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The Impact of Forensic vs. Social-Science Evidence on Judicial Decisions to Grant a Writ of Habeas Corpus

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Hayley J. Wechsler, Robert J. Cramer, Andre Kehn, Robin E. Wosje, Marcus T. Boccaccini & Jorge G. Varela

Wrongful conviction is a serious dilemma for the criminal-justice system. A joint investigation by the Better Government Association and the Center on Wrongful Convictions tracked exonerations from 1989 through 2010 and identified 85 people who were wrongfully incarcerated.[1] Not only were those 85 lives unfairly affected in serious ways due to the incarceration, but the actual perpetrators continued on crime sprees that went on to include 14 murders, 11 sexual assaults, 10 kidnappings, and at least 62 other felonies.[2]

The reversal of false convictions is becoming more frequent.[3] However, scholars have asserted that the exonerations that do occur are probably a small fraction of actual wrongful convictions. Gross and colleagues pointed out that "[o]ur legal system places great weight on the finality of criminal convictions. Courts and prosecutors are exceedingly reluctant to reverse judgments or reconsider closed cases; when they do—and it's rare—it's usually because of a compelling showing of error."[4] Therefore, in order for a wrongful conviction to be overturned, these cases must undergo a lengthy appeals process.

WRONGFUL CONVICTION CAUSAL FACTORS

To prevent wrongful convictions, it is important to understand the factors that lead to them. In one study of 86 DNA-exoneration cases, the leading factors contributing to wrongful conviction were eyewitness misidentification (71% of the cases), errors in forensic-science testing (63% of the cases), police misconduct (44% of the cases), prosecutorial misconduct (28% of the cases), false and misleading expert testimony by forensic experts (27% of the cases), dishonest informants and incompetent defense representation (both 19% of the cases), and false confessions (17% of the cases).[5] According to a more recent analysis by The Innocence Project (2015), which examined 325 post-conviction DNA exonerations in the United States, the following errors were identified: eyewitness-misidentification testimony (72% of cases), unvalidated or improper forensic science (47% of cases), false confessions/incriminating statements (27% of cases), and informants or snitches (15% of cases).[6] Based on these data, it is apparent that there is an array of causal factors related to wrongful convictions.

Eyewitness misidentification. Wrongful-conviction research has established that eyewitness identifications are widely considered to be one of the least reliable forms of evidence admitted in the courtroom.[7] In one study of 500 cases of erroneous convictions, the leading cause of mistaken conviction was faulty eyewitness identification of defendants.[8] Since DNA testing became available in criminal cases in the 1990s, hundreds of defendants who were convicted by United States juries have been exonerated by exculpatory DNA evidence.[9] Out of these people, 235 were cases of mistaken eyewitness identification.[10] Despite clear limitations, many legal decision makers view eyewitness testimony as very persuasive. As eyewitness testimony is the leading cause of wrongful convictions, decision makers should consider the existing scientific knowledge pertaining to the shortcomings of eyewitness testimony when considering facts of criminal cases that involve eyewitnesses.[11]

Error in forensic-science testing. Forensic science (*e.g.*, latent fingerprints and hair analysis) is often portrayed as a gold standard of evidence since it is widely thought of as unquestionable physical proof of one's innocence or guilt.

Footnotes

1. John Conroy & Rob Warden, *A Tale of Lives Lost, Tax Dollars Wasted and Justice Denied*, Better Gov't Ass'n, June 18, 2011, http://www.bettergov.org/investigations/wrongful_convictions_1.aspx.
2. *Id.*
3. Samuel R. Gross, Kristen Jacoby, Daniel J. Matheson, Nicholas Montgomery & Sujata Patil, *Exonerations in the United States 1989 Through 2003*, 95 J. Crim. L. & Criminology 523, 527 (2005).
4. *Id.* at 525.
5. Michael J. Saks & Jonathan Koehler, *The Coming Paradigm Shift in Forensic Identification Science*, 309 Science 892, 892 fig.1 (2005).
6. *The Causes of Wrongful Conviction*, Innocence Project, http://www.innocenceproject.org/causes-wrongful-conviction.
7. *See* Gary L. Wells, Mark Small, Steven Penrod, Roy S. Malpass, Soloman M. Fulero & A. E. Brimacombe, *Eyewitness Identification Procedures: Recommendations for Lineups and Photospreads*, 22 L. & Hum. Behav. 603, 605 (1998).
8. C. Ronald Huff, *Wrongful Conviction: Societal Tolerance of Injustice*, 4 Res. Soc. Probs. & Pub. Pol'y 99, 101-03 (1987).
9. *See The Causes of Wrongful Conviction*, *supra* note 6.
10. *Id.*
11. Gary Wells & Deah S. Quinlivan, *Suggestive Eyewitness Identification Procedures and the Supreme Court's Reliability Test in Light of Eyewitness Science: 30 Years Later*, 33 L. & Hum. Behav. 1, 1-2 (2008).

DNA evidence specifically has been referred to as a "truth machine."[12] However, forensic-science error has led to wrongful convictions in several cases. Whether it is laboratory fraud or fabricated evidence, these erroneous methods are especially troubling since scientific evidence is often the primary method prosecutors use to prove a defendant's guilt. In a study of the trial transcripts of 137 exonerees, 13 cases involved either a failure to disclose exculpatory data or analysis or fabrication of forensic evidence.[13]

Police misconduct. In a study of 62 exonerations, police misconduct was found in 50% of the cases.[14] Common forms of misconduct by police included employing suggestion when conducting identification procedures, coercing false confessions, lying or intentionally misleading jurors about their observations, failing to turn over exculpatory evidence to prosecutors, losing or destroying evidence, and providing incentives to secure unreliable evidence from informants.[15] Because there is pressure on police officers to obtain incriminating evidence against a suspect in the absence of alternate inculpatory evidence, police may be "tempted to cut corners . . . perhaps to manufacture evidence to clinch the case."[16]

Expert Testimony. Experts may be held in a generally high regard based on the witness's credential or some other relevant factor.[17] In fact, because juries may give special weight to forensic-science expert testimony,[18] the U.S. Supreme Court cautioned, "[e]xpert evidence can be both powerful and quite misleading because of the difficulty in evaluating it."[19] A study by Garrett and Neufeld found that in 60% of their sample of wrongful-conviction cases, forensic analysts called by the prosecution provided invalid testimony.[20] Additionally, experts sometimes testify regarding forensic-science practices (*e.g.*, hair microscopy, bite-mark comparison) that, while practiced for years, have not been subjected to adequate scientific research.[21] While forensic science often provides exonerating information, the misuse of this evidence can have deleterious implications as well.

