Impact of Psychiatric Genetic Data on Tort Litigation and Its Relationship With Stigma

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IMPACT OF PSYCHIATRIC GENETIC DATA ON TORT LITIGATION AND ITS RELATIONSHIP WITH STIGMA

Ashlyn Enokian and Kira Dineen

May 2020

Submitted in partial fulfillment of the requirements for the

Degree of Master of Science in Human Genetics at Sarah Lawrence College
ABSTRACT

Behavioral genetics and other “hard” sciences have the potential to wield great persuasive power in both the criminal and civil court systems. Scholars have suggested that testimony citing scientific evidence, regardless of the quality of that evidence, may be given undeserved credibility and unduly influence on jurors and judges. These worries reflect popular acceptance of biological determinism, the belief that all human behaviors can be explained or predicted by examining an individual’s genes or brain. In this study, we surveyed state trial court judges in the United States about their views on civil responsibility for behavior in tort litigation, and specifically the responsibility of a man who experienced auditory hallucinations and delusions that resulted in a car accident. This study is the first to explore judges’ views on tort liability in the presence or absence of evidence for genetic attribution. State trial court judges (n=465) were randomly chosen from a publicly available list of seated judges nationwide, and randomly assigned surveys detailing scenarios that varied in severity of behavior presented (battery versus negligence) and in whether or not there was evidence that the man’s illness might have a genetic component. Judges were asked to determine the legal responsibility of the defendant and related questions including their perceptions of: the defendant’s dangerousness to the public and level of control over his behavior; the causes of his mental health condition; the defendant’s overall capability to take legal action in various spheres of life. Over half of all judges found the defendant civilly responsible for battery (51.8%) or negligence (67.5%). In the negligence scenario, over half (56.1%) of the judges considered the defendant’s illness a biological disorder qualifying as a physical disability. The presence of genetic evidence did not significantly impact any key survey
questions relating to responsibility. In the future, evidence of genetic attribution and chemical or structural changes to the brain may support the redefinition of schizophrenia as a physical disability. This could result in major changes in policy regarding the standards for responsibility for behavior in negligence cases involving individuals with schizophrenia, however, the presence of genetic evidence in the vignette was not associated with these views. This study provides insight into judges' perspectives on psychiatric genetic evidence in civil court and serves as groundwork for future studies examining how genetic evidence will be used in court.
ACKNOWLEDGEMENTS

We want to thank our advisors Maya Sabatello, LLB, PhD and Laura Hercher, MS, CGC for their invaluable input throughout this thesis project. Funding was received through NHGRI grant K01HG008653.

CONFLICTS OF INTEREST

There are no conflicts of interest to disclose.
INTRODUCTION

An Introduction to Civil Court, Tort Law, and Behavioral Genetic Evidence

While criminal law focuses on crimes and punishments, civil law focuses on private rights. A tort is a civil wrong that causes harm to another party by violating a protected right (Gossman, 2019). Tort liability is meant to monetarily reimburse the tort victim for the harm endured, paid for by the tortfeasor, the one committing the tort (Gossman, 2019). Two types of torts are intentional and negligence torts. Intentional torts (e.g. battery) are defined as any unlawful physical violence or constraint without consent (Black’s Law Dictionary, 2014). Negligence torts are defined as an action or a failure to act when a “reasonable person” would do so (Black’s Law Dictionary, 2014).

Although behavioral genetics has been increasingly used in cases of medical negligence and toxic torts, it has received only little attention in tort cases more generally (Sabatello, M., 2016). However, given the attraction to such information in other judicial proceedings, it is plausible that behavioral genetics will play a growing role in tort cases as the knowledge of behavioral genetics develops. In criminal justice, for instance, studies of cases from 1994 to 2011 found that behavioral genetics has been introduced in some capacity in 81 cases (Denno, 2011). Genetics and other “hard” sciences have great potential persuasive power in both the criminal and civil court system (Jones, 2003). Current studies indicate that testimonies citing scientific evidence, regardless of the quality of that evidence, may be viewed with “undeserved credibility” and have a significant influence on jurors’ and judges’ decisions (Sabatello, 2016). These issues illustrate the concept of biological determinism, the belief that an individual’s genes or brain determine, and thus can allow us to predict or explain their behavior (Aspinwall, 2012). The purpose of this study was to gain the perspective of judges’ views on civil responsibility in two scenarios: battery and negligence. This study is the first to explore judges’ views on tort liability in the presence or absence of schizophrenia genetic evidence.
There are a variety of factors in court cases that determine what level of responsibility defendants have for their actions, including one’s mental stability. In criminal law, a well-known defense that has transformed over time is the insanity defense, which is based on the idea that mental illness can prevent an individual’s ability to form “mens rea”, the intent to commit an act and have a desired consequence, as required by the law (Feuerstein et al., 2005). The insanity defense has been a part of English law since 1616, yet has remained largely unsuccessful as an exculpatory argument. Over a century after its introduction, in the civil case of Polmatier v. Russ (1988), the court spoke to the question of whether or not an insane person can be civilly liable for intentional tort. However, contrary to the criminal law arena, the Supreme Court of Connecticut held that the defendant could be held liable even though his behaviors that resulted in the death of another person were based on delusions and he was incapable of informing the intent necessary for responsibility. The defendant was thus found to be liable for his behavior. Although the insanity defense applies solely in criminal law, this case was significant as it explored the relationship between defendants’ mental instability and civil liability.

