MacLean, N., Neal, T.M.S., Morgan, R.D., & Murrie, D.C. (in press). Forensic clinicians' understanding of bias. *Psychology, Public Policy, and Law*.

Forensic Clinicians' Understanding of Bias

Nina MacLean, [1] Tess M.S. Neal, [2] Robert D. Morgan, [3] & Daniel C. Murrie [4]

[1]Michigan Department of Health and Human Services

[2]Arizona State University

[3]Texas Tech University

[4]University of Virginia

Author Note

Nina MacLean, Center for Forensic Psychiatry, Michigan Department of Health and Human Services. Tess M.S. Neal, New College of Interdisciplinary Arts & Sciences, Arizona State University. Robert D. Morgan, Department of Psychological Sciences, Texas Tech University. Daniel C. Murrie, Institute of Law, Psychiatry, and Public Policy, University of Virginia.

This research was supported by student grant-in-aid funding from the American Psychology- Law Society (AP-LS). Some of these results were presented at the 2016 annual AP-LS conference in Seattle, WA.

Thanks to Joseph Hunter and Brieann Olafsson for creating the initial participant database and to Hannah Goddard, Jeffrey Haas, Cassandra Hamza, Morgan Hight, Brian Howatt, Sierra Marshall, Carina Philipp, Caitlyn Quamme, Dennis Ramos, Bibiana Oliveira, Cassidy Siso, and Rebecca Velez for their assistance expanding the database.

Correspondence concerning this article should be addressed to Tess M.S. Neal, New College of Interdisciplinary Arts and Sciences, Arizona State University, 4701 West Thunderbird Road, Mail Code 3051, Glendale, AZ 85306. E-mail: tess.neal@asu.edu

Abstract

Bias, or systematic influences that create errors in judgment, can affect psychological evaluations in ways that lead to erroneous diagnoses and opinions. Although these errors can have especially serious consequences in the criminal justice system, little research has addressed forensic psychologists' awareness of well-known cognitive biases and debiasing strategies. We conducted a national survey with a sample of 120 randomly-selected licensed psychologists with forensic interests to examine a) their familiarity with and understanding of cognitive biases, b) their self-reported strategies to mitigate bias, and c) the relation of a and b to psychologists' cognitive reflection abilities. Most psychologists reported familiarity with well-known biases and distinguished these from sham biases, and reported using research-identified strategies but not fictional/sham strategies. However, some psychologists reported little familiarity with actual biases, endorsed sham biases as real, failed to recognize effective bias mitigation strategies, and endorsed ineffective bias mitigation strategies. Furthermore, nearly everyone endorsed introspection (a strategy known to be ineffective) as an effective bias mitigation strategy. Cognitive reflection abilities were systematically related to error, such that stronger cognitive reflection was associated with less endorsement of sham biases.

Keywords: bias, forensic evaluation, survey, cognitive reflection

Forensic Clinicians' Understanding of Bias

Bias and judgment errors are problematic in any profession, but in forensic mental health assessments, errors can undermine justice. Biases may have profound implications for defendants' lives, such as whether defendants are confined in a correctional versus psychiatric facility, how long they are confined, and the final disposition of their cases (e.g., guilty vs. not guilty by reason of insanity). Evaluator opinions carry considerable weight in many judicial decisions. For example, judges' rulings in competence to stand trial hearings usually follow (>90% agreement) the opinions forensic evaluators provide (Zapf, Hubbard, Cooper, Wheeles & Ronan, 2004; Gowensmith, Murrie & Boccaccini, 2012). Although biases do not necessarily lead to an inaccurate conclusion, reliance on relevant factors (as opposed to irrelevant or biasing information) increases the likelihood of reaching an objective opinion.

Given the potential impact of bias in legal decision-making, researchers have increasingly examined the presence of bias in forensic mental health evaluations. The primary aim of the current study is to examine the extent to which forensic psychologists are familiar with well-known biases from the broader psychology literature, and strategies to mitigate the effects of bias. We explored whether psychologists could discriminate actual from sham biases and bias mitigation strategies. We also investigated individual differences between forensic mental health experts in their cognitive reflection abilities, as well as the relationship between cognitive reflection and knowledge of biases.

What is Bias?

Bias is the systematic deviation from the truth (West & Kenny, 2011), though it does not necessarily result in error (Dror, 2009). Laypersons and the legal community have long been skeptical of forensic mental health or medical experts, based on concerns they may be "hired

guns" (Hagen, 1997) swayed by adversarial or financial influences. But in reality, such overt partisan bias is probably relatively rare (Murrie & Boccaccini, 2015). Instead, implicit bias - automatic bias outside of examiner awareness - is probably a more common and insidious threat to the integrity and objectivity of forensic evaluations (Neal & Grisso, 2014). Susceptibility to implicit bias and errors in judgment is largely a consequence of mental "shortcuts" or heuristics that simplify cognitive processing (Kahneman, 2011). Like all humans, forensic examiners are susceptible to bias in their professional work. It is possible that forensic evaluators who are more knowledgeable about bias, and more open to workflow practices that minimize the effects of bias, manifest less systematic bias in their work. This project is a first step toward testing this hypothesis, exploring knowledge about common biases among psychologists doing forensic work.