False confessions. Despite being implicated in 20% to 25% of wrongful convictions in DNA-exoneration cases in the United States, confession evidence has been historically regarded as a "gold standard" of evidence in court.[22] However, of the 340 exonerations between 1989 and 2004, 51 defendants, or 15%, confessed to crimes they did not commit.[23] Most of these confessions were coerced by the police. False confessions are heavily concentrated among the most vulnerable populations—people with mental disabilities and people under the age of 18. Of the false confessors in Gross et al.'s study, 55% of them were either under 18, intellectually disabled, or both.[24] Research conducted by Kassin, Bogart, and Kerner[25] suggested that confessions may exert influence in addition to the actual admission of guilt in trial. Specifically, incriminating confessions can mislead the perceptions of lay witnesses, expert witnesses, and jurors. For example, research has found that confessions influence verdicts even when the confessor is reportedly mentally ill or when the confessor was noted to be under duress when confessing.[26] Furthermore, Kassin et al. found that multiple errors were more likely to exist in wrongful-conviction cases containing a confession.[27] In such cases containing multiple errors, confessions were more likely to have been obtained first rather than later in the investigation. This temporal-order finding is important because it suggests confessions taint other forms of evidence.

JUDICIAL DECISION MAKING

While judicial decision making is ostensibly guided by legal factors, public policy and other influences often converge to shape judicial decisions.[28] Ideological factors as well as policy preferences increasingly influence decision making as one moves higher up the judicial "pyramid."[29] Although a growing body of research has investigated the use of expert testimony in jury decisions, little is known about how judges evaluate scientific or psychological evidence in the decision-making process.[30] It has been indicated that some judges may be more likely to disregard social-science evidence because it may repu-

12. Seth F. Kreimer, *Truth Machines & Consequences: The Light and Dark Sides of "Accuracy" in Criminal Justice*, 60 N.Y.U. Ann. Surv. Am. L. 655, 656 (2005).
13. Brandon L. Garrett & Peter J. Neufeld, *Invalid Forensic Science Testimony and Wrongful Convictions*, 95 Va. L. Rev. 1, 14, 76 (2009).
14. Jim Dwyer, Peter J. Neufeld & Barry Scheck, Actual Innocence: Five Days to Execution and Other Dispatches from the Wrongfully Convicted 246 (2000).
15. *See* Innocence Project, http://www.innocenceproject.org; Talia R. Harmon & William S. Lofquist, *Too Late for Luck: A Comparison of Post-Furman Exonerations and Executions*, 51 Crime & Delinq. 498, 508 (2005).
16. Samuel R. Gross, *The Risks of Death: Why Erroneous Convictions Are Common in Capital Cases*, 44 Buff. L. Rev. 469, 478 (1996).
17. *See generally* Marcus T. Boccaccini & Stanley L. Brodsky, *Believability of Expert and Lay Witnesses: Implications for Trial Consultation*, 33 Prof. Psychol.: Res. & Prac. 384 (2002).
18. Garrett & Neufeld, *supra* note 13, at 9.
19. Daubert v. Merrell Dow Pharmaceuticals, 509 U.S. 579, 595 (1993).
20. Garrett & Neufeld, *supra* note 13, at 14.
21. *Id.* at 20, 47-51.
22. Jennifer T. Perillo & Saul M. Kassin, *Inside Interrogation: The Lie, the Bluff, and False Confessions*, 35 Law & Hum. Behav. 327, 327 (2010).
23. Gross et al., *supra* note 3, at 544.
24. *Id.* at 545.
25. Saul M. Kassin, Daniel Bogart & Jacqueline Kerner, *Confessions That Corrupt: Evidence from the DNA Exoneration Case Files*, 23 Psychol. Sci. 41, 43 (2012).
26. Linda A. Henkel, *Jurors' Reactions to Recanted Confessions: Do the Defendant's Personal and Dispositional Characteristics Play a Role?* 14 Psychol. Crime & L. 565, 574 (2008).
27. Kassin et al., *supra* note 25, at 43.
28. Christopher Zorn & Jennifer B. Bowie, *Ideological Influences on Decision Making in the Federal Judicial Hierarchy: An Empirical Assessment*, 72 J. Politics 1212, 1214 (2010).
29. *Id.* at 1213.
30. Margaret Kovera & Bradley D. McAuliff, *The Effects of Peer Review and Evidence Quality on Judge Evaluations of Psychological Science: Are Judges Effective Gatekeepers?* 85 J. Applied Psychol. 574, 575 (2000).

diate their (more conservative) sociopolitical beliefs.[31] Furthermore, research suggests that without additional training, some judges may be less able to assess the validity of scientific and psychological evidence accurately.[32] This has several implications for judges' ability to interpret expert and eyewitness testimony and be effective gatekeepers of forensic-science and social-science evidence.

For the most part, it is relatively unknown how judges perceive the errors that commonly lead to convictions of innocent defendants. In a survey conducted by Ramsey and Frank investigating criminal-justice professionals' perceptions of the frequency of wrongful convictions and system errors, judges indicated beliefs that each system error occurred less frequently than defense attorneys believed it occurred.[33] Judge perceptions were more in line with police chiefs and prosecutors than defense attorneys.[34] In addition, survey responses indicated criminal-justice professionals (*i.e.*, defense counsel, police, prosecutors, and judges) were least likely to acknowledge error concerning corrupt actions, specifically police using false evidence and prosecutors knowingly using false evidence. This may reflect the fact that respondents are more likely to recognize issues concerning negligence and poor training than issues involving corruption within the system.[35] While studies such as this do ultimately shed some light on judges' perceptions of factors leading to wrongful convictions, there is still much to be learned regarding judicial decision making in wrongful-conviction cases.

THE PRESENT STUDY

Judicial decision making may be subject to the influence of many different factors, including the judge's attitudes, past experiences, policy preferences, and opinion of scientific evidence.[36] The present study contributes to courtroom research by examining demographics and perceptions of trial errors and scientific evidence associated with the propensity to grant a writ of habeas corpus.

We expected that judges would be more likely to grant the writ of habeas corpus when confronted with errors in forensic-science evidence contributing to a wrongful conviction over errors in social-science evidence. This hypothesis is consistent with past research documenting judicial and law-student participants' generally negative or dismissive attitudes about social-science evidence.[37] In an exploratory manner, we investigate which trial errors judges would place greatest importance on in their decision making. Finally, it was hypothesized that judges' attitudes toward different types of scientific evidence (*i.e.*, social science and forensic science) in the courtroom would influence granting of a new trial.

