since this initiative, much research has been conducted analyzing the dynamics and structure of the brain; however, the social and legal implications of brain injuries have often been overlooked or ignored. Brain injuries are extremely complex, and its symptoms and outcomes are unique to each individual. Consequently, understanding the social and legal implications caused by brain injury is equally important.

Because TBIs are believed to increase aggressive behavior, they may also increase criminal behavior. Consistent with this idea, Barnfield and Leathem (1998), 86% of male prisoners in a minimum to high-medium security prison reported at least one TBI over their lifetime. In another study, 87% of inmates reported sustaining a TBI sometime in their lifetime, and 29% reported having a lifetime history of moderate/severe TBI (Slaughter, Fann, & Ehde 2003). Comparing offenders to university personnel, 50% of participants from the correctional program reported having a brain injury sometime in their lifetime compared to 5% university personnel (Sarapata et al., 1998). Based on previous studies, it is evident that individuals with a history of TBI are more susceptible to aggressive tendencies, and though not causal, there is a strong correlation between TBI and criminality (Barnfield & Leathem, 1998; Colantonio, Stamenova, Abramowitz, Clarke, & Christensen, 2007; Perkes, Schofield, Butler & Hollis, 2011; Sarapata et al., 1998; Tateno et al. 2003; Turkstra, Jones, & Toler, 2003).

In an Australian prison system, 82% of inmates self-reported sustaining at least one TBI, and 43% of inmates reported sustaining four or more TBIs in their lifetime (Schofield, Butler, Hollis, Smith, Lee, & Kelso, 2006). Among 16 death row inmates, TBI was documented in 12 of the cases, and 7 of the 12 suffered multiple TBIs in their lifetime (Freedman & Hemenway, 2000). With approximately two million people currently residing in the U.S. prisons and jails, between 25-87% of those inmates reported having sustained a TBI in their lifetime (Centers for Disease Control and Prevention, 2014). Compared to only 8.5% of the general population reporting a history of TBI, this discrepancy suggests that brain injury correlates with criminal involvement and incarceration (Centers for Disease Control and Prevention, 2014). Thus, it can be assumed that individuals with a history of TBI are being convicted at a higher rate for their crimes and/or are involved in more, and more severe crimes compared with those defendants without a history of TBI. (Sarapata et al., 1998) It is also possible that jurors' lack of knowledge regarding the consequences of brain injury may influence judgments of the defendant's moral aptitude, guilt, and ultimately, their sentencing disposition.

This paper will review judgmental biases a juror may have towards individuals with a history of TBI when determining their level of guilt and punishment for a crime. However, before exploring this literature, it is important to define TBI and to understand the concept of posttraumatic aggression that results from TBI. Moreover, it is important to illustrate how these posttraumatic aggressive behaviors can produce negative social and legal consequences, and how public misconceptions about brain injury can bias jurors' perception of a brain injured defendants' capacity for moral judgment, their perceived guilt, and sentencing determinations.

Overview of TBI

The prevalence, treatment, and deaths resulting from TBI have steadily increased in the United States over the past decade (Centers for Disease Control and Prevention, 2014). The combined rates of hospitalization and emergency room visits due to TBI have increased from a rate of 521.0 per 100,000 individuals in 2001 to 823.7 per 100,000 individuals in 2010 (Centers for Disease Control and Prevention, 2014). According to the Brain Injury Association of America, (2014) the leading cause of TBI is falls (40.5%), followed by physical violence/assault (26.2%), and motor vehicle accidents (14.3%).

The Brain Injury Association of America (2012) defines TBI as “an alteration in brain function or pathology caused by an external force.” The Glasgow Coma Scale (GCS) is a 15-point scale used to measure the injury’s level of severity in relation to the neurological damage to the brain. The GCS score for mild TBI ranges from 13-15, moderate TBI ranges from 8-12 for moderate TBI, and severe TBI is below 8.

Assessment of motor, verbal, and eye-opening responses right after the brain injury determines the GCS score (Brain Injury Association of America, 2012).

Individuals who have a history of mild TBI have experienced a change in mental status at the time of injury (e.g., concussion). They have either lost consciousness for a brief time, usually lasting a few seconds or minutes, or have been dazed or confused. Though scans of the brain appear normal, the fact that the person had a concussion and/or has lost consciousness indicates that the brain functioning has been altered by the injury (Brain Injury Association of Utah). Perhaps, the most life threatening type of brain injury is the severe TBI. These brain injuries result from blows or penetrating wounds to the head which affects neurological functions of the brain, such as thinking, sensation, and

emotion. Repeated occurrences of mild TBI can result in similar neurological and cognitive deficits as seen in severe TBIs (Brain Injury Association of Utah; Barnfield & Leathem, 1998). Nonetheless, any form of injury to the brain can be life-threatening; thus TBIs are unique to each individual and the prognostics vary according to injury.

TBI and Aggression

The damage resulting from TBI can have significant behavioral consequences, with increased aggression being one of the more common side effects (Tateno, Jorge, & Robinson, 2003). Tateno et al. (2003) found aggressive behaviors (e.g., verbal aggression and physical aggression against objects, self, and others) in 33.7% of individuals with TBI, compared to 11.5% of patients with no TBI. Dyer and colleagues (2006) found that impulsive verbal aggression and anger were prominent aggressive traits post-TBI. Among those individuals with TBI, 25-39% were classified as having higher levels of anger and 35-38% were classified as having higher levels of verbal aggression compared to those without TBI. In addition, those individuals with TBI reported higher measures on aggression and impulsivity than those without TBI. (Dyer, Bell, McCann, & Rauch, 2006). Supporting previous literature, posttraumatic verbal aggression, characterized by anger and violent threats, was also observed among 28.4% of first-time TBI patients recruited from an acute trauma unit (Rao, Rosenberg, Bertrand, Salehinia, Spiro, Vaishnavi & Miles, 2009). Thus, TBI-related injuries are thought to increase aggressive tendencies because the injury causes impulsivity, loss of self-control, and the inability to modify behavior, often leading to criminal involvement (Sarapata, Herrmann, Johnson, & Aycock, 1998).

In an Australian study, history of TBI was reported significantly more frequently in the prison population than in the community population (Perkes et al., 2010). The prison population reported a significantly higher prevalence of persisting neurological (39% vs 2%), psychological (25% vs 1%), and social (15% vs 1%) side-effects, with personality and social factors also differing significantly between each group. Most importantly, there was a significant difference between the groups' screening questions that concerned impulsivity (55.8% of the prison population compared to 7.5% of the community population) and anti-social personality (50.3% prison and 3.6% community). Consistent with past literature, the prevalence of TBI was significant among the prison/offender population compared to the community population. Though this study did not explicitly focus on aggression, the study did analyze the behavioral complications as a result of TBI among the prison population, which indicated significant characteristics of aggression occurring more frequently; specifically, impulsivity and antisocial traits.

Such characteristics of aggression (i.e., impulsivity and antisocial personality traits) have been reported in case studies dating as far back as the 17th century, where clinicians reported poor impulse control, explosive aggressive outburst, and lack of interpersonal sensitivity among patients with frontal lobe damage, specifically damage to the orbitofrontal cortex (Brower & Price, 2001; Dyer et al., 2006). In the review article, Brower and Price (2001) discuss that the orbitofrontal syndrome, behavioral disturbance resulting from damage to the lobe, has haunting similarities to psychopathy. Sometimes referred to as "acquired sociopathy", the neuropsychological behavioral deficits such as impulsivity, lack of remorse and empathy, and violent and aggressive tendencies have been reported in patients who had frontal lobe, prefrontal lobe, and orbitofrontal lobe

injuries, all of which are strongly associated with violence and criminality (Brower & Price, 2001; Dyer et al, 2006; Palijan et al, 2010; Wortzel & Arciniegas, 2013).

TBI and Incarceration

Much of the underlying association between TBI and behavioral dysfunction derives from the cognitive and emotional impairments that result from TBI (Turkstra et al., 2003). Impulsivity and aggression being risk factors are, perhaps the biggest risk factors (Perks et al., 2010). Turkstra et al. (2003, 2010) indicated that when cognitive and emotional impairments following TBI are catalyzed during a social encounter individuals with TBI are more susceptible than individuals without TBI to make poor social judgments, to overreact to proactive stimuli, or to strike out impulsively because of poor communication skills. Such behaviors lead to police interventions and/or legal consequences, which is described in the study conducted by Turkstra et al. (2003).

Forty African-American males were recruited for the study; half were convicted of violent crimes and the other half had no convictions (Turkstra et al., 2003). Each participant completed a questionnaire that assessed life history, health history, and demographic information. Results indicated similar findings to the study done by Sarapata et al. (1998); severe TBI was more prevalent in the group convicted of violent crimes than the non-convicted group. Also aligned with the results from Sarapata et al. (1998), Turkstra et al. (2003) found that symptoms of anger and anxiety were more common in the convicted group than non-convicted group. Therefore, Turkstra et al. (2003) suggest a strong link between TBI and crime, in which they believe may have implications for sentencing.

Because individuals with frontal lobe injury are known to have difficulty changing future behavior based on past consequences, sentencing these individuals to a facility that emphasizes punishment (e.g. prison) will be less successful than sentencing to a facility identifying aggressive impulsiveness and teaching alternative coping strategies (e.g., rehabilitation facilities). Turkstra et al. (2003) suggests that obtaining information about the defendant's history and identifying the severity of the injury and its impairments will provide the courtroom with additional information necessary to determine an appropriate sentence.

This brief review of the literature revealed a strong correlation between the presence of TBI and criminality, that previous literature has also suggested (Barnfield & Leathem, 1998; Colantonio et al., 2007; Perks, et al. 2011; Sarapata et al., 1998; Turkstra et al., 2003; Tateno et al., 2003). However, each TBI is individualized and the outcome can vary depending on pre and post-injury risk factors. Such risk factors include low socioeconomic status, low education, male gender, and history of substance abuse, psychiatric comorbidities, pre-injury aggressive traits, and a tendency to engage in risky behavior (Tateno et al, 2003, Turkstra et al., 2013). However, there is little evidence that sheds light on the question of whether aggressive behaviors predated, were caused by, or were exacerbated by the brain injury. Therefore, with at least half of any forensic population reporting that they have sustained at least one TBI in their lifetime (Sarapata et al., 1998), it should be assumed that each stage of the criminal justice process, starting with the court system, is well informed of the neurological and psychological impairments caused by a TBI. This information is necessary to make an accurate verdict for any defendant. However, there is very little research literature that analyzes the

perceptions of individuals with a history of TBI; even though 25%-87% of the prison population has sustained a TBI (Centers for Disease Control and Prevention, 2014).

TBI in the Courtroom

Jurors are exposed to a significant amount of information to assist in their verdict deliberations. However, the jury is made up of ordinary individuals from society who may or may not be familiar with the law, or may become confused by unfamiliar legal jargon, vocabulary, and long, complex sentences that are used in the court room (Strawn and Buchanan, 1976). Daftary-Kapur, Dumas, and Penrod (2010) cited a review article by Elwork and Sales (1985) that indicates a less than 50% comprehension level for pattern jury instructions; thus, if members of the jury do not understand the instructions given to them, they tend to rely on ‘commonsense justice’ (i.e., judging the defendant based on what they think the law ought to be). Therefore, if there is an established belief among the public that TBI is correlated with aggressive behaviors and criminality, then jurors may deliberate a harsher verdict to those defendants with brain injuries, attributing the brain injury to criminality. Consequently, this could explain why individuals with TBI are being sent to prison rather than to a rehabilitation facility because judges and jurors may not have a good understanding of how TBIs affect the brain, so they do not appropriately account for the impairments caused by the TBI when making judgments about a defendant.

In a study analyzing the effects of the juvenile offender stereotypes “Wayward Youth” and “Superpredator”, each jury was presented a detailed trial transcript of a 15 year old African American male committing aggregated assault and murder (Haegerich, Salerno, & Bottoms, 2013). Results indicated that 100% of the mock jury rendered a

guilty verdict on a murder charge when the offender possessed a “Superpredator” stereotype (i.e., ruthless and unconcerned about the consequences of their actions) compared to the 13% of the jurors who rendered a guilty verdict for the “Wayward Youth” stereotype (i.e., immature, inherently good adolescent who strayed from the right path). Though this study was comparing youth offenders, it suggests that disruptive behaviors and lack of empathy influenced jurors to render a guilty verdict. Such “Superpredator” qualities are quite similar to the behavioral and cognitive impairments such as aggression, impulsivity, irritability, and disinhibition resulting from TBI. Therefore, it could be assumed that due to the “Superpredator” qualities some defendants with TBI possess, jurors may render more guilty verdicts because of the defendant possesses disorderly and delinquent qualities.

Individuals with a history of TBI often lack empathy and react on impulses, which commonly occur after damage to the orbitofrontal cortex (OFC). Damage to this area of the frontal cortex impairs an individual’s ability to regulate impulses and social behavior (Dyer et al., 2006). These impairments from the brain injury may go unnoticed in a courtroom. If a juror did not know the defendant sustained a TBI and had no knowledge regarding the behavioral consequences of TBI, then he or she could pre-judge the defendant as cruel and having no remorse for their actions (i.e., similar to “Superpredator” qualities). Instead of understanding how the injury influences personality and behaviors, the jury may perceive that the defendant simply has a personality flaw (i.e., aggressive or antisocial personality) which led to the criminal behaviors. Because of the omission that the brain injury may play a role in the individual’s criminal behaviors, the jury may attribute blame to the defendant, rather than

understanding that the defendant has a brain injury which can, in turn, affect such behaviors. This tendency may explain why there are far more brain injured inmates in prison and jail than non-injured inmates (Sarapata et al. 1998). These misattributions of brain injured defendants cause the jury to send the defendant to prisons and jails, which may prevent the potential for rehabilitation.

Public Perception of TBI

Public perception is based on morality, defined by the Merriam-Webster dictionary (2015) as the principles concerning the distinction between right and wrong or good and bad behavior. According to Carnes, Lickel, and Janoff-Bulman (2014), morality helps make social life possible, playing a functional role in facilitating sociality. Morality becomes socially embedded from which derives a consensus in the way people understand the role of moral principles in differing social contexts. People tend to perceive morality differently based upon the social roles and social situations. Therefore, it is important to understand how individuals perceive TBI and its effects on an individual.

Recent literature on morality has found that different kinds of groups instill different kinds of valued characteristics in others. Within each group, there are shared norms that guide behavior in diverse social contexts (Carnes et al., 2014). Thus, how jurors perceive the behaviors of the defendant is based on the social context of the crime, as well as the individual qualities of the defendant. As a result, a crime committed by one defender may be perceived as morally acceptable, whereas the same crime committed by another defender may be perceived as immoral behaviors.

How the public perceives crime and mental illness greatly affects the outcome of a defendant perceived as guilty or not guilty of the crimes committed. According to Ramchand, MacDonald, Haviland and Morral (2008) the severity of crime can be regarded as a multidimensional concept that considers harm to society, personal harm experienced by victims, and the potential consequences for the offender. However, based on public perceptions, the severity of crimes may be subject to shift (e.g., the War on Drugs, moral panics about marijuana, and prohibition of alcohol); therefore shifting how a crime is perceived to be (Ramchand et al., 2008).

The phenomenon known as *moral sensitivity* is defined as the ability to recognize the presence of a moral issue and understand its attribution and importance (Sparks, 2015); or as Sparks and Hunt (1998) stated that, in order to indicate a moral issue, people must see blood flowing. When people see “blood flowing”, they become sensitive to the situation and immediately recognize that there is a moral issue occurring. However, some people are less sensitive to moral issues and can overlook the situation’s importance; therefore not notice the immoral act.

Recognizing the presence of a moral issue becomes difficult when the behavior is seen in different moral atmospheres. For example, underage drinking is considered a crime and is punishable by law. However, the perception of the crime may vary with the context. Allowing a teenager to become intoxicated at a family celebration may not be perceived as a crime, whereas a teenager drinking at a party may. In both situations the teenager is committing a crime (i.e., underage drinking); however, the perception of the crime shifts based on the environment. Thus, the perception of crime is the outcome of

how individuals perceive the behaviors when confronted with different types of settings (Svensson, Pauwels, and Weerman, 2010).

