Eyewitness Testimony in Forensic Psychology: A Study on Recall and Accuracy

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Introduction

Eyewitness testimony plays a critical role in the criminal justice system, often serving as pivotal evidence in court trials. However, research has demonstrated that such testimonies are not always reliable, with factors such as memory distortions, biases, and suggestive questioning significantly influencing the accuracy of eyewitness accounts (Loftus, E. F., & Zanni, G.,1975). This introduction delves into the complexities of eyewitness testimony, discussing the psychological mechanisms behind memory recall, common sources of error, and the legal implications of relying on such testimony in criminal cases.

The Fragility of Human Memory

The human memory is highly fallible, particularly in high-stress situations like witnessing a crime. Studies show that eyewitnesses can be influenced by external factors that alter their recollections. Loftus and Zanni (1975) highlighted the role of wording in questions, finding that subtle changes, such as using a definite or indefinite article, could significantly alter an eyewitness's response. For instance, asking "Did you see the broken headlight?" rather than "a broken headlight" led to more affirmative responses, even for details that were never present (Loftus, E. F., & Zanni, G.,1975). This suggests that memory is not a static recording of events but is reconstructive in nature.

The Role of Memory in Eyewitness Testimony

Eyewitness testimony is largely dependent on human memory, which is not as infallible as often believed. The process of encoding, storing, and retrieving memories is prone to various biases and distortions. Psychological research distinguishes between three stages of memory: acquisition, retention, and retrieval. During the acquisition phase, the witness gathers information about the event, but factors such as stress, visibility, and time pressure can affect the accuracy of encoding. Retention refers to the period between witnessing the event and recalling it, during which memories can fade or become distorted. The final stage, retrieval, is when the eyewitness recalls the information, which may be influenced by suggestion, leading questions, or other post-event information.

Factors Influencing Eyewitness Accuracy

Numerous variables affect the accuracy of eyewitness testimony. These can be divided into two categories: estimator variables and system variables. Estimator variables are factors that cannot be controlled by the legal system, such as the witness's emotional state, lighting conditions, and the presence of a weapon during the crime (the "weapon focus" effect). In contrast, system variables can be influenced by legal procedures, including how police lineups are conducted, the type of questions asked during interviews, and the length of time between the crime and the testimony.

Legal Implications and the Innocence Project

The legal implications of faulty eyewitness testimony are significant. Many cases of wrongful convictions have been overturned due to DNA evidence that contradicts eyewitness accounts. The Innocence Project, a legal organization that works to exonerate wrongfully convicted individuals, has found that faulty eyewitness identification played a role in over 70% of the convictions later overturned by DNA testing. These cases have prompted reforms in how eyewitness evidence is gathered, such as double-blind lineups and standardized instructions to reduce bias.

Common Sources of Eyewitness Error

Several cognitive factors contribute to the errors made in eyewitness testimony. According to Wise, Fishman, and Safer (2009), biases such as the misinformation effect, hindsight bias, and source monitoring errors can significantly distort memory. The misinformation effect, for example, occurs when post-event information alters a witness's recollection of the event. Eyewitness confidence, often taken as a sign of accuracy in courtrooms, can also be misleading. Overconfidence, inflated by post-identification feedback or repeated questioning, can result in wrongful convictions

The Reconstructive Nature of Memory

Memory is not a perfect recording of events but rather a reconstructive process influenced by both internal and external factors. Loftus and Zanni (1975) demonstrated how subtle changes in question phrasing could lead to distortions in eyewitness recall. For instance, when witnesses were asked if they saw "the" broken headlight versus "a" broken headlight, the definite article prompted more affirmative responses, even when no headlight was broken (Loftus, E. F., & Zanni, G.,1975). This finding underlines the malleable nature of human memory and its susceptibility to external cues.

Question Repetition and Suggestibility

Repeated questioning is another factor that can influence eyewitness testimony, especially in children. Poole and White (1991) examined the effects of question repetition on the accuracy of responses from children and adults. They found that while children, particularly younger ones, were as accurate as adults when answering open-ended questions, they were more likely to change their answers when asked repeated yes-no questions (Poole, D. A., & White, L. T. ,1991). The cognitive immaturity of younger children makes them more vulnerable to suggestibility, especially when they infer that the repeated question implies their previous answer was incorrect (Siegal et al., 1988) (Poole, D. A., & White, L. T. ,1991).