METHOD

PARTICIPANTS

Participants were 308 judges with an average of approximately 13 years of experience each.[38] The sample included 70 females (22.7% of the sample) and 238 males (77.3% of the sample). Most judges reported being between the ages of 45 and 64 (75.4%), with others between 35 and 44 (7.1%), 65 and 74 (16.6%), and over 75 (1%). Most reported being Caucasian (94.0%), while others reported being black or African-American (1.7%), Asian or Asian-American (1.7%), Hispanic or Latin American (1.3%), or from another racial or ethnic background (3.3%). There was at least one participant from each U.S. state, the District of Columbia, the Northern Mariana Islands, and the Virgin Islands. The judicial sample comprised judges from the following regions of jurisdiction: 32.1% of judges presided in the West, 27.6% presided in the Midwest, 6.5% presided in the Northeast, 33.1% presided in the South, and 0.6% presided in island territories.

In the sample, 69.4% of judges served general jurisdictions, while 5.5% served appellate, 22.8% served special,[39] and 2.3% served military jurisdictions. As a whole, judges estimated they had presided over between 17 and 18 cases that had been involved in the appeals process over the duration of their careers thus far.[40] The judges reported a range of experience with cases over which they had presided that had been overturned on appeal, with an average of approximately five overturned cases.[41]

MEASURES

Vignette. Judges were presented with one of two vignettes; one included social-science evidence and the other, forensic-science evidence. The vignettes contained three different evidentiary issues related to the causal factors of wrongful convictions. All vignettes first presented system-corruption evidence (*i.e.*, held constant across conditions as a rationale to raise the appeal process). There were then two variables from one of the scientific-evidence categories (*i.e.*, forensic or social science). The vignettes' presentation order of scientific evidentiary issues were counterbalanced, with the system-corruption issue always presented first and a counterbalanced variation of the two scientific-evidence variables presented second and third. Because post-conviction review is often focused on the correction of legal and procedural errors, as opposed to factual errors,[42] judges were presented with the system-corruption evidentiary issue (*i.e.*, police misconduct) first, as it was potentially more likely to be considered a legal error worthy of investigation that might then lead to judges' further consideration of additional factual errors (*e.g.*, false confession, inaccurate

31. Richard E. Redding & N. Dickon Reppucci, *Effects of Lawyers' Socio-Political Attitudes on Their Judgments of Social Science in Legal Decision Making*, 23 LAW & HUM. BEHAV. 31, 32 (1999).
32. Kovera & McAuliff, *supra* note 30, at 575.
33. Robert J. Ramsey & James Frank, *Wrongful Conviction: Perceptions of Criminal Justice Professionals Regarding the Frequency of Wrongful Conviction and the Extent of System Errors*, 53 CRIME & DELINQ. 436, 455-56 (2007).
34. *Id.* at 456.
35. *Id.* at 461.
36. Neil Vidmar, *The Psychology of Trial Judging*, 20 CURRENT DIRECTIONS PSYCHOL. SCI. 58, 58 (2011).
37. *See* Redding & Reppucci, *supra* note 31, at 47.
38. (M = 13.35, SD = 8.23)
39. Special jurisdictions are also referred to as "limited jurisdictions," and both terms were referenced in the survey.
40. (M = 17.43%, SD = 20.09)
41. (M = 5.33, SD = 7.66)
42. Lissa Griffin, *The Correction of Wrongful Convictions: A Comparative Perspective*, 16 AMER. UNIV. INT'L. L. REV. 1241, 1246 (2001).

expert testimony). The system-error evidence pertained to causal factors of false convictions involving corrupt action by form of police misconduct. The police-misconduct vignette was as follows:

> Mr. Adam's co-worker told the police that she was with him on the night of the murder during the time that the crime allegedly took place. However, law enforcement officials never added this evidence to their police report and it was never mentioned during trial, as it was never turned over to the prosecutors.

The evidentiary issues relating to social-science evidence included evidence of a false confession and of an eyewitness misidentification. These types of evidence fall under the defined domain of social-science evidence in line with social-psychological research on mechanisms and impacts involved in false confessions and eyewitness misidentification.[43] The eyewitness-testimony vignette was as follows:

> Mr. Williams testified at the original trial that he witnessed what he believed to be Mr. Adams fleeing the scene of the crime on the night of the murder. The eyewitness stated that as he was leaving his friend's house, he heard a commotion in an alleyway and saw who appeared to be Mr. Adams running and jumping over a fence. When he heard about the murder on the news a few days later, he went into the police station and told them what he believes he saw. The underlying facts regarding the identification procedure at the station were never presented to the jury. First, at the time Mr. Williams witnessed the perpetrator flee, it was late, dark, and he had been drinking. He told the officers this and they asked him to try his hardest to pick the perpetrator from a lineup to the best of his ability, as they knew how compelling an eyewitness would be to the jury during the trial. When he stated he was unsure who the perpetrator was upon viewing the lineup, an officer asked if he would take a few more minutes to consider who they suspected committed the crime (Mr. Adams). The officers reminded him a few more times how important his testimony would be to the case and reassured him that they were already quite sure who had committed the crime. Eventually, Mr. Williams picked out the suspect from the lineup after recognizing that he had a similar facial structure and facial hair to the man he witnessed fleeing the scene of the crime.

The false-confession vignette was as follows:

> The prosecuting attorney presented evidence to the court at the original trial that Mr. Adams confessed to raping and murdering Mrs. Jones. The circumstances behind the coerced confession included the following. Mr. Adams was interrogated by police detectives for several hours, after which they deployed deception to elicit his confession. Specifically, they told him they had solid incriminating evidence that he committed the crime in the form of fingerprints on the murder weapon. However, this was untrue. At the arrival of his lawyer and upon learning that there was no such fingerprint evidence, Mr. Adams recanted the confession. The confession evidence played a large role in the prosecutor's case against Mr. Adams, and he was eventually convicted and sentenced to 50 years to life in prison.

The evidentiary issues presented in the forensic-science vignette were derived from real cases described by Garret and Neufeld[44] in their study examining trial transcripts for invalid forensic-science testimony. The inaccurate-expert-testimony vignette was as follows:

> An expert from the local crime lab testified during the trial regarding a serology analysis his lab conducted. In this case, the victim, Mrs. Jones, and the suspect, Mr. Adams, are both B secretors. B substances were found on the victim's underwear, which could have been entirely from the victim. However, the analyst testified stating that the donor would have had to have been a B secretor. In addition, A antigens were found on another stain in the victim's underwear that were foreign to both the suspect and the victim, but the analyst failed to exclude Mr. Adams as the source stating to the court that the foreign substance could be a mixture of blood, sweat, wood, leather, and detergents or other substances, indicating that the suspect should not be ruled out based on this evidence.

