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Does Choice of Eyewitness Research Materials Influence Findings?

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by

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ABSTRACT OF THE THESIS

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The misinformation effect refers to memory distortion following exposure to inaccurate post-event information. The present study sought to take a critical look at the materials used in eyewitness memory research through the lens of this misinformation effect. One criticism of applying research on eyewitness memory to the real-world legal system is that many studies rely on pallid materials. Research on the misinformation effect usually uses a video or slideshow to expose participants to a crime. While videos provide a more realistic scenario with the moving picture, slideshows are easier to manipulate. The present study sought to explore whether these two modes of stimuli, differing in realism, produce similar effects for participants in response to post-event misinformation. Participants were randomly assigned to view the same crime via a video or slideshow, and then to be exposed to post-event information about the crime that was either misinformation or consistent information. Finally, all participants took a memory test which tested their memory for details of the crime. Results showed that participants who viewed the crime via video or slideshow did not significantly differ in susceptibility to post-event misinformation. The relationship between eyewitness confidence and accuracy was also examined. The need for more critical consideration of the stimuli used in research is discussed.

INTRODUCTION

After a crime is committed, witnesses are frequently questioned about the details of the crime. These witness interviews may happen immediately or after a short delay (perhaps a few days, or sometimes even longer). Especially when there is a delay, opportunities can arise for witnesses to be exposed to post-event information that may influence their memories. This information may come in the form of media, talking with co-witnesses, or investigators themselves. Post-event information is especially troubling when the witness is exposed to incorrect details, as this misinformation can become incorporated into a witness's memory and alter that memory. This memory distortion due to exposure to incorrect information is known as the "misinformation effect" (Zaragoza, Belli, & Payment, 2007; Frenda, Nichols, & Loftus, 2011). The misinformation effect is often used as a demonstration of the malleability of eyewitness memory.

Throughout the many years of research on the misinformation effect, the to-be-remembered event is often presented to participants in the form of a video or a slideshow. The present research seeks to investigate whether the form of stimulus presented at encoding affects subsequent memory performance, particularly in the misinformation paradigm.

CHAPTER 1: MISINFORMATION AND EYEWITNESS RESEARCH MATERIALS

The Misinformation Effect

Ample research has demonstrated the danger of the misinformation effect in eyewitness research. In one early study, Loftus (1975) showed the malleability of memory by presenting participants a video of a car speeding down the road. Then, half of the participants were asked the misleading question, "How fast was the white sports car going when it passed the barn while traveling along the country road?" and the other half were asked, "How fast was the white sports car going while traveling along the country road?" This misinformation here is the presence of the barn, as there was in fact no barn in the video. After a week retention interval, participants were asked, "Did you see a barn?" Of those asked the question containing the misinformation, 17% reported seeing a barn, while only 3% of those asked the neutral question reported seeing a barn. This study demonstrated the ease of implanting misinformation in memory. The mere suggestion of the presence of a barn in the question resulted in that information being incorporated into participants' memories. This misinformation effect has been replicated over and over, using a variety of methods to insert misinformation such as embedding misinformation in post-event narratives (Echterhoff, Groll, & Hirst, 2007), post-event questions (Forgas, Laham, & Vargas, 2005), and through discussion with co- witnesses (Jack, Zydervelt, & Zajac, 2014; Zajac, Dickson, Munn, & O'Neill, 2016).

Misinformation Study Materials

The misinformation effect is robust, having been found in a variety of contexts and with differing stimuli (for a review, see Loftus, 2005; Frenda et al., 2011). Misinformation research in the eyewitness context usually involves three steps: viewing a crime, exposure to post-event

misinformation, and then testing. When showing participants the target event, researchers commonly use videos or slideshows to depict the crime, with each stimulus having its own drawbacks (Takarangi, Parker, & Garry, 2006). Videos seem to provide a more realistic scenario, with the moving picture simulating "real time," and many researchers use this method (Loftus, 1975; Echterhoff et al., 2007; Foster, Huthwaite, Yesberg, Garry, & Loftus, 2012; Blank, Ost, Davies, Jones, Lambert, & Salmon, 2013). However, videos present difficulties in the ability for experimenters to manipulate variables of interest, such as having different versions of the event that vary exposure time or counterbalance items. To remedy this issue, some researchers use slideshows to depict the crime, allowing the researcher to have more control over these variables (McCloskey & Zaragoza, 1985; Assefi & Garry, 2003; Forgas et al., 2005; Higham, Blank, & Luna, 2017). However, while slideshows are easier to make, they provide less realism in representing real-world events.

