

The Role of Implicit Social-Cognitive Biases in Judgments of Insanity

by

Cassandra Hamza

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Graduate Supervisory Committee:

Tess M.S. Neal, Chair
Nicholas Schweitzer
Deborah Hall

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ABSTRACT

Juror impartiality is necessary for a fair and just legal system, but is true juror impartiality realistic? The current study investigated the role of implicit and explicit social-cognitive biases in jurors' conceptualizations of insanity, and the influence of those biases in juror verdict decisions. It was hypothesized that by analyzing the role of implicit and explicit biases in insanity defense cases, jurors' attitudes towards those with mental illnesses and attitudes towards the insanity defense would influence jurors' final verdict decisions.

Two hundred and two participants completed an online survey which included a trial vignette incorporating an insanity defense (adapted from Maeder et al., 2016), the Insanity Defense Attitude Scale (Skeem, Louden, & Evans, 2004), Community Attitudes Towards the Mentally Ill Scale (Taylor & Dear, 1981), and an Implicit Association Test (Greenwald et al., 1998). While implicit associations concerning mental illness and dangerousness were significantly related to mock jurors' verdicts, they no longer were when explicit insanity defense attitudes were added to a more complex model including all measured attitudes and biases. Insanity defense attitudes were significantly related to jurors' verdicts over and above attitudes about the mentally ill and implicit biases concerning the mentally ill. The potentially biasing impact of jurors' insanity defense attitudes and the impact of implicit associations about the mentally ill in legal judgments are discussed.

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“In all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial, *by an impartial jury* of the state and district wherein the crime shall have been committed...” (U.S. Constitution, Amendment VI, emphasis added). Although the law requires impartiality in criminal cases, true impartiality has been acknowledged by scholars as difficult for both juries and judges to attain (Nadelhoffer, 2006; Bassett & Perschbacher, 2011). People – jurors included – constantly take in information from the environment, and this information affects how we make decisions and form judgments. The environment, in this case, is an extremely broad term encompassing the constant stream of information from the world around us that affects how we interpret things. To assume that jurors are able to enter the courtroom and forget any preconceived knowledge or fundamental beliefs, which would need to occur for true impartiality, is not possible (Nadelhoffer, 2006). However, by identifying the existence of previous beliefs, stereotypes, and prejudices that systematically bias jurors, methods can be developed to aid in reducing their reliance on outside information in their legal decision making that may hinder the right to a fair trial.

One area in which jurors’ preconceived knowledge and attitudes can affect their judgments is in the case of the insanity defense. While the insanity defense may differ by jurisdiction, one key feature in all legal standards for insanity is the existence of a mental disease or defect that influences the defendant’s behaviors in a way that their ability to understand the crime or the wrongness of their crime is impaired (Huss, 2013). The insanity defense requires jurors to decide whether the defendant, at the time of the crime, met the legal definition of insanity (e.g., Not Guilty by Reason of Insanity, or NGRI). A person adjudicated NGRI is not held criminally responsible for their actions and is treated

rather than punished. They receive treatment in a state hospital until they are deemed no longer mentally ill or dangerous, in which case they may be released back into society (Huss, 2013).

Public Conceptions of Insanity

In 1982, John Hinckley Jr. was found Not Guilty by Reason of Insanity after he attempted to assassinate then President Ronald Reagan (Hans & Slater, 1984). Public outcry followed, with demands for reform in the use of insanity verdicts to make it harder for people to “get away with” crimes while insane. Hans and Slater found that there were differences in the public’s understanding of the NGRI verdict based on education, gender, race, and general media consumption, with jurors who received more education defining insanity with fewer colloquialisms (e.g., “crazed”) than those with lower levels of education.

An understanding of the verdict and the outcome is also important when considering how jurors form judgments in criminal cases. Sloat and Frierson (2005) surveyed discharged jurors from the South Carolina court system to gauge their knowledge about insanity verdicts. They found that only 4.2% ($n = 96$) of their sample were able to correctly define insanity defense verdicts. It should be noted that these jurors were not given information prior to completing this survey on insanity verdicts by the researchers, and therefore relied solely on previous knowledge when asked to define the insanity verdict.

Juror Attitudes and Judgments of Insanity

There is a growing body of literature on the role of juror attitudes in judgments of insanity. Negative attitudes toward the insanity defense are associated with positive

attitudes towards the death penalty, higher perceptions of the overuse of the insanity defense, and favoring punishment over treatment (Bailis et al., 1995; Bloechl et al., 2007). Juror attitudes towards the insanity defense and perceptions of insanity may also be related to jurors' previous knowledge. Prototypes, a generalized cognitive construct used for item categorization based on similar group characteristics (Cohen & Murphy, 1984; Rosch, 1975), are intrinsic in helping jurors form judgments by associations with preconceived knowledge.

Prototype theory was first described by cognitive psychologists as category membership based upon similar characteristics and meanings (Rosch, 1975). While there have been challenges to prototype theory as it applies to complex situations (see Cohen & Murphy, 1984), there are direct implications surrounding prototype theory that are applicable to legal concepts. Smith (1991) found that jurors' prior representations (previous knowledge) not only influenced how jurors define what constitutes a crime, but that they rely on prototypes when they are lacking instructions, and form judgments based on how similar a crime is to the general prototype of that crime. It has been found that juror prototypes are a significant indicator of attitudes toward the insanity defense (Skeem & Golding, 2001), and juror attitudes towards the insanity defense are strongly connected with jurors choosing the insanity verdict in general (Louden & Skeem, 2007). Similar to the findings about jurors' inability to accurately define insanity, theoretical underpinnings for jurors' understandings of insanity via prototype theory do not fully explain how jurors form their opinions and ultimately make their verdicts in insanity cases. Juror attitudes about the insanity defense seem to be more predictive than conceptions and prototypes of insanity in regard to insanity verdict decisions (Louden &

Skeem, 2007). Attitudes are commonly discussed in the same context as bias (e.g., Bloechl et al., 2007), and measures have been designed to hone in on explicit attitudes toward the insanity defense (e.g., IDA-R; Skeem, Loudon, & Evans, 2004). However, implicit, or subconscious, biases that jurors may have towards the insanity defense have not been examined to date.

Explicit Social-Cognitive Biases

Explicit biases affect people's behaviors, decisions, and judgments in ways in which they are aware (Greenwald & Krieger, 2006, p.946). Explicit bias measures are commonly self-report assessments or questionnaires and have been shown to be effective in predicting participants' behaviors. For example, Dovidio, Kawakami, and Gaertner (2002) administered explicit measures of racial prejudice to a sample of White participants and then examined the extent to which explicit prejudice scores predicted observers' perceptions of participants' verbal and nonverbal friendliness. They found that explicit prejudice scores predicted less friendly verbal behaviors. Thus, Dovidio and colleagues (2002) demonstrated a link between a commonly-used racial bias questionnaire and verbal behaviors, supporting the real-world applicability of explicit bias measures.

In regard to the insanity defense, explicit biases can be discussed in two ways: biases against the mentally ill in general, and bias against the use of the insanity defense. Taylor and Dear (1981) developed the Community Attitudes Toward the Mentally Ill (CAMI) scale in order to support the growing need to gauge general attitudes (or biases) towards the mentally ill as deinstitutionalization became commonplace.

Deinstitutionalization occurred in the United States in the 1960s and 1970s, and transferred the duty of care for mentally ill patients from treatment facilities to more community-based programs (Steadman, Monahan, Duffee, & Hartstone, 1984). However, community-based programs were underfunded and largely ineffective in treating the mentally ill, and deinstitutionalization has been associated with an increase in the number of severely mentally ill homeless persons and an increase in the prison population (Lamb & Bachrach, 2001).

While bias against the mentally ill is a pervasive societal issue, there have been notable differences in levels of bias held by those of different genders, races, and education level. Corrigan and Watson (2007) found that women attached less stigma than men to those with physical and mental health conditions (specifically schizophrenia, substance abuse, or emphysema), although there was not a significant effect for type of health condition found within the sample. Women were also more likely than men to pity those with the above health conditions, held less blame than men for having those conditions, and indicated that they would be less likely to avoid people with those conditions. Non-White participants were less likely than White participants to pity those with health conditions (e.g., people dependent on drugs) and to view people with those conditions as more dangerous. While there was a significant effect for education and stigmatization of the mentally ill, this effect seemed to be driven by perceptions of dangerousness; those with more education perceived those with the health conditions as less dangerous.

Schomerus and colleagues (2012) completed a meta-analytic review spanning the mental health literature between 1950 and 2011 in order to determine if attitudes about

mental illness by the community have improved over time. Studies that were included were required to have collected data at multiple time points while inquiring about attitudes about mental illness, and surveyed the general population (i.e., not special populations like medical professionals). Sixteen studies, which were conducted across multiple countries, were included in the meta-analysis. In general, there was a better understanding of what constitutes mental illness at the societal level when compared to past levels of knowledge about mental illness, but attitudes towards those with mental illnesses (schizophrenia, but not depression) have grown less favorable (Schomerus et al., 2012).

There are also cultural differences that have been associated with mental illness stigma. In a global survey of 596,712 participants from 229 countries, there seem to be differences in views on mental illness between developed and developing countries (Seeman, Tang, Brown & Ing, 2016). Although statistical analyses were not included in the report to determine if there were significant between-group differences, only 7-8% of those from developed countries believed that those with mental illnesses were violent compared to 15-16% from developing countries. When asked about the similarity between physical and mental illnesses, those in developed countries (45-51% of participants) compared to developing countries (12-15% of participants) were more likely to report that they viewed both types of illness as similar to one another (Seeman et al., 2016).