Social control theory has been one of the most frequently cited and tested criminological theories that explains why crime occurs (Schoepfer & Piquero, 2006). Gottfredson and Hirschi (1990) created this theory and argued that the lack of self-control is a main component to criminal behavior. People will stop committing crimes when they have developed a strong sense of self-control either through age or finding alternative means to reach their goals. Gottfredson and Hirschi (1990), however, did not account for other predictors that may influence self-control (i.e., brain injury), in addition to influencing the behaviors of crime.

Brain injury limits a person's self-control? The frontal lobe is one area of the brain responsible for inhibiting impulses and suppressing aggression (Wortzel & Arciniegas, 2013). Similarly, the limbic system is responsible for mediating signals from the prefrontal cortex and hypothalamus. When there is damage to the frontal lobe, there is a sudden release of limbic-generated and amygdala-generated signals which can cause uncontrollable behaviors, resulting in impulsivity, loss of self-control, and the inability to modify behaviors (Brower & Price, 2001; Wortzel & Arciniegas, 2013).

Without the ability to control behaviors, individuals with TBI are impulsive, react more often to provocation, and display heightened aggression. From a medical viewpoint, the effects of the brain injury may have influenced the behaviors; therefore, the individual may or may not have had control over his behaviors or does not understand the consequences of his actions. However, from a bystander's perspective, the behaviors of the individual could be seen as violent or dangerous. The bystander may not understand

that the brain injury has an influence over the individual's behaviors, and will displace blame onto the individual rather than understanding that the individual has a mental disability which causes him to react violently to the situation. Depending on the context, the individual with TBI is perceived differently; a person with a mental disability versus a person who is violent and unpredictable. Thus, it is important to study the public perception of individuals with brain injuries to understand how society views brain injury and associated behaviors.

Statement of the Problem

Given the limited research on how individuals with a history of TBI are perceived in society and in court, Sarapata et al. (1998) suggests that persons with TBI participate in crime more frequently than they would if they were not injured, which is why there is a high proportion of individuals with a history of TBI in prisons and jails. Thus, it is reasonable to suggest that defendants with TBIs are prone to multiple offenses and may receive harsher punishments than those without brain injury (Sarapata et al. 1998). Although the suggestion makes sense, it has not been directly tested.

The purpose of these studies was therefore threefold. Experiment 1 examined whether students would assess the hypothetical crimes of defendants with brain injuries to be less morally defensible, to assume guilt, and to ascribe a harsher sentence relative to a person without TBI. Experiment 2 replicated the results of Experiment 1 after correcting for possible weaknesses in the experimental design. Experiment 3 assessed the impact of educating jurors about the repercussions following brain injuries via an informational brochure. Experiment 3 presented the behavioral manifestations of TBI

through the use of a mock trial case, and assessed participants on their judgments of morality, guilt, and sentencing.

Proposed Analyses

In Experiment 1, participants were randomly assigned to one of two crime conditions, and each participant read three crimes scenarios committed by different defendants with varying brain injuries. The data were analyzed using a 1 between (crime: murder vs. assault), 1 within (TBI: severe TBI, mild TBI vs. no TBI) mixed design ANOVA computed on each of the three dependent measures (morality, guilt, and sentencing).

In Experiment 2, participants were presented one version (i.e., severe, mild or no-TBI) of the defendant committing a crime. Therefore, the data was analyzed using a 3 (TBI: severe, mild or no-TBI) x 2 (crime: murder or assault) independent groups factorial design computed on each of the three dependent measures (morality, guilty, and sentencing).

In Experiment 3, participants were presented an informational brochure (i.e., jury duty or brain injury), as well as one version of a mock trial case detailing the testimonies and evidence of a crime that was committed by a defendant with different degrees of brain injury (i.e., severe, mild, or no TBI). A between-subjects analysis of variance; 2 (informative brochure: TBI or jury selection) x 3 (TBI: severe, mild, or no TBI) was used to analyze the data.

Chapter Two:

Method

The available literature indicates that persons with TBI are more aggressive, impulsive, and behaviorally volatile relative to persons without TBI. It is therefore possible that persons with TBI are more likely to engage in risky and potentially illegal behavior and that law enforcement personnel, jurors, and judges are more likely to see these individuals as potential threats to society resulting in a higher frequency of conviction and incarceration. Experiment 1 investigated judgmental biases effecting the level of guilt and punishment of accused individuals with a history of severe TBI, mild TBI, and no TBI. Specifically, the experiment assessed discrepancies between ratings of morality, guilt, and sentencing with hypothetical defendants who differed in the level of severity of brain injury (severe, mild, no TBI) and the severity of their alleged crime (murder, assault).

Participants

Seventy-five students from a large section statistics course at Towson University participated in the study. Participants were informed that the purpose of the study was to evaluate the judgmental biases and perceived guilt of accused individuals with a history of brain injury. See Appendix A. Only those who were at least 18 years of age were able to participate in the study. Students were given extra credit for their participation in the study. The study procedures were approved by the university IRB committee.

Of the 75 participants, there were 56 female participants, 15 male participants, and 8 participants who chose not to answer. Fifty-one (68%) self-identified as white, nine (12%) as African-American, six (8%) as Latino(a), four (5.3%) as Asian-American,

one (1.3%) as “other”, and four (5.3%) chose not to answer. Ages ranged from 18 to 48 ($M = 19.78$, $SD = 5.39$).

Procedure

Participants were randomly assigned to one of two crime conditions: murder ($n = 36$) or assault ($n = 39$). Each participant read three hypothetical crime scenarios and completed identical questionnaires immediately following each scenario. The three scenarios described three different defendants who committed the same crime: a defendant with severe TBI, mild TBI, and with no TBI. For example, in the murder condition, participants read one scenario about a defendant diagnosed with severe TBI committing a murder, the second scenario concerned a defendant diagnosed with mild TBI who committed a murder, and then a third scenario about a defendant with no TBI who committed a murder. This same procedure was used with participants in the assault condition. The scenarios were counterbalanced per participant within each crime condition. See Appendix B. After reading each of the three scenarios, participants completed the same version of the questionnaire that assessed three dependent measures (i.e., morality, guilt, and punishment). See Appendix C.

Manipulation check. Before filling out the questionnaires, the participants first answered one question, “What crime was allegedly committed by the defendant?” Three participants failed the manipulation check and their questionnaires were not included in the analyses.

Morality. Participants then answered three questions using 7-pt scales that assessed the morality of the defendant’s alleged crime on a scale of 1- *not at all* to 7- *extremely*. The first question asked, “How ethical were the defendant’s behaviors that

night?”, the second question asked, “How morally acceptable was the defendant’s behaviors that night?”, and the third question asked, “How morally justifiable were the defendant’s behaviors that night?”.

Level of guilt. Participants then answered three questions that assessed the defendant’s level of guilt on a scale of 1- *not at all* to 7- *extremely*, the first question asked, “How at fault is the defendant of committing the crime?”, the second question asked, “How liable is the defendant of committing the crime?”, and the third question asked, “How guilty is the defendant of committing the crime?”.

Punishment. Participants then answered six questions that assessed the most appropriate form of punishment if the defendant was convicted on a scale of 1- *not at all* to 7- *extremely*. The first question asked, “How punishable are the defendant’s behaviors?”. The next four questions used a 7-pt scale ranging from 1- *not appropriate* to 7-*extremely appropriate*. The first question asked, “If convicted, how appropriated would rehabilitation be?”. The second question asked, “If convicted, how appropriated would community service be?”. The third asked, “if convicted, how appropriate would a jail sentence be?” The fourth question asked, “If convicted, how appropriate would a prison sentence be?”. The fifth question in this section asked, “If convicted, how long of a sentenced should be given?” These questions prompted the participant to select from multiple choices ranging from no sentence to between 16-20 years.

Chapter Three:

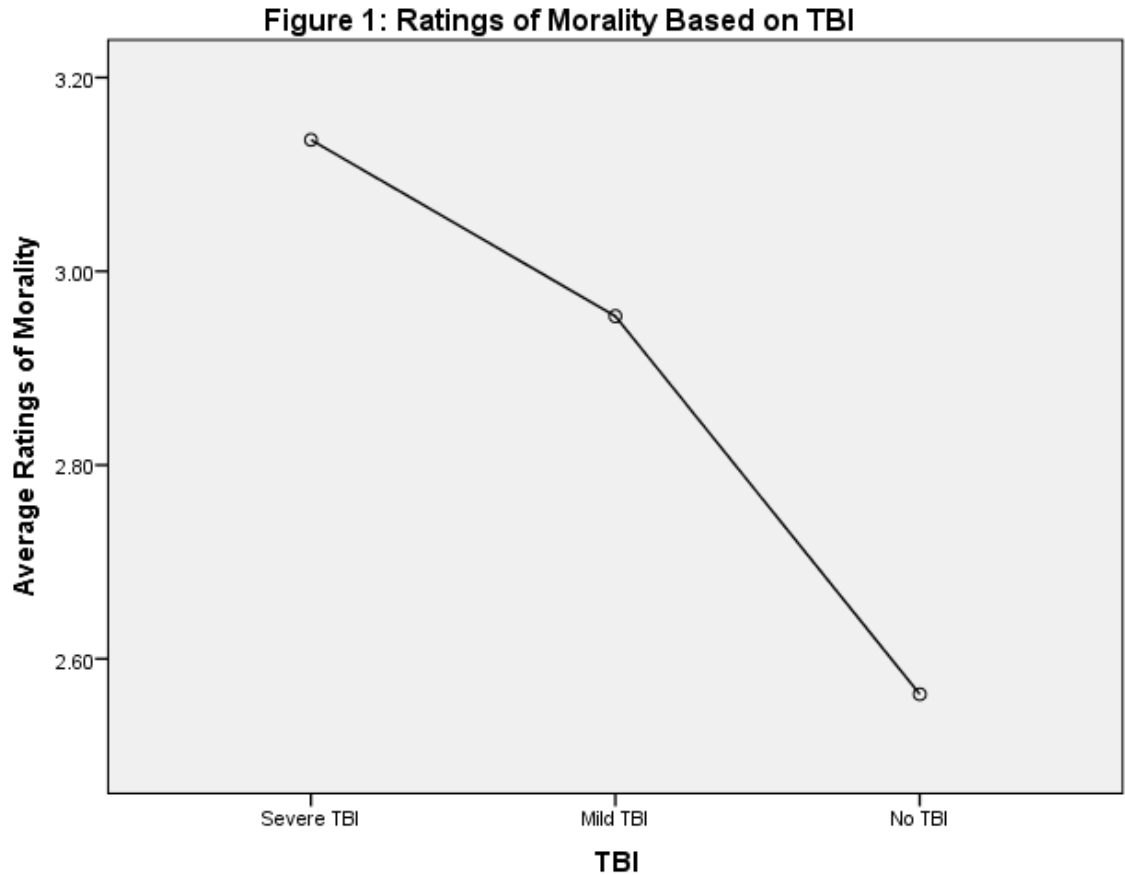
Results

Morality Index

Cronbach's α statistics computed on the morally acceptable, morally ethical, and morally justifiable subscales, were reliable in each condition; severe TBI condition ($\alpha = .824$) mild TBI condition ($\alpha = .914$) and no TBI condition ($\alpha = .951$). Thus, the three morality questions were therefore combined into a single index.

An Analysis of Variance (ANOVA) computed on the morality index revealed a significant main effect of TBI, $F(2, 146) = 8.291, p < .001$. Generally, participants perceived the crimes committed by the defendant with a history of severe TBI higher in morality ($M = 3.14, SE = .139$) relative to the defendant who had mild TBI ($M = 2.95, SE = .166$) and the defendant who had no TBI ($M = 2.56, SE = .173$). See Figure 1. Overall, participants rated the defendant's behaviors (i.e., the crime) who had severe TBI to be morally justifiable, acceptable, and ethical that the same behaviors executed by the defendant with mild TBI and no TBI.

The main effect of type of crime was also significant, $F(1, 73) = 19.01, p < .001$. Overall, participants rated the crime of murder ($M = 2.29, SE = .198$) as being more immoral than the crime of assault ($M = 3.48, SE = .190$). There was no significant interaction between the morality and crime conditions.