Bias in Forensic Mental Health Evaluations

Researchers have been working to investigate whether forensic psychologists are susceptible to bias, documenting evidence that these professionals are, of course, human and susceptible to human biases, with the goal of developing strategies to mitigate bias. For example, Murrie and colleagues (2013) used experimental methods to examine adversarial allegiance, a phenomenon wherein forensic experts tend to unintentionally interpret assessment data in a manner that supports the retaining party. These researchers recruited trained forensic evaluators to participate in a "gold standard" training on two commonly used risk assessment measures (PCL-R and Static-99R), in exchange for scoring risk measures based on offender files. Researchers randomly assigned participants to believe they were serving the prosecution or defense, deceived them into believing they were performing formal consultation, and paid a consultation fee. Findings demonstrated that forensic evaluators tended to assign scores that

supported the party they believed retained them. That is, defense-retained evaluators tended to assign lower risk scores and prosecution-retained evaluators tended to assign higher risk scores, revealing a clear adversarial allegiance effect.

In addition to (or interacting with) adversarial allegiance, many other forms of bias (e.g., confirmation bias, anchoring effect, bias blind spot, diagnostic momentum) may undermine objective evaluation. For example, in a recent study examining confirmation bias– the tendency to seek and rely on confirmatory information instead of seeking disconfirmatory information (Nickerson, 1998) – 93% of a sample of forensic psychologists demonstrated confirmation bias in an experimental task (Neal, MacLean, Morgan, & Murrie, 2017). In this study, participants received one of four randomly assigned vignettes and responded to a set of questions. Clinicians were first asked to rank-order the likelihood that the described patient may meet the DSM-5 criteria for a series of possible diagnoses. They were then asked about which piece of information they would want first to allow them to effectively test their primary diagnostic hypothesis. The pieces of possible information differed based on the diagnosis the clinicians listed to be most likely, and included one that might confirm their hypothesis, and another that might disconfirm their initial hypothesis. Nearly all of the forensic psychologists in the sample chose the confirmatory piece of information, suggesting confirmation bias among clinicians.

Although other types of bias have not been experimentally tested in forensic psychology, their potential implications are frequently discussed. For example, anchoring, or the tendency to weigh initially encountered information more heavily than later-encountered information (Tversky & Kahneman, 1974), can lead to biased judgment. The potential effects of anchoring were illustrated using a hypothetical scenario involving a child custody case (Neal & Grisso, 2014). The scenario involved an initial meeting with one likeable parent versus the other and

formulating a hypothesis about the case. Unfortunately, forensic evaluators are often presented with conflicting information, and may have difficulty re-formulating the original hypothesis using later received information. Anchoring, the tendency to rely heavily on the first piece of information, has also been documented in judicial decision-making among federal judges (Guthrie, Rachlinski, & Wistrich, 2001), though no study has explored the tendency with forensic evaluators. Similar to anchoring is diagnostic momentum, the tendency to become increasingly certain about a diagnosis and exclude other possibilities without sufficient skepticism (Croskerry, 2003).

Although many of these biases are well-known in the literature, clinicians are more likely to identify bias in others than in their own work. This tendency to recognize bias among others, but remain oblivious to one's own biases, is known as the "bias blind spot" (Pronin, Lin, & Ross, 2002), a well-known cognitive phenomena documented among laypersons and other professionals, including forensic mental health clinicians (Boccaccini, Chavevalier, Murrie, & Varela, 2015; Neal & Brodsky, 2016; Zapf, Kukucka, Kassin, & Dror, 2018). For example, Neal and Brodsky (2016) examined forensic psychologists' perceptions of bias in their own and in their colleagues' forensic evaluations. The bias blind spot was clear, with participants underestimating their own biases compared to their peers. Similarly, another survey of forensic mental health professionals from across 39 countries found that participants were more likely to perceive professional peers (78.1%) as influenced by bias than to perceive their own work (52.2%) as influenced by bias (Zapf, Kukucka, Kassin, & Dror, 2018). The current study expands on such prior research by directly examining evaluator knowledge of common biases and mitigating strategies.

What Can Clinicians Do To Mitigate Bias in Forensic Mental Health Evaluations?

To address biases in forensic evaluations, researchers have recommended various bias mitigation strategies (Borum, Otto & Golding, 1993; Murrie, Boccaccini, Turner, Meeks, Woods & Tussey, 2009; Murrie & Boccaccini, 2015; Neal & Grisso, 2014). Although many of these strategies are based on research in medical decision making (Borum, Otto, & Golding, 1993; Neal & Brodsky, 2016; Williams, 1992), they are frequently mentioned as possible methods to reduce bias in forensic mental health evaluations. One such method is sequentially documenting information gathered in interviews (rather than relying on memory for any aspect of the evaluation), which aids in alleviating selective retrieval mechanisms and the fallibility of the examiners' memory (Borum, Otto, & Golding, 1993). Using such a technique prompts the mental health professional to examine all available data collected, allowing them to reduce the effect of heuristics that may otherwise skew decision making.

Another method is seeking disconfirming (rather than only confirming) information, as is commonplace during cross-examinations in criminal proceedings (Borum, Otto, & Golding 1993). Searching out such disconfirmatory information can help offset confirmation bias and reduce over-reliance on prejudiced sources.

Neal & Brodsky (2016) recommended checklists to aid in reducing bias. This approach forces the evaluator to consider all types or sources of information prescribed by the checklist. In an example from medical research, Sibbald and colleagues (2013), randomly assigned 15 cardiology fellowship trainees to one of 4 groups (control, verification with a checklist, verification without a checklist, and interpretation and verification with a checklist) and found that subjects who utilized a checklist were less likely to make errors in their diagnostic process.