Similarly, the case of Breunig v. American Family Insurance Company (1970) focused on torts of a person with a mental illness. The plaintiff was a truck driver who was injured in a car accident caused by the defendant’s delusions while driving. A psychiatrist determined that the defendant experienced an acute schizophrenic reaction of which she had no knowledge. During the case, it was argued that it is unjust to hold a person responsible for their conduct if their incapacity was unknown to them prior to the event and therefore could not have been avoided. However, in determining the judicial perspective on tort liability, the court resolved that mental incapacity does not protect individuals from liability for negligence and that culpability may stem from ignoring known risks.
With the rise of genetic testing and sequencing in the 1990s, the possibility of utilizing such knowledge in court has further expanded. In particular, genetic testing for the monoamine oxidase A gene (MAO-A), known in the media as the “warrior gene”, has began to be introduced to challenge the sentencing and mens rea of defendants in criminal cases. Low expression of MAO-A has been linked to aggressive and violent behavior in observational and survey-based studies (McDermott et al., 2009). In the case of Mobley v. The State (1995), the defendant was convicted of murder, armed robbery, aggravated assault, and possession of a firearm during the commission of a crime, where he ultimately robbed and murdered a student. Part of Mobley’s argument against the death penalty was a family history of behavioral disorders and low expression of MAO-A. Although this attempt to use behavioral genetic evidence in court was unsuccessful, cases like this paved the way for other defendants to investigate how behavioral genetic evidence could reduce responsibility or punishment in the United States and internationally.

In an effort to “isolate” the potential impact of behavioral genetics on judicial decisions in cases of criminal responsibility, a 2012 survey of 181 United States state trial judges presented them with a hypothetical case of a defendant diagnosed with psychopathy, alternating offering and not offering specific details on his low MAO-A activity and atypical amygdala function (Aspinwall, 2012). This diagnosis resulted in an overall reduced punishment from the judges surveyed, lessening the sentence from 13.93 years to 12.83 years (Aspinwall, 2012).

Features of Schizophrenia

Researchers have proposed that psychotic illness is better characterized as a continuous spectrum, rather than a categorical classification, and includes what we refer to as schizophrenia (Kapur et al., 2012 and Kendler et al., 2014). Schizophrenia affects about one percent of the population (Insel, 2010). The onset of schizophrenia generally occurs in late adolescence or early
adulthood, with a peak between ages 18 and 25 (Insel, 2010). Symptoms of schizophrenia, however, are often observed and reported at much earlier ages (e.g., delayed developmental milestones, reduced IQ) during the period when the prefrontal cortex is still developing. However, researchers have limited understanding of this developmental process (Insel, 2010 and Brody, 2014).

Effective treatment and the means of preventing schizophrenia are lacking (Insel, 2010). Some antipsychotic drugs aim to increase the amount of dopamine in the synapses to help relieve the individual of some of the most characteristic symptoms, including hallucinations and delusions (Leemput et al., 2016). Yet, one study found that less than 14% of individuals maintain recovery during the first five years after a psychotic episode (Insel, 2010). Researchers in the biomedical field had held out hopes of a more straightforward etiology, searching for one single, potentially preventable cause for this disorder, but in decades of extensive research this has not proven to be the case (Kendler et. al., 2015).

