

A Systematic Overview of Cognitive Bias Research in Forensic Science

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Introduction

The term "cognitive bias" refers to a wide range of processes that can result in incorrect interpretations or judgments; mental predispositions can influence memory, thinking, and decision-production. Although the term may be interpreted in a negative light, it is essential to recognize that these processes are a necessary by product of the need to develop heuristics and attune to patterns in order to process a wide range of complex stimuli. One type of cognitive bias that has the potential to undermine the objective evaluation of forensic evidence is confirmation bias, which was defined in 1998 as "seeking or interpreting evidence in ways that are partial to existing beliefs, expectations, or a hypothesis in hand." This could happen as a result of an unconscious focus on similarities rather than differences caused by information about other evidence in a case, characteristics of the comparison procedures used, or previous analyst conclusions. In the last ten years, there has been an increase in interest in the extent to which cognitive biases may influence forensic science decision-making; this was one of the exploration needs recognized in the 2009 Public Foundation of Sciences report on scientific sciences. The 2013 review by Kassin et al. shows that the subject has been the subject of a lot of discussion and the responses that go along with it [1].

To lessen the likelihood of bias, it has been suggested to control the order and duration of information distribution and restrict access to information that is irrelevant to the task. However, a recent survey of 403 expert forensic science examiners revealed a general lack of understanding of bias susceptibility and acceptance of the need for procedures to reduce cognitive biases. In order to map the landscape of the existing research-such as topics, populations, and variables-by the point in the criminal justice process that is being addressed, we carried out a scoping review of the literature on cognitive biases in criminal investigations and prosecutions. Criminological science was one of the regions with the most examination connecting with mental predispositions, and subsequently we zeroed in on this arrangement of exploration for a more top to bottom examination. Using a predetermined set of criteria, we carried out a systematic review of the forensic science-cognitive bias research's scope, design, and outcomes in this second phase. The objective of this review was to assess the basis for conclusions regarding the potential impact of contextual bias and other types of bias on decision-making in various fields of forensic science [2].

Description

PsycINFO and Social Sciences Full Text, two electronic databases of

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books, chapters, articles, and dissertations in the social sciences, served as our starting points for our review. We specifically looked for works that included the terms "cognitive bias," "implicit bias," "cognitive dissonance," "tunnel vision," "confirmation bias," "interpretive bias," "belief perseverance," or "asymmetrical skepticism" in any field (e.g., text, title), and "criminal or justice" or "police or investigation" or "forensic" or "jury or juries" or "conviction" in any We found 92 seemingly relevant abstracts, 20 of which related to forensic science, after conducting a title and abstract review by two independent reviewers. To find additional relevant references, we also looked at the reference lists in the identified forensic science publications. We used the PubMed database again to check that our search strategy was thorough, and three outside researchers working on different questions about confirmation bias and forensic science looked over our list of references [3].

The reference list was last reviewed in July 2018. We used a combination of search terms related to bias, technology, and database systems to expand our search to include studies of the interaction of humans with technology and databases on the advice of a journal reviewer. A total of 41 primary source publications for 36 studies were found using this search strategy. Studies with practitioners or trainees examining case-specific information about the "suspect" or crime scenario (in 9 of 11 studies examining this question), procedures regarding the use of exemplars (in 4 of 4 studies), or knowledge of a previous decision (in 4 of 4 studies) provide evidence of the influence of contextual and confirmation bias on analysts' conclusions. The results of the two studies conducted by fingerprint analysts on the influence of emotional context or the severity of a crime on suitability decision-making are distinct; Compared to the other questions examined, this may be of less significance for future research [4].

There are a number of issues that arise when forensic scientists receive case-specific information. Even when the information is incorrect, case-specific data can still have an impact, as this collection of studies demonstrates. A few kinds of data might be required inside the setting of the examination, nonetheless, so it is critical to painstakingly think about whether, and when, data is given to the examiner. Another issue is that the use of ancillary information blurs the line between conclusions based on multiple lines of evidence and those based on the attributes of the analysis of the specific evidence (such as the characteristics of a latent print), which fall under the purview of the forensic scientist. The ancillary information may also give the impression of a stronger basis for a conclusion than the forensic science practitioner's analytical tools would support. The consequences of the examinations inspecting parts of correlation tests (target models) give bits of knowledge with respect to possible enhancements to standard working systems. Miller and Wells et al. have both suggested Similar to the use of fillers in a photo array, the use of multiple comparison samples may reduce identification errors [3].

The collection of studies examining prior decision knowledge suggests additional procedural enhancements. The second analyst is aware of the previous conclusion because of a verification step that is only used for certain kinds of decisions. In order to prevent the second analyst from predicting or guessing the first analyst's decision, it would be crucial to develop procedures that allow for truly independent replication of results, such as through replication of all analyses or an appropriately weighted sample of analyses, if knowledge of another analyst's conclusions or perception of knowledge influences decision-making. The impact of the consequences of a calculation produced matching interaction on human independent direction is another region

requiring extra exploration. Our review of the study's methods revealed areas where the design or reporting of the methods and results could be improved. Rules for revealing randomized controlled preliminaries and observational the study of disease transmission studies, created inside the clinical and wellbeing field, may give a helpful groundwork to ponder ways of accomplishing, or come near, an ideal plan, and about the data that should be accounted for to permit perusers to see the value in the qualities and restrictions of the exploration completely [4].

For instance, regardless of whether the review will rely upon experts who volunteer to take part, considering the number of inhabitants in interest, the enrollment cycle utilized for this populace, and information that could be utilized to contrast the example with the populace (or to think about members and non-members) may prompt choices that outcome in more grounded plans and more enlightening distributions. It would be useful to collect and report information on the total number of eligible employees in the workplace in order to determine the participation rate, as well as pertinent demographic and work-related variables that permit assessing differences between eligible participants and non-participants in a study population drawn from a single workplace. For studies with professionals, it is essential to consolidate concentrate on examples inside the working environment stream or to direct the concentrate under working environment conditions. A randomization scheme should serve as the foundation for allocation procedures, such as grouping participants for between-person comparison designs, and the randomization procedure should be described. For within- and between-person designs, blinding to the specific samples used in a study may be difficult but possible; A review of how far blinding was achieved might be helpful to include in the design [5].

Conclusion

In a nutshell, the available research lends credence to the notion that practitioners of forensic science are susceptible to a variety of forms of cognitive bias. Additionally, it raises the question of whether or not it would be beneficial to implement procedures that limit access to information that isn't needed, encourage the use of multiple comparison samples rather than a single suspect exemplar, and encourage the replication of results by analysts who are

blinded to previous results. Future exploration ought to give extra information in under-concentrated on disciplines, evaluate level of subjectivity in the logical techniques comparable to presence or extent of predisposition, and survey test intricacy or trouble as an impact modifier. Methodologically stronger and more comprehensively described studies may result from following guidelines for designing and reporting studies.

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