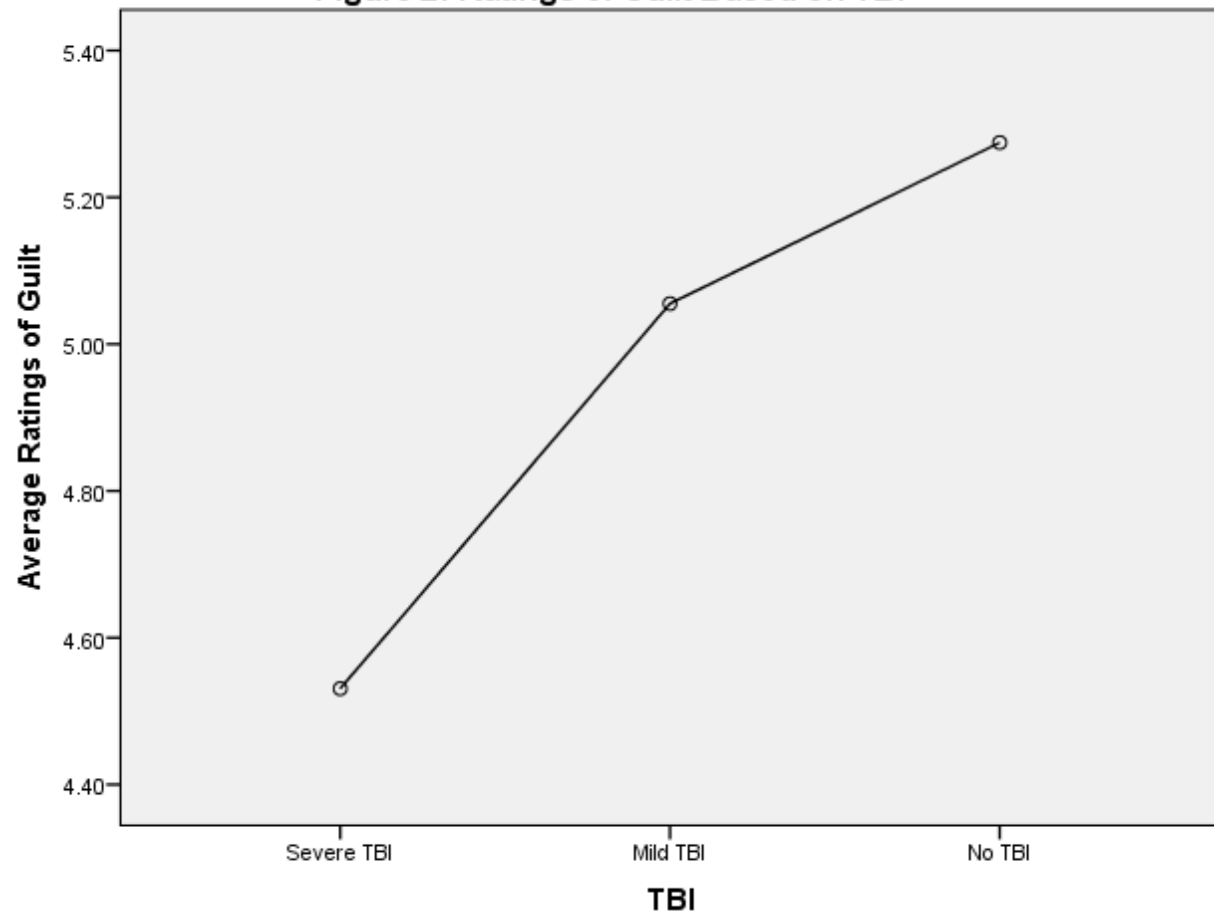


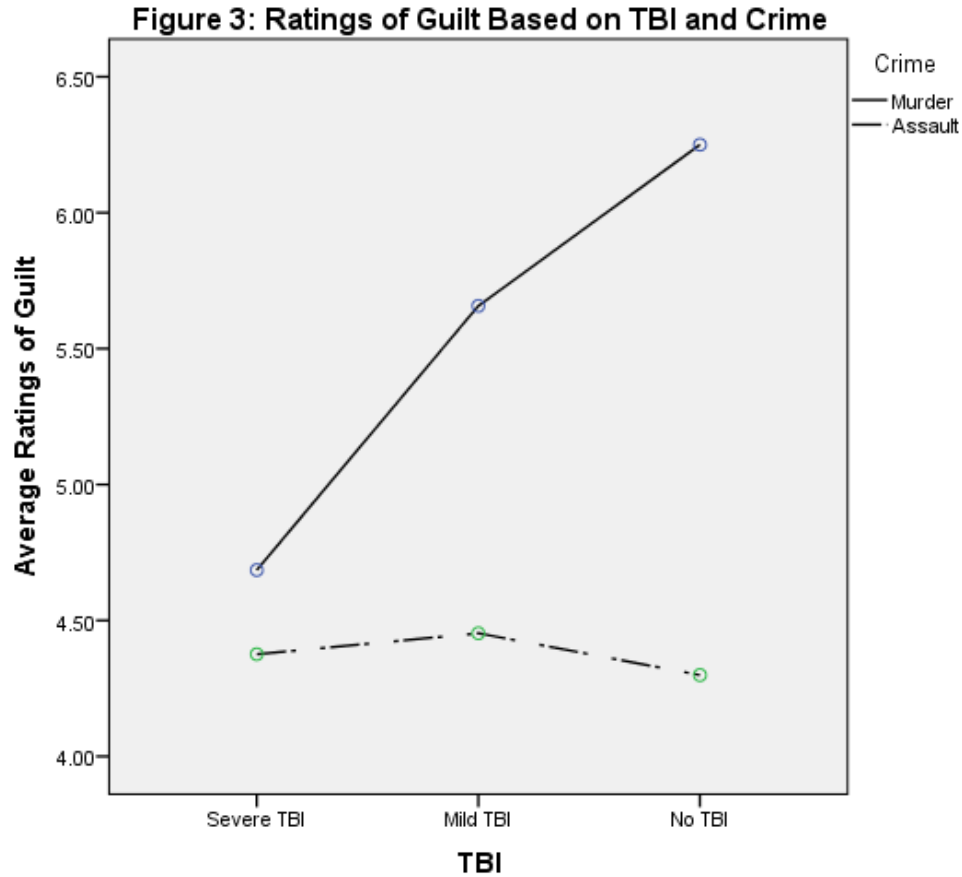
Guilty Index

Cronbach's α computed on the three questions measuring level of guilt (at fault, liable, and guilty) were highly reliable in each condition; severe TBI condition ($\alpha = .864$) mild TBI condition ($\alpha = .902$) and no TBI condition ($\alpha = .956$). Thus, the three questions measuring level of guilt were combined into a single index.

The ANOVA on the guilt index revealed a significant main effect, $F(2, 146) = 10.78, p < .001$. Participants perceived the defendant with no TBI to be more guilty ($M = 5.28, SE = .185$) relative to the defendant with severe TBI ($M = 4.53, SE = .167$). There was no significant differences of the level of guilt between the mild TBI ($M = 5.06, SE = .160$) and the other two TBI conditions. See Figure 2.

The main effect of crime type was also significant, $F(2, 146) = 10.783, p < .001$. Overall, participants rated the crime of murder ($M = 5.53, SE = .205$) as having a higher level of guilt than the crime of assault ($M = 4.77, SE = .197$). There was a significant TBI x crime interaction, $F(2, 146) = 12.47, p < .001$. Participants perceived the behaviors of the defendant with severe TBI to be less guilty ($M = 4.69, SE = .242$) than the defendant with mild TBI ($M = 5.68, SE = .231$) or no TBI ($M = 6.25, SE = .266$). This was not the case for a relatively minor offense of assault for which there was no significant difference in perceived guilt for the TBI and no-TBI defendants. See Figure 3.

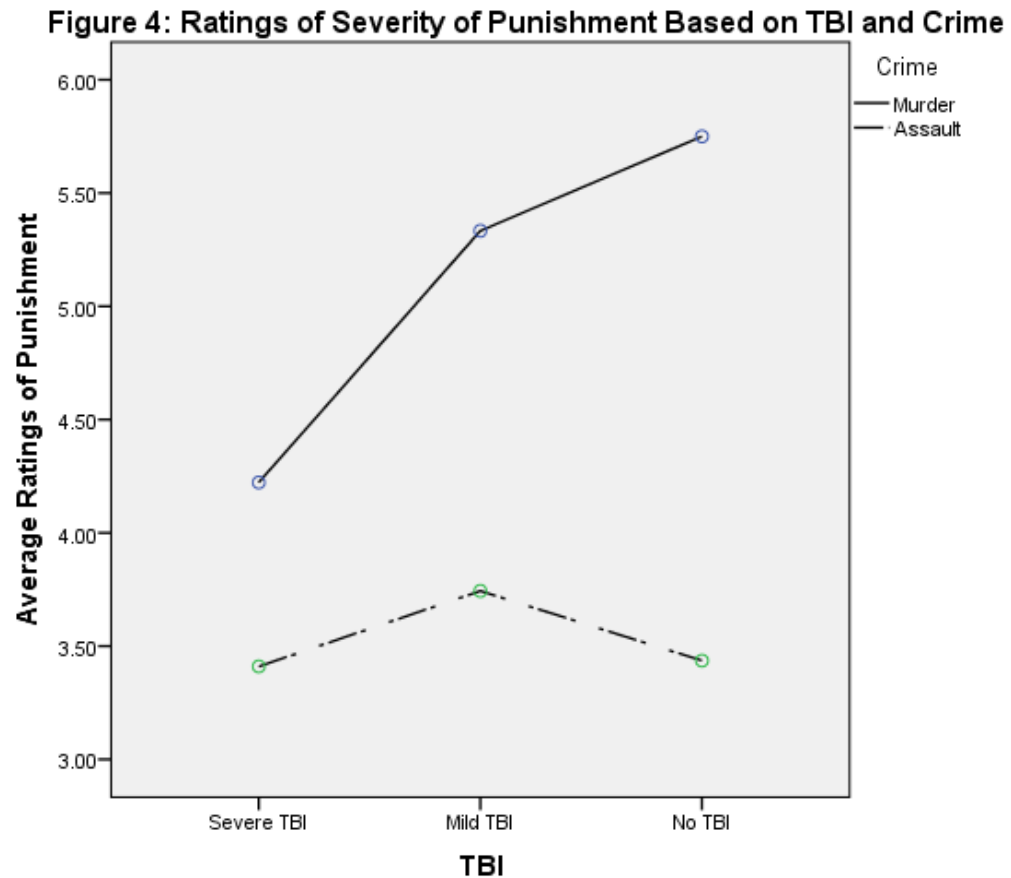
Figure 2: Ratings of Guilt Based on TBI



Punishment Index

Punishable Analysis. There was a significant main effect for how punishable the crimes were, $F(2, 146) = 8.251, p < .001$. Defendants with severe TBI received lighter sentences ($M = 3.82, SE = .173$) relative to the defendants with mild TBI ($M = 4.54, SE = .210$) or to the defendants with no TBI ($M = 4.59, SE = .195$). There was also a significant main effect for type of crime, $F(1, 73) = 27.80, p < .001$. Murder was perceived as more punishable ($M = 5.10, SE = .215$) compared to assault ($M = 3.5, SE = .207$). There was a significant crime x punishment interaction in the murder condition, $F(2, 146) = 6.19, p < .001$. Whereas the participants felt that the defendant with severe TBI who murdered should receive the less severe punishment ($M = 4.22, SE = .250$) relative to

the defendant with mild TBI who murdered ($M = 5.33$, $SE = .303$) and the defendant with no TBI who murdered ($M = 5.75$, $SE = .282$). This was not the case for a relatively minor offense of assault for which there was no significant difference in perceived punishment for the TBI and no-TBI defendants.



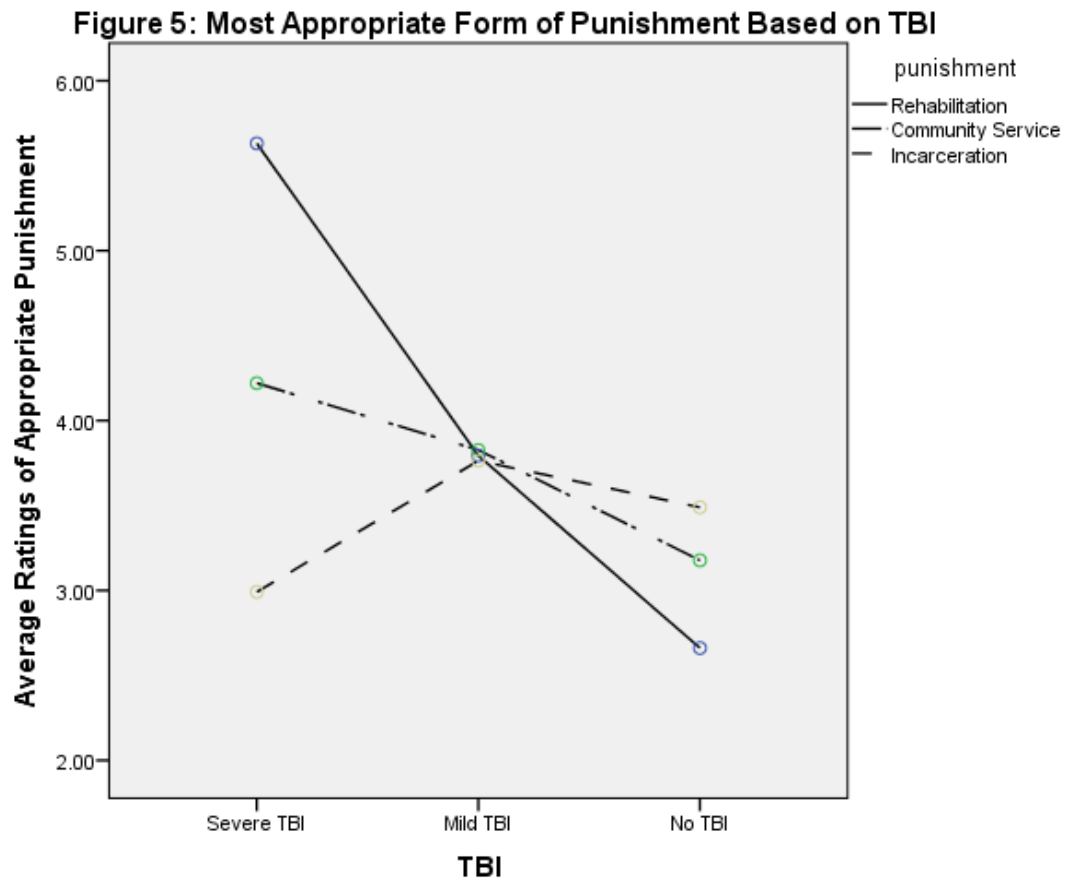
Most Appropriate Form of Punishment Analysis. The questionnaire contained four separate questions that asked if convicted, would rehabilitation, community service, jail or punishment be the most appropriate form of punishment. Jail and prison were highly correlated in each condition; severe TBI condition ($r = .944$), mild TBI condition ($r = .899$) and no TBI condition ($r = .895$). Thus, these two forms of punishment were combined into a single index.

Although defendants with severe TBI generally received more punishment ($M = 4.28$, $SE = .149$) relative to defendants with mild TBI ($M = 4.28$, $SE = .149$) or no TBI ($M = 3.11$, $SE = .142$), $F(2, 146) = 15.15$, $p < .00$, participants typically rated rehabilitation as being the most appropriate form of punishment among the TBI conditions ($M = 4.03$, $SE = .128$) compared to community service ($M = 3.74$, $SE = .129$) and incarceration ($M = 3.42$, $SE = .161$). The crime of murder was perceived to be more punishable ($M = 4.36$, $SE = .171$) than the crime of assault ($M = 3.10$, $SE = .164$), $F(1, 73) = 28.74$, $p < .001$.

There was a significant TBI x crime type interaction, $F(2146) = 17.99$, $p < .001$. In the murder condition, participants were more likely to impose some form of punishment to the severe TBI group (rehabilitation, community service, or incarceration) ($M = 4.75$, $SE = .215$), compared to no TBI ($M = 4.45$, $SE = .204$), and mild TBI ($M = 3.88$, $SE = .308$). Likewise, in the assault condition, a person with severe TBI was more likely to receive some form of punishment ($M = 3.812$, $SE = .207$), compared to mild TBI ($M = 3.70$, $SE = .296$), and no TBI ($M = 1.76$, $SE = .196$).

However, although the severe TBI survivors were more likely to receive some form of punishment, the type of punishment varied with the severity of the TBI, $F(4, 292) = 42.47$, $p < .001$. For severe TBI, rehabilitation was rated the most appropriate form of punishment ($M = 5.63$, $SE = .163$) compared to community service ($M = 4.22$, $SE = .228$), and incarceration ($M = 2.99$, $SE = .217$). For mild TBI, community service was rated the most appropriate form of punishment ($M = 3.83$, $SE = .233$) compared to rehabilitation ($M = 3.79$, $SE = .226$), and incarceration ($M = 3.76$, $SE = .263$). For the no TBI condition, incarceration was rated the most appropriate form of punishment ($M = 3.49$, $SE = .169$), followed by community service ($M = 3.18$, $SE = .162$) and rehabilitation

($M = 2.66$, $SE = .188$). Participants also rated incarceration as being the most appropriate form of punishment for the crime of murder ($M = 4.45$, $SE = .204$) relative to assault ($M = 1.77$, $SE = .196$).



Chapter Four:

Experiment 2

The previous study used a within-groups design, where participants were presented identical scenarios of a crime allegedly committed by three different defendants with varying degrees of brain injury. The methodology used in Experiment 1 did not accurately characterize the in vivo juror experience. Each participant read three scenarios of defendants with either severe, mild, and no TBI. However, jurors do not rate multiple defendants; they usually participate in only one trial with one defendant. It is therefore, possible that the results described above could have been biased by carryover effects that resulted from the interplay of the cases. Experiment 2 was designed to rectify this limitation.

The second experiment used an independent-groups design, where participants were randomly assigned to one condition of the TBI and one type of crime condition. Identical scenarios were used, where participants were provided with descriptions of the effects of TBI on behavior prior to making their judgments of morality, guilt, and punishments.

Method

Participants

One hundred and thirty-nine students from a large section statistics course at Towson University participated in the study. Participants were informed that the purpose of the study was to evaluate the judgmental biases and perceived guilt of accused individuals with a history of brain injury. Only those who were at least 18 years of age were able to participate in the study, and extra credit was given to those students who

willing participated. The study was approved by the university IRB committee. See Appendix A.

Of the 139 participants, there were 98 female participants, 23 male participants, and 18 participants who chose not to answer. Seventy-eight (56.1%) self-identified as white, twenty-four (17.3%) as African-American, eight (5.8%) as Latino, six (4.3%) as Asian-American, one (0.72%) as Native American, four (2.9%) as “other”, and eighteen chose not to answer. Ages ranged from 18 to 48 ($M = 19.78$, $SD = 5.39$).

Procedure

All participants signed the informed consent form, and thereafter, were informed of the possible risks involved in the study. Participants were then randomly assigned to one of the six scenarios describing either 1) a defendant with severe TBI committing murder; 2) a defendant with mild TBI committing murder; 3) a defendant with no-TBI committing murder; 4) a defendant with severe TBI committing assault; 5) a defendant with mild TBI committing assault; or 6) a defendant with no-TBI committing assault. These scenarios were identical to those that were used in Experiment 1. After reading the assigned scenario, participants completed the same version of the questionnaire that was used in Experiment 1 that assessed three dependent measures (i.e., morality, guilt, and punishment). At the end of the experiment, participants were asked, “List 5 words/characteristics that describe the defendant”. This task allowed the participants to express their perceptions of the defendant in their own words. See Appendix D.

Manipulation check. The same manipulation checks that were used in Experiment 1 were used in Experiment 2. Three participants failed the manipulation

check in the no-TBI/assault condition due to not indicating the correct crime that occurred. Those questionnaires were not used in the analyses.