As previously mentioned, in order to be deemed insane there must be some type of mental illness present upon commission of the crime. Bloechl et al. (2006) point out the potential for biases against the insanity defense itself, referencing Hans' 1986 study

that observed the potential for the insanity defense to be misconstrued by biased jurors as being a loophole verdict. Loophole verdicts may be perceived by jurors as ways of “getting away” with a crime. There have been observed effects on jurors’ decisions in insanity cases when jurors’ attitudes about insanity are taken into account.

Louden and Skeem (2007) found insanity defense attitudes have a large influence on jurors’ general information processing. These attitudes are integral in the decision-making process, so much so that they influence the behaviors of jurors when they are tasked with making a verdict decision. Hans and Slater (1984) documented the differences the lay public has in defining insanity, which leads to the potential for jurors to rely on biased information to form their judgments. While Hans and Slater (1984) show the influence of the media and biases against mental illness on lay-people’s perceptions of insanity, these are self-formulated definitions any juror may bring into the courtroom, leading to the potential of a biased verdict choice. It is important to understand the basis for these biases in order to determine if there are feasible ways to limit the use of preconceived knowledge that may influence juror decision-making processes.

Implicit Social-Cognitive Biases

Implicit biases, in contrast to explicit biases, are attitudes that can affect behaviors, decisions, and judgments without conscious thought (Greenwald & Krieger, 2006). Greenwald and Banaji’s classic 1995 paper on implicit cognition reflects the idea that previously learned information or attitudes unconsciously affect behaviors and responses to stimuli. This paper formed the initial foundation for a research program on implicit biases as well. The existence of implicit cognition, Greenwald and Banaji (1995)

argued, required the development of measures that were capable of measuring unconscious cognitive constructs. Implicit cognitions are not measureable using self-report measures as they are outside of conscious awareness.

The Implicit Association Test (IAT; Greenwald et al., 1998) was developed to measure unconscious attitudes towards certain stimuli key to various constructs and social psychological concepts. The IAT measures unconscious implicit cognitive attitudes without requiring a conscious, self-report component (Greenwald, Nosek, & Banaji, 2003). The IAT is based upon reaction time and accuracy, and is designed to measure automatic responses to stimuli. The IAT has many iterations measuring various socially-relevant concepts such as racial bias (Greenwald, McGhee & Schwartz, 1998), bias against the mentally ill (Teachman, Wilson, & Komarovskaya, 2006), self-esteem (Greenwald & Farnham, 2000), gender self-concept (Greenwald & Farnham, 2000), biases towards people of different religions (Rudman, Greenwald, Mellott & Schwartz, 1999) and anti-fat bias (Teachman, Gapinski, Brownell, Rawlins & Jeyaram, 2000).

Implicit biases have been extensively studied in regard to racial bias. For example, Correll and colleagues (2014) have used a measure called the First-Person Shooter Task to investigate implicit racial bias. In this task, participants view a series of photographs and must quickly determine whether the person in each photo is holding a gun or a harmless everyday object (e.g., cell phone, wallet). On each trial of the task, they are instructed to make a split-second decision of whether to shoot the person (if the person pictured is holding a gun) or not (if the person is holding a harmless object). Implicit racial bias is reflected in the pattern of decision errors that participants tend to make. Participants who endorse negative racial stereotypes linking African Americans

with weapons and crime are especially likely to mistake a harmless object held by an African American person for a gun and make the (erroneous) decision to shoot (Correll et al., 2004).

Implicit biases have been recognized as a problem in the courtroom by both legal and non-legal experts (Kang et al., 2012; Roberts, 2012). Implicit biases have been observed in juries (e.g., racial bias, Kang et al., 2012), and judges (e.g., racial bias, Rachlinski, Johnson, Wistrich & Guthrie, 2009). Given previous research linking explicit juror attitudes and biases to their decisions in insanity cases (Louden & Skeem, 2007), and research showing that implicit attitudes affect people's behaviors even beyond their explicit attitudes (e.g., Correll et al., 2014), there is a need to determine whether implicit social-cognitive biases play an important - and distinct - role in jurors' judgments of insanity. I was unable to find any previous studies of implicit biases related to insanity defense judgments, which forms the foundation of the current study.

Pilot Study

In August 2016, our research lab conducted an initial pilot study to look at the role of insanity defense attitudes, perceptions of the degree of mental illness of the defendant, and cultural worldview differences between mock jurors on whether or not jurors would choose an insanity defense verdict option. A sample of 188 ($n = 182$ after manipulation checks, 51.4% male) participants between the ages of 21 and 61 ($M = 34.18$, $SD = 9.12$) from Amazon's Mechanical Turk were asked to read a vignette depicting a second-degree murder case in which the defendant raised the insanity defense (the case was adapted with permission from Maeder, McLaughlin, Yamamoto, & Zannella, 2016). Participants were asked to decide on their verdict after reading the

vignette, to complete the Insanity Defense Attitude Scale- Revised (IDA-R; Skeem, Loudon, & Evans, 2004), the Cultural Cognition Worldview Scale (CWS; Kahan et al., 2010), and basic demographic information. The IDA-R measures people's explicit attitudes toward the insanity defense.

We found that higher support for the insanity defense (measured using the IDA-R) was associated with a higher likelihood of choosing the insanity verdict option compared to a verdict of guilty, $b = 0.51$, $SE = 0.01$, $Wald(1) = 24.67$, $p < .001$. This positive relation is an indicator that mock jurors' explicit attitudes are systematically related to judgments of guilt, with more positive attitudes toward the insanity defense associated with an increased likelihood of choosing an insanity verdict.

Current Study

The current study extends previous research on juror attitudes towards the insanity defense and jurors' propensity to assign an insanity verdict. Similar to the pilot study, the current study used common measures of attitudes towards the insanity defense and biases against the mentally ill in order to determine if biases, both explicit and implicit, are predictive of jurors choosing the insanity verdict. This study contributes to research on the impartiality of jurors by identifying factors that bias jurors' judgments and threaten the sanctity of the ideal legal system. This study also uniquely contributes to the literature on the role of implicit biases in juror decisions about the insanity defense.

Hypotheses

Hypothesis 1. Jurors' implicit social-cognitive attitudes toward people with mental illness (measured by the Implicit Association Test (IAT; stimuli from Teachman, Wilson, & Komarovskaya, 2006) will systematically affect their verdicts. Consistent with

research showing some people hold stigmatizing attitudes toward the mentally ill (e.g., Corrigan & Watson, 2007), we expect that jurors with more implicit bias against the mentally ill (who score higher - positive d-scores - on the IAT) will be more likely to choose a more punitive verdict (Guilty) than the insanity verdict.

Hypothesis 2. Jurors' explicit social-cognitive attitudes will systematically affect their verdicts.

2a. Explicit social-cognitive attitudes towards people with mental illness (as measured by the Community Attitudes towards the Mentally Ill Scale, Taylor & Dear, 1981) will predict jurors' overall verdicts. Specifically, people with more negative, restrictive attitudes towards the mentally ill (CAMI), will be more likely to choose the more punitive guilty verdict than the insanity verdict option.

2b. Replicating our findings from the initial pilot study, jurors' explicit social-cognitive attitudes towards the insanity defense (measured using the IDA-R) will be directly related to jurors choosing the insanity verdict option. Specifically, jurors with higher support toward the insanity defense will be more likely to choose the insanity verdict, whereas jurors with lower support toward the insanity defense will be more likely to choose the guilty verdict option.

2c. Explicit attitudes toward people with mental illness and toward the insanity defense are expected to overlap. Participants with higher authoritarian and socially restrictive attitudes toward people with mental illness (CAMI) will also have more explicitly negative attitudes about the insanity defense (IDA-R).

Hypothesis 3. The relationship between insanity defense attitudes and verdict decisions will be moderated by performance on the Implicit Association Test. One of the

most important aspects of the definition of insanity is the existence of a mental illness, and people who believe dangerousness and mental illness are linked (via implicit biases) are hypothesized to be less likely to choose the insanity verdict.

Hypothesis 4. Taking into account both implicit bias (IAT) and explicit bias measures (CAMI, IDA-R), a significantly higher proportion of the variance in jurors' insanity verdict decisions will be accounted for as compared to the variance accounted for by implicit bias measures or explicit bias measures alone. While there may not be a strong relation between the explicit bias and implicit bias measures (see Teachman et al., 2006), the measures will each contribute unique variance and together will contribute to a substantial portion of the variance in jurors' verdict decisions.

Method

Participants

Two hundred and eighteen participants were recruited via SONA Research Participation Systems between October 2017 and January 2018 (<https://asuw.sona-systems.com/>). SONA is a credit-based system used by Universities around the world to facilitate the recruitment of student and community participants in research studies for payment or credit (Sona Systems, 2017). Research credits are awarded based upon the completion of studies by students in courses normally related to their area of study, which may be necessary for a percentage of points in the course. Participants received two research participation credits upon completion of the study. Sixteen participants were removed from the final sample after failing the attention check question ("Please choose option two" in a multiple-choice question). This brought the final sample size to 202. The sample was primarily female (73.8%) and white/Caucasian (50.5%). Participants ranged

in age from 18 to 52, with a mean age of 22.17 (SD=4.73, N=200). The majority of the sample (94.1%) had never served on a jury. Further demographic information can be found in Table 1.