Current Understanding of the Genetic Contribution to Schizophrenia

Genetic attribution for schizophrenia was a concept first suggested by members of the eugenics movement (Torrey, 2009). In 1916, Ernst Rüdin hypothesized a two-locus recessive model, which was disproved. Though a clear etiology for schizophrenia has not been established, mental illness has been observed to run in families (Uher and Zwicker, 2017). The genetic contribution to schizophrenia is relatively unspecified, but researchers agree that there is often an underlying genetic cause that appears to be multifactorial (GHR, 2019). A full assessment of its multifactorial nature takes into account shared genetic risk factors, environment, gene-environment interactions, neural substrates, neurobiological measures, biomarkers, temperamental antecedents, cognitive and emotional processing abnormalities, comorbidities, and illness course (Tandon, 2013).
Genes implicated in increased risk of schizophrenia are expressed throughout development, including early in pregnancy (Susser et al., 1996 and Huckins et al., 2019). In addition, studies suggest that parental age is a risk factor for schizophrenia. One study conducted by Dolores Malaspina (2001) observed the relationship between paternal age and their offspring’s likelihood of admission to psychiatric units after being diagnosed with schizophrenia. Compared to those with fathers under 25 years old, the relative risk of schizophrenia increased in each 5-year age group, rising more steeply in ages 45-49 (2.02) and 50 and older (2.96). These findings supported the hypothesis that paternal age is a significant predictor of schizophrenia diagnoses (but not of other psychiatric diagnoses) and suggest that schizophrenia may be associated with de novo mutations in paternal germ cells (Malaspina et al., 2001).

Quantitative measures of the genetic contribution to schizophrenia are controversial. The largest twin study to date looking at heritability of schizophrenia found a concordance rate of 33% in monozygotic twins and 7% in dizygotic twins (Hilker, 2018). Based on this information, the estimated heritability of schizophrenia is 79%; after separating out spectrum disorders that include schizophrenia the estimate for residual cases is lowered to 73% (Gejman, 2010 and Hilker, 2018). Despite the relatively low concordance for monozygotic twins, one study found that an individual with a positive family history of schizophrenia has a 10-fold increase in risk to develop schizophrenia (Lu et al., 2017). The large difference between what researchers expect to find based on twin studies and the combined genetic effect of known molecular risk factors is called the “heritability gap” (Uher and Zwicker, 2017).
Studies examining copy number variation (CNV) and rare variants as risk factors have provided insight into the genetics of schizophrenia. Current estimates show a lack of consensus, suggesting that as low as 50% to as high as potentially 90% of the genetic risk for the disorder comes from common polygenes (Kendler et al., 2014). Alleles for these conditions often seem to be de novo or recent in a family history, and these alleles can have an effect on either neuroanatomical or behavioral traits, but expressivity is variable (Malhotra and Sebat, 2012).

There has also been research in predicting the development of schizophrenia based on an individual’s genetics; at this time there is insufficient data to provide this type of predication. While research has identified many genetic associations with schizophrenia, our inability to
determine what genetic variation is causative makes it impossible to predict the type or severity of symptoms in an individual. This uncertainty has not stopped the use of genetic evidence and discussions regarding liability in court.

METHODS

Recruitment

State trial court judges were randomly chosen from The American Bench, a publicly available list of judges nationwide currently sitting on the bench. Demographic information was collected from the judges including sex (Male, Female), race (White, Black or African American, Asian, Other), and race summarized (Non-Hispanic White, Non-White).

No compensation was offered to participants, as judges are government employees. Participants were recruited from April 18th, 2019 to July 8th, 2019 through collaboration with the Center for Survey Research (CSR), an academic survey research center housed by the University of Massachusetts in Boston. CSR identified and recruited participants through The American Bench, a publicly available nationwide listing of over 20,000 judges, including state trial court judges. CSR drew a sampling of judges to participate in the study.

Judges with an email address on file were contacted by this method with a link to the survey. Non-responders received two email reminders, after which they were sent a hard paper package. Judges without an email address on file were contacted through the post and given both a link to the survey online and a paper survey with a postage-paid envelope. A second packet followed the initial mailing to non-responders after three weeks. Those completing the survey online provided electronic consent. The paper survey included an invitation letter that served as consent disclosure and the return of the completed survey was deemed as an indication for consent. Survey participants were de-identified and their identities were unknown to the research
team. The study was approved by the New York State Psychiatric Institute’s Institutional Review Board.

