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July 27, 2021

Inadmissible Evidence: Integrating Irrelevant Information in a Multiple Source Scenario

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The authors declare that there no conflicts of interest with respect to this preprint.

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Abstract

Jurors' use of inadmissible evidence illustrates the impact of irrelevant information in multiple-source comprehension. Participants read a trial in one of four conditions: Admissible (evidence included), Due Process (evidence inadmissible because of fairness), Unreliable (evidence inadmissible because of ambiguity), Control (evidence excluded). Afterwards, participants recommended a verdict (guilty or not guilty), rated evidence importance, and wrote an essay. Inadmissible evidence was rated highly and included in essays, indicating that readers integrate and use irrelevant information.

Keywords: Inadmissible evidence, comprehension, integration

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Theories of discourse comprehension predominately agree that successful comprehension relies on a readers' construction of a coherent mental model (see McNamara & Magliano, 2009). How and when information is connected or *integrated* during the creation of a mental model is critical for supporting retention and learning from the text. A well-integrated model contains connections between ideas from both the text and the reader's prior knowledge, which enriches and strengthens the representation. The processes supporting the creation of a well-integrated model have long been examined in the context of single document comprehension and, more recently, extended to the domain of multiple document comprehension. When engaging with multiple sources, there is an added challenge of integrating information across documents that may not be clearly connected. This can be further exacerbated when some information is irrelevant or even detrimental to comprehension but nevertheless becomes encoded and integrated into the mental representation.

Irrelevant information can impact comprehension due to the passive nature of the memory processes underlying comprehension. The passive processes of activation and integration operate cyclically on a sentence-by-sentence basis as the reader progresses through the text, incorporating any related information from memory, including previous portions of the text and a reader's prior knowledge (Kintsch, 1988). Therefore, once a reader has encoded information from the text, it can return to impact later comprehension, even if it is qualified, outdated, or irrelevant (O'Brien et al., 2010). Just as irrelevant textual information can interfere with comprehension, information from a reader's prior knowledge may likewise impact comprehension (Rizzella & O'Brien, 2002).

The use of evidence by juries in a trial provides a real-world domain for examining how individuals comprehend multiple sources and process irrelevant information. Jurors must integrate multiple pieces of evidence and ultimately use them to decide a verdict. This is challenging because jurors are presented with conflicting information as the prosecution presents a case and the accused states their defense. Additionally, over the course of the trial, jurors may encounter information they cannot use in their decision—evidence deemed *inadmissible* by the judge that is therefore irrelevant. In this scenario, jurors must deliberately disregard information they already received (Stebly et al., 2006).

The legal system operates under the assumption that jurors can follow judge's instructions and that inadmissible evidence will not impact trial outcomes. However, studies examining the impact of irrelevant information indicate that readers cannot ignore it, for once encoded, any related information in memory can return and impact comprehension (O'Brien et al., 2010). While some investigations using mock juries have provided mixed conclusions about the impact of inadmissible evidence, meta-analyses have found inadmissible evidence to reliably impact verdicts (Nietzel et al., 1999; Stebly et al., 2006). The current study was designed to explore the integration of irrelevant information within a mock trial context by examining three outcomes: verdicts (guilty, not guilty), ratings of evidence importance, and essays.

Method

Participants

One hundred and twenty-nine undergraduate students ($M = 19.79$ years old) from the University of New Hampshire participated in the study for partial course credit. The sample predominately reported being female (70.54%) and Caucasian (87.12%). Seven participants (5.43%) reported English was their second language, and all had four or more years of English

language experience. Though 96.9% of participants reported being eligible to serve on a jury, only three participants reported they had previous jury experience.

Materials

A trial summary about a murder trial was adapted from Kassin and Sommers (1997). The summary presented nine pieces of evidence over the course of 23 paragraphs. The target evidence was a wiretap recording of the defendant confessing, which was manipulated across four conditions: Admissible (target evidence deemed admissible), Due Process (target evidence deemed inadmissible because it violated due process and fairness), Unreliable (target evidence deemed inadmissible because of ambiguity), Control (target evidence excluded).