The faulty-laboratory-procedure vignette was as follows:

> A private forensic laboratory's analyst reportedly failed to detect semen on the victim's underwear so that no testing could be done to either include or exclude Mr. Adams. However, a post-conviction on-the-spot DNA test later showed a positive result for the presence of semen on that exact spot that should not have been missed previously. Subsequent DNA testing on the spot will provide evidence lending to the innocence of the suspect.

Vignette-related factors and outcomes. Judges answered questions after each evidentiary issue was presented. After the first piece of evidence (*i.e.*, system error/police misconduct) was presented, the judges were asked to consider the piece of evidence and rate how likely they would be to grant a new trial on a scale of 1 to 10. Following the presentation of the entire vignette (*i.e.*, either all forensic or all social-science evidence), judges made final decisions as to the likelihood of granting a new trial (using the scalar item), as well as whether or not they would grant a writ of habeas corpus in dichotomous format. Therefore, the items included a dichotomous "yes"/"no" question addressing this decision (used for ecological-validity purposes) and a continuous version of the question asking, "How likely are you to grant the writ on a scale of 1 to 10?"

An opinion portion of the questionnaire followed the deci-

43. *See generally* INNOCENCE PROJECT, *supra* note 15; Kassin et al., *supra* note 25; Steven Penrod, *Eyewitness Identification Evidence: How Well Are Witnesses and Police Performing?* 54 CRIM. JUST. MAG. 36 (2005).

44. Garrett & Neufeld, *supra* note 13.

sion, where the judges were asked to rate how important each evidence variable was in their decision-making process. They rated the importance of each trial error on a scalar rating, with 1 being "Not at all" and 10 being "Very much so." Participating judges also indicated which evidentiary issue presented in the vignette was most influential in their decision regarding whether to grant a new trial, as well as which evidentiary issue was least influential.

Scientific Evidence in Court Attitudes Questionnaire. After the decision-making portion of the survey was complete, judges responded to 36 items related to beliefs and attitudes about scientific evidence. Eighteen items pertained to social science in a courtroom context, and the remaining 18 items concerned forensic science in the courtroom. For example, a social-science item stated, "The subjectivity of social science causes me to question its value in the courtroom." A forensic-science item stated, "Forensic science expert witnesses have been known to exaggerate their findings to benefit the side for whom they are testifying." The items were derived from issues discussed in a variety of sources, including amicus briefs, research articles, court cases, and The Innocence Project.[45] Judges were asked to rate the extent to which they agreed with the 36 items. They responded on a 10-point scale, with 1 being "Not at all" and 10 being "Very much so."

PROCEDURE

Questionnaires were distributed to judges through SurveyMonkey, a survey-hosting website. Participating judges were contacted through a National Judicial College electronic mailing list. Before answering items on the questionnaire, a brief consent form explained the rights and risks of the participants that are involved in the research study. If consenting, the participants were directed to the remainder of the questionnaire. The versions of the vignettes (*i.e.*, social science or forensic science) presented to the participants were randomly assigned through a logic function in SurveyMonkey. Of the participating judges, 48.7% received the social-science vignette, and 51.3% received the forensic-science vignette.

FINDINGS

PRELIMINARY ANALYSES

A total of 279 out of 308 judges (90.5%) ultimately granted the writ of habeas corpus. Of the judges in the forensic-science condition, 92.4% ultimately granted the writ of habeas corpus. In the social-science condition, 88.7% of the judges ultimately granted the writ of habeas corpus. Other than gender, no demographic variables showed significant effects on ultimate decisions regarding granting a writ of habeas corpus.[46] Results indicated that gender of the judge was fairly influential on judges' decisions regarding how likely they were to grant the writ.[47] Specifically, females[48] reported a somewhat higher likelihood of granting the writ than males.[49] Similarly, the ultimate dichotomous decision regarding whether to grant the writ differed by gender,[50] where females more often indicated they would grant the writ of habeas corpus (97.1%) in comparison to males (88.7%).

DOES THE TYPE OF SCIENTIFIC EVIDENCE PRESENTED IN THE VIGNETTE CONTRIBUTE TO THE JUDGES' DECISIONS REGARDING GRANTING A WRIT OF HABEAS CORPUS?

We conducted a logistic regression to evaluate what type of evidence would most influence the decision to grant the writ of habeas corpus. A logistic regression allows the prediction of categorical outcomes (*i.e.*, yes or no) with two or more categories. Therefore, a logistic regression was utilized to determine the influence of the different types of evidence presented to judges on their ultimate decision to grant the writ (*i.e.*, yes or no). This model also included gender to evaluate its role on decisions to grant a writ. While the overall group of predictors was significant,[51] only gender influenced the decision to grant the writ in this instance.[52]

Results of the current study collectively suggest that female judges were consistently more likely to grant the writ than male judges, even when couched in the context of restricted ranges of overall sample responses. Of note, existing research on judges and gender found sentencing disparities involving the gender of the defendant.[53] Specifically, it was found that female offenders receive more lenient sentences by male judges and that male offenders are punished more harshly regardless of the gender of the judge.[54] Adding to the literature on gender-difference theories in a judicial context, gender differences in judicial decision making have been found in sex-discrimination cases. Specifically, it was found that male and female judges utilize distinct approaches in these types of cases, with the probability of female judges ruling in favor of the plaintiff 10% more often than when the judge is male.[55] Additionally, research findings indicated that the presence of a female judge