**Survey**

The survey consisted of a 2-page hypothetical tort case with variants. In both versions, a 30-year-old man named John begins having auditory hallucinations that he is a “supreme being who had the power to save the world.” These hallucinations and delusions resulted in John causing an automobile accident, which was randomized to reflect either battery or negligence. In the battery scenario, John initiated the crash, as he believed the oncoming truck was sent to destroy him. In the negligence scenario, John was distracted by auditory hallucinations, which lead to his car crashing into the oncoming truck. These scenarios were randomized for participants. The independent variables are the presence or absence of genetic evidence and whether or not John experienced a prior psychiatric episode. Dependent variables included views of danger, responsibility, and liability, among others. This survey was expected to take participants a maximum of 20 minutes to complete. Participants were then asked questions to determine, on the basis of the facts provided, their views on the case and how it should be resolved. Areas explored included if John was civilly responsible, a danger to the public, had control of his actions, and was capable of adult responsibilities. Another question asked the factors that caused John’s situation. Demographic questions included the following: age, sex, race, degrees, tort workload, length of judge position, geographical location, and political views.

**RESULTS**

**Demographics**

There were 465 surveys submitted by judges, 234 completed the battery scenario and 231 completed the negligence scenario. The majority of judges self-identified as Male (72%) and
Non-Hispanic White (83%). Further demographic information can be found in Table 1. 78.2% of the judges reported that their workload included tort cases, with a higher percentage (82.0%) in respondents who had the battery scenario compared to the negligence scenario (74.5%).

<table>
<thead>
<tr>
<th>Demographic Area</th>
<th>Response</th>
<th>Overall (N = 465) n (%)</th>
<th>Scenario: Battery (n = 234)</th>
<th>Scenario: Negligence (n = 231)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male</td>
<td>335 (72.0)</td>
<td>172 (73.5)</td>
<td>163 (70.6)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>130 (28.0)</td>
<td>62 (26.5)</td>
<td>68 (29.4)</td>
</tr>
<tr>
<td>Race</td>
<td>White</td>
<td>402 (88.6)</td>
<td>206 (89.2)</td>
<td>200 (88.1)</td>
</tr>
<tr>
<td></td>
<td>Black or African American</td>
<td>34 (7.4)</td>
<td>15 (6.5)</td>
<td>19 (8.4)</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>8 (1.7)</td>
<td>5 (2.2)</td>
<td>3 (1.3)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>10 (2.2)</td>
<td>5 (2.2)</td>
<td>5 (2.2)</td>
</tr>
<tr>
<td>Race Summarized</td>
<td>Non-Hispanic White</td>
<td>386 (83.0)</td>
<td>197 (84.2)</td>
<td>189 (81.8)</td>
</tr>
<tr>
<td></td>
<td>Non-White</td>
<td>79 (17.0)</td>
<td>37 (15.8)</td>
<td>42 (18.2)</td>
</tr>
</tbody>
</table>

Table 1. Respondent’s demographic information.

Civil Responsibility for Negligence or Battery

After reading the vignette, over half of the judges found John civilly responsible for his behavior, specifically 51.8% in the battery case and 67.5% in the negligence case. In addition, over half (56.1%) of the judges who read the negligence scenario found the defendant’s schizophrenia as a biological disorder qualifying as a physical disability.

In the negligence scenario, responses were not impacted by genetic evidence; however, responses were impacted by the presence or absence of a prior psychiatric episode. When given information about a prior psychiatric episode, 75.2% of respondents found John to be civilly responsible of negligence. In the absence of a prior psychiatric episode, this percentage decreased to 58.3%, a statistically significant difference (p = 0.007). Non-Hispanic White participants were more likely to find John to be civilly responsible of negligence (70%) than Non-White Judges (53.7%), which is statistically significant (p = 0.036).
Danger to the Public

The majority (67.6%) of all participants agreed that John is dangerous to the public, including 76.1% who received the battery case and 58.6% who received negligence case. In the battery scenario, the presence or absence of genetic evidence impacted responses about John’s dangerousness. In the presence of genetic evidence, 83% of respondents agreed that John was dangerous to the public. In the absence of genetic evidence, this percentage decreased to 69.5% (p=0.016).

Control of Actions

Over half of the judges (61.8%) disagreed with the statement, “John had control over his actions.” including of 64.6% who reviewed the battery scenario and 59.0% who reviewed the negligence scenario. Male respondents (41.4%) were more likely than Female respondents (29.5%) to agree that John had control over his actions in both scenarios (p=0.026). In the negligence scenario, 47.6% of Male respondents agreed John had control over his actions compared to only 25.4% of Female respondents (p=0.003). Race also demonstrated a significant effect, with 40.4% of Non-Hispanic White respondents agreeing that John had control over his actions compared to 26.2% of Non-White Respondents (p=0.03).