Age Differences in Memory Accuracy

Research consistently shows that age plays a crucial role in the accuracy of eyewitness testimony. Adults tend to provide more information overall, but this includes both accurate and inaccurate details (Poole, D. A., & White, L. T. ,1991). Children, on the other hand, are more concise and often provide less detailed accounts but are more consistent in their reporting when not subjected to suggestive questioning. Studies like those by Goodman et al. (1987) show that while children may struggle with specific questions, they generally perform well when asked open-ended ones (Poole, D. A., & White, L. T. ,1991)

The Impact of Cognitive Development on Testimony

Developmental differences in memory and suggestibility stem from the cognitive processes that underlie how children and adults recall events. As Piagetian studies have shown, repeated questioning within a short period can decrease accuracy, especially when children perceive the repetition as a signal that their previous answer was incorrect (Poole, D. A., & White, L. T. ,1991). This is particularly concerning in legal contexts, where repeated interrogations may lead to increased inaccuracies in children's testimonies. Studies by Goodman and Reed (1986) further illustrate that while children can be highly accurate in free-recall tasks, specific and repeated questions often lead to inconsistencies.

Recent research has suggested potential methods for improving the accuracy of eyewitness testimony. Gasper, Roy, and Flowe (2019) proposed that segmenting time estimation into smaller components allows for more accurate and reliable recollections. Their findings align with studies by Flores et al. (2017) and Gold et al. (2017), which indicate that dividing events into smaller segments enhances both time estimation and overall memory recall. Such interventions could prove beneficial in legal settings, where improving the accuracy of witness recollections is critical for achieving just outcomes.

Methods

Objective

To assess the accuracy and reliability of eyewitness testimony.

Participants

The sample size consisted of 8 students at the Department of Applied Psychology, University of Delhi.

Material required

The materials required were projector, timer, questions, pen and paper. The questions consisted of direct, misleading, closed-ended and open-ended questions (see appendix).

Setting

The setting was a classroom at the department of Applied Psychology.

Ethical guidelines

1. Before the administration, informed consent of the subjects was taken by the administrator, clearly stating the nature and purpose of the study.

2. Strict confidentiality was maintained, and the data was used for academic purposes only.

Procedure

Instructions

The participants were briefed about the nature of the study and instructed to attentively watch the video for a minute. They were then asked to do anything for 30 minutes without discussing the video among themselves, and later write answers for the 10 questions to be asked by the administrator.

Administration

After providing instructions and taking their consent, 8 participants were shown a minute long video through a projector. In the video an assault was shown taking place in a prison where 3 convicts were assaulting a prison guard. After 30 minutes the participants were then asked to write answers for 10 questions asked about the video, however the way they remember it.

Results

The results for the eyewitness testimony experiment have been presented below in table 1. The accuracy of their responses to 10 questions was measured using a 4-point Likert scale, with 1 being (very inaccurate) and 4 being (very accurate.) A total score for each question was obtainedand converted to percentages, showcasing the percentage of accurate responses. The results werediscussed and a conclusion was drawn.

Table 1. *Percentage of accurate responses for each question by the participants (n=8).*

Questions	Total Score	Percentage of accurate responses
Where did the crime take place?	32	100 %
What date and day did the crime occur?	10	31.25%
What time did the crime take place?	28	87.5%
Describe the culprit's appearance.	32	100%
How many persons were there in total?	31	96.87%
What weapon did the culprits use?	32	100%
How many culprits were there?	32	100%
How many customers and shopkeepers were present?	28	87.5%
What did the criminals bring with them?	31	96.87%
What activities did the perpetrators engage in at the crime scene?	28	87.5%

The results presented in Table 1 indicate a varying level of accuracy in the participants' responses to questions about the eyewitness testimony experiment. Participants achieved a perfect score of 100% accuracy on four questions: the location of the crime, the culprit's

appearance, the weapon used, and the number of culprits. These results suggest that these aspects of the event were more easily remembered by participants. Similarly, high accuracy scores were observed for the number of people present (96.87%) and the items brought by the criminals (96.87%), indicating strong recollection in these areas as well.

In contrast, the lowest accuracy score was for the date and day of the crime, with only 31.25% of participants correctly recalling this information. This suggests that specific details related to time were less memorable for the participants. Additionally, the questions regarding the exact time of the crime, the number of people (customers and shopkeepers) present, and the activities of the perpetrators had moderately high accuracy scores at 87.5%, showing that while participants had a good recall in these areas, their accuracy was not as high as in other areas. Overall, these results highlight that while participants generally remembered the main elements of the crime, details related to time and numbers were less accurately recalled.