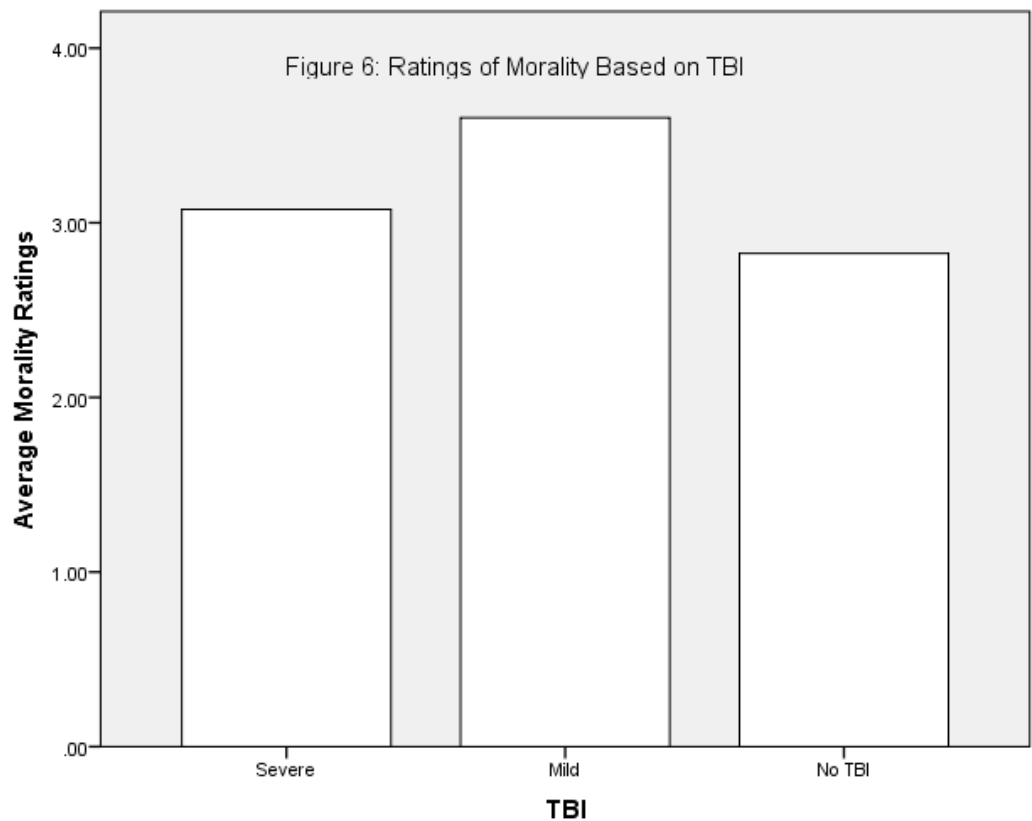
Chapter Five:

Results

Morality Index

The three morality subscales (morally acceptable, morally ethical, and morally justifiable) produced a significant Cronbach alpha ($\alpha = .898$) and were therefore combined into a frequency index.

The ANOVA on the morality index indicated a significant TBI main effect, $F(2, 130) = 3.143, p < .001$. Participants perceived the crimes committed by the defendant with a history of mild TBI to be more moral ($M = 3.56, SE = .209$) relative to the defendant with severe TBI ($M = 3.12, SE = .205$) and the defendant with no-TBI ($M = 2.81, SE = .219$). See Figure 6.



The ANOVA on the morality index indicated a significant crime main effect, $F(1, 130) =$

13.976, $p < .001$. Overall, participants greater morality for defendants who committed the assault ($M = 3.62$, $SE = .171$) relative to those defendants who committed murder ($M = 2.71$, $SE = .174$). There was no significant interaction between TBI and crime.

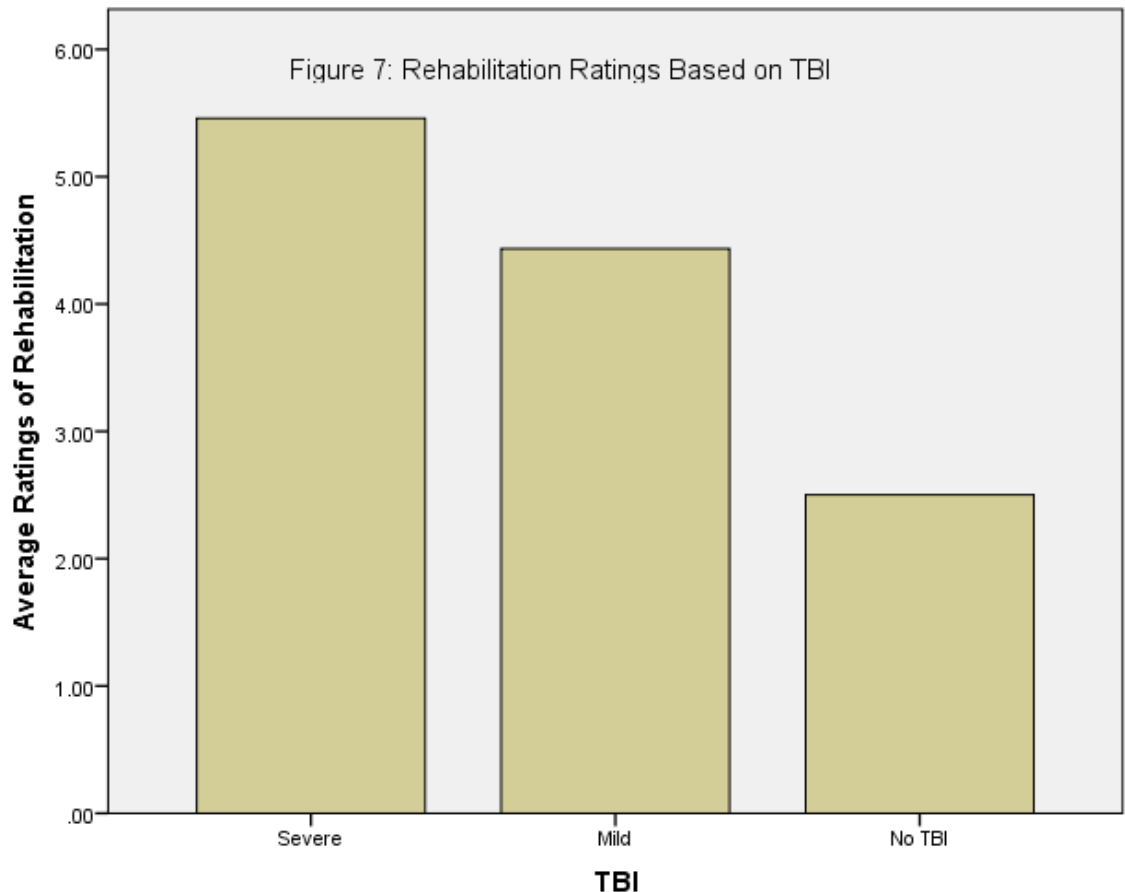
Guilt Index

The three questions measuring level of guilt (at fault, liable, and guilty) were highly reliable ($\alpha = .900$). Thus, the three questions measuring level of guilt were combined into a frequency index. The ANOVA on the guilt index revealed a significant main effect for the crime condition, $F(1, 129) = 35.25$, $p < .001$. Overall, participants perceived those defendants who murdered guiltier ($M = 5.49$, $SE = .180$) compared to those defendants who assaulted ($M = 3.99$, $SE = .178$). There was no significant main effect for the TBI condition. Each defendant, regardless of the brain injury, was given approximately the same guilt rating by participants; severe TBI ($M = 4.69$, $SE = .211$), mild TBI ($M = 4.66$, $SE = .216$), and no-TBI ($M = 4.87$, $SE = .228$).

Punishment Index

To measure punishment, there were four separate questions that asked if the defendant is convicted, would, incarceration community service, or rehabilitation be the most appropriate form of punishment. Jail and prison were highly correlated ($r = .896$). Thus, these two forms of punishment were combined into a frequency index. There was a significant main effect for the crime condition, $F(1, 130) = 52.61$, $p < .001$. The defendants who murdered were perceived as more punishable ($M = 5.05$, $SE = .191$) than the defendants who assaulted ($M = 3.11$, $SE = .188$). However, the type of punishment varied depending on the level of TBI.

There was a main effect for the level of TBI, $F(2, 130) = 29.67, p < .001$; rehabilitation was the most appropriate form of punishment for the defendant with severe TBI ($M = 5.42, SE = .260$) relative to the defendant with mild TBI ($M = 4.48, SE = .266$) and no-TBI ($M = 2.53, SE = .278$). See Figure 7. There was no significant main effect for the level of TBI for the punishment of community service and incarceration.



Word Association Rule

An association Rule Analysis was conducted on the words collected from the participants. This analysis was based on 56 participants, each of whom generated approximately three word descriptions. This analysis evaluated consistent word associations for the various TBI conditions of the experiment: severe, mild, and no TBI. Each of the rules in Table 1 below had significant measures of association ($p < .05$) on

the various measures of association (coverage, support, strength, lift, and leverage – Webb, 2003). Table 1 shows that in the severe condition, descriptions of the defendants were mostly adjectives or adverbs that described a volatile physical and psychological defendant who was likely to be impulsive, aggressive, and angry. In the Mild condition, the participants perceived a more of a confused and defensive person with less potential for overt or immediate physicality. In the no TBI condition, the participants perceived a largely frightened and reflexive defendant who was likely to respond out of fear and surprise.

Table 1. Significant association rules for word descriptions of defendants in the Severe, Mild, and No TBI conditions.

Severe TBI	Mild TBI	No-TBI
Impulsive	Paranoid	Scared
Anxious	Shocked	Reflexive
Aggressive	Confused	Defensive
Angry	Defensive	Startled
Unstable	Cautious	
Misunderstood		

Chapter Six:

Method

Experiment 3

In the previous studies, participants received only a cursory description of the effects TBI has on an individual before making their judgments. Experiment 3 provided a more extensive and detailed account of the crime committed by individuals with severe, mild or no TBI presented in a mock trial transcript. The transcript shared similar characteristics with those used in the in vivo juror experience. In addition to a more detailed account of the crime, participants were presented with either an informational brochure about jury selection or brain injury prior to the mock trial scripts. This added element to Experiment 3 increased the randomly assigned participants' knowledge to see if a more comprehensive education with respect to the consequences of TBI would influence participants' perception of the morality, guilt and punishment of the offense.

Participants

Two hundred and six students from two large section statistics course at Towson University participated in the study. Participants were informed that the purpose of the study was to assess perceptions morality, guilt, and sentencing of defendants with brain injury. Only those who were at least 18 years of age were able to participate in the study, and extra credit was given to those students who willing participated. The study was approved by the university IRB committee. See Appendix A.

Of the 206 participants, there were 169 female participants, 29 male participants, and 8 participants who chose not to answer. One-hundred and thirty-one (63.5%) self-identified as white, forty-five (21.8%) as African-American, ten (4.9%) as Latino, five

(2.4%) as Asian-American, one (0.5%) as Native American, five (2.4%) as “other”, and nine chose not to answer. Ages ranged from 18 to 48 ($M = 19.78$, $SD = 5.39$).

Procedure

Participants were randomized into one of the two brochure conditions and were presented with the informational brochure about jury duty or an information brochure about brain injury. These informational brochures were the same length and participants had five minutes to read through the brochure. See Appendix F.

Once participants read over their specific brochure, they were randomly assigned to one of the three versions of the mock trial script detailing a defendant with either severe TBI, mild TBI, or no TBI on trial for the crime of voluntary manslaughter. The mock trial script described the defendant’s crime, in addition to two direct examinations: 1) a detective discussing the crime in detail, which was identical for each condition; and 2) a medical doctor’s testimony discussing the medical records of the defendant’s severity of brain injury. The latter was altered depending on the condition (i.e., severe, mild or no-TBI). See Appendix G.

The participants first read the mock trial script. After reading the script, each participant completed the same version of the questionnaire, which was also used in the previous studies that assesses 1) the morality of the crime, 2) the guilt of the crime, and 2) how punishable the crime was. See Appendix H.

Chapter Seven:

Results

Morality Index

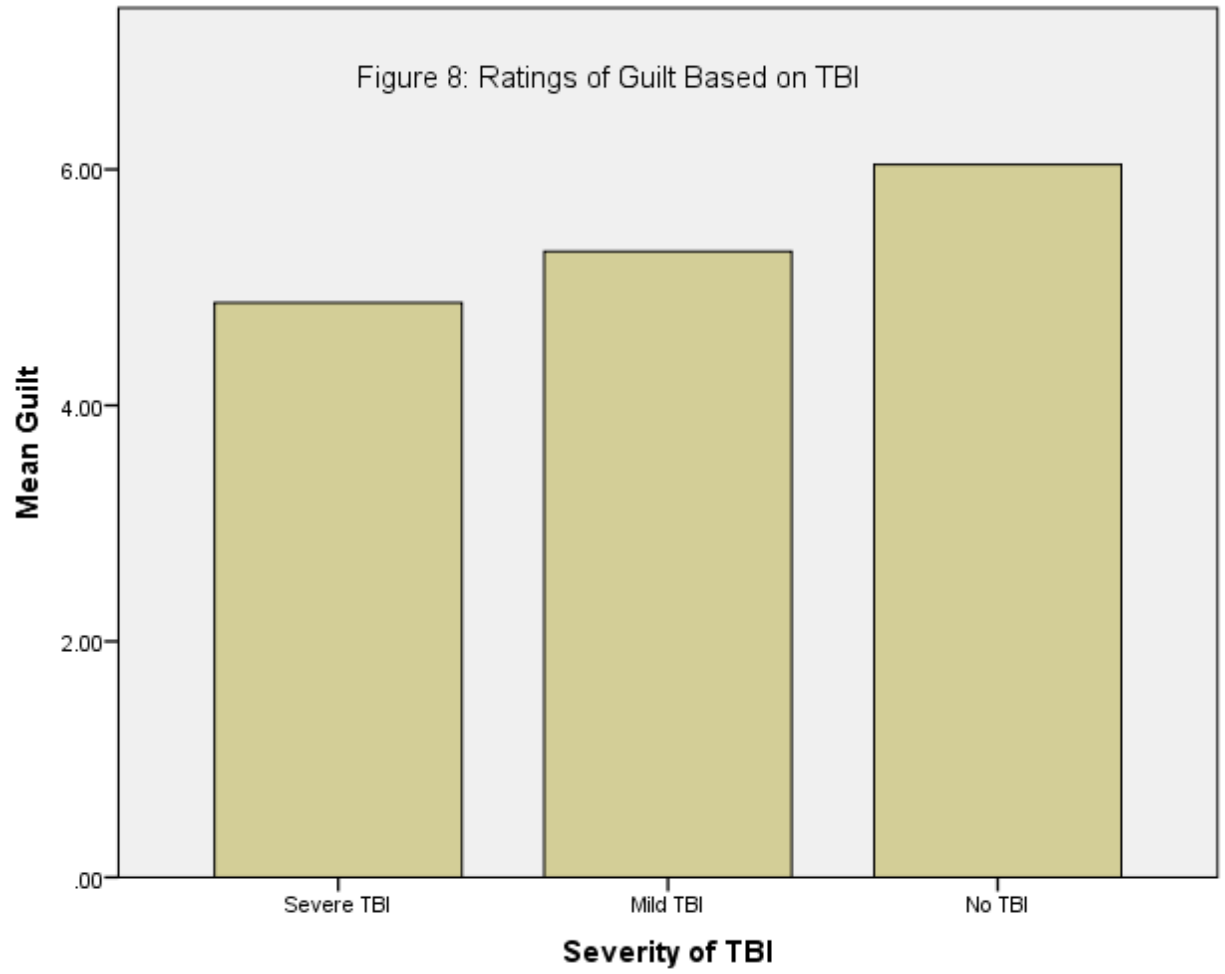
The three morality subscales (morally acceptable, morally ethical, and morally justifiable) produced a significant Cronbach alpha ($\alpha = .802$) and were therefore combined into a frequency index.