Causation

Table 2 shows the overwhelming majority of judges indicated John’s situation was likely caused by a chemical imbalance or genetics, and only a minority indicated John’s situation was likely caused by the way he was raised or bad character. The presence or absence of genetic information, a prior psychiatric episode, and the gender identity of the respondent impacted responses.
Overall, in the presence of genetic evidence, 90.3% of respondents indicated John’s situation was likely caused by a chemical imbalance in his brain, regardless of the scenario. In the absence of genetic evidence, this percentage increased to 97.2%. This response was statistically significant with a p-value of 0.002. In the presence of genetic evidence in the battery case, 89.4% of respondents indicated John’s situation was likely caused by a chemical imbalance in his brain. In the absence of genetic evidence in the battery case, this percentage increased to 98.3%. This response was statistically significant with a p-value of 0.005. In the battery scenario, 88.7% of Female respondents and 95.9% of Male respondents indicated it was likely that chemical imbalance in John’s brain was the cause of the situation, with a p-value of 0.041. The presence of genetic evidence did not significantly impact the responses.

Other statistically significant responses for the causation question included John’s upbringing as a cause to his situation. In the presence of genetic evidence, 11.2% of all respondents indicated John’s situation was likely caused by the way he was raised. In the absence of genetic evidence, this percentage decreased to 4.9%. This response was statistically significant with a p-value of 0.012. In the presence of genetic evidence in the battery case, 14.3% of respondents indicated John’s situation was likely caused by the way he was raised. In the absence of genetic evidence in the battery case, this percentage decreased to 4.2%. This response was statistically significant with a p-value of 0.01. In the negligence case, genetic evidence did not have a significant impact on respondents’ view of John’s situation being caused by his upbringing. In the presence of genetic evidence, 7.8% of respondents indicated John’s situation was likely caused by the way he was raised, compared to 5.6% in the absence of genetic evidence (p=0.488).

In the negligence scenario, only Female respondents (3%) indicated John’s own bad character likely caused his situation, with a p-value of 0.026. In the presence of a prior psychiatric episode in the battery case, 98.5% of respondents indicated John’s situation was likely caused by a genetic or inherited problem. In the absence of a psychiatric episode in the battery case, this
percentage decreased to 92.9%. This response was statistically significant with a p-value of 0.037.

The last set of statistically significant responses for this causation question included stressful circumstances in John’s life. In the presence of genetic evidence in the negligence scenario, 39.6% of respondents indicated John’s situation was likely caused by stressful circumstances in his life. In the absence of genetic evidence, this percentage increased to 52.8%. This response was statistically significant with a p-value of 0.048.

Table 2. Respondent’s views on the cause of John’s situation.

<table>
<thead>
<tr>
<th>How likely is it that John’s situation is caused by each of the following?</th>
<th>Response</th>
<th>Overall (N = 465) n (%)</th>
<th>Scenario: Battery (n = 234)</th>
<th>Scenario: Negligence (n = 231)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. The way he was raised</td>
<td>Somewhat likely / Very likely</td>
<td>36 (7.8)</td>
<td>21 (9.1)</td>
<td>15 (6.6)</td>
</tr>
<tr>
<td></td>
<td>Not at all likely / Not very likely</td>
<td>424 (92.2)</td>
<td>211 (90.9)</td>
<td>213 (93.4)</td>
</tr>
<tr>
<td>b. Stressful circumstances in his life</td>
<td>Somewhat likely / Very likely</td>
<td>235 (51.6)</td>
<td>129 (56.3)</td>
<td>106 (46.9)</td>
</tr>
<tr>
<td></td>
<td>Not at all likely / Not very likely</td>
<td>220 (48.4)</td>
<td>100 (43.7)</td>
<td>120 (53.1)</td>
</tr>
<tr>
<td>c. A chemical imbalance in his brain</td>
<td>Somewhat likely / Very likely</td>
<td>434 (93.9)</td>
<td>219 (94.0)</td>
<td>215 (93.9)</td>
</tr>
<tr>
<td></td>
<td>Not at all likely / Not very likely</td>
<td>28 (6.1)</td>
<td>14 (6.0)</td>
<td>14 (6.1)</td>
</tr>
<tr>
<td>d. A genetic or inherited problem</td>
<td>Somewhat likely / Very likely</td>
<td>450 (96.8)</td>
<td>225 (96.2)</td>
<td>225 (97.4)</td>
</tr>
<tr>
<td></td>
<td>Not at all likely / Not very likely</td>
<td>15 (3.2)</td>
<td>9 (3.8)</td>
<td>6 (2.6)</td>
</tr>
<tr>
<td>e. His own bad character</td>
<td>Somewhat likely / Very likely</td>
<td>6 (1.3)</td>
<td>4 (1.7)</td>
<td>2 (0.9)</td>
</tr>
<tr>
<td></td>
<td>Not at all likely / Not very likely</td>
<td>454 (98.7)</td>
<td>228 (98.3)</td>
<td>226 (99.1)</td>
</tr>
</tbody>
</table>