Table 1
Final Sample Demographic Information

		<i>Total</i>	<i>Percentage</i>
Gender (N = 202)			
	Male	52	25.7%
	Female	149	73.8%
	N/A	1	0.5%
Race (N = 202)			
	White/Caucasian	102	50.5%
	Hispanic (Non-White)	34	16.8%
	Hispanic (White)	18	8.9%
	Black/African American	16	7.9%
	Asian (Not Specified)	14	6.9%
	Middle-Eastern	6	3.0%
	Pacific Islander	1	0.5%
	Native American	1	0.5%
	Caribbean American	1	0.5%
	Mixed Race	8	4.0%
	Other (Not Specified)	1	0.5%
Political Affiliation (N = 202)			
	Democrat	90	44.6%
	Republican	31	15.4%
	Independent	59	29.2%
	Libertarian	11	5.4%
	Other (N/A or Not Affiliated)	11	5.4%
Prior Jury Service (N = 202)			
	Yes	12	5.9%
	No	190	94.1%

Measures

Demographics and Verdict Questionnaire. The demographics form consisted of questions related to the participant's age, race, and gender, and questions asking about attitudes towards the death penalty, previous jury participation, and political affiliation.

The verdict questionnaire was nearly identical to the questionnaire used in the pilot study, and asked questions such as "To what degree do you think the defendant has a mental illness?" (0-100% scale). Other questions asked about evidence strength, the existence of reasonable doubt, and the participants' verdict.

Insanity Defense Attitudes Scale-Revised (Skeem et al. 2004). The Insanity Defense Attitudes Scale- Revised (IDA-R) was developed to understand explicit attitudes towards the insanity defense, while also validating previous measures that had been linked to insanity defense attitudes. The IDA-R is designed to measure common misconceptions about the insanity defense (e.g. "Many of the crazy criminals that psychiatrists see fit to return to the streets go on to kill again"), as well as participants' attitudes towards legal concepts of insanity (e.g. "I believe that we should punish a person for a criminal act only if he understood the act as evil and then freely chose to do it").

The IDA-R consists of 22 statements rated on a 7-point Likert-type scale. It has two subscales: injustice and danger (I-D) and strict liability (SL). The I-D subscale "reflects the extent to which individuals perceive that the insanity defense is misused" and the SL subscale "reflects the extent to which individuals believe that mental illness is associated with reduced capacity for rational decision making and control" (Skeem et al., 2004, p. 629). Skeem and colleagues have shown that both subscales are internally

consistent (I-D Subscale: $\alpha = .90$, SL Subscale: $\alpha = .80$), and are moderately related to jurors' judgments of insanity in mock trial vignettes (specifically the SL subscale at $r = .45$ to $-.60$ depending on the vignette, $p < .01$). IDA-R total scores, calculated by combining both of the subscales, were also consistently related to case judgments ($r = .53$ to $.59$ across vignettes) as well as in ratings of insanity ($r = -.49$ to $-.61$ across vignettes) (Skeem et al., 2004).

Community Attitudes Towards the Mentally Ill (Taylor & Dear, 1981). The Community Attitudes Towards the Mentally Ill (CAMI) scale was designed to measure communal acceptance of those with mental illnesses, as well as to gauge attitudes about resources available for the mentally ill within the community. The Authoritarianism (A) subscale generally focuses on the amount of control society has on containing those with mental illnesses, the Benevolence (B) subscale focuses on personal feelings towards helping the mentally ill, and Social Restrictiveness (SR) gauges attitudes about the threat and normalcy of mental illnesses in the community. The Community Mental Health Ideology (CMHI) subscale asks participants questions regarding community services and attitudes towards mental health facilities within the community (Taylor & Dear, 1981).

The CAMI consists of 40 total items (10 for each subscale) and responses are given using a 5-point Likert scale for each statement. Each of the subscales have moderate-high reliability ($\alpha = .68 - .88$; Taylor & Dear, 1981). Subscale intercorrelations were also moderate-high in previous studies ($r = -.63$ to $-.77$). Taylor and Dear found that individual differences such as age (older, "less sympathy" towards mentally ill), gender (females more "sympathetic" than males), marital status (married and widowed "less sympathetic"), and number of children (those with children less than 18 years old are less

sympathetic) were related to attitudes towards the mentally ill. The CAMI has been used in the past to observe the relationship between communal attitudes about mental illness and juror verdicts with mixed results (e.g., non-significant findings in Jung, 2015; significant findings in Cotrone, 2016).

Implicit Association Test (IAT; Greenwald, McGhee, & Schwarz, 1998; Teachman, Wilson, & Komarovskaya, 2006). An adaptation of the IAT that focuses on attitudes towards those with mental illnesses (Teachman et al., 2006) was used in this study as an implicit measure of attitudes about the mentally ill. This version of the IAT measures the extent to which participants show an implicit bias linking dangerousness of those with mental illnesses and physical illnesses.

Two sets of words appear on a computer screen across multiple trials. One word (or set of words) will pertain to either physical or mental illness (e.g. mentally ill people, physically ill people, bipolar disorder, appendicitis). The second word (or set of words) will pertain to either harm or danger (e.g., harmless, dangerous, violent, gentle). In different phases of the IAT, participants are given different decision rules (e.g., press a specific key on the keyboard if what they see on the screen represents the pairing of a mental illness concept with words relating to danger or a pairing of a physical illness concept with words relating to harmlessness). The word pairings that generate faster reaction times are indicative of an implicit (automatic) association between those two categories. That is, participants who can more quickly identify the pairing of a mental health concept with danger than harmlessness are presumably able to do so because they have an underlying attitude linking mental illness with dangerousness.

In previous research, people's average responses on this variation of the IAT have shown that people's attitudes tend to be more negative towards the mentally ill than the physically ill ($t_{116} = 4.60, p < .0001$; Teachman et al., 2006). No relation was found between explicit bias measures of similar constructs with this variation of the IAT, but Teachman and colleagues (2006) reported that this was not unexpected, as it may be an indicator that different components of the same construct were being measured. While there was no way to gauge the reliability of this version of the IAT, there has been a meta-analytic review of various types of IATs to determine the mean predictive validity that can be attributed to the IAT with various behaviors and prejudices observable in the real world, such as racial bias, biases associated with political affiliation, and gender biases (Greenwald, Poehlman, Uhlmann, & Banaji, 2009). According to Greenwald and colleagues (2009), the mean for 184 independent samples (ranging across various topics) was $r = .27$. Greenwald and colleagues (2009) focused on studies with the IAT predicting outcomes on "measures of physical actions, judgments, preferences expressed as choices, and physiological reactions" (p. 19).

An IAT was created for this study using the IAT generator on <https://iatgen.wordpress.com/> (Carpenter et al., 2018), with category and stimuli labels provided by Dr. Bethany Teachman with permission (IAT labels from and used in Teachman, Wilson, & Komarovskaya, 2006). Participants were instructed to match the stimuli words to the main category labels using the e and i keys on their keyboard. There were 20 practice trials and 40 "real" trials which were used for data analysis. In accordance with Greenwald, Nosek, and Banaji (2003), as well as the IATgen Data

Cleaning/Analysis Web app (Carpenter et al., 2018) and R Script for analyzing IATgen IAT Data (Carpenter et al., 2018), participants that have 10% or more trials that were less than 300 *ms* were not included in data analysis.

Procedures

Participants were recruited through ASU West's SONA Research Participation Systems upon approval from the ASU Institutional Review Board (Appendix A). Participants completed the study online through Qualtrics, an online-hosted survey platform. Participants were provided with a participant information sheet with informed consent information, the study procedures, the risks and benefits of participation, the basic age/citizenship requirements to participate, and clear instructions that they may stop the study at any time without penalty. Upon providing informed consent, participants were directed to read the 14-page second-degree murder insanity trial vignette (the same vignette used in the pilot; Appendix B; Maeder, et al., 2016). This vignette was adapted to reflect the legal standards in the United States, as it was originally written in the context of the Canadian legal system. After reading the vignette, participants were given all of the measures to complete in a randomized order to avoid order effects (see Appendix C). After participants completed the study, they were re-directed to the SONA platform and automatically awarded 2 research participation credits.

Results

Analysis Information and Exclusion Criteria

For all analyses that include logistic regression, 0 is coded as NGRI (Insanity) and 1 is coded as Guilty. This was done to aid in the interpretation of results based on the a priori framing of our hypotheses. Those that chose the Not Guilty verdict were excluded

from analyses due to the low number of Not Guilty verdicts and because our research questions revolved around the systematic differences between guilty and insanity verdict choices. Due to the small number of participants that chose Not Guilty ($N = 8$), there was the potential for regression coefficients to be inflated when comparing between the groups in a multinomial logistic regression. Participants that did not answer the attention check question correctly were removed from all analyses (16 participants). Participant data was excluded from an analysis if they were missing data on at least one measure (list-wise deletion).

Scale and Test Reliability

Reliability analyses showed moderate to high internal consistency for all scales and subscales (See: Table 2). The Implicit Association Test (IAT) showed no significant difference between the category-target stimuli conditions (reaction time and correct responses for compatible vs. incompatible pairs), $t(197) = 0.15$, $p = .88$.

Table 2

Sample size, Means, Standard Deviations, and Reliability Analyses

	N	M	SD	Cronbach's Alpha
IAT D-Score	202	0.01	0.46	0.83
IDA-R (19 items)	202	67.26	19.79	0.92
CAMI				
Authoritarianism (10 items)	199	2.39	0.48	0.62
Benevolence (10 items)	196	4.03	0.58	0.85
Community Mental Health Ideology (10 items)	199	3.59	0.62	0.86
Social Restrictiveness (10 items)	199	2.3	0.56	0.77

Scale and subscale correlations ranged from low ($r = .15$) to high ($r = .80$), which could influence the interpretation of some analyses due to multicollinearity (See: Table 3; Limitations).