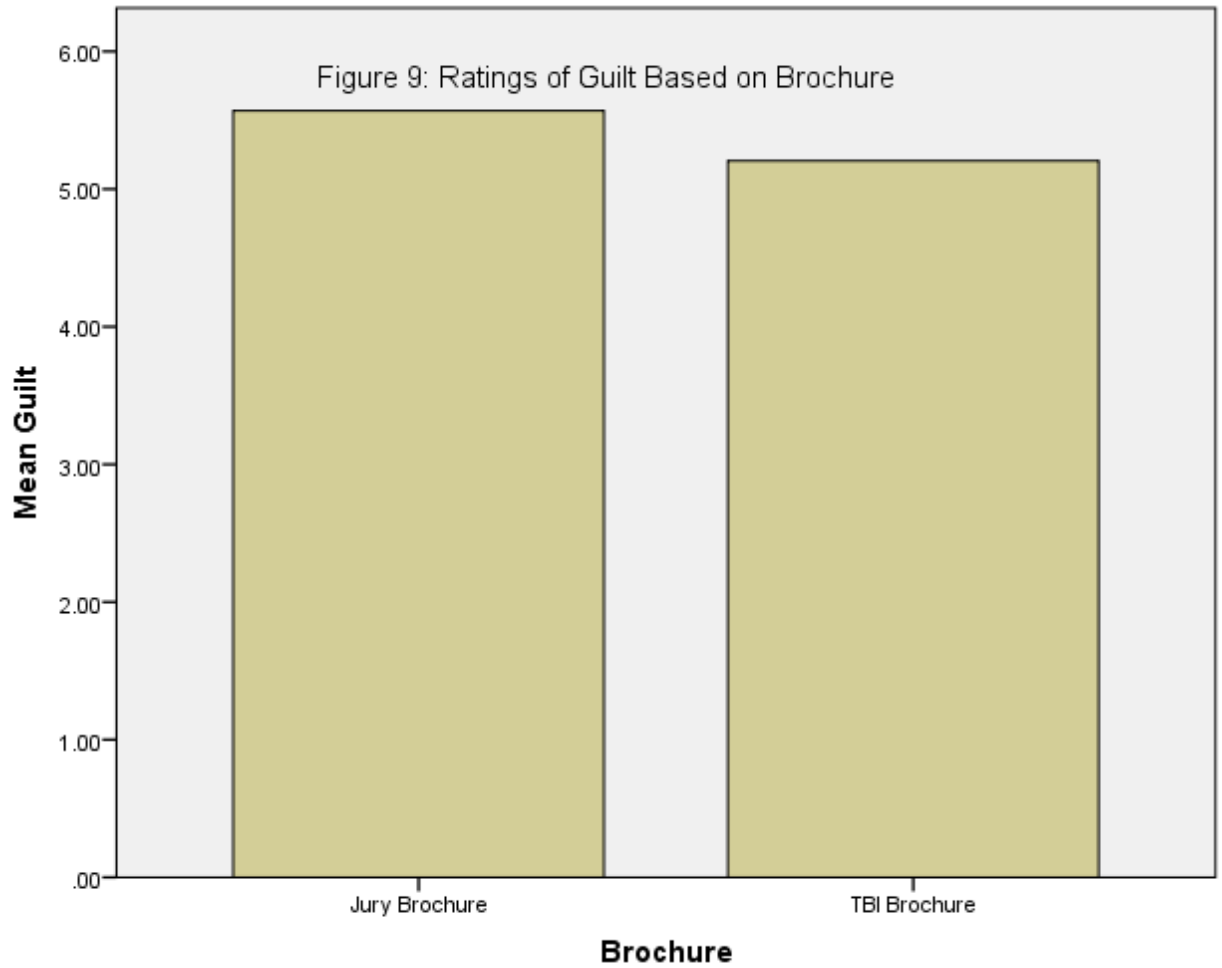
The ANOVA on the index indicated no significant main effect [TBI: $F(2, 198) = 2.334, p = .100$; brochure: $F(1, 198) = 2.111, p = .148$] or interaction [$F(2, 198) = .794, p = .454$] between TBI and brochure.

Guilt Index

The three questions measuring level of guilt (at fault, liable, and guilty) were highly reliable ($\alpha = .841$). Thus, the three questions measuring level of guilt were combined into a frequency index.

The ANOVA on the guilt index revealed a significant main effect for the TBI condition, $F(2, 198) = 15.52, p < .001$. Overall, participants perceived those defendants with severe TBI to be less guilty of the crime ($M = 4.867, SE = .148$) compared to defendants with mild TBI ($M = 5.303, SE = .145$) and no TBI ($M = 6.042, SE = .153$). When analyzing the brochure condition, the ANOVA revealed a significant main effect, $F(1, 198) = 4.764, p < .05$. Participants who received the brain injury brochure rated the defendant as being less guilty of the crime ($M = 5.216, SE = .122$) compared to those participants who received the jury duty brochure ($M = 5.591, SE = .121$). There was no significant interaction between TBI and brochure.



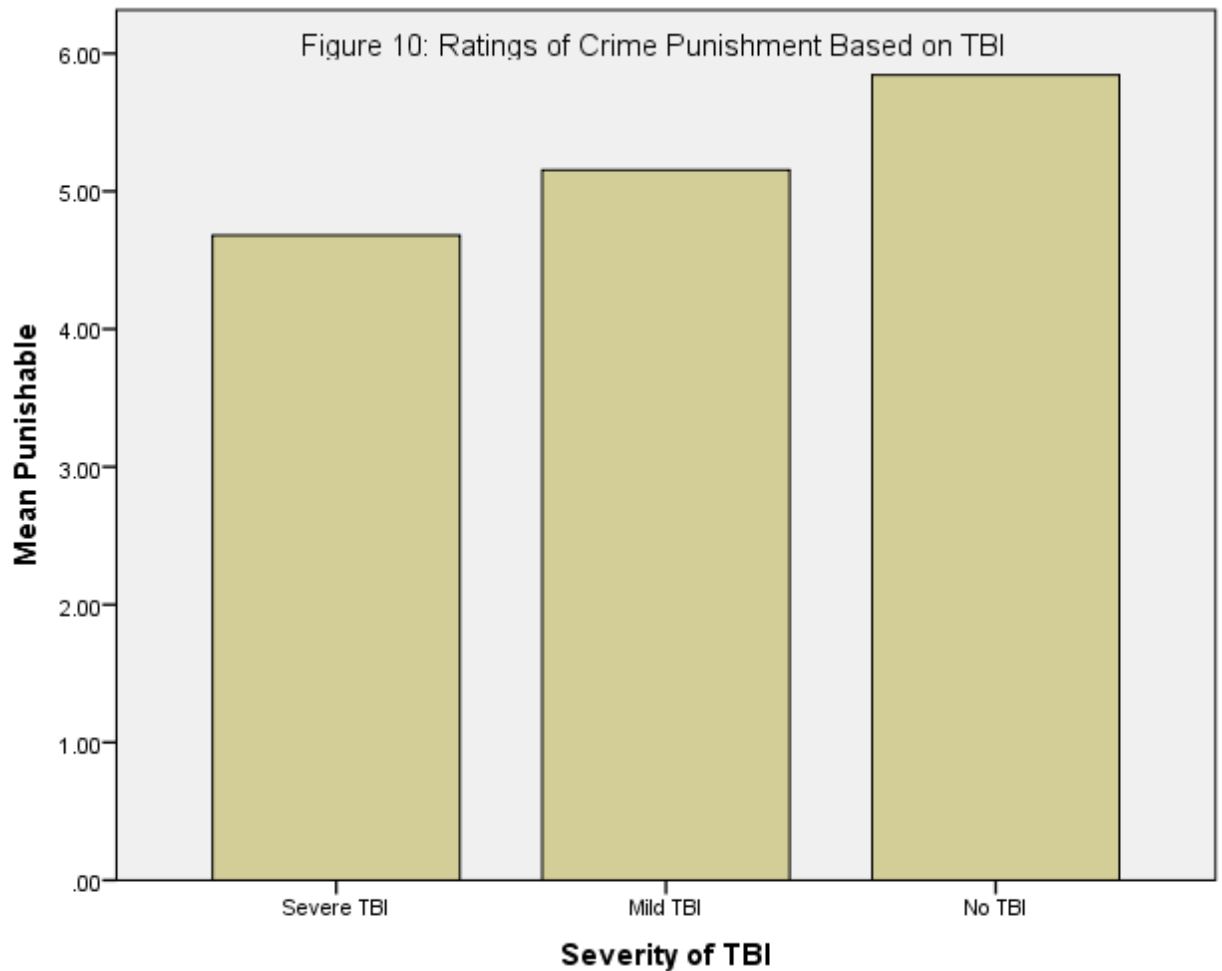


Punishment Index

To measure punishment, there were four separate questions that asked if the defendant is convicted, would, incarceration community service, or rehabilitation be the most appropriate form of punishment. Jail and prison were highly correlated ($r = .904$). Thus, these two forms of punishment were combined into a frequency index.

There was a significant main effect for the TBI condition, $F(2, 198) = 22.621, p < .001$. The defendants with severe TBI were perceived as least punishable for the crime ($M = 4.681, SE = .160$) than the defendants mild TBI ($M = 5.152, SE = .152$) and no TBI

($M = 5.844$, $SE = .166$). There was no significant main effect for the brochure condition nor significant interaction between TBI and brochure.

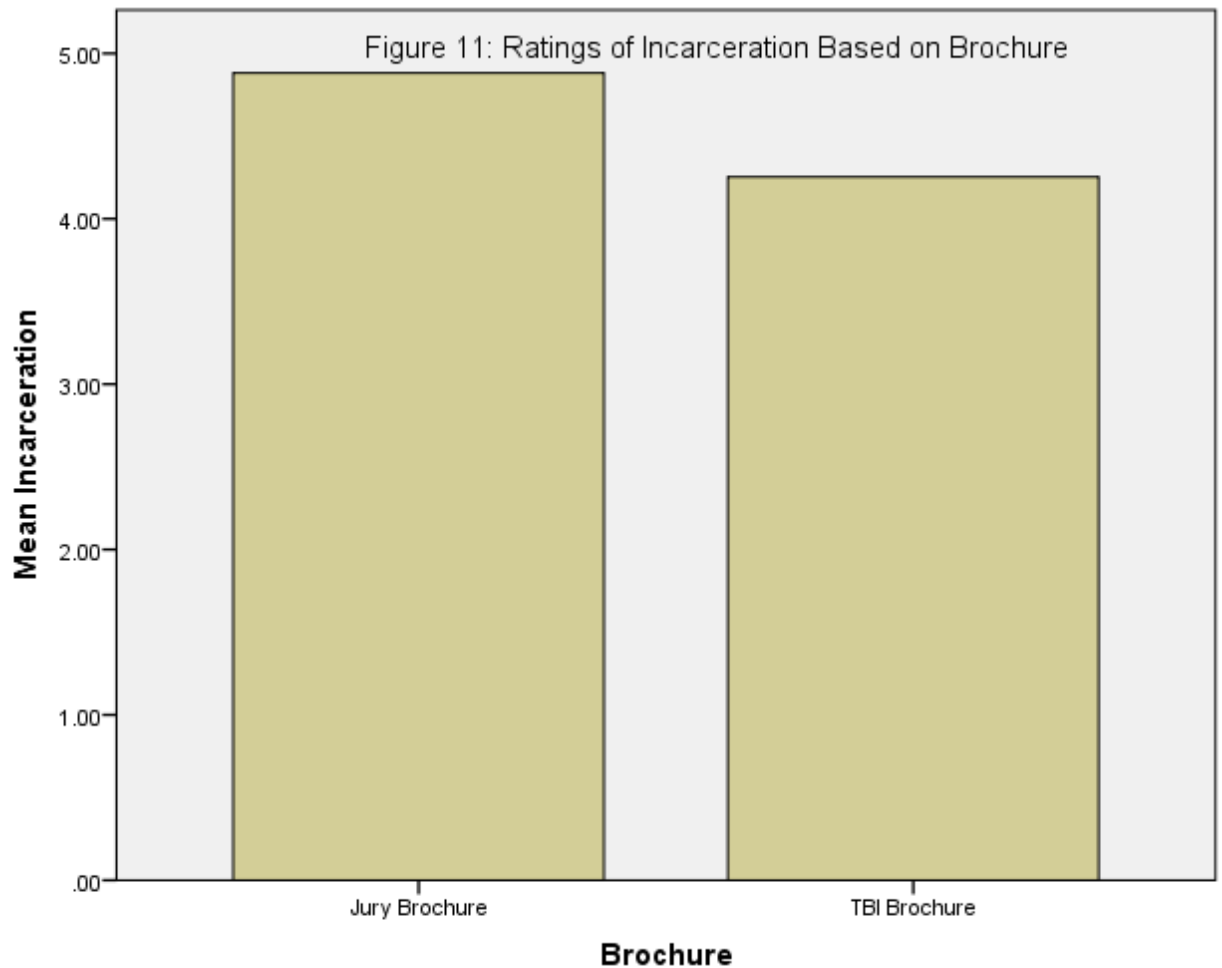


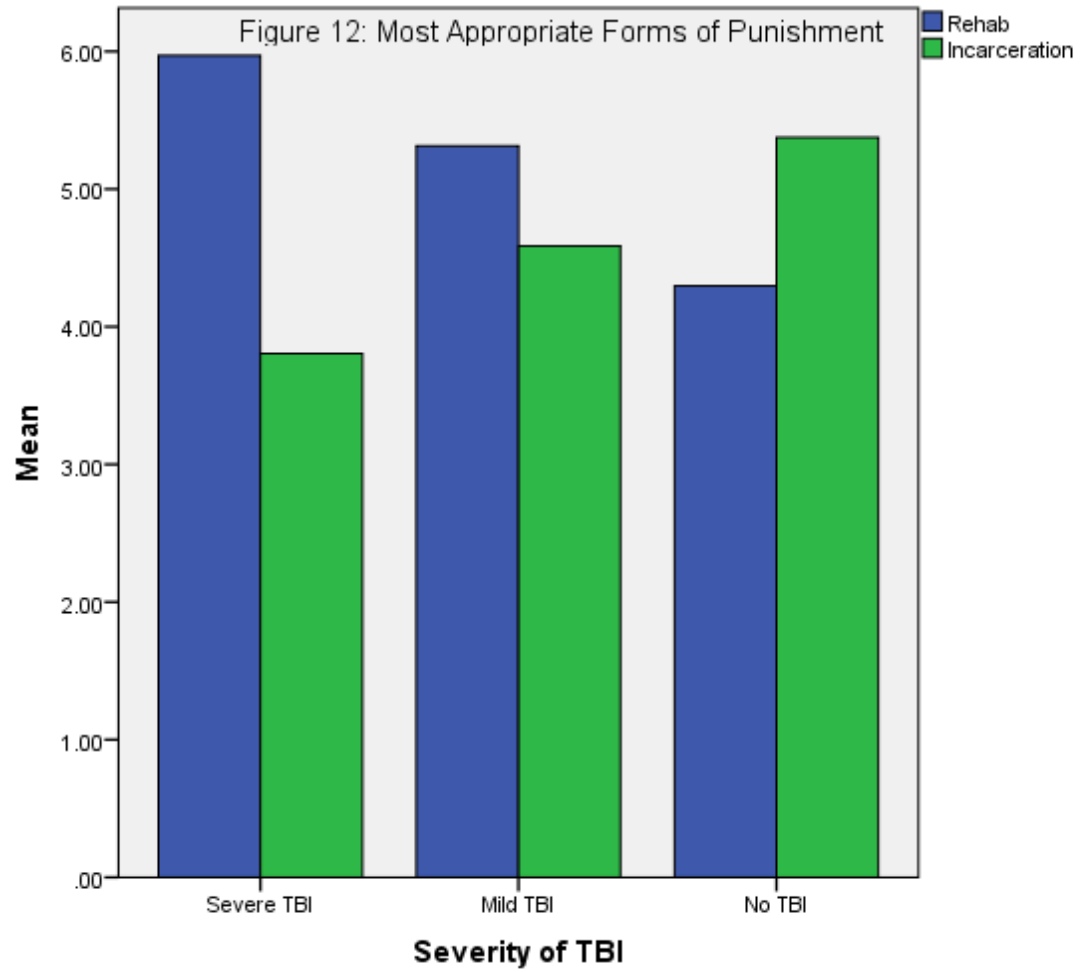
Most Appropriate Form of Punishment Analysis.

