

**Basic Acknowledgement format of AI tool use.**

I confirm that I have not used any AI tools in the research and creation of this assignment. I confirm that I have not presented any AI generated materials as my own work. I confirm I have copies of my drafts, notes and other resources I used, which I may be asked to provide in evidence.

## **Introduction**

A witness's memory is an important factor in a crime investigation because they may need to remember the details of a crime or identify a suspect. Eyewitness memory should not, however, be thought of as an accurate transcript of an event that was actually witnessed. Recent cognitive science research indicates that eyewitness evidence can be susceptible to contamination, but under optimal conditions, memory can be more accurate than generally thought (Mickes et al., 2025). Eyewitness memory is a general term which refers to the encoding, storage, and later retrieval or recognition of information about an observed event. Information remembered may thus be affected by cognitive processes in each of these stages. Episodic memory is reconstructive, with recollections potentially being altered and/or distorted by information received after the event (Brassil et al., 2024).

Thus, the reliability of an eyewitness may be affected by what was witnessed as well as by how attention was directed during the event, by what information was received after the event, and by the cognitive processes used in attempting to identify a perpetrator at a later time. While there are many cognitive factors that can affect eyewitness memory, this essay critically examines three that operate at various stages in the memory process: the weapon focus effect, post event misinformation and reconstructive memory and recognition and decision-making processes during eyewitness identification. It will present arguments showing that the accuracy of the witness is influenced by the vulnerabilities of several elements of memory, rather than any single one; and will critically assess the quality, weaknesses, and application of theoretical and empirical evidence.

## **Weapon Focus and Attentional Processes**

The allocation of visual attention could be a cognitive factor affecting the encoding of an event for the witness. The attentional system has a limited capacity, such that information

that is attended and has its attentional processing resources allocated to it is more well represented, while information that is not attended is less. This is especially true of the weapon focus effect (WFE) in which a weapon distracts an eye witness from his/her memory for other elements of an event, especially the perpetrator (Fawcett et al., 2013). When paying attention to a weapon, attentional resources are therefore diverted from the face or other mental representations needed for later recall and/or identification.

There are two well-stated reasons given for the attention that weapons catch. According to the arousal/threat hypothesis, the threatening nature of a weapon will increase the emotional arousal leading to a focus of attention on the source of the threat (Fawcett et al., 2013). Thus, central threatening information can be encoded at the cost of peripheral information. The unusualness hypothesis, however, suggests that the focus of attention on weapons may be due to an unexpected or incongruous element, not just because of the threat level. These explanations were directly examined by Pickel (1998) who did so by showing participants videotaped interactions in which a target had objects of different threat and unusualness. Participants' description accuracy was affected by the unusualness of the object, but not by threat alone, suggesting that expectancy violation would be a better explanation of weapon focus than threat alone (Pickel, 1998). Critically, this counters the idea that weapons have a special ability to interfere with the recollection of an eyewitness, a non-threatening but contextually unusual object can also distract attention away from a perpetrator.

The larger hypothesis that the presence of weapons affects eyewitness memory, however, is corroborated by evidence. Fawcett et al. (2013) found an overall negative effect of weapon presence on eyewitness memory, with a larger effect on memory for the perpetrator's features than on identification accuracy. Meta-analytic evidence is useful because it is based on the synthesis of the findings of many studies and not just one experiment. The strength of weapon focus seems to greatly rely on the context of weapon encounter, however. Contextual

expectations about the perpetrator, for instance, Pickel and Sneyd (2018) found, also affected the effect, in line with the general idea that the oddity of a weapon in a specific context can shape its attention-holding power. The results suggest that weapon focus is not inevitable when viewing a weapon.

There is another challenge to the robustness of the effect from more recent evidence. In five pre-registered experiments with varying weapon types, descriptions of the perpetrator, and participants, West et al. (2025) did not observe a significant weapon focus effect for descriptions of the perpetrator or for lineup identification. The meta-analysis of these experiments also yielded nonsignificant effects. In recent eye-tracking studies, a more nuanced pattern emerges than a mere redirection of focused visual attention from perpetrators would suggest: weapons simply do not divert sustained visual attention away from perpetrators (Körner et al., 2024). The findings do not indicate that weapon focus never happens, rather they indicate that, in certain methodological and contextual conditions, weapon focus could emerge. This is a significant restriction if the results of the controlled experiments are to be extrapolated into real crime situations where witnesses are likely to feel much more threatened, stressed and emotionally engaged.