45. *See generally* James R. Acker, *Social Science in Supreme Court Criminal Cases and Briefs: The Actual and Potential Contribution of Social Scientists as Amici Curiae*, 14 LAW & HUM. BEHAV. 25 (1990); Donald N. Bersoff & David W. Ogden, *In the Supreme Court of the United States* Lockhart v. McCree*:* Amicus Curiae *Brief for the American Psychological Association*, 42 AM. PSYCHOL. 59 (1987); INNOCENCE PROJECT, *supra* note 15; Ronald G. Roesch, Stephen L. Golding, Valerie P. Hans & N. Dickon Reppucci, *Social Science and the Courts: The Role of Amicus Curiae Briefs*, 15 LAW & HUM. BEHAV. 1 (1991); State v. Cromedy, 727 A.2d 457 (1999); State of New Jersey v. Larry R. Henderson, 27 A.3d 872 (2011).
46. Only significant findings are reported. Full statistical results available upon request.
47. $F(1, 306) = 2.98$, $p = .08$
48. ($M = 9.08$, $SD = 1.54$)
49. ($M = 8.65$, $SD = 1.95$; Cohen's $d = .24$)
50. χ^2 (1, N = 308) = 4.57, $p = .03$, OR = 4.35, 95% CI (1.01, 18.77)
51. χ^2 (2) = 6.99, $p = .03$, Cox & Snell $R^2 = .02$
52. $\beta = 1.47$ (SE $\beta = .75$), Wald χ^2 (1) = 3.90, $p = .05$, OR = 4.37 (95% CI = 1.01, 18.86)
53. Shanna R. Van Slyke & William D. Bales, *Gender Dynamics in the Sentencing of White-Collar Offenders*, 26 CRIM. JUST. STUD. 168, 180 (2013).
54. *Id.* at 188.
55. Christina L. Boyd, Lee Epstein & Andrew D. Martin, *Untangling the Causal Effects of Sex on Judging*, 54 AM. J. POL. SCI. 389, 390 (2010).

on a panel of judges increases the likelihood of a male judge ruling in favor of the plaintiff by 12% to 14%.[56] In other words, "the presence of a female on a panel actually *causes* male judges to vote in a way they otherwise would not."[57] A plausible explanation for gender differences in granting the writ may be found in research on the construct of authoritarianism. Some studies have found that males tend to be higher in authoritarianism than women.[58] Research has suggested that individuals higher in authoritarianism may assign harsh punishment, be tougher on offenders, and be more likely to recommend conviction.[59] Therefore, perhaps male judges, who may be more likely to be high in authoritarianism, are less likely to consider the possibility of potentially releasing a previously convicted offender, even when confronted with persuasive proof of error. This finding demonstrates an area for further research to better understand potential gender differences among judges.

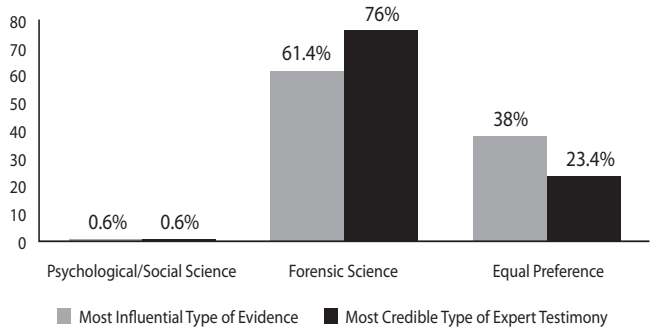
We conducted an analysis of covariance (ANCOVA) to examine the relationship between the likelihood of granting a writ of habeas corpus depending on vignette condition, controlling for gender. The overall model displayed a significant effect on likelihood of granting the writ.[60] Both type of evidence[61] and gender[62] contributed to judges' decisions regarding how likely they were to grant the writ. Results indicated participants in the forensic-science condition[63] were more likely to grant the writ (*i.e.*, assign higher likelihood ratings) than those in the social-science condition.[64]

When asked what evidence presented in court is generally more influential on their decision-making process, 0.6% of judges indicated psychological evidence such as eyewitness misidentifications and false confessions; 61.4% indicated forensic-science evidence such as serology, fingerprints, and DNA evidence; and 38% reported that they do not think one type of evidence is more influential than the other. Further, when asked which type of expert testimony they generally found more credible, 0.6% of judges indicated social-science testimony, 76% indicated forensic-science testimony, and 23.4% reported that they do not find one generally more credible than the other. Figure 1 demonstrates these preferences.

Judges indicated which evidentiary issues were most and least influential to their decision regarding granting the writ of habeas corpus. Table 1 provides a breakdown of their responses for both the forensic-science- and social-science-vignette conditions.

Judicial consideration of police misconduct (*i.e.*, the first piece of evidence presented to the judges) is of particular importance to the wrongful-conviction literature.[65] Of all evidentiary issues presented, police misconduct accounted for the greatest amount of variance in granting the writ across vignette conditions, suggesting judges place considerably high emphasis on criminal-justice-system errors.

FIGURE 1
JUDGES' OPINIONS REGARDING CREDIBILITY OF EXPERT TESTIMONY AND INFLUENCE OF TYPES OF EVIDENCE



Among the judges in the forensic-science condition, the likelihood of granting the writ of habeas corpus depended on the importance ratings that judges associated with the three different evidentiary issues: police misconduct, faulty laboratory procedure, and inaccurate expert testimony. With regard to a mistake made in a forensic laboratory, the results suggested that once the judges were presented with evidence of faulty laboratory procedure, the more they valued that evidence, the more likely they were to grant the writ of habeas corpus. This finding indicates that the importance associated with this type of error played a significant role in the judicial decision-making process. Seeing an error made in a forensic-science laboratory may have served as an eye-opening reminder to judges that forensic science is not always unquestionable physical proof of guilt or innocence. Therefore, many judges seemed to consider a mistake made with this generally accepted and trustworthy evidence to be an important factor in the appeals process.

TABLE 1
INFLUENTIAL EVIDENTIARY ISSUES FOR FORENSIC-SCIENCE AND SOCIAL-SCIENCE CONDITIONS

FORENSIC-SCIENCE CONDITION	Police Misconduct	Faulty Laboratory Procedure	Inaccurate Expert Testimony
Most Influential	49.4%	37.3%	13.3%
Least Influential	28.5%	18.4%	53.2%
SOCIAL-SCIENCE CONDITION	**Police Misconduct**	**Faulty Laboratory Procedure**	**Inaccurate Expert Testimony**
Most Influential	69.3%	25.3%	5.3%
Least Influential	11.3%	26.7%	62.0%

56. *Id.* at 406.
57. *Id.*
58. *E.g.*, Deborah L. Browning, *Developmental Aspects of Authoritarian Attitudes and Gender Role Conceptions in Men and Women*, 68 HIGH SCH. J. 177, 181 (1985).
59. *See generally* BOB ALTEMEYER, THE AUTHORITARIAN SPECTER (1996); Robert M. Bray & Audrey M. Noble, *Authoritarianism and Decisions of Mock Juries: Evidence of Jury Bias and Group Polarization*, 36 J. PERSONALITY & SOC. PSYCHOL. 1424 (1978); Carol M. Werner, Dorothy K. Kagehiro & Michael J. Strube, *Conviction Proneness and the Authoritarian Juror: Inability to Disregard Information or Attitudinal Bias*, 67 J. APPLIED PSYCHOL. 629 (1982).
60. $F(2, 305) = 3.30$, $p = .04$
61. $F(1, 305) = 3.60$, $p = .06$, $\eta_p^2 = .01$
62. $F(1, 305) = 2.99$, $p = .08$, $\eta_p^2 = .01$
63. ($M = 8.94$, $SD = 1.74$)
64. ($M = 8.54$, $SD = 1.99$; Cohen's $d = .21$)
65. *See* Ramsey & Frank, *supra* note 33.