There was a main effect for the brochure condition, $F(1, 197) = 8.362$, $p < .005$; those participants who received the jury brochure rated incarceration to be the most appropriate form of punishment for the defendant ($M = 4.903$, $SE = .154$) relative to those participants who received the brain injury brochure ($M = 4.270$, $SE = .155$). In the TBI condition, there was a main effect for rehabilitation, $F(2, 197) = 15.944$, $p < .001$, and incarceration, $F(2, 197) = 16.985$, $p < .001$. Participants rated the defendant with severe

TBI to be most deserving of a rehabilitation sentence ($M = 5.974$, $SE = .207$) compared to the defendant with mild TBI ($M = 5.314$, $SE = .206$) and no TBI ($M = 4.297$, $SE = .215$).

Inversely, the sentence of incarceration was most deserving to the defendant with no TBI ($M = 5.375$, $SE = .195$) compared to mild TBI ($M = 4.586$, $SE = .186$) and severe TBI ($M = 3.799$, $SE = .188$).





Chapter Eight:

Discussion

These results do not accord with the notion that defendants with severe TBI are the more reprehensible relative to those without TBI. Indeed, the results suggest just the opposite conclusion. Overall, the defendant with severe TBI was perceived as less guilty of the crime than the defendant with mild or no TBI, as well as least punishable for the crime than the defendant with mild or no TBI. Rehabilitation was rated as the most appropriate form of punishment for the defendant with severe TBI and incarceration was the least appropriate punishment form of punishment.

The purpose of Experiment 3 was to explore the reasons behind these real life inconsistencies, and investigated how awareness of brain injury and knowledge of post-injury symptoms influenced the perception of guilt and sentencing of defendants with brain injuries. Using informational brochures as an educational produced a significant decrease in the perception of guilt and sentencing for the TBI group. Compared to reading about jury duty (i.e., the control group), reading the TBI brochure and being informed about the symptoms, behavioral, emotional, and cognitive changes experienced by individuals with TBI reduced perceptions of guilt and punishment of the defendants. The defendant with severe TBI was perceived as less guilty of the crime than the defendant with mild or no TBI. Similarly, incarceration was seen as the least appropriate form of punishment for the defendant with severe TBI, whereas incarceration was the most appropriate form of punishment for the defendant with no TBI.

General Discussion

Morality - There were several findings that did not replicate. For example, in Experiment 1, participants perceived those crimes committed by the defendant with no TBI to be the most immoral behaviors relative to the defendant with severe and mild TBI. In Experiment 2, the crimes committed by the defendant with severe TBI were perceived as being less immoral than the no TBI defendant, but more immoral than the defendants with mild TBI. In Experiment 3, there were no significant differences among the groups for the morality measure. Though there are disparities between ratings of morality, one thing that is consistent between these experiments is that the crimes (murder and/or assault) were considered immoral behaviors in some degree. Although the hypothetical defendant did commit an illegal act, the existence of the neurological impairments seemed to affect the justification of the crime. More importantly, the justification changed based on the severity of the brain injury, indicating that the participants considered the neurological deficits resulting from the brain injuries when determining both morality and verdict of the crime.

Guilt - In Experiment 1, defendants with severe TBI were judged as less guilty relative to those with mild or no TBI. This result did not replicate in Experiment 2 where all defendants were judged equally guilty. However, in Experiment 3 the defendant with severe TBI was the least guilty of the crime after participants read the brain injury brochure. Although this result requires replication, the available data suggests that the perception of guilt or innocence may vary considerably from trial to trial. Additionally, the more educated the jury is on the consequences of brain injuries, the more empathy they are likely to show when determining the verdict.

Punishment – Punishment was the only analyses which replicated throughout the experiments. The severe TBI defendants were more likely to receive rehabilitations than were defendants in the other conditions. Although this finding contradicts the notion that half of any given prison population reported having sustained at least one TBI in their lifetime. Nevertheless, the consistency of the finding in this sequence of experiments is interesting because it suggests that, at some level, the brain injury was taken into account when determining the appropriate punishment for the crime. Although brain injury was not a consistent factor when determining guilt or whether or not the crime was morally acceptable, it did influence the participants' perception of the defendant when deciding the appropriate form of punishment. Furthermore, the additional education via the TBI brochure showcased a higher level of understanding, in that deficits resulting from brain injury also had some influence of the crime occurring.

Word Association Rule- Based on the Word Association analysis, participants described the defendant with severe TBI to be anxious, angry, impulsive, and aggressive; whereas they described the defendant with mild TBI as cautious, scared, confused, quick, shocked, and paranoid. The defendant with mild TBI was perceived as fearful of and shocked by the situation which suggests an unpremeditated startle reaction. On the other hand, the defendant with severe TBI was viewed as being generally angry and aggressive which possibly predisposed an outburst of violence. Thus, the defendant with severe TBI was judged based on inherent personality flaws, whereas the defendant with mild TBI was judged based on a “kneejerk” reaction that resulted from being startled by the victim.

Limitations

Despite the prevalence of brain injuries occurring over the past decade, people in the general public lack the knowledge about the cognitive, physical, and behavioral repercussions resulting from brain injury (Hux, Schram, & Goeken, 2009). This global unawareness (Chapman & Hudson, 2010; Mavis & Akyildiz, 2013) is not only seen among the lay population, but among many professionals involved in healthcare and education, (Hux, Bush, Evans, & Simanek, 2013; Yuhasz, 2013). Thus, it is essential for further investigation on how misconceptions influence the treatment and perception of individuals who have sustained a brain injury.

Due to the lack of research exploring juror perceptions of defendants with brain injuries, several modifications of the present studies should be considered. One modification concerns the in vivo juror experience. Future studies should present mock trial versions of a case to provide a similar occurrence one would experience if selected for jury duty. Whereas the present studies obtained university students who have a background in psychology, another modification would be to recruit a sample that is more like the general population of jurors in terms of the range of ages, careers, interests, and backgrounds.

Contributions – Although past literature has shown a prevalence of brain injuries among the prison population, as well as a propensity for aggression and criminality (Barnfield & Leathem, 1998; Colantonio et al., 2007; Perks, et al. 2011; Sarapata et al., 1998; Turkstra et al., 2003; Tateno et al., 2003), questions remain concerning what motivates jurors' perceptions of guilt and morality for this population. The TBI population has increased markedly in recent years, and the ranks of the TBI population

will likely continue to swell with the return of wounded veterans who are returning from the various theaters of war. It is necessary to further investigate the issue of innocence and guilt for that portion of the TBI population who may find themselves embroiled in legal proceedings.

These data also shed light on the public perception of a TBI survivor. The data indicate that potential jurors are not very knowledgeable regarding the effects of TBI. Jurors, like most of the population, do not understand the disorder, but may have empathy for the person with TBI and have an underlying fear of the survivor's behavioral volatility. It is therefore necessary to provide the public with the same education concerning the TBI population as the education taught to those with mental illness.

Conclusion

Jurors do not determine sentences; these decisions are made by the judge. The jurors' responsibility is to deliberate a verdict. However, a juror may not realize that those without a brain injury are able to control their behaviors and to assess situations better than those individuals with a brain injury. Based on the results of Experiment 3, it is therefore reasonable to suggest that defense attorneys emphasize the consequences of brain injury, through the use of expert witnesses or presentation of medical charts, so that the jury takes these facts into consideration when determining guilt or innocence. The defense attorney must also educate the judge regarding the effect of the TBI on the client's behavior; sending someone with a TBI to prison will only exacerbate the illness further. Rehabilitation and medication may be the only effective means of dealing with the disorder and preventing future criminal acts.

APPENDICES

Appendix A

INFORMED CONSENT FORM

PRINCIPAL INVESTIGATOR: Maria E. St. Pierre

EMAIL: mstpie1@students.towson.edu

Purpose of the Study:

This study is designed to evaluate the judgmental biases and perceived guilt of accused individuals with history of brain injuries. Participants will act as jurors and determine the guilt and punishment of a fictional accused individual in order to assess any discrepancies between individuals with brain injury and the severity of crimes.

Procedures:

Participants will be recruited from a behavioral psychology statistics class and must be at least 18 years old to participate. Those participants meeting the above requirements will be presented a scenario describing a crime that was committed by the accused individual. After being informed of the crime, participants will complete a questionnaire, as if they were part of a jury, determining the guilt and punishment of the accused individual. The questionnaire will be presented during class time and will take no longer than 30 minutes to complete.

Risks/Discomfort:

There are no known risks associated with participation in the study. Should the study become distressing to you, it will be terminated immediately.

Benefits:

It is hoped that the results of this study will have beneficial effects in analyzing how society views the behaviors of offenders by identifying any discrepancies of perceived guilt and punishment between individuals having a history of traumatic brain injury.

Alternatives to Participation:

Participation in this study is voluntary. You are free to withdraw or discontinue participation at any time. Refusal to participate in this study will in no way affect your grade in the class or class standing.

Cost Compensation:

Participation in this study will involve no costs or payments to you.

Confidentiality:

All information collected during the study period will be kept strictly confidential. You will be identified through identification numbers. No publications or reports from this project will include identifying information on any participant. If you agree to join this study, please sign your name below.

I, _____ affirm that I have read and understand the above statements and have had all of my questions answered.

Subject's Signature

Date

Principal Investigator

Date

Appendix B

Scenario 1: A retail worker was walking home one night. Two years ago, the worker sustained a severe brain injury from a motor vehicle accident resulting in a week long coma and amnesia. During the recovery time, it became difficult for the worker to concentrate on cognitive tasks. Motivation decreased and the worker exhibited an increased level of anxiety, personality changes, and an increase in impulsivity and irritability. Family members have defined the worker's personality change as spontaneous episodes of impulsive aggression in response to minor provocation. That night, the worker was walking the usual route home. While turning into the alley way, a man comes out of nowhere, startling the worker. Reflexively, the worker pulled out a pocket knife and stabbed the man in the chest. Within seconds, the man was laying lifeless on the sidewalk. When the police came, the man was pronounced dead at the scene.

Scenario 2: A retail worker was walking home one night. Two years ago, the worker sustained a mild brain injury from a motor vehicle accident, and suffered a concussion lasting for a few minutes, which resulted in headaches and temporary confusion and dizziness. The worker was discharged from the hospital after two days of observation, and has shown little to no symptoms from the injury since the accident. That night, the worker was walking the usual route home. While turning into the alley way, a man comes out of nowhere, startling the worker. Reflexively, the worker pulled out a pocket knife and stabbed the man in the chest. Within seconds, the man was laying lifeless on the sidewalk. When the police came, the man was pronounced dead at the scene.

Scenario 3: A retail worker was walking home one night. Growing up, the worker had a normal childhood without any major health complications. That night, the worker was walking the usual route home. While turning into the alley way, a man comes out of nowhere, startling the worker. Reflexively, the worker pulled out a pocket knife and stabbed the man in the chest. Within seconds, the man was laying lifeless on the sidewalk. When the police came, the man was pronounced dead at the scene.

Appendix C

After having read the scenario, please answer the following questions as if you were part of a jury responsible for deciding the verdict of the defendant.

1. What crime was allegedly committed by the defendant?

2. Was there anything abnormal about the defendant that could explain the defendant's behaviors that night?

On a scale of 1-7, please answer the following questions.

3. How ethical were the defendant's behaviors that night?

1

2

3

4

5

6

7

Not Ethical

Possibly Ethical

Extremely Ethical

4. How morally acceptable were the defendant's behaviors that night?

1

2

3

4

5

6

7

Not Acceptable

Possibly Acceptable

Extremely Acceptable

5. How morally justifiable were the defendant's behaviors that night?

1	2	3	4	5	6	7
Not Justifiable		Possibly Justifiable			Extremely Justifiable	

6. Do you agree with the defendant's behaviors that night?

1	2	3	4	5	6	7
Strongly Disagree		Neutral			Strongly Agree	

On a scale of 1-7, please answer the following questions as if you were part of a jury.

7. How at fault is the defendant of committing the crime?

1	2	3	4	5	6	7
Not at Fault		Possibly at Fault			Extremely at Fault	

8. How liable is the defendant of committing the crime?

1	2	3	4	5	6	7
Not Liable		Possibly Liable			Extremely Liable	

9. How guilty is the defendant of committing the crime?

1	2	3	4	5	6	7
Not Guilty		Possibly Guilty			Extremely Guilty	

10. How punishable are the defendant's behaviors?

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Not Punishable

Possibly Punishable

Extremely Punishable

On a scale of 1-7, please answer the following questions as if you were part of a jury.

11. If convicted, how appropriate would rehabilitation be?

1

2

3

4

5

6

7

Not Appropriate

Moderately Appropriate

Extremely Appropriate

12. If convicted, how appropriate would community service be?

1

2

3

4

5

6

7

Not Appropriate

Moderately Appropriate

Extremely Appropriate

13. If convicted, how appropriate would a jail sentence be?

1

2

3

4

5

6

7

Not Appropriate

Moderately Appropriate

Extremely Appropriate

14. If convicted, how appropriate would a prison sentence be?

1

2

3

4

5

6

7

Not Appropriate

Moderately Appropriate

Extremely Appropriate

15. If convicted, how long of a sentence should be given?

a. No sentence

e. Less than 2 years

b. Between 2-5 years

f. Between 6- 10 years

c. Between 11-15 years

g. Between 16-20 years

d. More than 21 years

- _____ Male _____ Female

Appendix D

Study 2 used the above questionnaire in Appendix C, in addition to the below question:

List 5 characteristic words describing the defendant:

- 1.
- 2.
- 3.
- 4.
- 5.

Appendix E

Brain Injury Severity

- **Mild TBI**- include brief loss of consciousness and generally do not show lesions or damaged brain tissue on MRI or CT scans
- **Moderate TBI**- loss of consciousness lasting 1-24 hours and abnormal brain imaging of damaged brain tissue
- **Severe TBI**-loss of consciousness/coma for more than 24 hours and abnormal brain imaging

Loss of Consciousness (LOC)- Duration of loss of consciousness (coma) following head trauma has historically been used as an indicator of TBI severity. However, significant TBIs do not necessarily lead to LOC, and research suggests that duration of LOC may not always be closely correlated with outcome.

TBI Classification	Coma Duration
Mild	<20 minutes
Moderate	< 6 hours of admission
Severe	> 6 hours after admission

Glasgow Coma Scale (GCS)- This brief scale provides indication of disturbed consciousness. Scores range from 3-15; points are assigned based on best eye, verbal, and motor responses.

- Score of 13-15 = Mild TBI
- Score of 9-12 = Moderate TBI
- Score of < 8 = Severe TBI

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The Brain Injury Guide & Resources

- Extracted from:
- 1) The Missouri Department of Health and Senior Services and the MU Department of Health Psychology
 - 2) Centers for Disease Control and Prevention,
 - 3) The Brain Injury Association of

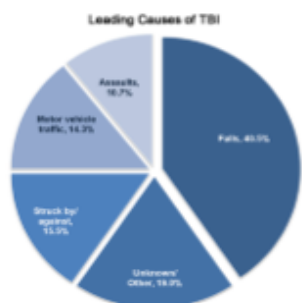


What is a Traumatic Brain Injury (TBI) ?

TBI—brain injury caused by a bump, blow or jolt to the head or a penetrating injury that disrupts the normal function of the brain.

Individuals who have had a TBI often experience changes in behavior as well as emotional difficulties.

- Common behavior changes include frustration, impulsivity, less effective social skills, and impaired self-awareness.
 - Frequently experienced emotional difficulties include depression, anxiety, and mood swings.
- Behavioral/Emotional issues can be due to the injury to the brain itself, and/or they may reflect the person's distress in adjusting to changes since the TBI.



Behavioral & Emotional Consequences

Emotional and behavioral changes experienced by persons with TBI are often one of the more significant sources of difficulties and stress for the individual and his/her family. They also can have a substantial impact on performance in work and school settings.

Personality changes

Families often report that the injured person's personality has changed.

The individual may be seen as more or less outgoing, irritable, active, etc.

The individual may demonstrate changes in interests (e.g., loss of interest in previously enjoyed activities).