Overall, weapon focus is a clear illustration of the fact that selective attention in encoding can impact on the quality of subsequent eyewitness memory. However, evidence concerning its underlying mechanisms and reliability remains inconsistent. The novelty of the object and how it fits with the contextual expectations might sometimes be more important than threat, and the difficulties of replication in recent studies suggest that weapon presence does not reliably affect memory across all situations. Therefore, it is important to take account of one of the possible influences of a weapon when considering eyewitness evidence, but not to automatically assume that it would make an eyewitness's memory inaccurate.

## **Post-Event Misinformation and Reconstructive Memory**

Memory for events can be shaped after the event has taken place because remembering does not involve reproducing a representation of the event itself, but involves reconstruction. This includes the misinformation effect, a phenomenon that occurs when people are exposed to inaccurate information after the event and may then recall the incorrect information as if it were part of the original event (Brassil et al., 2024). This is important especially in a forensic context because the information may come from a leading question, from another witness, from media or during an investigation. That is, even accurate information can be later incorrectly reported after exposure to misleading information.

Loftus and Palmer (1974) drew attention to the impact of questioning on eyewitness accounts through some seminal studies. Participants watched videos of traffic crashes and then were presented with questions that included a variety of verbs like “hit” or “smashed” and were asked to guess the speed of the vehicles. Higher estimates of speed were obtained with more intense wording. In the second experiment, participants who were questioned using the verb “smashed” were also more likely to report seeing broken glass, despite no broken glass being present. These results suggest that information added after an event might impact subsequent reports as opposed to simply retrieval of information from the original event. But they studied traffic accidents that were recorded on camera in a laboratory setting. That the participants were not "real" witnesses to the emotional impact or uncertainty of an actual crime reduces the applicability of their responses to real witnesses.

Later studies expanded the misinformation paradigm, commonly consisting of three steps: Participants observe an event, see misleading post-event information, and then are tested about the event itself (Brassil et al., 2024). While this paradigm has successfully shown the misinformation effect a number of times, there is significant disagreement in the theoretical

literature about what it is. One idea is that inaccurate information distorts or disturbs the initial representation or impression. However, the evidence against a simple memory-alteration explanation indicates that original and misleading information might coexist. In this view, eyewitnesses may have some memory of the original event, but may also choose or report misinformation during subsequent retrieval.

The source-monitoring framework offers a cognitive explanation. Misinformation errors do not involve the memory being erased, but rather when an individual recalls a detail but gives the source wrong (Johnson et al., 1993). A witness could have a very clear memory of hearing that an offender had a specific object, but hear it described later and think that it was actually seen during the commission of the crime. Some evidence suggests that priming people to think about the source of remembered information can curb susceptibility to misinformation, supporting this explanation. Therefore, sometimes misinformation can be a failure to remember where the information came from, not a failure to remember the information.

New evidence that misinformation can be decreased challenges that assumption that if an eyewitness is exposed to misinformation, it will permanently replace their original memory. Blank and Launay's (2014) review of 25 post-warning studies revealed that the misinformation effect was cut in half following exposure to misinformation. If misinformation permanently replaced the original memory trace, a later warning would be expected to have limited ability to restore accuracy. Rather, better performance after warnings is consistent with the idea that witnesses may retain multiple sources of information and apply extra cognitive monitoring to differentiate between sources. However, warnings have proved to be ineffective at eradicating misinformation, indicating that source monitoring is not foolproof.

There has also been evidence in more recent studies that there is significant individual vulnerability. Brassil et al. (2024), in their systematic review, reported that higher levels of

cognitive functioning, especially reasoning, perception and memory, tended to be associated with lower susceptibility to misinformation, but that none of the cognitive traits were entirely protective. That makes it difficult to make the claim that misinformation at the event impacts all witnesses equally. It further proposes that susceptibility to misinformation may be influenced by processes during initial encoding, discrepancy detection following the presentation of misinformation and source memory during later retrieval.

Overall, there is ample evidence in favor of post-event misinformation that eyewitness reports can be reconstructed after an event. But to accept reports that are inaccurate as a sign that an original memory has simply been forgotten is too simplistic. There are competing theoretical accounts and evidence from source-monitoring and warning studies that sometimes original information and mistaken information may co-exist; errors may occur when witnesses get the information from different sources mixed up during retrieval. In practice, it emphasises the need for minimising suggestive questioning and unnecessary exposure to misleading information in investigations; it is possible that post-event information could colour the eyewitness's subsequent report.