Capabilities

Another question in the survey, (See Table 3) asked judges their perception of John’s capabilities. Over 85% of respondents indicated John was capable of making marital decisions, opening a new bank account, signing a contract involving a financial transaction, and providing
testimony in court proceedings. 78.2% of all respondents indicated John was capable of making a decision to receive psychiatric treatment, whereas 61.8% indicated he was capable to refuse psychiatric treatment. Specifically in the battery scenario, 88.9% of non-white respondents indicated John was capable of making a decision to receive psychiatric treatment compared to 72.3% of Non-Hispanic White respondents, with a p-value of 0.037. In the battery scenario, all Non-White Respondents indicated John was capable of opening a new bank account compared to 89.7% of Non-Hispanic White respondents, with a p-value of 0.05.

In the presence of genetic evidence, 92.5% of all respondents indicated John was capable of making marital decisions, compared to 85.7% in the absence of genetic evidence. This response was statistically significant with a p-value of 0.02. Specifically in the battery scenario, 92.7% of participants that were presented with genetic evidence indicated John was capable, compared to 82.5% in the absence of genetic evidence with a p-value of 0.02.

In the presence of genetic evidence, 90.7% of all respondents indicated John was capable of signing a contract involved in financial transaction, compared to 83.2% in the absence of genetic evidence. This response was statistically significant with a p-value of 0.018. Specifically in the negligence scenario, 90.4% of participants that were presented with genetic evidence thought John was capable, compared to 82.3% in the absence of genetic evidence with a p-value of 0.078. In the presence of a psychiatric episode, 90.8% of respondents indicated John was capable, compared to 81.3% in the absence of a psychiatric episode, with a p-value of 0.003. Specifically in the battery case, 91.1% of participants that were presented with a psychiatric episode thought John was capable, compared to 82.3% in the absence of a psychiatric episode with a p-value of 0.046. Specifically in the negligence case, 90.5% of participants that were presented with a psychiatric episode indicated John was capable, compared to 80.4% in the absence of a psychiatric episode with a p-value of 0.029.

In the presence of genetic evidence, 94% of respondents indicated John was capable of providing a testimony in court proceedings, compared to 86.4% in the absence of genetic
evidence. This response was statistically significant with a p-value of 0.007. Specifically in the battery scenario, 93.7% of participants that were presented with genetic evidence indicated John was capable, compared to 82.5% in the absence of genetic evidence with a p-value of 0.009. In the presence of a psychiatric episode, 93.1% of respondents indicated John was capable, compared to 85.7% in the absence of a psychiatric episode, with a p-value of 0.009. Specifically in the negligence case, 90.6% of participants that were presented with a psychiatric episode thought John was capable, compared to 87% in the absence of a psychiatric episode with a p-value of 0.024.

In the presence of genetic evidence in the negligence case, 76% of respondents indicated John was capable of making a decision to refuse psychiatric treatment, compared to 58.9% in the absence of genetic evidence. This response was statistically significant with a p-value of 0.006.
How capable is John of doing each of the following?