Another approach Neal & Brodsky (2016) suggest adopting from medical practice is "slowing down" workplace strategies, allowing the clinician to focus completely on a specific

task. They note how Moulton and colleagues (2010) interviewed 28 surgeons and observed them during a procedure in the operating room. Successful surgeons were observed to stop to modify the procedure as needed, rather than completing the task automatically. Their findings indicated that surgeons use slowing down (i.e., expending effort rather than using an automatic mode) as a strategy to refocus at critical times during an operation – a strategy that may be advantageous during forensic evaluations to minimize error and bias. Despite the value of the above noted strategies, however, the extent to which clinicians are aware of and implement these mechanisms in their clinical practice is currently unknown.

Cognitive Reflection Abilities

Reflective thinking may help mitigate bias. Reflective thinking was described in detail by Fredrick (2005) who developed the Cognitive Reflection Task (CRT) to measure the capacity to resist initial incorrect responses and override them with better, deliberative responses. The CRT is a series of questions designed to elicit incorrect, intuitive answers, as opposed to correct, reflective responses that require more deliberation. Among those who correctly respond to the CRT items, most initially consider the incorrect intuitive answer, but are able to override the intuitive incorrect response and reason through to the correct answer. Reflective reasoning may be important for other tasks that pull for quick intuitive judgments, such as clinical reasoning.

Current Study

We examined the extent to which forensic psychologists are familiar with forms of bias frequently mentioned in the literature. To distinguish genuine recognition of actual biases from false self-reported familiarity (a social desirability effect in responding), we incorporated sham forms of biases. Likewise, we queried the extent to which forensic psychologists could recognize genuine bias-reduction strategies and distinguish them from sham bias-reduction strategies. The

purpose of this research was to examine forensic psychologists' knowledge of biases that are relevant in forensic practice, understanding of strategies to mitigate the effects of bias, and ability to recognize real biases and strategies (and not endorse the shams) as related to their cognitive reflection. We hypothesized that clinicians would endorse familiarity with the real biases and strategies, but less so the shams. Additionally, we predicted that the rate of error (in terms of endorsing false biases or strategies) would be negatively related to participant's scores on the CRT; that is, people with higher cognitive reflection abilities would make fewer errors.

Method

Participants

We developed a large, national database of licensed psychologists with forensic interests. Specifically, we used licensing databases maintained by each of the 50 states within the United States. We reviewed the available specialty search options for each state separately. The search options on each state licensing database differed, and we maintained a document detailing the search criteria used for each state. We selected the search options that were most relevant to forensic evaluators and compiled a national list (e.g., court ordered evaluations, forensic, custody evaluations, disability determination, risk assessment, personal injury, criminal responsibility, juvenile delinquency, fitness for duty, capacity evaluation, court testimony). Our complete database included 2221 licensed psychologists across the nation with forensic interests. Once we had compiled the list of names, a team of research assistants found contact information for most of these psychologists, including professional mailing addresses, professional email addresses, and professional websites. We used a random number generator to randomly select participants from the overall list. Participants were then randomly selected from this list and contacted through email with an invitation to participate in this study.

Our goal in adopting this sampling procedure—rather than more common convenience strategies of posting study invitations to professional listservs or sending invitations to members of professional groups (e.g., American Psychology-Law Society)—was to better sample the population of practicing forensic psychologists. Our effortful sampling method affords two significant improvements over more common and convenient methods of sampling. First, the new database we created represents the population of licensed psychologists with forensic interests across the entire nation, rather than only those who sought membership in a professional society. Second, the database was sufficiently large that we could then randomly select participants from the population.[1]

We sent 727 email invitations, but 35 were discarded because of incorrect email address or because recipient replied they lacked forensic experience. Data were collected from 120 (17% response rate) psychologists: 45.8% female, 39% male, and the remaining 15.2% did not indicate their gender. The participant's mean age was 55.24 years (*SD* = 11.64), and they were predominantly Caucasian (76.3%). The participants reported a mean of 18.51 years of experience as a forensic psychologist (*SD* = 11.08). Most of the participants were primarily employed in private practice (66.9%), and spent their time in clinical (non-forensic; *M* = 48.02%, *SD* = 32.82%), or forensic-related practice (*M* = 33.78%, *SD* = 32.00%).

Procedures

[1] It should be noted that each state maintains its own licensing database and website for public access to that information. As such, our search criteria used for each state's licensing database website differed based on the different search capabilities of each state's website. Our search criteria are available on the Open Science Framework website associated with this paper - https://osf.io/sd6ut/

Participants were invited by email, which included an explanation of the nature and purpose of the study, description of compensation for participation (i.e., $20 Visa gift card), and a link that directed participants to the 20-minute online survey via Qualtrics. Following consent, participants were asked to respond to the survey.

Measures

Cognitive Reflection Task (CRT; Frederick, 2005). The CRT is a brief questionnaire that measures abilities to inhibit initial instinctive but incorrect responses in favor of deliberate and reflective correct responses. The measure includes 3 right/wrong items, with a maximum score of 3 for reflective and correct responses. For example, "A bat and a ball cost $1.10 in total. The bat costs a dollar more than the ball. How much does the ball cost? ____ Cents." Given the items' design to solicit an instinctive but incorrect response, higher scores are characteristic of those with a more advanced cognitive reflection abilities. The CRT has good reliability in this sample, Cronbach's alpha = .72. The average score on the CRT in this sample was M = 1.41 (SD = 1.17) items correct.