Anger/ Frustration

Following a TBI, the injured person may be seen as "short tempered" and quick to get angry/frustrated.

The injured person may seem less patient in general.

A low tolerance for change can be noted.

The person may have anger outbursts, and may be more likely to become verbally or physically aggressive.

Problems with frustration tolerance may be particularly notable in new situations and/or when the person is tired or stressed.

Emotional distress

Symptoms of depression and/or anxiety are not uncommon following TBI. They may directly result from changes to the brain.

They may reflect problems adjusting to cognitive, physical, behavioral difficulties since the TBI.

Adaptation to change in the person's sense of self, or self-identity, can be a source of distress.

Awareness and appropriate use of non-verbal communication skills (e.g., gestures, facial expressions, body language).

Persons with TBI may have difficulties understanding nuances in social relationships.

They may need to be told directly when a behavior is not appropriate rather than be expected to pick up on social cues designed to convey this.

Following a TBI, individuals may be less sensitive to social norms and have less sensitivity to the feelings of others.

They may use inappropriate language or behave in a socially unacceptable way at home and in public.

Increased impulsivity in behaviors (e.g., increased tendency to engage in risk-taking) and decision-making (e.g., impulsive spending).

Poor decision-making (e.g., related to managing finances) may occur.

Decreased motivation and/or interest (apathy) may occur due to TBI.

During the trial

Do

- Do arrive on time and return promptly after breaks and lunch. The trial cannot proceed until all jurors are present.
- Do pay close attention. If you cannot hear what is being said, raise your hand and let the judge know.
- Do keep an open mind throughout the trial.
- Do listen carefully to the instructions read by the judge. Remember, it is your duty to accept what the judge is saying about the law, and how it is to be applied to the case.
- Do take notes during the trial if necessary to help you remember critical information, unless the judge instructs you otherwise.
- Do express your viewpoint freely, completely and politely during jury deliberations.



Don't

- Don't let yourself get information about the case from the news media or any other outside source. If you accidentally hear outside information about the case during the trial, tell a member of the court staff in private.
- Don't try to guess what the judge thinks about the case. Remember the rulings from the bench do not reflect the judge's personal views.
- Don't talk about the case, or issues raised by the case, with anyone, including other jurors, while the trial is going on — unless the judge instructs you otherwise.
- Don't try to uncover evidence on your own. Decide the case only on the basis of evidence presented at the trial.
- Don't talk to the lawyers, parties, or witnesses about anything. This will avoid the impression that something unfair is going on.
- Don't let others talk about the case in your presence, even family members. If someone insists on talking to you or another juror about the case, please report the matter to a court employee. These rules are designed to help you keep an open mind during the trial.
- After a verdict has been announced, you may discuss the case with lawyers, media and family if you wish. Don't identify any particular juror in such discussions.

Complete your juror qualification form online: www.mdcourts.gov/juryservice

During deliberations you should:

- Work out any differences with other jurors through complete and fair discussion of the evidence and the judge's instructions. You should listen to the views of other jurors.
- Refrain from marking, writing, injuring, or changing the trial exhibits.
- Refrain from trying to guess what might happen if the case is appealed. Appellate courts deal only with legal questions; they will not change a verdict if the jury decided the facts based on proper evidence and instructions.
- Make sure you do not talk to anyone about deliberations or about the verdict until the judge discharges the jury. After discharge, you may discuss the verdict and deliberations with anyone you choose, but you are not obligated to do so.



ACCESSIBILITY. The Maryland Judiciary is committed to making jury service accessible to everyone. If you have any concerns about accessibility issues (for example, for disabled citizens), contact your jury commissioner in advance.

Jury Service Q&A

How was I chosen? Juries are selected at random from a cross section of Maryland citizens and drawn from driver's license and voter registration pools.

Where do I report? Report at the time and place indicated on your summons unless you are notified by the court not to appear. The night before you are scheduled to report, call the number on your summons to be certain that you still must appear. If the message is not clear or silent, report as scheduled. You will be directed to a courtroom or given other instructions.

What happens next? In the courtroom, the judge will tell you about the case and introduce you to the lawyers and others involved in the case. You also will take an oath promising to answer all questions truthfully.

After you are sworn in, you and other potential members of the jury will go through a process known as "voir dire," or jury selection. During jury selection, the judge and the lawyers question you and other members of the panel to find out whether any of you have any knowledge of the case, a personal interest in the outcome, or any interest in the case that might make it hard to be impartial.

Each side is allowed to remove a certain number of prospective jurors without giving a reason for doing so (called peremptory challenges).

What types of cases will I hear?

Jury cases are either civil or criminal. Civil cases are disputes between private citizens, corporations, governments, government agencies, or other organizations. Usually, the party that brings the suit (the plaintiff) asks for money damages for some wrong alleged to have been done.

The state brings a criminal case against one or more persons accused of committing a crime. The person accused of the crime is the defendant. The state must prove "beyond a reasonable doubt" that the defendant committed the alleged crime.

How long will I serve? Most trials last one to two days. However, trials can last up to several weeks, however, and in rare occasions several months, depending on the complexity of the issues and evidence in a particular case. The judge will inform you during jury selection as to the anticipated length of the trial. You will have the chance to tell the judge whether a multi-day trial will present a hardship for you. If a trial lasts more than one day, the judge will tell you where and when to report the next day. In virtually all cases, you will be allowed to go home for the night.

During the trial, you may have to wait in the courtroom while the judge and lawyers settle questions of law. Judges and other courtroom staff will do everything they can to minimize the waiting both before and during the trial. You may bring reading material for use during waiting periods.

Parties often settle their differences moments before the trial is scheduled to begin. In such instances, the judge will instruct you on what to do next.

What about my job? Your employer cannot deprive you of your job because of job time you lose as a result of service as a juror.

Other important information.

You can generally bring an electronic device (for example: laptop, cell phone, MP3 player), but use is limited or prohibited in certain areas, such as the courtroom or jury deliberation rooms. Check with your jury commissioner or the court website about restrictions. Dress appropriately for the seriousness of the proceedings: in clothing that is neat, clean, comfortable and not revealing. You may wish to bring a sweater. Children shall not accompany you to jury service.

What do I wear? To observe courtroom decorum, consider how you would dress for an office job, or for a job interview. Generally, no shorts, T-shirts with logos, uniforms, or revealing tops are permitted.

What if I have an emergency?

Your absence can delay a trial. It is important that you report each day you are required. If an emergency occurs, such as a sudden illness, accident, or death in the family, tell the court staff immediately.

What happens during a trial? Events in a trial usually happen in a particular order, though the order may be changed by the judge. Here is the usual order of events:

1. Selection of the jury and appointment of foreperson
2. Opening statements
3. Presentation of the evidence
4. Jury instructions
5. Closing arguments
6. Jury deliberations
7. Announcement of the verdict



More questions: Contact the Jury Commissioner's office in your county or visit the jury service website: www.mdcourts.gov/jury-service

Appendix F

On August 5, 2014, around 11:30pm, Detective Simon called 911 to report a murder he witnessed while patrolling his usual route of 57th street. Detective Simon witnessed Jason Horton stabbing William Hayes after the two men collided into each other at the intersection of 57th street's alleyway. The unexpected collision startled the two men, specifically Jason Horton, who as Detective Simon stated, reflexively pulled out his pocketknife and stabbed William Hayes in the abdomen.

The trial script reveals the facts of the case. The prosecution presented Detective Simon's eyewitness testimony of the events that occurred the night of August 5, 2014. The defense presented Dr. Richard's expert witness testimony about the medical evaluation he performed on Jason Horton, and its possible influence on Mr. Horton's behaviors.

Jason Horton is being accused of the crime voluntary manslaughter, meaning that Mr. Horton did not have prior intent to kill William Hayes, and behaved due to "the heat of passion", under circumstances that would cause a reasonable person to become emotionally or mentally disturbed.

On the basis of the evidence, the defense intends to prove Jason Horton should not be held responsible for the death of William Hayes.

MOCK TRIAL SCRIPT**Case No.: 867530909****State of Maryland, Prosecution vs. Jason Horton, Defendant**

Bailiff: This honorable court of the State of Maryland Judicial Circuit with the Honorable Judge William Gladden is now in session. All rise.

Judge: Please be seated. Calling the case of the State of Maryland versus Jason Horton.

Are both sides ready?

Prosecution Attorney: Ready for the People, Your Honor.

Defense Attorney: Ready for the defense, Your Honor.

Opening Statements

Prosecution Attorney: Your Honor; members of the jury, my name is Bruce Reich, and I am representing the State of Maryland in this case. We intend to prove that on the day of August 5, 2014 at 11:45 PM, Jason Horton was responsible for the murder of William Hayes. Please find Jason Horton guilty of voluntary manslaughter. Thank you.

Defense Attorney: Your Honor; members of the jury, my name is Patrick Douglas, and I am representing Jason Horton in this case. We intend to prove that on the day of August 5, 2014 at 11:45 PM, Jason Horton should not be held responsible for the murder of William Hayes. Please find Jason Horton **not** guilty of voluntary manslaughter. Thank you.

Direct Examination (Prosecution)

Judge: Prosecution, you may call your witness.

Prosecution Attorney: Thank you, your honor. I call to the stand Detective Ronald Simon.

Bailiff: (To the witness) Please raise your right hand. Do you swear to tell the truth, the whole truth, and nothing but the truth?

Detective Simon: I do

Prosecution Attorney: Please state your name and your occupation for the court.

Detective Simon: My name is Ronald Simon, and I am a Detective for the state of Maryland.

Prosecution Attorney: Thank you. Detective Simon, could you please tell the court approximately how many years have you been a law enforcement officer?

Detective Simon: I have been a law enforcement officer for approximately 17 years with the state of Maryland.

Prosecution Attorney: Thank you. I am going to draw your attention to the night of August 5, 2014. Were you working that day?

Detective Simon: Yes sir.

Prosecution Attorney: Could you please tell the court, in your own words, what happened at on the night of August 5, 2014?

Detective Simon (murder): Yes sir. I was patrolling my usual route of 57th street. At about 11:35 PM, as I rounded the corner of 1st street, approximately 20 yards away, I saw Jason Horton become and William Hayes almost collide into each other as Mr. Hayes exited the alley way at 57th and 2nd street. I assumed Jason Horton was startled because Mr. Horton jumped back a few feet. I then saw Mr. Horton pull out his pocketknife and stabbed Mr. Hayes in the abdomen. I ran to the scene, detained Mr. Horton on the

ground and handcuffed him. At that moment, I called for backup. This occurred at 11:37 PM. Once I was able to detain Mr. Horton, I proceeded to Mr. Hayes who was lying with his back on the pavement. I saw that both of Mr. Hayes' hands were pressing against the lower left of his abdomen. Back up police and the medical team came on the scene at 11:42 PM. The medical doctor inspected Mr. Hayes and determined he was deceased and called time of death at 11:45 PM.

Prosecution Attorney: Thank you Detective. Based on your testimony, you recalled that Jason Horton did stab William Hayes with a pocketknife, resulting in William Hayes dead at the scene?

Detective Simon: Yes sir.

Prosecution Attorney: Thank you, no further questions.

Direct Examination (Defense)

Judge: Defense, you may call your witness.

Defense Attorney: Thank you, your Honor. I call to the stand Dr. Jaden Richard.

Bailiff: (To the witness) Please raise your right hand. Do you swear to tell the truth, the whole truth, and nothing but the truth?

Dr. Jaden Richard: I do.

Defense Attorney: Please state your name and your occupation for the court.

Dr. Richard: My name is Jaden Richard, and I am a Medical doctor.

Defense Attorney: Thank you. Dr. Richard, could you please tell the court approximately how many years have you been a medical doctor?

Dr. Richard: I have been a medical doctor for 17 years at Maryland Medical Hospital.

Defense Attorney: Thank you. I am going to draw your attention to the night of August 5, 2014. Were you working that day?

Dr. Richard: Yes sir.

Defense Attorney: Could you please tell the court, in your own words, what happened at on the night of August 5, 2014?

Dr. Richard: Yes sir. I responded to Detective Simon's call that came in at 11:37 PM. I arrived at the scene at 11:42 PM. I saw Mr. Hayes lying on his back on the pavement. When I approached Mr. Hayes, I determined that he was deceased and called time of death at 11:45 PM.

Defense Attorney: Thank you Dr. Richard. Did you also give Mr. Horton a medical evaluation that night?

Dr. Richard: Yes sir.

Defense Attorney: Can you please tell the court your medical evaluation of Mr. Horton from that night?

Dr. Richard (severe TBI): Yes sir. When I approached Mr. Horton, he was detained on the sidewalk. I noticed a 4-inch scar on the top of his head above his left eye. It looked as though he was struck with an object and needed stitches. When I asked Mr. Horton about his scar, he informed me that he sustained a severe brain injury from a motor vehicle accident two years ago. He was also shaking and appeared very anxious. He appeared to be a little out of it and had difficulties answering my questions. It seemed that Mr. Horton understood my questions, but could not cognitively formulate his responses at the time. At 12:05 AM, I telephoned Maryland Medical Hospital and located Mr. Horton's medical chart. Over the phone, the nurse verified that Mr. Horton was in a motor vehicle accident

two years ago and suffered a severe traumatic brain injury, resulting in a week-long coma and amnesia. The medical charts indicated that during Mr. Horton's recovery time, it became difficult for him to concentrate on cognitive tasks. His motivation decreased and Mr. Horton exhibited an increased level of anxiety, personality changes, and an increase in impulsivity and irritability. The medical chart also indicated that Mr. Horton's family members have reported his personality change as spontaneous episodes of impulsive aggression in response to minor provocation.

Dr. Richard (mild TBI): Yes sir. When I approached Mr. Horton, he was detained on the sidewalk. I noticed a 4-inch scar on the top of his head above his left eye. It looked as though he was struck with an object and needed stitches. When I asked Mr. Horton about his scar, he informed me that he sustained a mild brain injury from a motor vehicle accident two years ago. He was also shaking and appeared very anxious. At 12:05 AM, I telephoned Maryland Medical Hospital and located Mr. Horton's medical chart. Over the phone, the nurse verified that Mr. Horton was in a motor vehicle accident two years ago and suffered a mild traumatic brain injury, resulting in a concussion lasting for a few minutes, headaches, and temporary confusion and dizziness. The medical charts indicated that Mr. Horton was discharged from the hospital after two days of observation, and has shown little to no symptoms from the injury since the accident. However, the medical chart did indicate that Mr. Horton returned for a doctor's visit, complaining about persistent low-grade headaches, mild anxiety and depressed mood, and a lower frustration tolerance.

Dr. Richard (no-TBI): Yes sir. When I approached Mr. Horton, he was detained on the sidewalk. He was shaking and appeared very anxious. At 12:05 AM, I telephoned

Maryland Medical Hospital and located Mr. Horton's medical chart. Over the phone, the nurse stated that Mr. Horton did not have any past medical surgeries or health complications. The medical charts indicated that Mr. Horton's last hospital visit was for his annual physical exam.

Defense Attorney: Thank you Dr. Richard. Now in your expert opinion, did Mr. Horton appear to be impaired on the night of August 5, 2014?

Dr. Richard (severe TBI): In my expert opinion, Mr. Horton did appear to be impaired the night of August 5, 2014. After reading his medical chart, I concluded that his impairments were the result of his severe traumatic brain injury that he sustained two years ago.

Dr. Richard (mild TBI): In my expert opinion, Mr. Horton did appear to be impaired the night of August 5, 2014. After reading his medical chart, I concluded that his impairments were the result of his mild traumatic brain injury that he sustained two years ago.

Dr. Richard (no-TBI): In my expert opinion, Mr. Horton did **not** appear to be impaired the night of August 5, 2014. After reading his medical chart, I concluded there was nothing medically wrong with Mr. Horton.

Defense Attorney: Thank you Dr. Richard. No further questions.

Closing Arguments

Judge: Both the prosecution and the defense have not rested their cases. The attorneys will now present their final arguments. Prosecution, you may begin.