<table>
<thead>
<tr>
<th>How capable is John of doing each of the following?</th>
<th>Response</th>
<th>Overall (N = 465) n (%)</th>
<th>Scenario: Battery (n = 234)</th>
<th>Scenario: Negligence (n = 231)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Making marital decisions (e.g. divorce, remarry)</td>
<td>Somewhat capable / Very capable</td>
<td>407 (88.9)</td>
<td>201 (87.4)</td>
<td>206 (90.4)</td>
</tr>
<tr>
<td></td>
<td>Not at all capable / Not very capable</td>
<td>51 (11.1)</td>
<td>29 (12.6)</td>
<td>22 (9.6)</td>
</tr>
<tr>
<td>b. Opening a new bank account</td>
<td>Somewhat capable / Very capable</td>
<td>424 (92.4)</td>
<td>211 (91.3)</td>
<td>213 (93.4)</td>
</tr>
<tr>
<td></td>
<td>Not at all capable / Not very capable</td>
<td>35 (7.6)</td>
<td>20 (8.7)</td>
<td>15 (6.6)</td>
</tr>
<tr>
<td>c. Owning property (e.g. a car or apartment)</td>
<td>Somewhat capable / Very capable</td>
<td>424 (92.4)</td>
<td>213 (92.2)</td>
<td>211 (92.5)</td>
</tr>
<tr>
<td></td>
<td>Not at all capable / Not very capable</td>
<td>35 (7.6)</td>
<td>18 (7.8)</td>
<td>17 (7.5)</td>
</tr>
<tr>
<td>d. Signing a contract involving a financial transaction</td>
<td>Somewhat capable / Very capable</td>
<td>398 (86.7)</td>
<td>202 (87.4)</td>
<td>196 (86.0)</td>
</tr>
<tr>
<td></td>
<td>Not at all capable / Not very capable</td>
<td>61 (13.3)</td>
<td>29 (12.6)</td>
<td>32 (14.0)</td>
</tr>
<tr>
<td>e. Providing testimony in court proceedings</td>
<td>Somewhat capable / Very capable</td>
<td>411 (89.9)</td>
<td>203 (87.9)</td>
<td>208 (92.0)</td>
</tr>
<tr>
<td></td>
<td>Not at all capable / Not very capable</td>
<td>46 (10.1)</td>
<td>28 (12.1)</td>
<td>18 (8.0)</td>
</tr>
<tr>
<td>f. Making a decision to receive psychiatric treatment</td>
<td>Somewhat capable / Very capable</td>
<td>359 (78.2)</td>
<td>173 (74.9)</td>
<td>186 (81.6)</td>
</tr>
<tr>
<td></td>
<td>Not at all capable / Not very capable</td>
<td>100 (21.8)</td>
<td>58 (25.1)</td>
<td>42 (18.4)</td>
</tr>
<tr>
<td>g. Making a decision to refuse psychiatric treatment</td>
<td>Somewhat capable / Very capable</td>
<td>283 (61.8)</td>
<td>131 (57.0)</td>
<td>152 (66.7)</td>
</tr>
<tr>
<td></td>
<td>Not at all capable / Not very capable</td>
<td>175 (38.2)</td>
<td>99 (43.0)</td>
<td>76 (33.3)</td>
</tr>
<tr>
<td>Capability Score</td>
<td>Mean (SD)</td>
<td>12.90 (1.77)</td>
<td>12.77 (1.87)</td>
<td>13.04 (1.66)</td>
</tr>
</tbody>
</table>

Table 3. Respondent’s views on John’s capability of various tasks and decisions.

**DISCUSSION**

The impact of behavioral genetic evidence on sentencing has been explored in criminal law literature, however the relationship between behavioral genetic evidence and responsibility for behavior in tort litigation has not, therefore this study is the first to analyze this relationship. Based on the results of this study, judges’ impressions and understanding of genetics and
schizophrenia have the potential to contribute to their decision-making and views. Over half the judges surveyed indicated that they would find John civilly responsible for the outcome of his behavior, regardless of whether they read a scenario of negligence or battery. Genetic evidence was found to have no impact on perspectives of reasonability in both scenarios.

Additionally, our findings indicate that having a documented prior psychiatric episode impacts how judges view the etiology of psychiatric conditions. In the battery scenario, the presence of a previous psychiatric episode led more judges to agree that John’s situation was likely caused by a genetic or inherited problem, indicating that intractability and severity, as defined by multiple psychiatric episodes, is associated with a genetic explanation. How judges interpret genetic information for conditions like schizophrenia can potentially play a large role in their decision-making, however the results of this study did not support this idea. Their mindset impacts how judges view an affected individual’s responsibility for his or her actions and behavior, and has future implications for the extent to which genetic attribution for psychiatric conditions may affect what are considered physical disabilities in civil court.