In the social-science condition, the judges' likelihood of granting the writ depended on the importance ratings of two different trial errors: eyewitness misidentification and police misconduct. The perceived importance of a false confession did not impact judges' likelihood to grant the writ of habeas corpus. In fact, 62% of the judges named the false-confession evidence as the least influential evidentiary error presented to them. This finding is consistent with mock-jury research that has found that even when people decide that a confession was coerced or involuntary,[66] or when they say the confession evidence does not influence their decisions,[67] individuals do not appropriately discount confession evidence. Therefore, perhaps some judges simply are less likely to acknowledge that false confessions occur or are problematic in the first place.

The importance of eyewitness identification was the only social-science evidentiary issue that affected judges' likelihood of granting a new trial. It appears judges place a value on such evidence that is in line with the high frequency with which eyewitness misidentifications have occurred in actual exoneration cases.[68] Judges may be more likely to perceive eyewitness misidentification as an important and influential trial error due to judges' responsibility for preventing and minimizing effects of eyewitness errors in the United States court system.[69] Specifically, the quintessential responsibility judges hold in facilitating the prevention and identification of erroneous eyewitness testimony[70] may lend itself to explain why judges' perceived importance regarding eyewitness error successfully predicted the likelihood to grant a writ of habeas corpus.

DO ATTITUDES PERTAINING TO SCIENTIFIC EVIDENCE, SPECIFICALLY EITHER SOCIAL SCIENCE OR FORENSIC SCIENCE, INFLUENCE JUDICIAL DECISION MAKING REGARDING GRANTING A WRIT OF HABEAS CORPUS?

To develop items for the forensic-science-attitudes scales, an exploratory-factor-analysis (EFA) procedure was performed to retain only factors that are maximally representative of judges' attitudes pertaining to scientific evidence.[71] After several analyses were run, which produced suboptimal results due to issues with some of the items and the model, a forced two-factor EFA model utilizing all but two of the items from the Attitudes Regarding Forensic Scientific Evidence Scale (due to a general lack of fit with the other items) was run, which suggested meaningful[72] and correlated[73] relationships among factors. Nine of the 16 remaining items were related to factor 1,[74] and six items were related to a second factor.[75] Item 3 was dropped due to lack of conceptual fit on either factor.

From these results, it can be concluded that two underlying sub-components exist, namely, Negative Attitudes Regarding Forensic-Science Evidence (factor 1)[76] and Positive Attitudes Regarding Forensic-Science Evidence (factor 2).[77] Factor 1 comprises items suggesting beliefs that forensic-science evidence is flawed, biased, or lacks validity and reliability. Sample items include "Forensic science can produce errors that contribute to wrongful convictions" and "Forensic science techniques lack adequate reliability and validity." Conversely, factor 2 includes items that refer to beliefs about the infallibility of forensic-science evidence. Items correspond with beliefs that forensic-science evidence is objective, not likely to be biased by experts, and rarely inadmissible in court. Sample items include "Forensic science is the most important evidence presented during a criminal court proceeding" and "Opposing experts are less likely to disagree about forensic science evidence in court."

An EFA procedure was performed including the scores of the items in the Attitudes Regarding Social Scientific Evidence Scale. The EFA results, including all 18 items of the Attitudes Regarding Social Scientific Evidence Scale, suggested meaningful[78] and correlated[79] relationships among factors. Results of the EFA suggested one factor. Four items (7, 9, 10, and 14) were removed due to insufficient factor loading, yielding a 14-item, single-factor model.[80]

From these results, it was concluded that one underlying sub-component exists, namely, Negative Attitudes Regarding Social Science Evidence (factor 1).[81] This scale comprises items suggesting that social-science evidence is biased, is not applicable to the real world, and should be inadmissible in court. Sample items include "Social science evidence is easily manipulated to favor either side in a trial" and "Most fact finders have difficulties assessing the quality of social science evidence."

Repeated-measures General Linear Modeling was used to test the combined effects of judges' ratings before and after being presented with all pieces of evidence, judges' gender, and their attitudes regarding scientific evidence. This type of analysis allowed the investigators in the study to compare variables' impacts on the outcome (*i.e.*, likelihood to grant the writ) both before and after certain evidentiary issues were introduced,

66. Saul M. Kassin & Lawrence S. Wrightsman, *Prior Confessions & Mock Juror Verdicts*, 10 J. APPLIED SOC. PSYCHOL. 133, 144 (1980); Saul M. Kassin & Harry Sukel, *Coerced Confessions and the Jury*, 21 LAW & HUM. BEHAV. 27, 42 (1997).
67. Kassin & Sukel, *supra* note 66, at 42.
68. *See The Causes of Wrongful Conviction*, *supra* note 6; Saks & Koehler, *supra* note 5, at 892 fig.1.
69. Richard A. Wise & Martin A. Safer, *What US Judges Know and Believe About Eyewitness Testimony*, 18 APPLIED COGNITIVE PSYCHOL. 427, 428 (2004).
70. *Id.* at 428.
71. EFA specification featured principal-component analysis, oblique promax rotation with Kaiser normalization. In accordance with EFA convention (*e.g.*, Allen E. Hendrickson & Paul O. White, *Promax: A Quick Method for Rotation to Oblique Simple Structure*, 17 BRIT. J. STAT. PSYCHOL. 65 (1964)), these parameters were selected to evaluate the possibility of oblique factors.
72. (*KMO* = 0.78)
73. (Bartlett's Test, (χ^2 [120] = 987.98, p < .001))
74. (range .44 to .74, eigenvalue = 3.62)
75. (loadings range = .37 to .66; eigenvalue = 2.29)
76. alpha = .77
77. alpha = .63
78. (*KMO* = 0.90)
79. (Bartlett's Test, (χ^2 [153] = 2,060.81, p < .001))
80. (range .31 to .79, eigenvalue = 6.43)
81. alpha = .90

while comparing results by different group variables, such as gender and vignette condition (*i.e.*, social science vs. forensic science). Within the forensic-science-vignette subsample, no significant effects were observed. Within the social-science-vignette subsample, the main effect of the pre-post writ rating remained significant.[82] Participants were significantly more likely to grant the writ after considering all scientific errors[83] than after viewing police corruption only.[84] No additional significant effects were observed.