Prosecution Attorney: Thank you, your Honor. Members of the jury, today you have heard testimony about Mr. Jason Horton and his involvement in the death of Mr. William Hayes. I would like to remind you about some important information that you should consider in your decision. These facts include that 1) Mr. Hayes was pronounced dead on August 5, 2015 at 11:45 PM by the medical doctor, Dr. Jaden Richard; and 2) Detective Simon recalled that Mr. Horton stabbed Mr. Hayes with a pocket knife in the abdomen. Mr. Jason Horton should be found responsible for the murder of Mr. William Hayes based on the facts, Mr. Horton should be found guilty of voluntary manslaughter. Thank you.

Judge: Defense, you may proceed with your closing argument.

Defense Attorney (severe TBI): Thank you, your Honor. Members of the jury, today you have heard testimony about Mr. Jason Horton and his involvement in the death of Mr. William Hayes. I would like to remind you about some important information that you should consider in your decision. These facts include that 1) the medical doctor, Dr. Jaden Richard testified that Mr. Horton appeared to be impaired on the night of August 5, 2014 from his severe traumatic brain injury he sustained two years ago; and 2) From his brain injury, Mr. Horton suffers from increased levels of anxiety, personality changes, and an increase in impulsivity and irritability. Mr. Jason Horton should be found **not** responsible for the murder of Mr. William Hayes based on the facts, Mr. Horton should be found **not** guilty of voluntary manslaughter. Thank you.

Defense Attorney (mild TBI): Thank you, your Honor. Members of the jury, today you have heard testimony about Mr. Jason Horton and his involvement in the death of Mr. William Hayes. I would like to remind you about some important information that you should consider in your decision. These facts include that 1) the medical doctor, Dr. Jaden Richard testified that Mr. Horton appeared to be impaired on the night of August 5, 2014 from his mild traumatic brain injury he sustained two years ago; and 2) From his brain injury, Mr. Horton suffers from persistent low grade headaches, mild anxiety and depressed mood, and a lower frustration tolerance. Mr. Jason Horton should be found **not** responsible for the murder of Mr. William Hayes based on the facts, Mr. Horton should be found **not** guilty of voluntary manslaughter. Thank you.

Defense Attorney (no-TBI): Thank you, your Honor. Members of the jury, today you have heard testimony about Mr. Jason Horton and his involvement in the death of Mr. William Hayes. I would like to remind you about some important information that you should consider in your decision. These facts include that 1) Mr. Jason Horton and Mr. William Hayes collided into each other between 57th and 2nd street; and 2) Because of the collision, Mr. Horton became startled and stabbed Mr. Hayes in the abdomen. Mr. Jason Horton should be found **not** responsible for the murder of Mr. William Hayes based on the facts, Mr. Horton should be found **not** guilty of voluntary manslaughter. Thank you.

Jury Instructions

Judge: Members of the jury, you have heard all of the testimony concerning this case. It is now up to you to determine the facts. You and you alone, are the judges of the fact. Your job is to decide the facts based on the evidence that you heard during the trial. The

evidence includes the testimony of the witnesses. My job is to give you the law. After you decide the facts, you need to apply the law that I give you, even if you do not agree with it. The Bailiff will now escort you to the deliberation room, for you to make your decision.

Appendix G

After having read the mock trial, please answer the following questions as if you were part of a jury responsible for deciding the verdict of the defendant.

1. What crime is the defendant on trial for committing?

2. What did Dr. Richard find in Mr. Horton's medical chart?

- a) Mr. Horton had suffered a severe traumatic brain injury
- b) Mr. Horton had suffered a mild traumatic brain injury
- c) Mr. Horton did not have any past medical surgeries or health complications

On a scale from 1-7, please answer the following questions.

3. How ethical were the defendant's behaviors that night?

1	2	3	4	5	6	7
Not Ethical			Possibly Ethical		Extremely Ethical	

4. How morally acceptable were the defendant's behaviors that night?

1	2	3	4	5	6	7
Not Acceptable			Possibly Acceptable		Extremely Acceptable	

5. How morally justifiable were the defendant's behaviors that night?

1	2	3	4	5	6	7
Not Justifiable			Possibly Justifiable		Extremely Justifiable	

6. Do you agree with the defendant's behaviors that night?

1	2	3	4	5	6	7
Strongly Disagree			Neutral		Strongly Agree	

On a scale from 1-7, please answer the following questions as if you were part of a jury.

7. How at fault is the defendant of committing the crime?

1	2	3	4	5	6	7
Not at Fault		Possibly at Fault			Extremely at Fault	

8. How liable is the defendant of committing the crime?

1	2	3	4	5	6	7
Not Liable		Possibly Liable			Extremely Liable	

9. How guilty is the defendant of committing the crime?

1	2	3	4	5	6	7
Not Guilty		Possibly Guilty			Extremely Guilty	

10. How punishable are the defendant's behaviors?

1	2	3	4	5	6	7
Not Punishable		Possibly Punishable			Extremely Punishable	

On a scale of 1-7, please answer the following questions as if you were part of a jury.

11. If convicted, how appropriate would rehabilitation be?

1	2	3	4	5	6	7
Not Appropriate		Moderately Appropriate			Extremely Appropriate	

12. If convicted, how appropriate would community service be?

1	2	3	4	5	6	7
Not Appropriate		Moderately Appropriate			Extremely Appropriate	

13. If convicted, how appropriate would a jail sentence be?

1	2	3	4	5	6	7
Not Appropriate		Moderately Appropriate			Extremely Appropriate	

14. If convicted, how appropriate would a prison sentence be?

1	2	3	4	5	6	7
Not Appropriate		Moderately Appropriate			Extremely Appropriate	

15. If convicted, how long of a sentence should be given?

- | | |
|------------------------|------------------------|
| e. No sentence | e. Less than 2 years |
| f. Between 2-5 years | f. Between 6- 10 years |
| g. Between 11-15 years | g. Between 16-20 years |
| h. More than 21 years | |

List 5 characteristics words describing the defendant:

- 1.
- 2.
- 3.
- 4.
- 5.

Demographic Questions:

1. **Please indicate your age:** _____

2. **Gender (circle one):** Female Male

3. **Class year (circle one):** First year Second year Third year Fourth year

4. **Ethnicity (circle one):** African-American Asian-American Caucasian/White

Native American Latino (a) - American Other: _____

IRB Approval



October 12, 2015

To: Maria St. Pierre
Department of Psychology
Modifications to TU IRB project 15-A044

Ms. St. Pierre,

Thank you for informing the Towson IRB of your modifications to project 15-A044
"Innocent by reason of brain injury".

Office of Sponsored Programs
& Research

Towson University
8000 York Road
Towson, MD 21252-0001

t. 410 704-2236
f. 410 704-4494
www.towson.edu/ospr

The Towson University Institutional Review Board for the Protection of Human Participants has reviewed and approved your modification for this project. However, this modification approval does not change the expiration date of the original approval, which will need to be renewed one year from the date of approval if the research is ongoing.

If any other modifications are made to this project, or if any new risks are discovered, please inform the Board immediately.

Should you have any questions, please do not hesitate to contact me at 410-704-2236.

Sincerely,

A handwritten signature in black ink, appearing to read "W. Denise Spears", followed by a horizontal line.

W. Denise Spears, MPA
Compliance Administrator, On Behalf of Towson University Institutional Review
Board for the Protection of Human Participants

CC:
File

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*Curriculum Vitae***Maria E. St. Pierre**

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Education

May 2016	M.S., Experimental Psychology
(Expected)	Towson University; Towson, MD
	GPA: 3.6
May 2014	B.S., Psychology and Criminal Justice, <i>cum laude</i>
	Towson University; Towson, MD
	Psychology GPA: 3.81, Overall GPA: 3.84
Dec 2011	A.A., General Studies
	College of Southern Maryland; Prince Frederick, MD

Honors and Awards

- Dean's List: 6 semesters
- Towson University Omicron Delta Kappa: The National Leadership Honor Society
- 2015-2016: Anita LeAnn Foster Graduate Psychology Endowment
- 2014-2016: Maryland's Senator Brochin's Senatorial Scholarship
- 2013-2014: Towson Promise Scholarship

Teaching Experience

Spring 2016 **TOWSON UNIVERSITY; Towson, MD**

Teaching Assistant, Research Methods in Psychology

- Assist professor in preparation of teaching materials and learning resources
- Prepared and lectured specific classes on experimental design and using SPSS

Fall 2015- **TOWSON UNIVERSITY; Towson, MD**

Spring 2016 *Teaching Assistant, Behavioral Statistics in Psychology*

- Assist professor in preparation of teaching materials and learning resources
- Prepared and lectured specific classes on analyzing data using SPSS

Dec. 2013 **TOWSON UNIVERSITY; Towson, MD**

Teaching Assistant, Cross- Cultural Psychology

- Invited to assist due to successfully completing the course
- Assisted instructor in grading multiple-choice exams
- Tutored undergraduate students

Spring 2009 **UNIVERSITY OF MIAMI; Coral Gables, FL**

Tutor for America Reads

- Tutored Spanish-speaking first graders reading and English comprehension
- Prepared students for FCAT testing

Research Interests

- Neuropsychological and psychosocial factors affecting the criminality
- Perception and stigma of individuals with severe mental illnesses, specifically traumatic brain injury
- Jury perceptions and decision-making

Research Experience

2015- Present **Lab Supervisor**, Towson University; The Player's Lab Psychology

Research Group

- Responsible for supervising a team and ensuring that duties are completed within strict deadlines.
- Delegating work duties to individual lab members

- Identifying and evaluating lab member training requirements

2015- Present **Research Assistant**, Towson University, *Gaming Meta-Analysis*, The Player's Lab Psychology Research Group
- 2015- Present **Research Assistant**, Towson University, *Gaming and Morality Research Study Part III*, The Player's Lab Psychology Research Group

 - Investigating viewers perceptions of the player of a violent video game
- 2014- Present **Research Team Member**, Towson University, The Player's Lab Psychology Research Group, Supervisor: Jessica A. Stansbury, <http://jessicaastansbury.weebly.com/the-players-lab.html>

 - Interdisciplinary gaming research lab conducting basic and applied research.
- 2014- Present **Lead Research Assistant**, Towson University *Gaming and Morality Research Study*, The Player's Lab Psychology Research Group

 - Assessing the transference of moral in-game decisions to real-world situations
- 2014- Present **Lead Research Assistant**, Towson University, *Non-Traditional Teaching Methods in a Classroom Research Study*, The Player's Lab Psychology Research Group

 - Investigating the implications of non-traditional teaching methods in a classroom through the use of interactive activities
- 2013 **Research Assistant**, Towson University, *Moral Decision Making in Different Moral Climates*, The Player's Lab Psychology Research Group

 - Evaluated the perceptions of morality of immoral behaviors in different moral atmospheres

Clinical Research Experience

- 2014- Present **Volunteer Researcher**, Neuropsychiatry Program at Sheppard Pratt, Supervisor: Vassilis Koliatsos, M.D.

Retrospective Analysis of Brain Injured Patients and Criminality

- Assessing neurological and social factors resulting from brain injury including incarceration, police interventions, and deviant behaviors.
- 2015 **Research Intern**, Anne Arundel Medical Hospital,

Supervisor: Raymond Hoffman, M.D.

Prospective and Retrospective Analysis of Risk Factors for Alcohol Use

Disorder (AUD) Among Bariatric Patients

- Analyzed medical charts and survey data to investigate the psychosocial risk factors associated with AUD post-bariatric surgery among patients who have received treatment for AUD after surgery and among patients evaluated for candidacy prior to surgery

Clinical & Counseling Experience

- 2015 **Research Intern**, Anne Arundel Medical Hospital, Supervisor:

Raymond Hoffman, M.D.

- Responsible for completing IRB, creating a questionnaire, and administering the questionnaire to patients during the interview process at the location.
- Training in Medical Ethics, Simulation to Advance Innovation and Learning (SAIL), EPIC Hyperspace, and REDcap

- 2014- Present **Volunteer**, The Concussion Clinic, Neuropsychiatry Program At

Sheppard Pratt Hospital, Supervisor: Vassilis Koliatsos, M.D.

- 2014 **Volunteer**, Baltimore City Office of the Mayor's "Supper Club",

Schaefer House Substance Abuse Treatment Program

- 2013 **Intern**, Patuxent Institution Correctional Mental Health Center,

Maryland Department of Public Safety and Correctional Services

- Observed treatment and group therapy in anger management, cognitive behavioral programs, and substance abuse sessions

- 2013 **Mental Health Advocate**, Towson University, Towson University

Student Support Network

- Certified Mental Health Advocate at Towson University for attending and completing a six week course, learning necessary skills in various mental health concerns that impact college students
- Acquire excellent listening, leadership, and communication skills to become a campus leader in mental health awareness and advocacy

Manuscripts

Parente, F.J., **St. Pierre, M. E.**, & Chaney, G.S. (2016) A Comparison of Recall and Recognition Memory in Adults with Learning Disabilities and Acquired Brain Injured. *Neurol Brain Psychiatry* 1: 004.

St. Pierre, M. E. & Parente, F. J. (in prep). *Will sustaining a brain injury make you dangerous?: A meta-analysis on public perceptions of brain injuries.*

St. Pierre, M. E. & Parente, F. J. (in prep). *Innocent by reason of brain injury: Perceptions of morality, guilt, and sentencing for defendants with traumatic brain injury.*

St. Pierre, M. E. & Parente, F. J. (in review). *The effects of meta-awareness on personality traits.*

St. Pierre, M. E. & Parente, F. J. (in review). *Efficacy of legal judgements for persons with traumatic brain injury.*

Lane, K. S., **St. Pierre, M. E.**, Lauterbach, M., & Koliatsos, V. E. (in review). *Patient profiles of criminal behavior in the context of TBI*

Munro, G. D., Stansbury, J., A., **St. Pierre, M. E.**, & Braman, J. (in prep). *Moral norms, moral atmosphere and their role in moral judgment.*

Parente, F.J., Chaney, G.S., & **St. Pierre, M. E.** (In review). *Post-Traumatic Amnesia*.

Entry for the

Encyclopedia of Clinical Neuropsychology

Parente, F.J., Chaney, G.S., & **St. Pierre, M. E.** (In review). *Retrieval Techniques*. Entry

for the Encyclopedia of Clinical Neuropsychology

Parente, F.J., Chaney, G.S., & **St. Pierre, M. E.** (In review). *Learning*. Entry for the

Encyclopedia of Clinical Neuropsychology

Parente, F.J., **St. Pierre, M. E.**, & Chaney, G.S. (In review). *Concept Learning*. Entry for

the Encyclopedia of Clinical Neuropsychology

Parente, F.J., **St. Pierre, M. E.**, & Chaney, G.S. (In review). *Cognitive Correctors*. Entry

for the Encyclopedia of Clinical Neuropsychology

Conference Posters & Presentations

St. Pierre, M. E. & Parente F. J. (2015). *Innocent by reason of brain injury: The effects*

of brain injury on perception of morality, guilt, and sentencing. Oral presentation

presented at the 39th Annual Brain Injury Rehabilitation Conference in

Williamsburg, VA.

St. Pierre, M. E., Stansbury, J., A., & Munro, G. D. (2015). *The effect of moral*

judgments in different moral climates: Using Second Life to explore the

perception of moral norms. Poster presented at the Association of Psychological

Sciences National Conference in New York, NY.

Myers, N. S., **St. Pierre, M. E.**, Earnest, D. R., Munro, G. D., & Stansbury, J. A. (2015).

Morality in gaming: Onlooker perceptions of in-game moral decisions. Poster

presented at the Association of Psychological Sciences National Conference in New York, NY.

St. Pierre, M. E. & Parente F. J. (2015). *Not guilty by reason of brain injury: The effects of brain injury on perception of guilt.* Poster presented at the Maryland Psychological Association Graduate Students Conference in Baltimore, MD.

Honor Societies

- Towson University Omicron Delta Kappa: The National Leadership Honor Society
- *Psi Chi*, National Honor Society in Psychology
- Alpha Phi Sigma: The National Criminal Justice Honor Society
- Golden Key International Honour Society
- Tau Sigma National Honor Society
- Phi Sigma Pi Honors Society

Professional Societies

- American Psychological Association
- American Psychology-Law Society
- Association for Psychological Sciences
- American Statistical Association