*Whether or Not Genetic Evidence Impacts Notions of Responsibility for Behavior*

The genetic evidence offered in the survey and current stigma surrounding schizophrenia did not greatly affect judges’ decision making in this study. The features of psychotic illness fall along a continuous spectrum and include symptoms such as delusions, hallucinations, disorganized thinking and speech, and abnormal motor behavior (Kapur et al., 2012 and Kendler et al., 2014). All these features could potentially play a role in an individual’s level of responsibility, although not in tort law at this time. Though researchers are not certain of one specific genetic cause for schizophrenia, the current overarching understanding is that the condition is genetic, partially heritable, and most likely due to an underlying multifactorial cause, which includes genetic risk factors, environment, gene-environment interactions, and more (Tandon, 2013). With 96.8% of judges indicating it was somewhat likely or very likely John’s
situation is caused by a genetic or inherited problem, our study demonstrates a belief in the idea that schizophrenia is something that John was born with, rather than acquired.

Surprisingly, a correlation was found between introducing evidence of genetic attribution and judges’ assumptions about John’s upbringing. When evidence of genetic attribution was presented, judges were more likely to think John’s upbringing had a role in his behavior in the battery scenario. We had anticipated the opposite, hypothesizing that judges would be increasingly likely to dismiss environmental factors in the face of biological attribution.

In a future study, it would be interesting to explore how genetic evidence may alter judges’ decision making in terms of compensation for injuries or damages in civil court. In the battery scenario, judges were more likely to describe John as dangerous in the presence of evidence suggestive of genetic attribution. However, it is unclear how such views may affect the level of compensation that judges may order. In a study examining the link between an official diagnosis and criminal sentencing, researchers found a contrasting result where a diagnosis resulted in an overall reduced punishment from the surveyed judges, lessening the sentence from 13.93 years to 12.83 years (Aspinwall et al., 2012). It would be intriguing to explore whether this concern will play out differently in tort litigation, namely: whether the impact of genetic information on perceptions of dangerousness would result in higher or reduced compensations.

How the Use of Psychiatric Genetic Information May Impact Our Understanding of Psychiatric Conditions as Physical Disabilities

As more research is conducted on the topic of psychiatric conditions, the way in which we define physical disabilities may change. In the presence of genetic evidence in both the battery and negligence scenarios, the vast majority of respondents agreed that John’s situation was likely caused by a chemical imbalance. This could imply that the majority of judges might equate evidence of genetic attribution with a chemical imbalance, a factor out of his control. However, even in the absence of genetic evidence, a vast majority (97.2%) of judges answered somewhat
likely or very likely due to a chemical imbalance in his brain, so apparently this is broadly indicative of how these judges view schizophrenia. If an individual is born with a predisposition to a genetic condition that creates a chemical imbalance in their brain, this could be viewed as a congenital disability. Even if acquired during their lifetime, this could also be viewed as a physical disability, as a disability is defined as any condition that makes it more difficult for a person to do certain activities or interact with the world around them. Schizophrenia, by the nature of the disorder, falls under this definition.

Among those who read the negligence scenario, over half of the judges agreed that John’s schizophrenia was a biological disorder qualifying as a physical disability. Disabilities fall on a wide spectrum (cognitive, intellectual, developmental, mental, physical, sensory) and may include a combination of multiple aspects, and all should be seen as valid factors when determining responsibility. Though this kind of evidence is relatively new and more limited to criminal cases, predispositions to genetic conditions (i.e. MAOA deficiency cases) are being presented in court to determine levels of responsibility for an individual’s behavior. In the future, genetic and chemical changes may be more clearly defined as physical disabilities by legal precedent. Having a clearer definition of what is considered a disability would allow for major changes in policy regarding how these individuals are treated in court.

Limitations of the Study

One area of limitations of this study is within the literature. There is an abundance of data on the possible genetics of schizophrenia; however, there is a lack of concordance in the scientific community. This study shed light on how judges view genetic evidence when making decisions, but there is a lack of concrete data on the cause(s) and etiology of schizophrenia. While it is possible that a study design that centered around a psychiatric condition with high genetic validity (e.g., Huntington’s Disease) would have had more impact on judicial decisions, our description of “a combination of genes that, … makes it more likely that a person will have schizophrenia”
better fits with existing knowledge and we preferred it over a deterministic evidence that is unsupported by scientific research that could confuse participants and increase biases. An additional limitation of this study was a lack of understanding of judges’ knowledge of key issues in genetics such as etiology, inheritance patterns, and penetrance of features, which may have influenced their responses. However, given the challenges in recruiting judges—a hard to reach population—we opted for a first survey to be experimental in nature, without risking participants’ dropping out due to the possible discomfort of showing insufficient genetic literacy.
REFERENCES


Supreme Court of Wisconsin. AMERICAN FAMILY INSURANCE COMPANY, a Wisconsin insurance corporation, Appellant. , (February 3, 1970).