Data from several analyses suggest a pattern of judges preferring forensic science over social science. Therefore, it seems possible that judges value forensic-science evidence (even *errors* pertaining to forensic-science evidence) more than they value social-science evidence. These findings are consistent with previous literature that has explored why courts seem to ignore relevant social-science research[85] or reject social-science evidence.[86] The current study builds upon Redding and Reppucci's findings where many judges indicated a distrust of social science, particularly experts who testify in court regarding social science.[87]

EXPLORATORY ANALYSES

The Attitudes Regarding Scientific Evidence scales were tested for their direct impact on the dichotomous judicial decision regarding granting a writ of habeas corpus. Logistic regression was employed for examination of both Attitudes Regarding Forensic and Social Scientific Evidence, predicting the ultimate dichotomous writ decision when controlling for participant gender and vignette condition.

The set of predictors displayed a significant effect on the dichotomous writ decision;[88] the model also displayed adequate fit.[89] Of the Attitudes Regarding Scientific Evidence subscales, only Positive Attitudes Regarding Forensic-Science Evidence[90] and Negative Attitudes Regarding Social-Science Evidence[91] showed significant effects. The odds ratio suggests that as positive attitudes regarding forensic-science evidence increase, the odds of the judges granting the writ of habeas corpus increase as well. In addition, as negative attitudes regarding social-science evidence increase, the odds of the judges granting the writ of habeas corpus decrease.

Supplemental logistic-regression analyses were conducted to evaluate whether the effects of Attitudes Regarding Scientific Evidence scores on the dichotomous writ decision varied by vignette subsample. Identical regression parameters were retained from the previous analysis. For judges in the forensic-science-vignette condition, the set of predictors displayed a significant effect on whether or not they ultimately granted the writ of habeas corpus;[92] the model also displayed adequate fit.[93] Similar to the findings from the larger overall sample, only Positive Attitudes Regarding Forensic Science[94] and Negative Attitudes Regarding Social Science[95] displayed significant effects. Odds ratios indicated that as positive attitudes regarding forensic-science evidence increase, so do odds of judges granting the writ of habeas corpus. Further, as negative attitudes regarding social science increase, judges' odds of granting the writ decrease. For judges in the social-science-vignette condition, the set of predictors did not display a significant effect on whether or not they ultimately granted the writ of habeas corpus;[96] the model also displayed adequate fit.[97]

Consistent with Redding and Reppucci's finding that judges' general attitudes about the use of social science in law correlate with specific judgments,[98] results of the current study suggest that judges' attitudes toward scientific evidence predicted whether judges would ultimately grant the writ of habeas corpus using the dichotomous-outcome variable (*i.e.*, yes or no). This finding is particularly relevant to judicial decision making, as the judges' dichotomous decision is externally valid and more applicable to the kinds of decisions judges typically make in court. The results indicate that the more positive attitudes regarding forensic science and the less negative attitudes regarding social science, the more likely judges were to grant the writ. This could point to potential biasing factors regarding how judicial decision makers feel about science. Furthermore, when broken down by subsample, only judges who received the forensic-science vignette were significantly affected by their attitudes when making the dichotomous decision.

Because these results suggest judges are less likely to change their attitudes, it seems system reform is a viable option to rectify errors involving scientific evidence. According to Haney, little widespread and lasting legal change results from psychological testimony regarding these errors.[99] Instead, Haney advises working toward concrete changes within the legal system by seeking improvements to mandatory jury instruction or changes to the rules of evidence.[100] The Innocence Project, in conjunction with the National Academy of Sciences, recommends the creation of an independent federal entity that would seek to conduct comprehensive research and evaluation within the forensic sciences to establish validated standards and consistent applica-

82. $F(1, 147) = 4.06$, $p < .05$, $\eta_p^2 = .03$
83. ($M = 8.54$, $SD = 1.99$)
84. ($M = 7.77$, $SD = 2.41$)
85. Redding & Reppucci, *supra* note 31.
86. Craig Haney, *Psychology and Legal Change: On the Limits of a Factual Jurisprudence*, 4 LAW & HUM. BEHAV. 147 (1980).
87. Redding & Reppucci, *supra* note 31, at 48.
88. χ^2 (5) = 15.20, $p = .01$, Cox & Snell $R^2 = .05$
89. Hosmer and Lemeshow: $\chi^2(8) = 9.62$, $p = .29$
90. ($\beta = .07$, $p = .01$, Wald χ^2 (1) = 5.98, OR = 1.07, 95% CI = 1.01-1.13)
91. ($\beta = -.03$, $p = .02$, Wald χ^2 (1) = 5.21, OR = 0.97, 95% CI = 0.95-1.00)
92. χ^2 (4) =15.39, $p < .01$, Cox & Snell $R^2 = .09$
93. Hosmer and Lemeshow: χ^2 (8) = 1.71, $p = .99$
94. ($\beta = .12$, $p = .01$, Wald χ^2 (1) = 6.23, OR = 1.13, 95% CI = 1.03-1.24)
95. ($\beta = -.03$, $p = .05$, Wald χ^2 (1) = 3.91, OR = 0.96, 95% CI = 0.93-1.00)
96. χ^2 (4) =3.25, $p = .52$, Cox & Snell $R^2 = .02$
97. Hosmer and Lemeshow: χ^2 (8) = 7.86, $p = .45$
98. Redding & Reppucci, *supra* note 31, at 48.
99. Haney, *supra* note 86, at 173.
100. *Id.* at 174.

tions of forensic techniques nationwide.[101] Widely enforced scientific standards, in combination with judicial training regarding complex scientific evidence, could significantly assist judges in making important legal decisions within the justice system. Ultimately, if the frequency of these errors is reduced, not only would the number of wrongful convictions eventually decrease, but the justice system's time and financial resources would be saved as well, as fewer efforts would be wasted in rectifying these errors in the first place.

CONCLUSION AND IMPLICATIONS

Overall, results indicated the following factors played a part in judges' decisions regarding granting a writ of habeas corpus: gender of the judge, forensic- versus social-science-vignette condition, and the perceived importance of certain evidentiary issues (*i.e.*, faulty laboratory procedure, police misconduct, inaccurate expert testimony, and eyewitness misidentification). Additionally, attitudes regarding social and forensic scientific evidence differentially predicted the decision of whether judges would ultimately grant the writ of habeas corpus.