Bias Familiarity Questions. Participants were asked to indicate familiarity (yes/no) with a list of biases and bias-reduction strategies.[2] The list of biases and strategies used in this study were included following a review of relevant psychological research to determine those that are commonly mentioned in the literature. For example, participants were asked to indicate familiarity with the bias blind spot, diagnostic momentum, adversarial allegiance, in-group bias, and confirmation bias. In addition to real biases that research demonstrates affect clinicians' reasoning processes, we also presented participants with misleading "sham" biases (fictional terms not found in the literature). For example, participants were asked to indicate familiarity

[2] A copy of the survey as well as the deidentified database is located at https://osf.io/sd6ut/

with the sutter effect, distinctiveness error, out-group sequestration, accommodation fallacy, and control bias. The misleading biases included in the survey were used to account for acquiescence bias (i.e., the tendency to agree; Carr, 1971), the illusion of familiarity (Whittlesea, 1993), and social desirability effects (in this case, an effort to appear knowledgeable and attuned to all potential biases). All real and misleading biases were presented in random order. Participants were allowed limited time (i.e., 25 seconds) to indicate familiarity with the various biases, in order to reduce opportunity to search the internet for bias terms.

For the real biases with which participants indicated familiarity, they were then given limited time (i.e., 25 seconds) to answer multiple-choice questions to evaluate knowledge of each kind of bias. For example, participants who endorsed familiarity with Adversarial Allegiance were asked to select which of the following was the correct definition, "A) An expert's tendency to reach an opinion that supports the side that retained the expert; B) Forming a close bond with the individual being evaluated to an extent that clouds judgment; C) Evaluating an individual with whom a prior relationship exists; or D) Accepting a bribe to make recommendations that are requested by the hiring party."

This procedure was created to avoid overreliance on self-report of familiarity and quantify the participant's knowledge. The multiple quiz choices were developed by the authors to attempt to gauge genuine knowledge. The quality of the questions were informally assessed with a small sample (N = 8) of advanced graduate students to ensure the misleading biases were not grossly obvious, and the multiple-choice options on the bias knowledge quiz were appropriately challenging but accessible to those who had a basic knowledge of the terms.

Bias Mitigation Strategies Questions. In addition to indicating familiarity with various biases, participants were asked to respond to questions about their use of strategies to mitigate

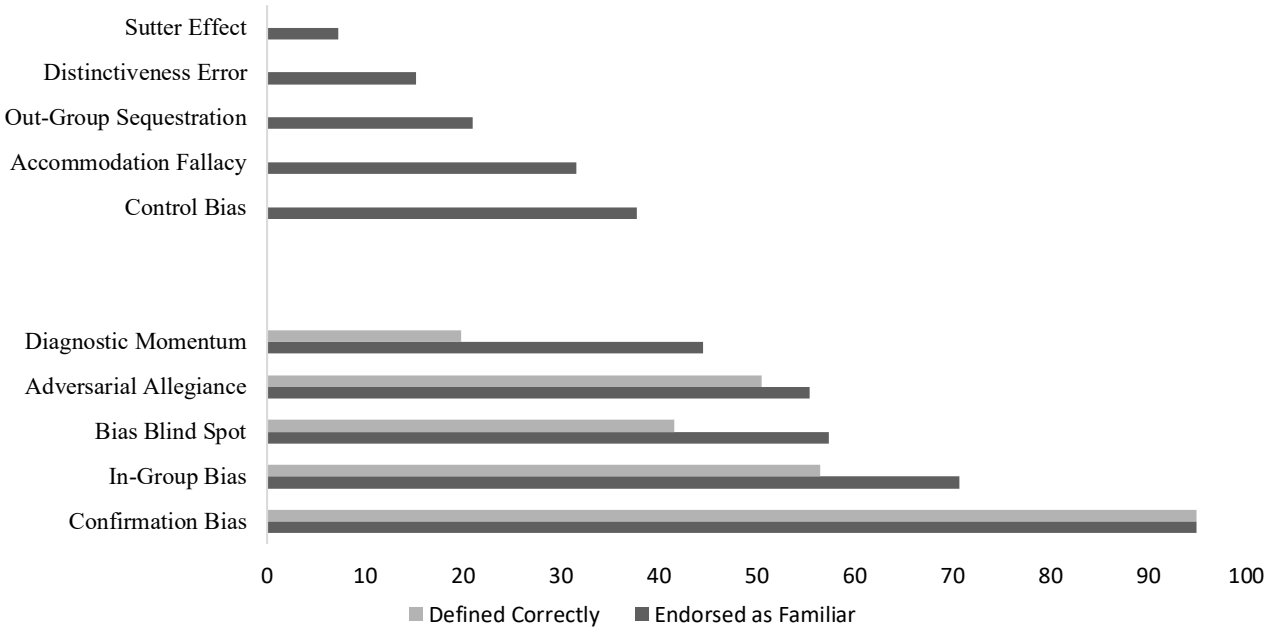
biases. The selected strategies reflected those that have been discussed in relevant literature as strategies to mitigate bias. As with the biases, we also included misleading or "sham" strategies by reframing biasing behavior as a strategy (e.g., relying on previous diagnoses, prioritizing first received information), and strategies that have been previously identified in the literature as ineffective (e.g., introspection – reflecting on ways one's opinion may be biased). The bias terms and strategies were presented to the participants in random order.

Demographics. Finally, participants provided demographic data (i.e., age, gender, race and ethnicity, professional training, licensure, years of forensic experience, board certification, and employment setting).