Table 3

Correlation Matrix (N = 187)

Variables	1	2	3	4	5	6
1. IDA-R Total Score	-					
2. IAT D-Score (Z-Transformed)	.15*	-				
3. CAMI Authoritarianism	.54**	.16*	-			
4. CAMI Benevolence	-.48**	-.23**	-.70**	-		
5. CAMI Social Restrictiveness	.47**	.18*	.76**	-.70**	-	
6. CAMI Community Mental Health Ideology	-.51**	-.16*	-.72**	.72**	-.80**	-

Hypothesis Testing

Hypothesis 1. To determine if jurors' implicit attitudes toward people with mental illness were predictive of jurors' verdict choice, a binary logistic regression was completed. IAT d-scores (z-transformed) were entered as the independent variable and verdict (guilty vs. insanity) as the dependent variable. Goodness of Fit indices indicate that this model fit significantly better than the null model ($\chi^2(1) = 7.63, p = .01$).

Consistent with the hypothesis that higher implicit bias against the mentally ill would be associated with jurors' greater likelihood of choosing a guilty verdict as compared to the insanity verdict, each 1 unit increase in jurors' scores on the IAT was associated with a 1.5 times greater likelihood of choosing the guilty verdict. Participants

that scored higher on the IAT (positive scores show a faster association between mental illness and dangerousness) were more likely to choose a verdict of guilty instead of NGRI ($b = .41$, $SE = 0.15$, $\text{Exp}(B) = 1.51$, $\text{Wald } \chi^2(1) = 7.26$, $p = .01$).

Hypothesis 2a. To determine if people with more negative, restrictive attitudes towards the mentally ill were more likely to choose the guilty verdict, a multiple logistic regression was completed. The four CAMI subscale scores were entered as independent variables and verdict (guilty vs. insanity) was entered as the dependent variable. Goodness of Fit indices indicate that this model fits significantly better than that of the null model ($\chi^2(4) = 24.44$, $p < .001$). When controlling for responses on the other subscales, participants' scores on the CMHI subscale significantly predicted their choice of a guilty verdict ($B = -.96$, $SE = 0.48$, $\text{Exp}(B) = .38$, $\text{Wald } \chi^2(1) = 3.95$, $p = .05$). This indicates that with a 1 unit increase in CMHI scores (more favorable views about the mentally ill being integrated into their communities), participants were .38 times more likely to choose a verdict of Guilty. The three other subscales did not significantly predict jurors' verdicts ($p = .17-.98$).

In order to make this finding more interpretable, the Guilty and NGRI verdict variable was recoded so that 1 indicated a verdict of NGRI and 0 indicated a verdict of Guilty. When controlling for responses on the other subscales, participants' scores on the CMHI subscale significantly predicted their choice of Not Guilty verdict ($B = .96$, $SE = 0.48$, $\text{Exp}(B) = 2.60$, $\text{Wald } \chi^2(1) = 3.95$, $p = .05$). With a 1 unit increase in scores on the CMHI (more favorable views about the mentally ill being integrated into people's communities), participants were 2.6 times more likely to choose a verdict of NGRI.

Hypothesis 2b. To determine if jurors' explicit social-cognitive attitudes towards the insanity defense were related to jurors choosing the insanity verdict option, a binary logistic regression was completed. IDA-R total scores were entered as the independent variable and jurors' verdicts (Guilty vs. Insanity) were entered as the dependent variable. Goodness of fit indices indicate that this model fits significantly better than that of the null model ($\chi^2(1) = 77.57, p < .001$). Participants' scores on the IDA-R significantly predicted their choice of a guilty verdict ($B = .09, SE = 0.01, \text{Exp}(B) = 1.09, \text{Wald } \text{CHI}(1) = 46.98, p < .001, \text{Nagelkerke Pseudo } R^2 = .44$). With a 1 unit increase in jurors' scores on the IDAR, participants were 1.09 times more likely to choose a verdict of Guilty. More specifically, participants that scored higher on the IDAR (negative attitudes towards ID) were more likely to choose a verdict of guilty than NGRI. Pseudo R^2 estimates indicate that 44% of the variability in verdict choice is due to scores on the IDA-R.

Hypothesis 2c. To determine if participants with more authoritarian and socially restrictive attitudes toward people with mental illness (CAMI) will also have more explicitly negative attitudes about the insanity defense (IDA-R), a multiple regression analysis was completed. The four CAMI subscale scores were entered as the predictors, and the total score on the IDA-R was entered as the outcome variable. The CAMI subscales significantly predicted scores on the IDA-R ($F(4, 185) = 23.03, p < .001, R^2 = .33$). However, upon analyzing the unique contribution of each subscale to the statistical significance of the model, the Authoritarianism subscale was the only significant predictor, controlling for the three other subscales ($p = .001$). With a 1 unit increase in scores on the Authoritarianism subscale, there was an increase of 13.69 for IDA-R scores.

This indicates that as participants became more authoritarian in their views on the mentally ill, they also had less support for the insanity defense. The social restrictiveness subscale was not related to scores on the IDA-R ($p = .95$) as was hypothesized.

Unexpectedly, the CMHI subscale was marginally significant, controlling for all other subscales ($p = .05$). With a 1 unit increase in scores on the CMHI subscale, there was a decrease of 6.76 for IDA-R scores. This indicates that more positive views about the integration of the mentally ill into one's community were associated with more positive attitudes about the insanity defense.

Hypothesis 3. In order to determine if the relationship between insanity defense attitudes and verdict decisions will be moderated by implicit associations between dangerousness and mental illness, a binary logistic regression with moderation was completed. Goodness of Fit indices indicate that this model fits significantly better than that of the null model ($\chi^2(3) = 81.08, p < .001$). Controlling for the IATxIDA-R interaction and IAT scores, IDA-R scores significantly predicted Guilty verdicts ($B = .09$, $SE = 0.01$, $\text{Exp}(B) = 1.09$, $\text{Wald } \text{CHI}(1) = 44.25, p < .001$). However, both scores on the IAT ($B = .44$, $SE = 0.79$, $\text{Exp}(B) = 1.55$, $\text{Wald } \text{CHI}(1) = 0.31, p = .58$) and the interaction term ($B = -0.002$, $SE = 0.01$, $\text{Exp}(B) = 0.998$, $\text{Wald } \text{CHI}(1) = 0.04, p = .85$) did not significantly contribute to the model, and are therefore not predictive of jurors' verdicts. This indicates that, contrary to the hypothesis, implicit bias as measured by the IAT does not moderate the relationship between scores on the IDA-R and verdict decisions.

Hypothesis 4. To determine if, when they are considered simultaneously, implicit and explicit attitude measures will account for significantly more variability in jurors' verdicts in an insanity case than when either is considered alone, a hierarchical logistic

regression was completed. The four CAMI subscales were entered as the independent variable at Level 1, IDA-R total scores were entered at Level 2, and Z-transformed scores on the IAT were entered at Level 3. Verdict choice was entered as the dependent variable. All results for this analysis can be found in Table 4.

Table 4

Hierarchical Logistic Regression with IAT D-Scores (Z-Transformed), IDA-R Total Scores, and the CAMI Subscales as Predictors of Verdict Decision (Guilty v. NGRI) (N=181).

Variable	Model 1				Model 2				Model 3			
	B	SE B	Wald	Exp(B)	B	SE B	Wald	Exp(B)	B	SE B	Wald	Exp(B)
Constant	0.69	3.36	0.04	1.99	-6.17	4.19	2.17	0.002	-6.61	4.26	2.40	0.001
CAMI Authoritarianism	0.91	0.57	2.54	2.49	-0.08	0.71	0.01	0.93	0.00	0.72	0.00	1.00
CAMI Benevolence	0.15	0.46	0.10	1.16	0.80	0.58	1.91	2.22	0.98	0.61	2.63	2.67
CAMI Social Restrictiveness	0.02	0.55	0.002	1.02	0.12	0.66	0.03	1.13	0.32	0.66	0.002	1.03
CAMI Community Mental Health Ideology	-0.86	0.48	3.14	0.43	-0.65	0.58	1.29	0.52	-0.73	0.58	1.58	0.48
IDA-R	-	-	-	-	0.09***	0.02	33.07	1.09	0.09***	0.02	32.20	1.09
IAT D-Score	-	-	-	-	-	-	-	-	0.32	0.21	2.25	1.38
Nagelkerke Pseudo R ²	0.18				0.46				0.47			
χ^2	25.83, df= 4, p=.02				75.52, df=5, p<.001				77.83, df=6, p<.001			
Change in χ^2	-				49.69, df=1, p<.001				2.32, df=1, p=.13			

Goodness of fit indices indicate all models fit significantly better than the null model, but model 3 did not differ significantly from model 2 ($p = .13$). In model 1, the subscales of the CAMI did not significantly predict jurors' verdicts. In model 2, with a 1 unit increase in participants' scores on the IDA-R and controlling for all four subscales of the CAMI, participants were 1.09 times more likely to choose a verdict of guilty ($p < .001$). In model 3, controlling for all other variables in model 3, the IDA-R remained the only significant predictor of Guilty verdicts ($p < .001$). With a 1 unit increase in IDA-R scores, participants were 1.09 times more likely to choose a verdict of guilty. However,

overall, model 3 did not significantly differ from model 2 in terms of model fit, and no other predictors other than the IDA-R significantly contributed to the model.

We had expected that explicit and implicit attitudes would account for more variance than either considered alone, but this hypothesis was not supported. Implicit attitudes did not account for independent variance above and beyond the explicit measures.

