Nature versus Nurture: Juror Perceptions of Neuroscientific Evidence to Explain Mental Disorders
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Abstract
Neuroscientific evidence is currently of interest to the psychology and law community due to an incomplete understanding of how jurors perceive and use this type of evidence within a legal context.

This research investigates mock jurors’ pre-conceived beliefs about the biological versus environmental cause of mental health disorders and the effect of neuroscientific evidence on judgments of culpability.

The presentation of neuroscientific evidence had a mitigating effect across all three disorders. However, mock jurors’ preexisting beliefs about the biological versus environmental cause of mental health disorders mediated judgments of defendant responsibility. Across all three diagnoses, the belief that the disorder was caused by environmental reasons led to an increased perceived responsibility than when the belief the disorder was biological in origin.

Introduction
Neuroscientific evidence has been offered as relevant to defendants’ mental state, capacity to appreciate the wrongfulness of conduct or to conform to laws, and sentencing (owing to aggravating or mitigating neurological conditions).

Findings of recent research on the neuroimage effect (Saks, Schweitzer, Aharoni, & Kiehl, in press) demonstrate that biological explanations for mental disorders can be seen as mitigating or aggravating, depending on whether onset of the disorder is believed to be controllable.

This study examines whether neuroscientific evidence primes the biological mechanism of mental disorders, which could explain why the neuroimagery impact—aggravating, mitigating, or irrelevant—is conditional upon the described disorder.

Hypothesis: The differential impact of neuroscientific evidence on case judgments will be mediated by belief in the biological nature of the mental disorder.

Methodology
- A demographically diverse online sample of US residents age 18 years or older was recruited to (N = 253).
- Participants were first asked questions to gauge their baseline attitudes, including whether they are biological versus environmental in nature, toward five mental health disorders (schizophrenia, psychopathy, substance use disorder (SUD), bipolar disorder and post-traumatic stress disorder).
- Participants then read a case summary in which the defendant was charged with assault and were randomly assigned to a condition that could be supported by neuroimaging: schizophrenia, psychopathy, or SUD.
- Participants were asked for their subjective judgments on how responsible the defendant was for his actions, both morally and criminally, as well as judgments of punishment.
- Next, participants were told that new evidence had been presented by the judge in the form of an fMRI scan (depicted in the figure below) along with testimony from a medical doctor who explained that the defendant suffered from a mental disorder and that his frontal lobe was not functioning properly as a result. Participants were then asked to reassess their beliefs of blameworthiness.

Results
A 3 (Condition: Psychopathy, Schizophrenia, or Substance Use Disorder) x 2 (Pre- vs. Post- Neuroevidence judgments) ANOVA was conducted on a composite measure of defendant responsibility.

- The use of neuroimage evidence produced a mitigating effect across all three defendant mental conditions, \( F(2, 250) = 3.4, p = .035, \eta_p^2 = .03 \).

Discussion
- These results suggest that the presentation of neuroscientific evidence can be mitigating for defendants with psychopathy, SUD, or schizophrenia.
- The results also reveal that the belief in which a disorder is biological in origin plays a large role in the judgments and perceptions of a defendant by jurors.
- This study produces further evidence that the specific effects of neuroscientific evidence is not universal across mental health diagnoses; jurors respond differentially to neuroscientific evidence depending on the defendant’s particular mental health diagnosis.
- This research helps to focus attention on the importance of jury members’ beliefs of specific clinical diagnoses and how neuroscientific evidence influences decisions in the courtroom. This knowledge contributes to attorney understanding of jury members’ decision making processes regarding mental health disorders.

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The inclusion of the participants’ pre-conceived notions about biological nature of each disorder (depicted below) differed among each other, but did not influence the magnitude of the mitigation or aggravation effects produced by the neuroevidence (\( p = .39 \)).

However, the biological measures largely negated the large main effect of condition (from \( \eta_p^2 = .17 \) to \( \eta_p^2 = .03 \)), suggesting that our participants’ judgments of the defendant were driven primarily by the extent to which they believed the defendant’s disorder was biological in nature.