Results

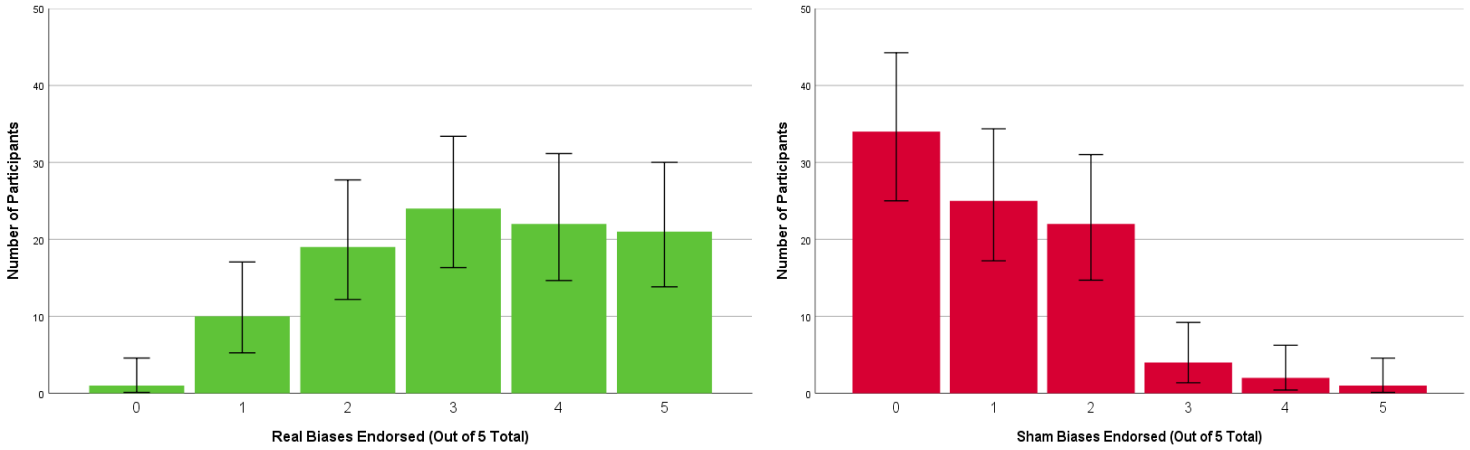
Consistent with our hypothesis, participants endorsed familiarity with many of the actual biases and endorsed the sham biases as less familiar during the limited time period provided (M = 5.99 seconds, SD = 3.40): clinician-participants endorsed every one of the actual biases as more familiar than every one of the sham biases (see Figure 1). Clinicians were able to complete the bias knowledge quiz within the allotted 25 second time period (M = 18.36 seconds, SD = 7.94). Results indicated that clinicians were widely familiar with confirmation bias – and they knew what it meant. The bias blind spot and adversarial allegiance—concepts more recently introduced to the forensic psychology literature—were familiar to a little over half of the sample, though participants were better able to define adversarial allegiance than the bias blind spot. Less than half were familiar with diagnostic momentum, and only about 20% could identify the correct definition.

Figure 1. Percent Sham (Top) and Actual Biases (Bottom) Endorsed as Familiar (with Actual Biases Defined Correctly)



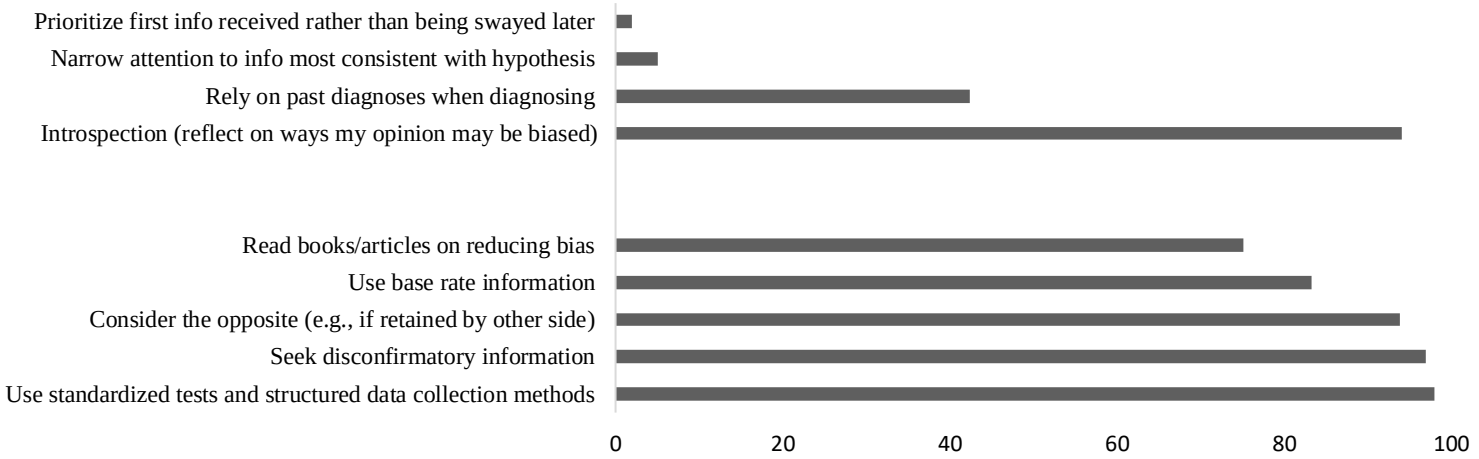
Results indicated that about 70% of the sample recognized at least 3 of the 5 actual biases (*M* = 3.23 out of 5, *SD* = 1.33; see Figure 2). Only 1 participant failed to recognize any of the 5 actual biases. To evaluate the participant's tendency to agree with the different biases and strategies, sham biases were included. Results demonstrated that 39% endorsed *none* of the sham biases, though 61% endorsed at least one. Eight percent endorsed 3 or more.