Discussion

Do implicit biases play an important- and distinct- role in jurors' judgments of insanity? When considered separately from explicit attitude measures of bias against the mentally ill and insanity defense attitudes, jurors' implicit associations significantly predicted their verdict decisions (See: Results- Hypothesis 1). People who associated the mentally ill with danger were more likely to choose a verdict of Guilty. However, the influence of implicit associations became non-significant when explicit attitudes about the insanity defense and community attitudes about the mentally ill were considered in the same model with implicit attitudes (See: Results- Hypothesis 4, Model 3). Explicit insanity defense attitudes seem to be the strongest predictor of insanity defense verdict decisions over and above explicit community attitudes about the mentally ill and implicit associations.

These findings do not mean that implicit associations other than dangerousness and mental illness will not predict jurors' verdict decisions. Levinson and colleagues (2010) discussed the merits of developing a "law specific measure of bias" that looks at a more direct association between a target group and a verdict decision (p. 12). The Guilty/Not Guilty IAT they developed observed participants' associations between race

(Black and White) and Guilty and Not Guilty verdicts. They found that there was a significant implicit association between Black and Guilty, which ultimately showed an influence on judgments of ambiguous evidence in a priming/vignette task (Levinson et al., 2010). One other important finding from Levinson and colleagues (2010) was the incorporation of another variation of the Race IAT with unpleasant and pleasant attribute words. When both IATs were entered into a regression model to predict judgments of evidence, both remained significant. Levinson and colleagues posit that this is due to both IATs measuring separate, distinct constructs. This assertion is further supported by a lack of correlation between both IATs.

The development of an IAT that specifically looks at the association of guilty with mental illness may be a better predictor of verdicts in an insanity case than the variation of the IAT used in this study. Additionally, a variation of the IAT that focuses on legal and non-legal characteristics of insanity may be necessary to further hone in on associations that may influence jurors' verdicts.

Limitations. Data was collected from a primarily female (73.8%), white (50.5%), democratic (44.6%) college sample. There were potential problems with slightly skewed data, specifically from the CAMI scale, that may indicate the influence of a social desirability bias. Many questions contain controversial concepts or ideas, and participants may not choose to disclose their true attitudes about those concepts or may change their answers to be viewed in a more favorable light. One other potential problem with the CAMI is outdated stimuli/questions. Questions about deinstitutionalization were highly relevant in the 1970s, but more appropriate questions in 2018 may concern social stigmatization of mental illness, untreated mental illnesses, lack of mental healthcare, or

the treatment of the mentally ill in the prison system- all highly contested and debated ideas within recent years in America.

One other limitation concerns the influence of multicollinearity. As depicted in Table 3 (See: Results- Scale and Test Reliability), all variables correlate significantly with one another, ranging from $r = .15$ to $r = .80$. This may influence the interpretation of the results, as this would violate one of the key assumptions of regression requiring lack of collinearity, for linear and logistic regression analyses (Berry, 1993). Analyses were planned out a priori, but did not take into account the potential for multicollinearity between variables.

There are specific limitations to the study design that should also be addressed. While all questionnaires and the IAT were randomized to control for order effects, the vignette and verdict questionnaire were always the first stimuli encountered by participants. This may have unintentionally primed participants to answer questionnaires in a particular way based on their responses to the vignette. The integration of the IAT using the tools provided by IATGen is also a newer way of integrating the IAT into online Psychological research, and general caution when using a new tool may be necessary. The use of the IAT in online research is also potentially problematic. Internet connections or computer speed may differ by participant, which could influence the reaction time of participants. Additionally, online studies can be completed anywhere, and the environment is uncontrolled by the researcher. Participants may have been distracted while completing the task, or may have answered questionnaire questions quickly to receive research credit with no penalty. While those participants were likely

excluded after the attention check question was taken into account, participants that did this may have gone unnoticed.

Conclusion

While implicit associations about people with mental illnesses being dangerous did not significantly contribute to a model predicting jurors' verdicts in an insanity case, explicit attitudes did. Jurors' explicit insanity defense attitudes accounted for 44% of the variability in verdict decisions, with participants being 1.09 times more likely to choose a verdict of guilty with every 1 unit increase in IDA-R scores. Consistent with the a priori hypotheses, these results show that as participants' attitudes about the insanity defense became more negative, they were more likely to choose the more punitive guilty verdict overall.

Biases related to jurors' existing explicit attitudes enter the courtroom, and while potential priming effects should be considered for this case and study (see: Limitations), this is just one example of how attitudes enter the courtroom with jurors. More importantly, community attitudes about the mentally ill did not predict verdicts when insanity defense attitudes and implicit attitudes were added to a regression model. There are specific attitudes concerning the insanity defense and the use/misuse of the insanity defense that appear to influence mock jurors asked to make decisions in insanity cases. Future research should consider attitudes in more real-life contexts (e.g. real jurors making decisions in insanity cases), include more realistic stimuli (e.g. simulated and videotaped court trials), and look at other potential influences that may lead to more bias against choosing an insanity verdict in an insanity case or negative attitudes against the mentally ill (e.g. media exposure).

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APPENDIX A

IRB APPROVAL DOCUMENTS

EXEMPTION GRANT

Tess Neal

NEW: Social and Behavioral Sciences, School of (SSBS)

602/543-5680

Tess.Neal@asu.edu

Dear Tess Neal:

On 9/14/2017 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	The Role of Implicit Social-Cognitive Biases in Judgments of Insanity
Investigator:	Tess Neal
IRB ID:	STUDY00006813
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	<ul style="list-style-type: none">• IRB HRP-503a Judgments of Insanity Study, Category: IRB Protocol;• HRP-502a Informed Consent Revised, Category: Consent Form;• Trial Vignette, Category: Recruitment Materials;• Revised SONA Recruitment Script, Category: Recruitment Materials;• Measures, Category: Recruitment Materials;

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 9/14/2017.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,
IRB Administrator

cc: Cassandra Hamza
Cassandra Hamza

APPENDIX B

INSANITY CASE VIGNETTE

Trial Transcript
A.H. v. Miller

Alleged Crime: Second-degree murder
Victim: Alex Hughes
Defendant: Jordan Miller
D.O.B.: March 6th, 1989
Arrested: December 10th, 2014

Judge's Opening Instructions to the Jury

At the end of the trial I will give you detailed guidance on the law and on how you will go about reaching your decision. But now I simply want to generally explain how the trial will proceed.

This criminal case has been brought by the State. I will sometimes refer to the government as the Prosecution. Mr. Miller is represented by his attorney, called the Defense.

The indictment charges the defendant with the second-degree murder of Mr. Alex Hughes. The indictment is simply the description of the charge made by the state government against the defendant; it is not evidence of guilt or anything else. The defendant is presumed innocent. He may not be found guilty unless you determine that the government has proved his guilt beyond a reasonable doubt.

You are to consider all the evidence received in this trial. It will be up to you to decide what evidence to believe and how much of any witness's testimony to accept or reject. After you have heard all the evidence on both sides, the Prosecution and the Defense will each be given time for their final arguments.

It is important that you wait until all the evidence is received and you have heard my instructions on the controlling rules of law before you reach your verdict.

With that introduction, Prosecution you may present the opening statement for the government.

Prosecution Opening Statement

On the night of December 10th, 2014, Jordan Miller stabbed and killed Alex Hughes. The facts meet the elements of second-degree murder; this is not in dispute by either side. The defendant further, by his own admission, knew that he was committing murder, and that murder is illegal. Thus, his action and admission satisfy all of the elements necessary to convict him of second-degree murder.

The reason we are here today is to determine how the defendant is going to be held responsible for his actions. In pleading Not Guilty by Reason of Insanity, the Defense actually assumes the burden of proof. It is true that the Prosecution always assumes the burden of proof in establishing guilt versus innocence, because the defendant is assumed to be innocent until proven guilty. However, the law has established that the defendant is assumed to be mentally intact unless the Defense can prove otherwise. In other words, the burden for proving criminal responsibility rests with the Defense, not with the Prosecution. In this case, the Defense would have you believe that at the time of the offense, the defendant, Mr. Miller, was extremely mentally ill. But while you're listening to this testimony, I urge you to remember that the simplest explanation tends to be the right one. After you have seen the evidence you will understand that Mr. Miller is simply a violent person who snapped on his roommate during an argument that got so heated a neighbor overheard and called the police.

Although you will hear psychiatric testimony that, according to the words of the defendant, he was mentally ill at the time of the offense, the Prosecution will show that actions speak louder than words in this case. You will hear testimony that the defendant stole money from the victim, and was preparing to skip town to avoid apprehension by the police. These are the actions of a person who knows he did something wrong but doesn't want to answer for it. Members of the jury, while Mr. Miller may have done an act that you and I believe only a sick individual could do, he was mentally intact when he did so. Don't accept the Defense's farfetched fiction, the only evidence about which comes from a violent offender's claims, but instead hold him responsible. We ask you to return the only verdict appropriate in this case, Guilty.

Defense Opening Statement

Members of the jury, Jordan Miller suffers from a very severe mental illness known as paranoid schizophrenia. The composed, seemingly rational person you see before you is a product of anti-psychotic medication. However, you have all heard the idiom, 'never judge a book by its cover.' To judge the inner workings of Mr. Miller's mind and mental illness based on his external appearance while he is on anti-psychotic medication is a grave mistake. You will hear medical testimony showing that the defendant has been positively diagnosed with paranoid schizophrenia.

