



## Psychiatry & Behavioral Science Section - 2016

### I38 Confirmation Bias and Metalinguistic Awareness

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After attending this presentation, attendees will understand how certain linguistic mechanisms, namely presupposition, epistemic modality, and coherence relations, can inadvertently cause confirmation bias during the forensic science workflow and how metalinguistic awareness can protect the forensic scientist and mitigate bias.

This presentation will impact the forensic science community by providing communicative strategies to mitigate confirmation bias.

Confirmation bias is now accepted as an issue that must be handled proactively to reduce its harmful effects in the forensic workflow from crime scene investigation through adjudication. Confirmation bias is a cognitive predisposition toward a certain interpretation of stimuli or events. Interpretive filters, or biasing mechanisms, are built into human cognition because such filters produce efficiency and speed in decision-making, but cognitive biases can also mislead human cognition: assumptions based on interpretive filters can be wrong, as the well-known Gestalt switches on visual stimuli (e.g., length of lines, direction of stairs, letter (B)/number (13), and profile/chalice) clearly show. Though the visual examples are more well-known, this presentation focuses on the same effect from auditory stimuli in spoken language. Generally, most cognitive psychologists agree that awareness of the human predisposition to cognitive bias is the first step in mitigating its potentially harmful effects.

But this advice raises two questions regarding implementation: First, how do humans become aware of potentially biasing cognition? Second, how can this awareness outside of the forensic science workflow be transferred into the forensic science workflow in a way that actually may mitigate confirmation bias?

In this presentation, analytical tools from linguistics are presented to demonstrate how metalinguistic awareness — awareness of language not merely as the conveyance of meaning but as an object itself — can be brought to bear on the problem of confirmation bias. In particular, three phenomena within pragmatics are presented: presupposition, epistemic modality, and coherence relations. It is argued that these three areas are especially important for the forensic science workflow. It is also argued that confirmation and cognitive bias can be inadvertently introduced in three steps of this workflow: (1) the interviewing of witnesses/suspects; (2) the presentation of evidence to the forensic science laboratory/examiner; and, (3) the presentation of evidence in court. This presentation focuses on the communication between the crime scene technician and the forensic scientist, but examples of all three steps are provided as constructed examples to illustrate the linguistic pragmatics and as real-case examples to illustrate how the use of presupposition, modality, and coherence relations in workaday communication can inadvertently cause cognitive bias.

A presupposition is information presented as though it is already common knowledge between the speaker and hearer.<sup>1</sup> For example, in (1), the use of “too” presupposes that the hearer carries a gun, which is fine when this has already been established, but dangerous if not, because presuppositions are known to be able to manipulate our memory of events.<sup>2</sup> Examples include: (1) “If I lived around there, I would carry a gun, too.”; (2) “We know for sure that this is the boyfriend’s blood, we just need the science.”; (3) “She then called and threatened to kill him. He was found dead at 6:00 p.m.”; and, (4) “He was found dead at 6:00 p.m. She then called and threatened to kill him.”

Epistemic modals express the level of certainty with which a person holds a proposition to be true and are marked by words like definitely, certainly, to know that, etc.<sup>3</sup> In examples like (2), the “know” presupposes the conclusion requested from the forensic scientist and inadvertently creates confirmation bias.<sup>4,5</sup>

Coherence relations are relationships between sentences that humans naturally compute to make sense of larger narratives, and the order in which information is presented can affect this computation.<sup>6</sup> For example, in (3) and (4), the same basic sentences are true, but their order leads to different inferences about whether the woman was responsible for the man’s death. In short, the examples demonstrate that being aware of the influence of these phenomena helps to avoid their harmful effects. Final suggestions include ways in which a forensic scientist’s metalinguistic awareness of these same linguistic strategies can be used to protect the forensic science workflow.



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## Reference(s):

1. Stalnaker R. Presuppositions. *Journal of Philosophical Logic*, 1973:2(4), 447-457.
  2. Loftus E.F. Leading questions and the eyewitness report. *Cognitive psychology*. 1975:7( 4), 560-572.
  3. von Fintel K., Gillies A.S. An opinionated guide to epistemic modality. *Oxford studies in epistemology*, 2007:2, 32-62.
  4. Windschitl P.D., Weber E.U. The interpretation of “likely” depends on the context, but “70%” is 70%—right? The influence of associative processes on perceived certainty. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 1999:25(6), 1514.
  5. Bradfield A.L., Wells G.L., Olson E.A. The damaging effect of confirming feedback on the relation between eyewitness certainty and identification accuracy. *Journal of Applied Psychology*, 2002: 87(1), 112.
  6. Kehler A. *Coherence, reference, and the theory of grammar*. Stanford, CA: CSLI publications. 2002.
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## Confirmation Bias, Pragmatics, Metalinguistic Awareness