One criticism of applying laboratory studies to the real-world legal system is that the ecology of the laboratory is often different from that of the real-world eyewitness context. Flowe, Carline, and Karoglu (2018) examined this difference, coining the term "eyewitness ecology" to refer to the environmental context in which a crime is witnessed. In reviewing laboratory studies on eyewitness identification compared to a sample of archival felony cases, Flowe and colleagues found large differences in the eyewitness ecology, such as differences in the prevalence of violence or in retention interval length. The concern presented is that many of these studies of eyewitness identification are not generalizable to the real legal context. It is possible that real world eyewitnesses may not behave the same way in response to simplified laboratory stimuli as they would in response to a crime in the real world.

This criticism has been especially directed at the use of slideshows to depict a crime. For example, Takarangi et al. (2006) portray using slideshows as an "unsatisfying" way to capture real events because a slideshow lacks the richness provided by full motion action. It is possible that real world eyewitnesses may not behave the same way in response to a slideshow as they would in response to a crime in the real world. Lending support to this notion is the work of Snow, Skiba, Coleman, and Berryhill (2014), who investigated memory for real objects in comparison to photographs and sketches of those objects. The results showed that both recall and recognition memory was better for the real objects than for both the photographs and the sketches. One possible contributing factor for these results is that the size and distance of real objects is unambiguous to the observer, while in contrast these features may be more ambiguous in a two-dimensional photograph. This study introduces the possibility that a slideshow and a video may also be encoded differently, as a video may offer more information about size and relational distance than a still slide can offer. Therefore, there may be differential memory performance, and hence more susceptibility to incorporating misinformation into memory, depending on the stimulus presented at encoding.

On the other hand, an earlier study found no difference in memory performance when a target face was encoded either through a live presentation or a static image presentation (Megreya & Burton, 2008). The purpose of this particular study was to discern memory performance for unfamiliar faces at baseline, when memory for an event is not required. In this study, participants viewed a target person either live or in a photograph, with exposure time held constant, and then immediately completed an identification procedure. The results showed that there was no difference in memory performance between the live and photograph conditions. While the findings here suggest that memory performance does not depend on the materials

presented for encoding (i.e., a live person or a photograph), the study intentionally removed many of the difficulties present in an eyewitness setting, such as a long retention interval or poor viewing conditions. Additionally, this study focused specifically on memory for faces, which may operate differently than memory for events or objects (Elbich, Molenaar, & Scherf, 2019). This study leaves uncertainty regarding whether these same null results may be found when memory performance is tested for objects rather than faces.

Confidence and Accuracy Relationship

Additionally, it is common in police procedures for the witness to be asked to report their level of confidence in their memory for various aspects of the crime. This is especially true when they try to identify the perpetrator of the crime. There is an abundance of research exploring the relationship between eyewitness confidence and eyewitness accuracy, specifically in the context of eyewitness identification (e.g., after a witness picks out the perpetrator from a lineup). In this context, there is much debate around the relationship between confidence and accuracy (hereafter, CA), but generally, in pristine circumstances, there may be a strong CA relationship (for an overview of this research, see Wells & Wixted, 2017). However, the eyewitness CA relationship is seldom explored outside the context of eyewitness identification. This leaves room for investigation of this relationship for details of the crime.

Further, there is reason to believe that the CA relationship is susceptible to changes in study materials. The optimality hypothesis, suggested by Deffenbacher in 1980, proposes that the degree of optimality of conditions during encoding, retention, and retrieval stages of memory predicts the strength of the CA relationship. This hypothesis is used to explain the widely varying CA correlation results across several studies (Sporer, Penrod, Read, & Cutler, 1995).

The varying degree of optimality in study materials may then influence the subsequent relationship between confidence and accuracy.

The Present Study

The present study seeks to investigate how the misinformation effect may vary between two modes of stimuli: videos and slideshows. This study is the first to directly compare memory performance for these two stimuli with specially created materials that hold constant the target event. A further goal was to explore the CA relationship outside of the domain of eyewitness identification, examining the strength of the relationship for memory for crime details (as opposed to human faces which had been done in past research).

If the study falls in line with the study by Snow and colleagues (2014), which found better memory performance for real objects in comparison to photographed objects, the misinformation effect should be larger for participants who viewed the slideshow rather than video. Because the video is higher in realism, it will result in better memory performance and therefore less misinformation endorsement.

There is a competing prediction, however, which postulates that the misinformation effect will be larger for participants who view the video. This prediction stems from the nature of the stimulus: a video presents more distracting information because of the moving picture, while a slideshow allows a person to scan the entire slide before moving on to the next. Therefore, there may be more attention paid toward the target items in the slideshow, making it less likely that those who view the slideshow will endorse misinformation regarding those items.

CHAPTER 2: METHODOLOGY

Participants

Participants were undergraduates at the University of California, Irvine who completed the study in exchange for course credit. Of the 280 participants who completed the study, 13 were removed for technical issues and 23 were removed for having seen the content before, leaving a final sample of 244 (78% female). The racial composition of the sample was consistent with that of the undergraduate institution, with the majority being Asian (42%), Hispanic/Latino (37%), or Caucasian (13%), and the remaining 8% identifying as another race. Participant age ranged from 18-28 with a mean age of 20.