Figure 2. Simple Bar Count of Real (Left) and Sham (Right) Biases Endorsed as Familiar



With respect to debiasing strategies, most clinicians endorsed using the research-identified strategies (*M* = 8.44 seconds, *SD* = 3.71), with each of the effective strategies being endorsed by more than three-quarters of the sample (see Figure 3). However, most clinicians (93%) endorsed using the ineffective strategy of introspection to mitigate bias. Few participants endorsed a behavioral description of confirmation bias and anchoring bias as strategies they use to combat bias. Overall, 93% of the clinician-participants reported using at least 4 of the 5 effective strategies (*M* = 4.46, *SD* = .69; see Figure 4). All participants reported using at least 2 of the research-identified strategies. Regarding the ineffective strategies, 94% of the sample endorsed 1 or 2 of them, but no one endorsed more than 3 of the 4 (*M* = 1.44, *SD* = .60]). Similarly, when participants were asked in an open-ended question to identify debiasing strategies utilized in their forensic practice, introspection was commonly identified as a utilized strategy by 30% of the sample. Other frequently identified debiasing strategies in the open-ended question included consulting (38%), using multiple sources of data (23%), and using validated measures (22%).

Figure 3. Percent Ineffective (Top) and Effective (Bottom) Strategies Endorsed



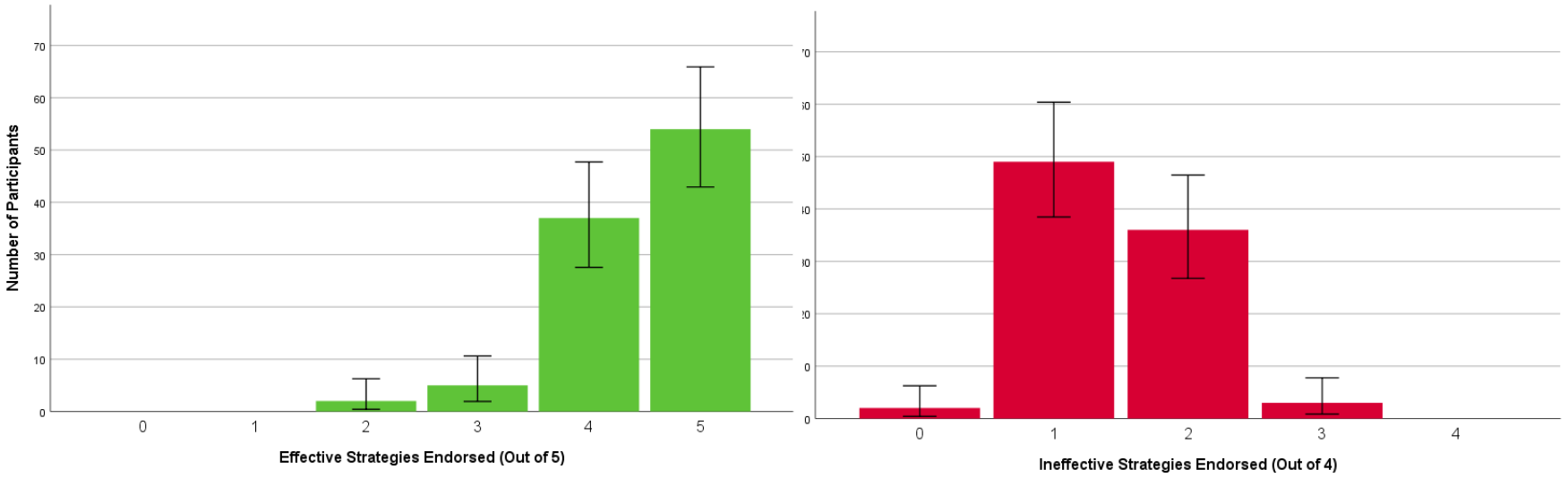


Figure 4. Simple Bar Count of Effective (Left) and Ineffective (Right) Bias Mitigation Strategies Used

As hypothesized, the CRT was negatively related to the rate of error on this task (in terms of endorsing false biases) was supported. Higher CRT scores were associated with fewer endorsements of sham biases, r = -.311, p = .004. However, contrary to the hypothesis, the CRT score was not correlated with the rate of error on the strategies task (i.e., endorsing sham strategies, r = -.10, p = .361).

Discussion

Bias in forensic assessments can undermine justice and can have significant implications for defendants' lives as well as the safety of the community. Mental health clinicians are consulted by courts to provide expert opinion to assist factfinders. Relying on biased information processing may decrease the objectivity of the clinician, and increase the likelihood of an erroneous opinion. The potential impact of bias in legal decision making has sparked recent research and discussion of policy changes to reduce its impact. For example, using blinding techniques (withholding potentially irrelevant and biasing information from the decision maker) across various fields has been proposed as the most surefire way to reduce or even eliminate bias in legal judgment (Robertson & Kesselheim, 2016). In San Francisco, for instance, prosecutors are utilizing "blind charging," a technique by which a decision regarding whether to charge a defendant is made without the availability of demographic information in an effort to reduce the problematic pattern of racially-biased charging decisions (Williams, 2019). In the forensic sciences, labs are increasingly modifying policies and procedures to reduce examiner access to potentially biasing, task-irrelevant information. These changes suggest increasing awareness of the implications of bias and policy changes to address the potential negative consequences.