Mr. Miller's actions were, in his mind, truly justified. The rationality of his belief, given his diagnosis of paranoid schizophrenia, is not the legal question to be decided here today. If a person kills another under a delusion that the salvation of the human race depends on it, then his action might be 'legally wrong', but it is not 'wrong' if we mean 'morally wrong'. The law is clear about this, members of the jury. A mental disease caused him to think that killing another person was the only option. If you, the jury, feel that Mr. Miller was not in his right mind and that he believed his actions were morally justified, then you must find that the defendant Not Guilty by Reason of Insanity.

To return a verdict of Not Guilty by Reason of Insanity you do not need to understand what he believed; surely, no sane person would believe that his loved ones have been replaced by alien imposters. What you do need to understand is *why* he believed what he did. The answer to that point is a severe mental illness or disease known as paranoid schizophrenia. It was only because of this mental illness that he stabbed Mr. Hughes. Keeping these facts in mind, the Defense calls on you to return a verdict of Not Guilty by Reason of Insanity.

Prosecution Witness, Officer Mark Hanes

Prosecuting Attorney: Can you please state your name and occupation?

Hanes: My name is Mark Hanes, and I am the police officer who was the first to arrive on scene on the day in question. I was also the officer that later arrested Jordan Miller.

Prosecuting Attorney: Can you please describe the events that took place on the evening of December 10th?

Hanes: At approximately 8:40 pm I responded to a 911 call from a neighbor about a disturbance at the apartment of Alex Hughes and Jordan Miller. When I arrived, the door was open, and the victim, Mr. Hughes, was lying on the floor in the kitchen. I could see that the Mr. Hughes had lost a lot of blood, and I immediately called for medical assistance. Mr. Hughes was pronounced dead shortly after arriving at the hospital, and the cause of death was noted as multiple stab wounds to the neck and chest.

Prosecuting Attorney: What happened next?

Hanes: We interviewed the neighbor who had called 911. We learned from this person that Mr. Hughes had a roommate, Jordan Miller.

Prosecuting Attorney: Was the defendant, Jordan Miller, there at that time?

Hanes: No he was not.

Prosecuting Attorney: When and where did you find Mr. Miller?

Hanes: At approximately 9:15 we found Mr. Miller at the home of his mother, Mrs. Miller.

Prosecuting Attorney: Can you describe what happened next?

Hanes: We arrived at the home of Mrs. Miller, and identified ourselves as police officers. Mrs. Miller indicated that Mr. Miller was in his childhood bedroom. When we went to his room, it was evident the defendant was quickly attempting to pack some belongings. We let Mr. Miller know that we needed to ask him some questions pertaining to Alex Hughes.

Prosecuting Attorney: Did the defendant comply with your instructions?

Hanes: No he did not. Mr. Miller attempted to flee through the bedroom window, which was on the ground level of the house. At that time we apprehended Mr. Miller and took him in for questioning.

Prosecuting Attorney: Did you find anything of note at Mrs. Miller's home?

Hanes: Yes. We found a butcher's knife, which we later identified as the murder weapon. Mr. Miller had cleaned the knife in the bathroom sink. We also recovered a wallet, which contained \$200 cash and several cards; it belonged to the victim, Mr. Hughes.

Prosecuting Attorney: So, to summarize, Mr. Miller was attempting to pack his belongings, and to avoid capture?

Hanes: Yes.

Defense Cross-examination:

Defense Attorney: What was Mr. Miller's demeanor at the time you arrived at his house?

Hanes: He seemed frantic, and unsettled by sudden police presence.

Defense Attorney : Did he say anything?

Hanes: He shouted something to the effect of: "Get away from me, don't let them take me."

Defense Witness, Dr. Devin Cassady

Defense Attorney: Can you please state your name and occupation for the court?

Cassady: I'm Dr. Devin Cassady. I'm a psychologist working at the Forensic Mental Health Institute.

Defense Attorney: What are your credentials?

Cassady: I earned my Ph.D. in clinical psychology and later became board-certified in forensic psychology by the American Board of Professional Psychology. I've been a forensic psychologist for over 20 years now.

Defense Attorney: Have you spoken extensively with the defendant, Jordan Miller?

Cassady: Yes. I conducted a full psychological assessment of Mr. Miller.

Defense Attorney: What did you learn from this assessment?

Cassady: Based on a psychological and medical history, a standardized questionnaire, and my own more detailed interview, it is my professional opinion that Mr. Miller meets the diagnostic criteria for schizophrenia, paranoid type.

Defense Attorney: Can you describe for the courts what exactly 'schizophrenia' is?

Cassady: Schizophrenia is a severe brain disorder in which people interpret reality abnormally. Schizophrenia may result in some combination of hallucinations, delusions, and extremely disordered thinking and behavior. Hallucinations involve perceiving something with one of your five senses when that something isn't really there, such as hearing voices when no one is actually speaking. Delusions are fixed, false beliefs - believing something that isn't true, a firm belief that can't be altered even in the face of proof.. The origins of schizophrenia are not yet fully understood by scientists, but its potential debilitating effects are well documented.

Defense Attorney: Could you please tell the jury some details about how someone is diagnosed with schizophrenia, and what that means?

Cassady: Well, first you must rule out other mental health disorders and determine that the symptoms aren't due to substance abuse, medication, or a medical condition. In addition, a person must have at least two of a specific set of symptoms outlined in the Diagnostic and Statistical Manual of Mental Disorder (also called the 'DSM'), and those symptoms would be present for most of the time during a one-month period, with some level of disturbance being present over six months. We look for things like delusions, hallucinations, disorganized speech (indicating disorganized thinking), and extremely disorganized behavior.

Defense Attorney: What did you learn, during your assessment, about Mr. Miller's behavior on the day in question?

Cassady: Mr. Miller suffers from what is called “Capgras Delusion”, a relatively rare type of delusion that can occur in patients with paranoid schizophrenia. The key feature of this delusion is that the patient believes that his loved ones have been replaced by identical looking imposters. Mr. Miller indicated to me that he believed that an alien imposter had replaced his roommate. Further, he stated he believed the alien imposter had transplanted a chip into his brain. This chip, Mr. Miller believed, was responsible for his hearing of Mr. Hughes’s voice even when Mr. Hughes was not present. Mr. Miller told me he suspected that aliens were conspiring to take over the planet, and that the Mr. Hughes imposter was attempting to extract information from his mind. He remarked to me that he began to suspect this was the case a couple of months prior, when he came home to find that Mr. Hughes had moved the TV to a different spot in the room.

Defense Attorney: In your discussions with Mr. Miller about the night in question, what did he tell you?

Cassady: He recalled that he and Mr. Hughes were talking in the kitchen, and that he heard a knock on the door. He believed that Mr. Hughes intended to take him away to a secret facility that night, and that he had to kill him to get away.

Defense Attorney: In your opinion, is Mr. Miller trying to mislead you into believing he has schizophrenia?

Cassady: No I do not. Mr. Miller presented with classic symptoms of schizophrenia, and in particular, Capgras delusion.

Prosecution Cross-Examination

Prosecuting Attorney: Are you an expert in deception, Dr. Cassady?

Cassady: No, I am not. But I have many years experience treating real illnesses, and the ability to detect malingering is part of the job.

Prosecuting Attorney: Is that because people sometimes lie, and try to trick their doctor into diagnosing them with an illness?

Cassady: It’s a possibility, but to my knowledge it is not all that common. Capgras Delusion specifically is not necessarily well known to most people, so it wouldn’t really be something one would fake easily.

Prosecuting Attorney: But, wasn’t your diagnosis just based on what the defendant told you, after some time had passed following the incident?

Cassady: No. I conducted a full psychological assessment. From this assessment, which included a retrospective examination of records from earlier in Mr. Miller’s life - including records from the time of the crime - it is my opinion that Mr. Miller’s behavior was consistent with a diagnosis of schizophrenia.

Prosecuting Attorney: But in fact, you didn’t even interview Mr. Miller until two full weeks after the crime had occurred, isn’t that right?

Cassady: Yes that’s correct.

Prosecuting Attorney: Do you think that is enough time for someone to research the symptoms of schizophrenia, or research the insanity defense?

Cassady: I don't really know – I couldn't speak to the defendant's activities during that time.

Prosecuting Attorney: Yet you can be confident about his mental state at the time of the crime? That he has this bizarre, specific delusion based only on a description of his activities?

Cassady: I conducted a full psychological assessment. That means that I had to take into account a lot of factors, not just Mr. Miller's word. I looked for things like certain speech patterns, emotional expression, thinking, and perception spanning the months leading up to the incident and at the time of assessment. We're not just looking for what patients say, but looking too at other records as collateral sources that document how they patients behave over time – it's not as simple as just making up stories.

Prosecuting Attorney: So, you're saying that the victim believed aliens replaced his roommate and he had to escape quickly, but he still felt he had time to take the victim's wallet? Was that part of this 'delusion' as well?

Cassady: The point is that Mr. Miller's behaviors were erratic, frantic, because he was under the influence of paranoid delusions. For example, he indicated that if the police captured him, the aliens could get to him easily. Although the behavior is irrational to a person who is well, it is reasonable to suspect that taking the wallet somehow played into those delusions.

Prosecuting Attorney: Speaking of mental health history, to your knowledge, has the defendant ever been hospitalized for paranoid delusions before the incident?

Cassady: No he has not.

Prosecuting Attorney: Thank you Dr. Cassady, that's all I have for you today.

Defense Re-direct

Defense Attorney: Dr. Cassady, is it surprising to you that Mr. Miller would not have spent time in a mental health facility?

Cassady: Not necessarily. Among men, onset of schizophrenia typically occurs during early to mid 20's. Even if Mr. Miller, who was 25 at the time of the alleged crime, began experiencing disturbances before the incident, he would not likely have understood the need to seek treatment. Having moved out of his family home, his family would not have realized the need to intervene either.