Discussion

The present study aimed to evaluate the accuracy and reliability of eyewitness testimony by assessing participants' recall of a short video they watched. Eight students were shown a one-minute video and, after a delay of thirty minutes, answered ten questions based on their observations. Their responses were rated on a 4-point Likert scale, where 1 indicated "very inaccurate" and 4 indicated "very accurate." As illustrated in Table 1, participants showed high accuracy, with scores over 87.5% for seven of the ten questions. These results support existing literature suggesting that eyewitnesses can recall core details accurately, though they may be prone to errors with more peripheral information. This section will discuss the findings in relation to current research, exploring cognitive processes in memory recall, the impact of suggestibility, and factors affecting the accuracy of eyewitness testimony.

The study revealed that participants recalled central details, such as the number of offenders and the weapon used, with high accuracy, achieving a perfect score of 100% on these items. This supports the theory that eyewitnesses tend to remember prominent, visually salient information more accurately, particularly when it is central to the event (Loftus & Palmer, 1974). Key aspects, like the offenders' appearance and actions, are encoded into memory more vividly and are less prone to distortion over time.

However, participants were less accurate when recalling peripheral details, such as the specific date of the crime, which only had an accuracy rate of 31.25%. This finding aligns with research by Clifford and Scott (1978), which suggests that memories of peripheral details, particularly in complex or stressful situations, are more vulnerable to inaccuracies. This indicates that participants may have focused their attention on the core actions in the video, such as the crime itself, rather than background details (Memon, Mastroberardino, & Fraser, 2008).

The study also emphasizes the reconstructive nature of memory, as described by Loftus (1979), which explains that memory is not a perfect replication but is subject to distortion. While central details were accurately recalled, the moderate accuracy observed in other questions suggests that memory reconstruction may have played a role. For example, the question on the presence of additional people (87.5%) may have been challenging due to the subtleties of the background figures.

Additionally, the way questions are phrased can impact eyewitness accuracy. Research by Loftus and Zanni (1974) shows that suggestive or leading questions can influence recall. In this study, open-ended versus closed-ended questions may have affected how accurately participants recalled details. For instance, the accuracy rate for describing the activities of the perpetrators (87.5%) suggests that question phrasing may have influenced participants'

perception and recall.

Lastly, environmental and stress-related factors are known to affect memory accuracy. Participants viewed a potentially stressful scene in the video. Research indicates that in stressful, violent events, observers tend to focus on central actions and overlook peripheral details (Clifford & Scott, 1978). Although no weapon was present, participants displayed high accuracy in recalling primary actions, which reflects a focus on central details without the distraction of additional stressors like a visible weapon.

Conclusion

In conclusion, this study demonstrates that while eyewitnesses can accurately recall central details of an event, their accuracy may diminish when recalling peripheral or complex information. These findings align with previous research on memory accuracy and suggestibility, underscoring the need for careful handling of eyewitness testimony in legal contexts. By understanding the cognitive mechanisms involved in memory recall and acknowledging factors that influence accuracy, the legal system can better assess the reliability of eyewitness evidence and reduce the risk of wrongful convictions.

Limitation

A notable limitation of this study is the small sample size (n=8), which may not adequately represent the range of memory recall abilities found in a broader population. Future research could address this by increasing the sample size and examining how various factors—such as stress levels, the delay between witnessing and recalling an event, and individual cognitive differences—affect the accuracy of eyewitness testimony. Additionally, exploring the influence of different questioning methods on memory recall could further refine interrogation techniques used in forensic settings.

Implications

The study's findings carry significant implications for the legal system, where eyewitness testimony often serves as a pivotal form of evidence. While witnesses tend to recall central details with relative accuracy, their recollection of peripheral or more complex aspects can be more susceptible to error. This study highlights the importance of employing careful questioning strategies to minimize the risk of memory distortion. The cognitive interview technique, developed by Fisher and Geiselman (1992), is particularly effective in reducing such risks by enabling witnesses to recall events freely, without interruptions or leading questions.

Educating legal professionals about the limitations of eyewitness memory and enhancing police lineup procedures can also help prevent wrongful convictions due to inaccurate testimony (Wells et al., 2006). Overall, this study reinforces the need for reforms aimed at ensuring the reliability and accuracy of eyewitness evidence within the legal system.

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Appendix

1) Where did the crime take place?
2) What date and day did the crime occur?
3) What time did the crime take place?
4) Describe the culprit's appearance.
5) How many persons were there in total?
6) What weapon did the culprits use?
7) How many culprits were there?
8) How many customers and shopkeepers were present?
9) What did the criminals bring with them?
10) What activities did the perpetrators engage in at the crime scene?