In this survey of a national sample of licensed psychologists with forensic interests, psychologists generally endorsed genuine familiarity with well-known biases and research-

suggested bias mitigation strategies, as predicted. However, many were less skilled at discriminating between real and misleading strategies. Similar to previous findings (e.g., Neal & Brodsky, 2016; Zapf, Kukucka, Kassin, & Dror, 2018), participants in this study (93%) overwhelmingly endorsed the use of introspection as a strategy to mitigate bias. Neal and Brodsky (2016) explained that not only was introspection an unsuccessful strategy to decrease bias, but could even exacerbate preexisting biases held by the individual. Psychological research demonstrates that people are unable to access higher-order processing during introspection (Nisbett & Wilson, 1977), and that introspection can actually function as a source of bias blind spot (Pronin & Kugler, 2007). Of course, we do not claim that forensic psychologists should never attempt to self-examine their motives or their practice, but we do caution that introspection alone—i.e., looking inward for bias and finding no indication of bias—is certainly *not* sufficient to identify or mitigate the effects of bias. Indeed, it likely serves to create a false sense of reassurance. In contrast, seeking behavioral evidence, such as examining patterns of behavior and decisions across cases, is a better method for ferreting out potential bias in one's judgment.

The cognitive reflection task was used to measure the ability to question ones' instincts and overcome an intuitive but potentially erroneous response by developing a more reflective response. As predicted, clinicians who were able to suppress spontaneous responses were better able to discriminate research-identified biases from shams. This suggests individual differences between clinicians that may impact bias and bias mitigation in forensic evaluations.

What these findings cannot tell us is whether the ability to discriminate actual from sham biases (and correctly defining actual biases) relates to any particular ability to mitigate such biases in one's own judgment. Future research should address whether familiarity with biases helps clinicians actually reduce bias. Does acknowledging bias reduce actual bias? Does explicit

description of strategies used to try to minimize bias have any effect on reducing actual bias? Could it backfire, instead resulting in unintentional exacerbation of bias through a process akin to moral licensing (i.e., subconscious phenomenon in which confidence and positive self-concept can make people more likely to engage in an immoral behavior by paradoxically making them feel freer to act badly because they consider themselves "good;" Blanken, Van de Ven, & Zeelenberg, 2015)? Another important consideration is how these biases and strategies we include are not quite as clear-cut as we might like for them to be. For example, although prioritizing initially obtained information could increase the risk of anchoring effect (i.e., lead to bias), in subspecialties of forensic psychology (i.e., interviewing child victims of alleged offenses), prioritizing information obtained during an initial interview is purported as a strategy to reduce threats to validity (e.g., Wyatt, 1999).

These study findings further our understanding of forensic psychologists' knowledge of research-identified biases and strategies; however, it is not without limitations. Of primary concern is that the biases included in this study were presented via a research study and not as part of a traditional case referral or case material. It is possible (but unlikely) that examiners fail to recognize or endorse bias mitigating strategies in cognitive exercises such as that used in this study, but adequately utilize such strategies in their forensic practice. It is also possible (and perhaps more likely) that clinicians recognize and endorse familiarity with actual biases, but fail to recognize them or effectively mitigate their effects in their actual work, consistent with a bias blind spot. In terms of the survey, a number of sham bias terms were vaguely similar to actual biases, which may have caused confusion among some participants. Thus, future studies that include sham terms should ensure that the terms are unquestionably unique to avoid confusion. In addition, although we programmed a time limit into the survey to reduce the likelihood that

participants would consult external sources for definitions or related information, we cannot rule out the possibility that some respondents might have searched an internet search engine to inform their responses.

The low response rate in this study (17%) was limiting, however, not unexpected given general response rates in surveys like these. Future studies could utilize multiple methods of recruiting participants, or recruit through in-person or paper-based methods vs. online recruitment in an effort to increase response rates. Additionally, the pilot survey was administered to only eight graduate students. We designed it as a procedural pilot to finalize the methods, estimate time, and identify grossly obvious or problematic questions. But we could not use it to examine threats to validity (i.e., whether more than one response option could be correct, whether the question or items could be interpreted in numerous ways) were not measured, thereby potentially limiting the results. These limitations notwithstanding, studies like these will advance our understanding of clinicians' abilities to reduce bias in forensic evaluations.

These findings (along with Neal and Brodsky, 2016) suggest that forensic clinicians are in need of additional training not only to recognize biases, but to perhaps begin to effectively mitigate harm from biases. For example, in predoctoral (e.g., internship) and postdoctoral (fellowships), didactic training could address bias, recognizing bias, and strategies for minimizing bias. Additionally, supervisors could address identifying and reducing bias as a regular part of supervision (e.g., include this as part of case conceptualization). However, further research is needed to determine the types of training, and workflow strategies that best reduce bias. Future studies should focus on experimentally examining the presence of biases, and ways to mitigate their effects, in forensic evaluations.

References

Blanken, I., Van de Ven, N., Zeelenberg, M. (2015). A meta-analytic review of moral licensing. *Personality and Social Psychology Bulletin, 41*(4), 540-558.

Boccaccini, M.T., Chevalier, C.S., Murrie, D.C., & Varela, J.G. (2015). Psychopathy Checklist use and reporting practices in sexually violent predator evaluations. *Sexual Abuse: A Journal of Research and Treatment, 29*(6), 592-614.