IMPLICATIONS FOR POLICY AND TRAINING

Present findings point to the need for greater awareness among criminal-justice professionals regarding the many different types of procedural or evidentiary errors existent in wrongful-conviction cases. In light of present findings and previous research, training for judges may include information regarding frequency and potential consequences of common procedural and evidentiary errors, the scientific method and how it relates to the types of evidence potentially presented in court, validity and reliability of scientific analyses and techniques often presented in the courtroom, and management of threats to objectivity.

The particular importance of judge education is highlighted, specifically regarding how often some of these trial errors occur in actuality, because it may be the case that some judges are underestimating the prevalence of such errors and, as a result, are overlooking their possible contribution to wrongful convictions. For example, many judges seemed to disregard evidence of a false confession in the current study, and yet in 27% of actual DNA exonerations, innocent defendants made incriminating statements, pled guilty, or falsely confessed.[102] Furthermore, to reduce the prevalence of wrongful convictions in the first place, the results of the current study support the continuation of scientific-evidence training among judges. Fong, Krantz, and Nisbett found that individuals who underwent brief training in methodological reasoning provided more scientifically sophisticated solutions to a series of real-world problems.[103] Therefore, judges may be able to reason in an increasingly methodologically sophisticated manner after brief training, and as a result, they may also be better "able to scrutinize the quality of expert evidence more systematically and thus make better informed decisions."[104]

For several decades, judges have been receiving training on scientific methods through judicial-education conferences and seminars, as well as through entities like the National Judicial College, the Federal Judicial Center, and the Agency for Science, Technology, and Research. Nevertheless, although education has been available, it generally has not been treated as a core component of judges' curricula. Future training, available to judges in all levels of courts and jurisdictions through workshops and webinars, should focus on how social and forensic scientific evidence can inform judicial decisions.

Due to the often-complicated nature of scientific evidence in the courtroom, it is of vital importance that judges understand the complexities of the evidence to perform the gatekeeping aspect of their jobs responsibly.[105] Regrettably, judges might sometimes find themselves in a position to evaluate rather convoluted materials without specialized training or expertise on the subject. Therefore, in addition to scientific-methodology training, judges should be informed as to the reliability, validity, and conformance to *Daubert* principles of different social-science measures as well as forensic-science techniques.[106] They should be aware of which techniques have not been subjected to rigorous scientific evaluation (*i.e.*, hair microscopy, bite-mark comparisons, tool-mark analysis), so that they can make well-informed gatekeeping decisions. Accordingly, a National Institute of Justice research report produced by representatives from practice, academia, and other relevant areas suggested the following potentially needed areas of judicial education: "the basics of a given science . . . regulations for expert presentations, and resources for determining when science is conclusive."[107]

While understanding the science presented in court is of utmost importance, it is possible that judges would benefit from objectivity training as well. As pointed out by Smith and Blumberg, "The judge . . . can only strive to minimize the emotional, the idiosyncratic elements in his intellectual processes, but cannot eliminate them altogether."[108] Therefore, considering our results suggesting that judicial decision making could potentially be compromised by preferences and opinions regarding scientific evidence, training should also address plausible techniques in detecting and managing threats to objectivity. While biases and opinions cannot be removed entirely, they can be adjusted for as long as they are identified

101. *National Academy of Sciences Urges Comprehensive Reform of U.S. Forensic Sciences*, INNOCENCE PROJECT (February 18, 2009), http://www.innocenceproject.org/news-events-exonerations/press-releases/national-academy-of-sciences-urges-comprehensive-reform-of-u-s-forensic-sciences.
102. *The Causes of Wrongful Conviction*, *supra* note 6.
103. Geoffrey T. Fong, David H. Krantz & Richard E. Nisbett, *The Effects of Statistical Training on Thinking About Everyday Problems*, 18 COGNITIVE PSYCHOL. 253, 281 (1986).
104. Kovera & McAuliff, *supra* note 30, at 575.
105. *See* DAVID MCCLURE, NAT'L INST. OF JUSTICE, FOCUS GROUP ON SCIENTIFIC AND FORENSIC EVIDENCE IN THE COURTROOM 4, 15 (2007), https://www.ncjrs.gov/pdffiles1/nij/grants/220692.pdf.
106. *Id.* at 9, 12-15.
107. *Id.* at 4.
108. Alexander B. Smith & Abraham S. Blumberg, *The Problem of Objectivity in Judicial Decision-Making*, 46 SOC. FORCES 96, 96 (1967).

and acknowledged.[109] Future training opportunities should address ways judges can practice such self-scrutiny.

Previous research on minimizing the influence of biases among expert witnesses has suggested employing a set of introspective tasks as an approach to proactively detect and prevent unconscious biases.[110] Drawing on those suggestions, similar tasks could be presented to judges as a method of recognizing threats to objectivity that may have previously been difficult to recognize. Some of these tasks would include a list of questions judges should ask themselves when evaluating scientific evidence in court. For example, they could ask themselves if they are having difficulty assessing the quality of the evidence, if the evidence presented resonates with preexisting ideas or attitudes regarding a particular type of science, or if their personal training and experience is adequate for the case.

Limitations. There are a few limitations associated with the current study. As with most studies that employ vignettes, the ecological validity associated with this particular method of data collection is limited. A short vignette is likely vague in comparison to actual in-court testimony or more detailed discoverable evidence. In regard to sample limitations, the Northeast region of the United States was underrepresented in comparison to other regions. Further, some judges with more unique demographic information (*e.g.*, jurisdiction, years served, region) may have been reluctant to participate in the study for fear of identifying information that could be somehow connected to opinions and attitudes collected in the survey. All findings must be viewed cautiously in light of the restricted range of ultimate decisional outcomes.

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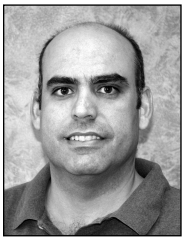

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109. Thomas G. Gutheil & Robert I. Simon, *Avoiding Bias in Expert Testimony*: *The General Practice Clinician Stepping into the Arena of Forensic Psychiatry Must Take Care to Maintain Objectivity*, 34 Psychiatric Annals 260, 270 (2004).

110. Adam J. Goldyne, *Minimizing the Influence of Unconscious Bias in Evaluations: A Practical Guide*, 35 J. Amer. Acad. Psychiatry & L. 60, 63 (2007).