### **Recognition and Decision-Making in Eyewitness Identification**

The third cognitive factor that affects eyewitness memory relates to the recognition and decision-making processes used by eyewitnesses during police lineups. The object of the eyewitness's task is to compare the face or faces in the lineup to his memory of the perpetrator and to determine if any face matches the memory of the perpetrator enough to be the correct face. Thus, identification is not a function of the ability to successfully encode and store a memory, but is also a function of the way memory evidence is retrieved. There are two competing models of this process: relative-judgement model and absolute-judgement model. Relative-judgement accounts suggest that witnesses assess the similarity between lineup photos

and their memory of the offender relative to the other images, and choose the one that matches best. Absolute-judgement models, however, suggest that witnesses will only match the best one if that person's match-to-memory is above some internal decision criterion (Smith et al., 2024).

This distinction is significant for identification errors. A relative strategy may lead a witness to select an innocent suspect when the actual perpetrator is absent from the lineup, simply because that individual most closely resembles the perpetrator. Previous studies seemed to validate this worry. For instance, Kneller et al. (2001) identified a positive relationship between absolute decision strategy and accurate identifications and line-up rejections, and a positive relationship between absolute judgement strategy and a sequential presentation of lineups. This supported the argument that sequential presentation may help to minimise misidentification by discouraging comparisons between lineup members. This reading has since been called into question. Smith et al. (2024) directly tested predictions deriving from the relative- and absolute-judgement models. In two experiments, witnesses preferred to correctly reject low-similarity, culprit-absent lineups and also correctly reject biased lineups. These findings supported absolute-judgement models and contradicted central predictions of a purely relative account. Therefore, although the process of relative comparison sometimes happens, this process could not be the main reason behind eyewitness identification decisions.

However, the presentation of a lineup can affect the conversion of the recognition evidence to a decision. Simultaneous lineups show lineup members all at once, while sequential lineups show lineup members one by one. In the past, it was assumed that sequential presentation would lead to absolute judgement and fewer false identifications. However, modern research shows that the benefits are not easy to obtain. Recent experimental research

demonstrated that simultaneous lineups were more effective at distinguishing guilty from innocent suspects than sequential presentation of suspects utilizing a "stopping rule" procedure (Seale-Carlisle et al., 2024). Thus, fewer identifications do not necessarily mean more accurate memory - it can also mean more conservative witnesses in deciding to make an identification.

Eyewitness confidence also supports the view of cognitive decision processes in identification. Historically, confidence has been considered a poor indicator of identification accuracy, however, more recent research suggests that the relationship is more nuanced. Quigley-McBride and Wells (2023) conducted experiment 1 using actual police lineups, and found that confidence and decision time were both associated with the eyewitness choice between a suspect and a known-innocent filler. Observers' perceptions of witnesses' confidence, however, may be affected by other information. This distinction is crucial as confidence recorded right after an uncontaminated identification may contain useful information about memory strength, while confidence recorded after a time may be susceptible to external influences. However, because experimental witnesses frequently experience lesser levels of emotional engagement and fewer consequences for their identification decisions than real eyewitnesses, results from controlled lineup studies may not fully generalise to actual criminal investigations.

In general, eyewitness identification shows that the accuracy of memory is influenced, in part, by the way in which information is retrieved from memory and transformed into a decision. There is now an accumulating amount of empirical evidence that suggests that the role played by absolute memory strength and decision criteria are significant. Simultaneously, the varying results in lineups indicate that changes in procedures do not necessarily lead to increased accuracy. Lineups should therefore be designed to minimise any biases; to ensure

that the decisions made by witnesses remain uncontaminated; and to prevent innocent suspects from being investigated or convicted.

## **Conclusion**

To summarize, eyewitness memory can be shaped by cognitive processes that are involved during various steps of remembering an event. The weapon focus effect illustrates the possibility of forgetting important information during encoding because of selective attention, albeit there is mixed evidence as to the effect of the weapon, which appears to be influenced by contextual factors like threat, unusualness. Post-event misinformation is another example of reconstructive memory: source monitoring errors account for the possibility of misinformation getting confused with information from the event itself. Finally, the research on eyewitness identification indicates that memory evaluation (strength) and response to variations in lineup procedures can affect recognition accuracy.

In total, the evidence indicates that eyewitness memory should not be viewed as 100% accurate or as inherently problematic. Rather, it relies on the circumstances in which information is encoded, encountered and is retrieved. The results of these studies have significant practical implications for police investigations, such as avoiding suggestive questioning, avoiding exposure to misleading information, and employing carefully constructed lineup procedures. They are also relevant to ethical issues as failure to account for these cognitive influences may increase the risk of false identification and wrongful conviction. It is therefore important to use cognitive research in investigative practice to enhance the reliability and fairness of eyewitness evidence.