Prosecution Closing Statement

Mr. Hughes woke up on December 10th, excited to finish his last exam before the holidays and soon go home to friends and family. He was a good student, and had many exciting plans in store, but instead, his life was cut short. I would like to remind you, ladies and gentlemen, that Mr. Miller does not deny intentionally ending Mr. Hughes's life. So, you don't need to take my word for it, instead you can take this information directly from the defendant. The disturbing truth is that Mr. Miller is a dangerous, cold-blooded killer. Frustrated with his roommate, he snapped and violently silenced Mr. Hughes. He knew that it was illegal, and he knew he would get in trouble. We can clearly see this because he took some quick cash from the victim, fled the scene, and even cleaned the murder weapon. Once he got caught red-handed he had to come up with a good story. Members of the jury, do not fall for his fanciful story. What is likely: that the defendant suddenly experienced paranoid delusions even though we have no evidence of this? The defense is so insistent that these outlandish beliefs explain Mr. Miller's behavior, and yet you didn't hear from a single witness who could attest to any strange behavior in the months leading up to the crime. Is it more plausible that he is just a violent person who lost his cool when he argued with his roommate one too many times? Not one piece of evidence was introduced, besides the defendant's own account, that he had a mental disease at the time of the event. What we do have is overwhelming evidence of second-degree murder: the body of Mr. Hughes, a murder weapon, the defendant's belongings in Mr. Miller's room, and even a direct admission. While the forensic psychologist you heard from might not be able to tell when someone is faking an illness, I have every confidence that you can, members of the jury, and that you will return the correct verdict in this case: Guilty.

Defense Closing Statement

This is a very tragic case, ladies and gentlemen; there is no doubt that. Mr. Miller also deeply feels the loss of his best friend and roommate, Mr. Hughes. The real culprit here is mental illness. We have shown you beyond a shadow of a doubt that Mr. Miller did not know his act was wrong. You heard testimony from a very experienced doctor describing an undisputed diagnosis of paranoid schizophrenia. The Prosecution would have you believe that because Mr. Miller's account is so bizarre, it can only be a piece of fiction. But after hearing Dr. Cassady's testimony, you can understand that the reason these beliefs sound so far-fetched to you or me is because they came from a mind that is unwell. Don't fall into the trap of attempting to understand Mr. Miller's delusion. The Prosecution is trying to distract you from the real legal issue at hand: namely, whether Mr. Miller believed these things because of a mental illness. Trust in an expert's full assessment that was based on a lot more information than you've heard in this case. It was based on years of training, experience, and study of mental health as well as other sources in Mr. Miller's history. Let us not punish Mr. Miller for being the unlucky recipient of a mental disease that consumed his life and left him in fear for it. What Mr. Miller really needs to receive is mental health care from trained medical professionals who understand how the brain works. I trust you, members of the jury, to follow the law in this case. The law tells us that if a person did not knowingly and intentionally commit a crime, then you must find so, plain and simple. This doesn't mean he can just walk out of here, it just means that we recognize something that was so beyond his control. This isn't a case of evil, but rather it is a case of illness. While Mr. Miller did not have the choice to act rationally at the time of the crime, you have a choice here and now; the rational one is to find the defendant Not Guilty by Reason of Insanity.

Judge's Closing Instructions to the Jury

The defendant is charged in the indictment with murder in the second degree in violation of Section 1111 of Title 18 of the State Code. In order for the defendant to be found guilty of that charge, the government must prove each of the following elements beyond a reasonable doubt:

First, the defendant unlawfully killed Alex Hughes; and
Second, the defendant killed Alex Hughes with malice aforethought.

To kill with malice aforethought means to kill either deliberately and intentionally or recklessly and with extreme disregard for human life.

If you conclude that the government has proved beyond a reasonable doubt that the defendant committed the crime charged, you must then consider whether the defendant should be found "Not Guilty by Reason of Insanity." Under the law, a person is not criminally liable for his conduct while insane. Insanity is therefore a defense to the crime charged. The defendant has presented evidence of insanity at the time he committed the crime charged.

For you to return a verdict of Not Guilty by Reason of Insanity (NGRI), the defendant must prove 1) that he suffered from a severe mental disease or defect when he committed the crime; and (2) that, as a result of this mental disease or defect, he was not able to understand what he was doing or to understand that it was wrong.

Insanity may be temporary or permanent. You may consider evidence of the defendant's mental condition before, during, and after the crime, in deciding whether he was legally insane at the time of the crime.

Unlike other aspects of a criminal trial, the defendant has the burden of proving an insanity defense. The defendant does not have to prove insanity beyond a reasonable doubt, however, but only by clear and convincing evidence. Clear and convincing evidence is evidence that makes it highly probable that the defendant was insane. You should render a verdict of "not guilty by reason of insanity" if you find, by clear and convincing evidence, that the defendant was insane when he committed the crime charged.

Although the defendant has raised the issue of insanity, the government still has the burden of proving all of the essential elements of the offense charged beyond a reasonable doubt. Remember that there are three possible verdicts in this case: Guilty, Not Guilty, and Not Guilty by Reason of Insanity.

APPENDIX C
MEASURES

Attention and Comprehension Checks

Each participant received attention and comprehension checks to ensure they read the case vignette fully. Participants were excluded if they failed to answer Attention Check 1 correctly.

1. I am paying attention. As such, I am marking the second option below.
 - a. Option one- He said it.
 - b. Option two- I was told to pick this one.
 - c. Option three- They didn't know.
 - d. Option four- She did it.
2. What will happen to the defendant after the trial if he is found Guilty?
 - a. He will be immediately released back into the community.
 - b. He will go to prison to serve his sentence, where he might receive psychiatric treatment, before he is released back into the community.
 - c. He will go to a secure psychiatric hospital for treatment until he is no longer mentally ill or dangerous, then he will be released back into the community.
 - d. He will go to a secure psychiatric hospital for treatment until the end of his sentence. If he is no longer mentally ill but still dangerous, he will be transferred to prison to serve the remainder of his sentence before he is released back into the community.
3. What will happen to the defendant after the trial if he is found Not Guilty?
 - a. He will be immediately released back into the community.
 - b. He will go to prison to serve his sentence, where he might receive psychiatric treatment, before he is released back into the community.
 - c. He will go to a secure psychiatric hospital for treatment until he is no longer mentally ill or dangerous, then he will be released back into the community.
 - d. He will go to a secure psychiatric hospital for treatment until the end of his sentence. If he is no longer mentally ill but still dangerous, he will be transferred to prison to serve the remainder of his sentence before he is released back into the community.
4. What will happen to the defendant after the trial if he is found Not Guilty by Reason of Insanity?
 - a. He will be immediately released back into the community.
 - b. He will go to prison to serve his sentence, where he might receive psychiatric treatment, before he is released back into the community.
 - c. He will go to a secure psychiatric hospital for treatment until he is no longer mentally ill or dangerous, then he will be released back into the community.
 - d. He will go to a secure psychiatric hospital for treatment until the end of his sentence. If he is no longer mentally ill but still dangerous, he will be transferred to prison to serve the remainder of his sentence before he is released back into the community.

Demographics

1. What is your gender? ☐ Male ☐ Female

2. What is your age? _____

3. What do you consider to be your race or ethnicity?

☐ African American ☐ Hispanic (non-white) ☐ Pacific Islander

☐ Asian ☐ Hispanic (white) ☐ White

☐ Native American ☐ Other (Specify _____)

4. Have you ever served on jury duty?

_____ Yes or _____ No

5. What do you consider to be your political affiliation?

☐ Democrat ☐ Republican ☐ Independent ☐ Libertarian ☐ Other

(Specify _____)

6. Please rate your support for the death penalty.

1 2 3 4 5 6 7 8 9

Strongly Opposed

Strongly In Favor

7. [For people who responded “1” or “2” to previous question] Despite your strong opposition to the death penalty, would you be able to set aside your beliefs and sentence a defendant to death if there were more aggravating circumstances (factors supporting death) than mitigating circumstances (factors supporting life)?

_____ Yes or _____ No

Juror Questions

To what degree do you believe the defendant has a mental illness?

0 - 100% _____

To what extent should the defendant be blamed for his actions?

0 - 100% _____

To what extent did the defendant have control of his actions?

0 - 100% _____

To what degree do you believe the defendant committed the crime charged, second-degree murder?

0 - 100% _____

Do you believe *beyond a reasonable doubt* that the defendant committed the crime charged, second-degree murder?

_____ Yes _____ No

To what degree do you believe the Defense showed that the defendant was [*insane*] at the time of the crime?

0 - 100% _____

Do you believe that the Defense showed, by *clear and convincing evidence*, that the defendant was [*insane*] at the time of the crime?

_____ Yes _____ No

What is your verdict?

_____ Guilty _____ Not Guilty _____ [*NGRI*]

Insanity Defense Attitudes Scale- Revised

On the following pages, you will find statements that express commonly held opinions about the insanity defense. We would like to know how much you agree or disagree with each of these statements. To the right of each statement is a rating scale. You may interpret the seven points on this scale as follows:

1	/	2	/	3	/	4	/	5	/	6	/	7
STRONGLY DISAGREE						STRONGLY AGREE						

After reading each statement, please circle the point on the scale that comes closest to saying how much you agree or disagree with the statement.

