Letter to the Editor—Combating Bias: The Next Step in Fighting Cognitive and Psychological Contamination.

Sir,

The National Academy of Sciences report (1), Mayfield case (2), scholarly papers (3), and empirical research (4–7) have succeeded in bringing a much needed and overdue shift in forensic science. Nowadays, there is a growing widespread acceptance that psychology and human cognition play a major role in many forensic disciplines. As with other sciences, measures must be taken to combat and minimize bias and a variety of cognitive influences that may degrade the quality of forensic decision making.

However, the cognitive foe can be elusive. In contrast to physical contamination of evidence, it is harder to determine the best ways to fight cognitive and psychological contamination. It is the human cognitive processes that stand at the center of forensic science, as the examiners are the "instrument" of analysis in many forensic disciplines.

Indeed, Thornton (8) rejects "working blind" as a way to deal with contextual bias, and Dror (9) warns that some measures may entail "throwing out the baby with the bath water." For forensic science to successfully take on the issue of contextual bias, it is important that one correctly considers the risks, that measures are taken when needed, and that they are proportionate and appropriate.

In response to Thornton's rejection of "working blind," 13 prominent scholars published a commentary promoting "sequential unmasking" (10,11). They make the point that some potentially biasing information is irrelevant to the forensic scientist (e.g., whether the suspect confessed to the crime or not) and therefore should be masked (i.e., that the examiner should be "blind" to it). Furthermore, they suggest that potentially biasing information that is relevant should be given to the examiner, but only when it is needed, unmasking it sequentially.

Sequential unmasking makes very good and solid recommendations. However, these suggestions do not go far enough. I believe that one must "unpack" the more difficult circumstances, the tricky situations when information is potentially biasing but is relevant nevertheless. A single "one size fits all" recommendation of exposing the examiner to the information they need, but only when needed, is a step forward; however it is not sufficient.

I think that when information is potentially biasing, but also relevant to the forensic examiner, then procedures should first require a cost–benefit analysis. Such an analysis would consider the level of potential bias introduced by the information vs. the potential contribution of the information to the work of the examiner. Therefore, the decision whether to provide such information to the examiner must consider the relative contribution to the examiner's work relative to the potential bias. Some information may be critical for the forensic examiner, whereas other information may have much less significance; some information may be very high in terms of potentially biasing impact, whereas other information much less. These cannot just be lumped together and should be considered to make an informed decision whether to expose or mask it. Furthermore, appropriately considering the level of potential bias must take a holistic view, for example, not only examining the potentially biasing information itself, but doing so in mirror of the difficulty of the case, because more difficult forensic decisions are more susceptible to contextual effects.

The outcome of such a cost–benefit analysis does not have to always result in a dichotomy of either providing or masking the information. One should have procedures that enable to "eat the cake and still have it" in special cases where the cost–benefit analysis does not provide an obvious best practice. A suggested recommendation for such situations is to have a procedure whereby the examiner initially reaches their conclusion without being exposed to the potentially biasing information, then, thereafter, giving them this information to be included in their decision making. If they then reach the same conclusion, with the additional information contributing to their work, then that would add strength to their original decision. If, however, the additional information has changed their original decision, then they are at liberty to revise their decision, but must explain and document the reasons. This allows the examiners, as well as others, to cognitively pinpoint and account for their decision making. It gives the examiners the freedom to revise their initial determination, but requires justification.

This procedure follows a similar cognitively informed approach to recommending procedures in fingerprint work which require the examiners to first conduct a full analysis of the latent print (in the ACE-V process) prior to the comparison, but then allowing them to revise their initial analysis after they are exposed to the "target" print in the comparison phase. However, such revisions require documentation and justification (9).

An alternative procedure may require two examiners to conduct the work in parallel: one with the needed (but potentially biasing) information and one without being exposed to it. If both reach the same conclusion, then we can be confident it was not reached because of the potentially biasing information. If, however, different conclusions are reached, then one can consider whether this was because of the contribution or the bias of the additional information. A further possibility is to engage in some sort of cross-laboratory checks (12), whereby different laboratories are exposed to different information.

Of course, such extra steps and caution require time and effort. However, such actions are not warranted in each and every case. If we start thinking about these issues from a cognitive perspective and working wisely, we can ascertain whether and which cases require these measures (as well as other measures; e.g., "blind" verification). But we also need to acknowledge that the human examiner is the "instrument" of analysis in many forensic domains and then realize that just as we take steps to minimize physical contamination of evidence, we must also make an effort and take active steps to minimize cognitive and psychological contamination.

References

1. National Academy of Sciences (NAS). Strengthening forensic science in the United States: a path forward. Washington, DC: National Research Council, National Academies Press, 2009.
2. Office of the Inspector General (OIG). A review of the FBI's handling of the Brandon Mayfield case. Washington, DC: Office of the Inspector General (OIG), 2006.
3. Risinger DM, Saks MJ, Thompson WC, Rosenthal R. The Daubert Kumho implications of observer effects in forensic science: hidden problems of expectation and suggestion. Calif Law Rev 2002;90:1–56.

4. Dror IE, Rosenthal R. Meta-analytically quantifying the reliability and biasability of forensic experts. J Forensic Sci 2008;53(4):1–4.
5. Dror IE, Champod C, Langenburg G, Charlton D, Hunt H, Rosenthal R. Cognitive issues in fingerprint analysis: inter-and intra-expert consistency and the effect of a "target" comparison. Forensic Sci Int 2011; 208:10–7.
6. Langenburg G, Champod C, Wertheim P. Testing for potential contextual bias effects during the verification stage of the ACE-V methodology when conducting fingerprint comparisons. J Forensic Sci 2009;54(3): 571–82.
7. Dror IE, Hampikian G. Subjectivity and bias in forensic DNA mixture interpretation. Sci Justice in press; doi:10.1016/j.scijus.2011.08.004.
8. Thornton JI. Letter to the editor—a rejection of "working blind" as a cure for contextual bias. J Forensic Sci 2010;55(6):1663.
9. Dror IE. How can Francis Bacon help forensic science? The four idols of human biases. Jurimetrics 2009;50:93–110.
10. Thompson WC, Ford S, Gilder JR, Inman K, Jamieson A, Koppl R, et al. Commentary on: Thornton JI. Letter to the editor—a rejection of "working blind" as a cure for contextual bias. J Forensic Sci 2011;56(2):562–3.
11. Krane DE, Ford S, Gilder JR, Inman K, Jamieson A, Koppl R, et al. Sequential unmasking: a means of minimizing observer effects in forensic DNA interpretation. J Forensic Sci 2008;53(4):1006–7.
12. Koppl R, Kurzban R, Kobilinsky L. Epistemics for forensics. Episteme 2008;5(2):141–59.

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