## References

- APA PsycNet. (n.d.). In *psycnet.apa.org*. Retrieved August 20, 2026, from <https://psycnet.apa.org/doiLanding?doi=10.1037%2Fh0101798>
- Blank, H., & Launay, C. (2014). *How to protect eyewitness memory against the misinformation effect: A meta-analysis of post-warning studies*. *Journal of Applied Research in Memory and Cognition*.  
[https://www.jstage.jst.go.jp/article/jcss/3/1/3\\_1\\_1\\_5/\\_article/-char/en?](https://www.jstage.jst.go.jp/article/jcss/3/1/3_1_1_5/_article/-char/en?)
- Brassil, M., Cian O'Mahony, & Greene, C. M. (2024). Do cognitive abilities reduce eyewitness susceptibility to the misinformation effect? A systematic review. *Psychonomic Bulletin & Review*, 31. <https://doi.org/10.3758/s13423-024-02512-5>
- Fawcett, J. M., Russell, E. J., Peace, K. A., & Christie, J. (2013). Of guns and geese: A meta-analytic review of the 'weapon focus' literature. *Psychology, Crime & Law*, 19(1), 35–66. <https://doi.org/10.1080/1068316x.2011.599325>
- Johnson, M. K., Hashtroudi, S., & Lindsay, D. S. (1993). *Source monitoring*. *Psychological Bulletin*. <https://psycnet.apa.org/doi/10.1037/0033-2909.114.1.3>
- Kaesler, M., Dunn, J. C., & Semmler, C. (2024). Clarifying the effects of sequential item presentation in the police lineup task. *Cognition*, 250, 105840.  
<https://doi.org/10.1016/j.cognition.2024.105840>
- Kneller, W., Memon, A., & Stevenage, S. (2001). Simultaneous and sequential lineups: Decision processes of accurate and inaccurate eyewitnesses. *Applied Cognitive Psychology*, 15(6), 659–671. <https://doi.org/10.1002/acp.739>
- Körner, H. M., Faul, F., & Antje Nuthmann. (2024). Is a knife the same as a plunger? Comparing the attentional effects of weapons and non-threatening unusual objects in dynamic scenes. *Cognitive Research Principles and Implications*, 9(1).  
<https://doi.org/10.1186/s41235-024-00579-1>

- Loftus, E. F., & Palmer, J. C. (1974). Reconstruction of automobile destruction: An example of the interaction between language and memory. *Journal of Verbal Learning and Verbal Behavior*, 13(5), 585–589. [https://doi.org/10.1016/S0022-5371\(74\)80011-3](https://doi.org/10.1016/S0022-5371(74)80011-3)
- Mickes, L., Wilson, B. M., & Wixted, J. T. (2025). The cognitive science of eyewitness memory. *Trends in Cognitive Sciences*, 29(7). <https://doi.org/10.1016/j.tics.2025.01.008>
- Moore, K. N., Pennekamp, P., Yu, C., & Zwemer, D. U. (2024). Eyewitness confidence does not necessarily indicate identification accuracy. *Policy Insights from the Behavioral and Brain Sciences*, 11(2). <https://doi.org/10.1177/23727322241268384>
- Pickel, K. L. (1998). Unusualness and threat as possible causes of “weapon focus.” *Memory*, 6(3), 277–295. <https://doi.org/10.1080/741942361>
- Pickel, K. L., & Sneyd, D. E. (2017). The weapon focus effect is weaker with black versus white male perpetrators. *Memory*, 26(1), 29–41. <https://doi.org/10.1080/09658211.2017.1317814>
- Quigley-McBride, A., & Wells, G. L. (2023). Eyewitness confidence and decision time reflect identification accuracy in actual police lineups. *Law and Human Behavior*, 47(2). <https://doi.org/10.1037/lhb0000518>
- Seale-Carlisle, T. M. (2024). Improving the diagnostic value of lineup rejections. *Cognition*, 252, 105917. <https://doi.org/10.1016/j.cognition.2024.105917>
- Smith, A. M., Ying, R. C., Goldstein, A. R., & Fitzgerald, R. J. (2024). Absolute-judgment models better predict eyewitness decision-making than do relative-judgment models. *Cognition*, 251, 105877. <https://doi.org/10.1016/j.cognition.2024.105877>
- Wells, G. L. (2014). Eyewitness identification. *Current Directions in Psychological Science*, 23(1), 11–16. <https://doi.org/10.1177/0963721413504781>

West, J. T., Mulligan, N. W., & Bornstein, B. H. (2025). Four (and a half) preregistered failures to replicate the weapon focus effect in online samples. *Psychology, Public Policy, and Law*. <https://doi.org/10.1037/law0000469>

Wixted, J. T., Vul, E., Mickes, L., & Wilson, B. M. (2021). Eyewitness identification is a visual search task. *Annual Review of Vision Science*, 7(1), 519–541.  
<https://doi.org/10.1146/annurev-vision-100119-124537>