1. I believe that people should be held responsible for their actions no matter what their mental condition.	1 2 3 4 5 6 7
2. I believe that <u>all</u> human beings know what they are doing and have the power to control themselves.	1 2 3 4 5 6 7
3. The insanity defense threatens public safety by telling criminals that they can get away with a crime if they come up with a good story about why they did it.	1 2 3 4 5 6 7
4. I believe that mental illness can impair people's ability to make logical choices and control themselves.	1 2 3 4 5 6 7

5. A defendant's degree of insanity is irrelevant: if he commits the crime, then he should do the time.	1	2	3	4	5	6	7
6. The insanity defense returns disturbed, dangerous people to the streets.	1	2	3	4	5	6	7
7. Mentally ill defendants who plead insanity have failed to exert enough willpower to behave properly like the rest of us. So, they should be punished for their crimes like everyone else.	1	2	3	4	5	6	7
8. As a last resort, defense attorneys will encourage their clients to act strangely and lie through their teeth in order to appear "insane."	1	2	3	4	5	6	7
9. Perfectly sane killers can get away with their crimes by hiring high-priced lawyers and experts who misuse the insanity defense.	1	2	3	4	5	6	7
10. The insanity plea is a loophole in the law that allows too many guilty people to escape punishment.	1	2	3	4	5	6	7
11. We should punish people who commit criminal acts, regardless of their degree of mental disturbance.	1	2	3	4	5	6	7

12. It is wrong to punish people who commit crime for crazy reasons while gripped by uncontrollable hallucinations or delusions.	1	2	3	4	5	6	7
13. Most defendants who use the insanity defense are truly mentally ill, <u>not</u> fakers.	1	2	3	4	5	6	7
14. Some people with severe mental illness are out of touch with reality and do not understand that their acts are wrong. These people cannot be blamed and do not deserve to be punished.	1	2	3	4	5	6	7
15. Many of the crazy criminals that psychiatrists see fit to return to the streets go on to kill again.							
16. With slick attorneys and a sad story, any criminal can use the insanity defense to finagle his way to freedom.	1	2	3	4	5	6	7
17. It is wrong to punish someone for an act they commit because of <u>any</u> uncontrollable illness, whether it be epilepsy or mental illness.	1	2	3	4	5	6	7
18. I believe that we should punish a person for a criminal act <u>only</u> if he understood the act as evil and then freely chose to do it.	1	2	3	4	5	6	7

<p>19. For the right price, psychiatrists will probably manufacture a “mental illness” for any criminal to convince the jury that he is insane.</p> <p>20. How <u>strongly</u> do you feel about the insanity defense?</p> <p>21. How <u>personally important</u> is your opinion on the insanity defense?</p> <p>22. How much do you <u>care</u> about the insanity defense?</p>	
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Community Attitudes Towards Mentally Ill (CAMI) Scale

The following statements express various opinions about mental illness and the mentally ill. The mentally ill refers to people needing treatment for mental disorders but who are capable of independent living outside a hospital. Please circle the response which most accurately describes your reaction to each statement. It's your first reaction which is important. Don't be concerned if some statements seem similar to ones you have previously answered. Please be sure to answer all statements.

SA (1) = Strongly Agree, A (2) = Agree, N (3) = Neutral, D (4) = Disagree, SD (5) = Strongly Disagree

a. As soon as a person shows signs of mental disturbance, he should be hospitalized.

SA A N D SD

b. More tax money should be spent on the care and treatment of the mentally ill.

SA A N D SD

c. The mentally ill should be isolated from the rest of the community.

SA A N D SD

d. The best therapy for many mental patients is to be part of a normal community.

SA A N D SD

e. Mental illness is an illness like any other.

SA A N D SD

f. The mentally ill are a burden on society.

SA A N D SD

g. The mentally ill are far less of a danger than most people suppose.

SA A N D SD

h. Locating mental health facilities in a residential area downgrades the neighbourhood.

SA A N D SD

i. There is something about the mentally ill that makes it easy to tell them from normal people.

SA A N D SD

j. The mentally ill have for too long been the subject of ridicule.

SA A N D SD

k. A woman would be foolish to marry a man who has suffered from mental illness, even though he seems fully recovered.

SA A N D SD

l. As far as possible mental health services should be provided through community- based facilities.

SA A N D SD

m. Less emphasis should be placed on protecting the public from the mentally ill.

SA A N D SD

n. Increased spending on mental health services is a waste of tax dollars.

SA A N D SD

o. No one has the right to exclude the mentally ill from their neighbourhood.

SA A N D SD

p. Having mental patients living within residential neighbourhoods might be good therapy, but the risks to residents are too great.

SA A N D SD

q. Mental patients need the same kind of control and discipline as a young child.

SA A N D SD

r. We need to adopt a far more tolerant attitude toward the mentally ill in our society.

SA A N D SD

s. I would not want to live next door to someone who has been mentally ill.

SA A N D SD

t. Residents should accept the location of mental health facilities in their neighbourhood to serve the needs of the local community.

SA A N D SD

u. The mentally ill should not be treated as outcasts of society.

SA A N D SD

v. There are sufficient existing services for the mentally ill.

SA A N D SD

w. Mental patients should be encouraged to assume the responsibilities of normal life.

SA A N D SD

x. Local residents have good reason to resist the location of mental health services in their neighbourhood.

SA A N D SD

y. The best way to handle the mentally ill is to keep them behind locked doors.

SA A N D SD

z. Our mental hospitals seem more like prisons than like places where the mentally ill can be cared for.

SA A N D SD

aa. Anyone with a history of mental problems should be excluded from taking public office.

SA A N D SD

bb. Locating mental health services in residential neighbourhoods does not endanger local residents.

SA A N D SD

cc. Mental hospitals are an outdated means of treating the mentally ill.

SA A N D SD

dd. The mentally ill do not deserve our sympathy.

SA A N D SD

ee. The mentally ill should not be denied their individual rights.

SA A N D SD

ff. Mental health facilities should be kept out of residential neighbourhoods.

SA A N D SD

gg. One of the main causes of mental illness is a lack of self-discipline and will power.

SA A N D SD

hh. We have the responsibility to provide the best possible care for the mentally ill.

SA A N D SD

ii. The mentally ill should not be given any responsibility.

SA A N D SD

jj. Residents have nothing to fear from people coming into their neighbourhood to obtain mental health services.

SA A N D SD

kk. Virtually anyone can become mentally ill.

SA A N D SD

ll. It is best to avoid anyone who has mental problems.

SA A N D SD

mm. Most women who were once patients in a mental hospital can be trusted as baby sitters.

SA A N D SD

nn. It is frightening to think of people with mental problems living in residential neighbourhoods.

SA A N D SD

Implicit Association Test (IAT)

Category Labels: Mentally Ill, Physically Ill, Harmless, Dangerous

Stimuli: Schizophrenia, Diabetes, Dangerous, Harmless, Bipolar Disorder, Appendicitis, Unsafe, Safe, Depression, Cerebral Palsy, Violent, Peaceful, Obsessive-Compulsive Disorder, Multiple Sclerosis, Aggressive, Gentle

Example: Sample Trial from IAT

Instructions for Participants, Category Stimuli is Randomized

Mentally Ill**Physically Ill**

+

Instructions: Place your left and right index fingers on the E and I keys. At the top of the screen are 2 categories. In the task, words and/or images appear in the middle of the screen.

When the word/image belongs to the category on the left, press the E key as fast as you can. When it belongs to the category on the right, press the I key as fast as you can. If you make an error, a red X will appear. Correct errors by hitting the other key.

Please try to go as *fast as you can* while making as few errors as possible.

When you are ready, please press the [Space] bar to begin.

Part 1 of 7

Example of Stimuli Placement

Mentally Ill**Physically Ill**

Appendicitis

Press E or I to advance to the next word/image. Correct mistakes by pressing the other key.

Example of Incorrect Response

Mentally III

Physically III

Diabetes

X

Press E or I to advance to the next word/image. Correct mistakes by pressing the other key.

Part 2

Harmless

Dangerous

+

Now, the categories have changed, but the rules remain the same. Please try to go as *fast as you can* while making as few errors as possible. Correct errors by hitting the other key.

When you are ready, please press the [Space] bar to begin.

Part 2 of 7

Part 4 (Practice Trial)

Mentally III
or
Harmless

Physically III
or
Dangerous

+

Please continue the task as you were just doing it. Again, try to go as fast as possible without making mistakes. Correct errors by hitting the other key.

When you are ready, please press the [Space] bar to begin.

Part 4 of 7

Part 3(Real Trial)

Mentally III
or
Harmless

Physically III
or
Dangerous

+

Now the four categories you saw separately will appear together. Remember, each word/image fits in only one of the four categories. The label/item colors may help you identify the appropriate category.

Use the E key for the two categories on the left and the I key for the two categories on the right. Again, try to go as fast as possible without making mistakes. Correct errors by hitting the other key. Practice this combination now.

When you are ready, please press the [Space] bar to begin.

Part 3 of 7

Part 5

Dangerous

Harmless

+

Notice the categories from before have switched sides. Please practice this new configuration now. Remember to try to go as *fast as you can* while making as few errors as possible. Correct errors by hitting the other key.

When you are ready, please press the [Space] bar to begin.

Part 5 of 7

Part 6 (Practice Trial)

Mentally III
or
Dangerous

Physically III
or
Harmless

+

Notice the four categories have been combined again, but in a new configuration. Please practice this combination now, and remember to go as fast as you can while making as few mistakes as possible. Correct errors by hitting the other key.

When you are ready, please press the [Space] bar to begin.

Part 6 of 7

Part 7 (Real Trial)

Mentally III
or
Dangerous

Physically III
or
Harmless

+

Please continue the task as you were just doing it, and remember to go as fast as you can while making as few mistakes as possible. Correct errors by hitting the other key.

When you are ready, please press the [Space] bar to begin.

Part 7 of 7