G99   Cognitive Bias in Forensic Entomology: A Life History Approach to Assessing Impact

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After attending this presentation, attendees will have a better understanding of how the most common types of cognitive biases influence decisions made throughout multiple stages of a forensic entomological case life history.

This presentation will impact the forensic science community by bringing awareness of cognitive biases and when they are likely to influence decision making.

Of central focus is the proposition that expectations formed before and during problem solving place all forensic scientists in especially vulnerable situations for biased conclusions of which they are not consciously aware. This presentation maintains that an awareness of these biases, and when they are likely to influence decision making, is paramount to elevating forensic science in the direction of more sound scientific methodology. In this presentation, attention is focused upon forensic entomology as an example of a discipline not previously connected with cognitive bias in the literature, but just as open to problems in this area as any other discipline.

Much of what forensic scientists do throughout a case life history falls under the cognitive science areas concerned with perception and problem solving. Whether the procedure involves fingerprint analyses, anthropology, or voice recognition, forensic scientists are often called upon to make decisions based on pattern recognition (more specifically, signal detection). It is widely held in the cognitive literature that in most situations involving perception, the brain adopts a top-down mode of processing, one where the interpretation is "constructed" from memory and highly influenced by context. This default mode of the brain puts all forensic scientists at risk of forming biases throughout perception and problem solving, even under normal circumstances. When the perceptual task is applied to a forensic context, the consequences of mistakes in perception are far more dire, and as will be argued, far more likely to go unnoticed.

Cognitive biases are the result of expectations formed before and during problem solving. They are almost always made without conscious intent or awareness. This study maintains that the four types of cognitive biases most pertinent to forensic procedures involve: confirmation bias; evaluation bias; selective reading; and semantic priming. In confirmation bias, all evidence which refutes our initial hypothesis is systematically minimized or ignored. In evaluation bias, decisions are influenced by what is considered the most desirable outcome to occur at the conclusion of the analysis. In selective reading, the "gist" of a written passage conforms to preconceived interpretations and not what is actually presented. In semantic priming, previous contexts or experiences prime the brain to perceive ambiguous stimuli in specific and predictable ways.

When applied to a case life history, this presentation will demonstrate how and when each of these four cognitive biases influence perception and decision making for the forensic entomologist from the point of first becoming aware of the case through witness preparation and testimony. Further, modifications to the scientific method will be presented that could be adopted to overcome some of these cognitive biases. The conclusion is that while forensic entomologists are most vulnerable to confirmation and evaluation biases throughout a case life history, selective reading and semantic priming can influence decision making at crucial stages. While the specifics of the case life history model adopted here focus on the forensic entomologist, they can easily be expanded to most, if not all, forensic scientist case life-histories.

The more knowledgeable the forensic community is regarding the influence of cognitive biases, the better prepared programs will be in training forensic students. In its current state, members of the forensic science community gain a reputation based on the number of cases where the evidence they collected, analyzed, and summarized for the court leads to a conviction. Nowhere in the process is science able to evaluate whether the conclusions drawn from the evidence were correct. A focus on training methods which teach individual scientists when to be aware of potential cognitive bias is vastly more ideal. The long-term ramifications of a community of forensic scientists who have been trained to be skeptical of their decisions can only strengthen the field and lead to better science presented in court and better verdicts made by juries.

Cognitive Bias, Perception, Diptera