Procedure

Participants were randomly assigned to one of the four conditions and read the summary paragraph-by-paragraph on the computer. During reading, participants were probed eleven times to report their thoughts. After reading, participants were asked to answer a series of questions relating to the trial, including what verdict they recommend, rating (on a scale of 0-10) the importance of each piece of evidence presented in the trial, a manipulation check, and to write an essay about their verdict and reasoning. Participants also completed a general prior knowledge measure and answered demographic questions. Natural language processing (NLP) tools SiNLP (Crossley, Allen, Kyle, & McNamara, 2014) and SEANCE (Crossley, Kyle, & McNamara, 2017) were then used to analyze essays for the use of keywords from the text and sentiment.

Results

Condition did not have a reliable impact on verdict ($X^2 = .19, p = .98$), with high ratings of guilt across conditions. However, there was a marginal interaction between condition and prior knowledge on verdict ($X^2 = 7.44, p = .059$), driven by the Admissible condition.

Specifically, participants in the Admissible condition were more likely to recommend a guilty verdict if they had higher prior knowledge.

There was a reliable effect of condition on the ratings of importance for the target evidence, such that in the Control condition participants rated the wiretap evidence lower than the Admissible, Due Process, and Unreliable conditions, $F(3,120) = 13.85, p < .001$.

Additionally, those who recommended a guilty verdict rated their use of the wiretap evidence more highly than those who recommended a not guilty verdict, $F(1,120) = 58.58, p < .001$. There was also a reliable verdict x condition interaction, $F(3,120) = 6.59, p < .001$, such that the control group rated the wiretap evidence lower when they recommended a guilty verdict compared to the other conditions; however, there was no reliable difference between ratings when they recommended a not guilty verdict. Additionally, there was a reliable effect of prior knowledge on ratings of wiretap evidence ($F(1,120) = 4.33, p < .05$), such that participants who scored lower in prior knowledge rated wiretap evidence as less important than those with higher scores.

Finally, participants' essays were examined using NLP techniques. Essays were compared to keywords from the description of the target evidence in the source material. There was a reliable effect of condition ($F(1,119) = 17.91, p < .001$), importance ratings of the wiretap evidence ($F(3,119) = 4.79, p < .001$), and interaction between ratings and condition on keyword overlap with the source materials ($F(3,119) = 3.83, p < .05$), such that in the Admissible, Due Process, and Unreliable conditions, higher ratings of importance of the wiretap evidence were associated with greater use of keywords from the source material in the essay. A sentiment analysis on essays was also performed. Essays from participants who recommended a guilty verdict contained more negative adjectives ($F(1,119) = 9.20, p < .001$), fewer positive adjectives

($F(1,119) = 8.2, p < .01$), more action words ($F(1,119) = 26.34, p < .001$), and more virtue adverbs ($F(1,119) = 10.26, p < .01$) than participants who recommended a not guilty verdict.

Discussion

Taken together, the pattern of results supports the claim that once readers encounter inadmissible evidence, they cannot ignore it. When participants recommended a guilty verdict and received the wiretap evidence, regardless of admissibility, they were more likely to rate wiretap evidence as important compared to the control condition. Amongst participants who received the wiretap evidence, higher ratings of wiretap evidence were associated with greater overlap between the source materials and the essay, compared to the control condition. Essays also differed in sentiment based on verdict, with fewer positive adjectives, and more negative adjectives, action words, and virtue adverbs present when participants recommended a guilty verdict. This indicates that not only did readers rate and use evidence differently, but their attitudes also differed.

Additionally, participants' prior knowledge impacted their use of evidence and decisions. Participants with lower prior knowledge scores rated the wiretap evidence as less important than participants with higher prior knowledge. This finding warrants further investigation, as it is counter to the common assumption that higher prior knowledge is always beneficial for readers. It might be the case that higher prior knowledge supports integration, but not necessarily attention to source information. If so, participants with higher prior knowledge were more likely to integrate the inadmissible evidence and rate it as important. Future studies should investigate both domain-specific legal knowledge and how prior knowledge functions mechanistically to support integration during reading, and whether that can be detrimental to source attributions.

The present study lays a foundation for future work exploring the impact of irrelevant information on comprehension of multiple sources in a real-life scenario by examining how jurors handle inadmissible evidence in arriving at a verdict. Additionally, it provides preliminary evidence that readers integrate inadmissible evidence, which can then influence outcome measures that are likely to have real-world impacts on decision making and learning.

Acknowledgements

This research was supported in part by IES Grants R305A180144 and R305A190063 as well as the Office of Naval Research (Grants: N00014-19-1-2424 and N00014-20-1-2627). Opinions, conclusions, or recommendations do not necessarily reflect the view of the Department of Education, IES, or the Office of Naval Research.

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