Borum, R., Otto, R., & Golding, S. (1993). Improving clinical judgment and decision making in forensic evaluation. *Journal of Psychiatry and Law, 21*, 35-76.

Carr, L. G. (1971). The srole items and acquiescence. *American Sociological Review*, 36(2), 287-293.

Croskerry, P. (2003). The importance of cognitive errors in diagnosis and strategies to minimize them. *Academic Medicine, 78*(8), 775-780.

Frederick, S. (2005). Cognitive reflection and decision making. *Journal of Economic Perspectives, 19*(4), 25-42.

Gowensmith, W.N., Murrie, D.C., & Boccaccini, M.T. (2012). Field reliability of competency to stand trial evaluations: How often do evaluators agree, and what do judges decide when evaluators disagree? *Law and Human Behavior, 36,* 130-139. doi: 10.1037/h0093958

Guthrie, C. P., Rachlinski, J. J., & Wistrich, A. J. (2001). Inside the Judicial Mind. *Cornell Law Faculty Publications*, 814.

Hagen, M. A. (1997). *Whores of the court: the fraud of psychiatric testimony and the rape of American justice*. New York: Regan Books.

Kahneman, D. (2011). *Thinking, fast and slow.* New York, NY: Farrar, Straus & Giroux.

Moulton, C. A., Regehr, G., Lingard, L., Merritt, C., & MacRae, H. (2010). Slowing down to

stay out of trouble in the operating room: Remaining attentive in automaticity. *Academic Medicine, 85*, 1571–1577.

Murrie, D.C., & Boccaccini, M.T., (2015). Adversarial allegiance among forensic evaluators. *Annual Review of Law and Social Science, 11,* 37-55.

Murrie, D. C., Boccaccini, M. T., Guarnera, L. A., & Rufino, K. A. (2013). Are forensic experts biased by the side that retained them? *Psychological Science, 24*, 1889–1897.

Murrie, D.C., Boccaccini, M.T., Turner, D., Meeks, M., Woods, C., & Tussey, C. (2009). Rater (dis)agreement on risk assessment measures in sexually violent predator proceedings: Evidence of adversarial allegiance in forensic evaluation? *Psychology, Public Policy, and Law, 15*, 19-53.

Neal, T. M. S., & Brodsky, S. (2016). Forensic Psychologists' Perceptions of Bias and Potential Correction Strategies in Forensic Mental Health Evaluations. Psychology Public Policy and Law, 22(1), 58–76.

Neal, T. M. S. & Grisso, T. (2014). The cognitive underpinnings of bias in forensic mental health evaluations. *Psychology, Public Policy, and Law, 20*, 200-211.

Neal, T. M. S., MacLean, N., Morgan, R. D., & Murrie, D. C. (2017, March). *Robust evidence of confirmation bias in forensic psychologists' diagnostic reasoning.* Paper presented at the annual conference of the American Psychology-Law Society, Seattle, WA.

Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review, 84*, 231–259.

Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology, 2*, 175–220.

Pirelli, G., Gottdiener, W. H., & Zapf, P. A. (2011). A meta-analytic review of competency to stand trial research. *Psychology, Public Policy, and Law*, *17*(1), 1.

Pronin, E., Lin, D. Y., & Ross, L. (2002). The bias blind spot: Perceptions of bias in self versus others. Personality and Social Psychology Bulletin, 28, 369–381.

Pronin, E., & Kugler, M. B. (2007). Valuing thoughts, ignoring behavior: The introspection illusion as a source of the bias blind spot. *Journal of Experimental Social Psychology, 43*, 565–578.

Robertson, C. T., & Kesselheim, A. S. (Eds.). (2016). *Blinding as a solution to bias: Strengthening biomedical science, forensic science, and law*. Cambridge, MA: Academic Press.

Sibbald, M., De Bruin, A. B., & Van Merrienboer, J. J. (2013). Checklists improve experts' diagnostic decisions. *Medical Education, 47*(3), 301-308.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. Science, 185, 1124-1131.

West, T. V., & Kenny, D. A. (2011). The truth and bias model of judgment. *Psychological Review, 118*, 357-78.

Whittlesea, B. (1993) Illusions of familiarity. *Journal of Experimental Psychology: Learning, Memory & Cognition, 19(6),* 1235-1253.

Williams, A. D. (1992). Bias and debiasing techniques in forensic psychology. *American Journal of Forensic Psychology. 10*(3), 1992, 19-26.

Williams, T. (2019, June 12). Black people are charged at a higher rate than whites. What if prosecutors didn't know their race? *The New York Times*. Retrieved from https://www. nytimes.com/

Wyatt, W. J. (1999). Assessment of child sexual abuse: Research and proposal for a bias-free interview: Part II. *The Forensic Examiner, 8,* 24–27.

Zapf, P. A., Hubbard, K. L., Cooper, V. G., Wheeles, M. C., & Ronan, K. A. (2004). Have the courts abdicated their responsibility for determination of competency to stand trial to clinicians? *Journal of Forensic Psychology Practice, 4,* 27-44.

Zapf, P. A., Kukucka, J., Kassin, S. M., & Dror, I. E. (2018). Cognitive bias in forensic mental health assessment: Evaluator beliefs about its nature and scope. *Psychology, Public Policy, and Law, 24*(1), 1-10.

Zapf, P. A., Roesch, R., & Pirelli, G. (2014). Assessing competency to stand trial. In I. B. Weiner & R. K. Otto (Eds.), *The handbook of forensic psychology* (4th ed.; pp. 281-314). New York: Wiley.