Design and Materials

Participants were randomly assigned to one of four conditions in a 2 (Stimulus: video, slideshow) x 2 (Post-event information (PEI): misinformation, consistent information) between-subjects design.

Video and slideshow. The present study used materials from an episode of National Geographic's *Brain Games* (Season 1, Episode 3). The study used a section of this episode portraying a three-perpetrator crime occurring in a park. The video shows a man presenting card tricks to a crowd of people in a large park. The camera then scans over to a woman, the first perpetrator, yelling at a tourist to distract him. A second, male perpetrator then runs up to the victim's bag and steals his wallet. The second perpetrator hands off the wallet to a third, male perpetrator who runs off with the wallet. The first and second perpetrators then run in separate directions. The entire video lasts about 45 seconds.

A slideshow was created from the video, portraying the same events via still pictures taken from the video. Each slide was shown for approximately two seconds. The slideshow was

matched for length of time of the video. For this study, both the video and slideshow were presented without sound.

Post-event memory test. Post-event misinformation was presented through misleading questions in a post-event memory test. In the consistent information test, all questions contained information consistent with the events portrayed. In the misinformation test, two questions were manipulated to contain post-event misinformation. The two misleading questions suggested that the woman perpetrator wore a red coat, when in fact it was grey, and that the stolen item was a camera, when in fact it was a wallet. Both tests then later questioned participants on the target information (i.e., coat color and stolen item). For example, participants in the consistent information condition saw the question, "Think about the woman in the *grey* coat who was screaming at the man, what color hair did she have?", while participants in the misinformation condition saw the question, "Think about the woman in the *red* coat who was screaming at the man, what color hair did she have?" Later, all participants were asked, "What color was the coat of the woman who was screaming at the victim?"

Prior to the post-event memory test, participants were instructed to answer the questions based on what they remember seeing in the event. The memory test included 16 multiple choice questions with either two or four answer options per question. Each question was accompanied by the question, "How confident are you that your answer is correct?" with a sliding scale from 0 to 100 and 10-point increment anchors on top.

Stimuli preference questions. Participants were asked questions about their preferences for viewing the crime via slideshow or video. These questions were asked specifically about the stimulus that participants saw. For example, participants who viewed the slideshow were asked, "If I saw the event in the form of a video, I would have remembered more details" while

participants who viewed the video were asked the same question, but about slideshows. This questionnaire included seven questions. Some questions asked about how realistic, enjoyable, interesting, and clear the slideshow or video was. The other questions asked if the other form of stimulus could convey more information and if the participant would have paid more attention to and remembered more details from the other form of stimulus.

Procedure

After obtaining informed consent, participants were randomly assigned to stimulus condition, either viewing the video or the slideshow. Participants were not informed that they would be later tested on their memory to better approximate real-world scenarios where eyewitnesses are not aware that they may be questioned about the crime. After viewing either the video or slideshow, participants all performed the same filler tasks. These tasks included the Marlowe-Crowne Social Desirability scale (Crowne & Marlowe, 1960) and the Need for Cognition scale (Cacioppo & Petty, 1982). These tasks served two purposes: first, they provided consistency with the supposed purpose of the study, and, second, they provided a short retention interval between the target event and the memory test. After completing the filler tasks, participants then completed the post-event memory test. Participants were randomly assigned to receive either the misinformation test or the consistent information test. Afterwards, participants completed questions asking about their preferences for viewing the crime via slideshow or video. Participants then filled out questions collecting demographic information.

Finally, participants went through a funneled debriefing which gave them an opportunity to discuss the misinformation. The debriefing questions start with general questions about the purpose of the study (i.e., “What do you think the study was about?”), and then begin to ask about the post-event memory test (e.g., “Think back to the questions about the crime you viewed

at the beginning of the study. Did you find anything strange about those questions?"). These questions were presented with an open text box. The questions aimed to find participants who detected the misinformation. Finally, participants were fully debriefed.

CHAPTER 3: RESULTS

Misinformation Endorsement

Misinformation endorsement (ME) was coded dichotomously for each of the two target items (coat color and stolen item) based on choosing the misinformation answer (coded as misinformation endorsement) or choosing any other answer. The percent of participants in each condition who endorsed the misinformation items are presented in Figures 1a and 1b. Participants in the misinformation condition endorsed the misinformation items (i.e., red coat, camera) significantly more than participants in the consistent information condition. However, ME did not differ between participants who viewed the video and participants who viewed the slideshow.

A mixed-effects logistic regression analyzed PEI condition and stimulus condition on ME across both target questions. ME was higher for participants in the misinformation condition (60% of participants for the coat color, 45% for the stolen item) in contrast to the consistent information condition (22% for the coat color, 2% for the stolen item; OR = 10.97, 95% CI [5.35, 22.48], $p < .001$). That is, the odds of participants in the misinformation condition endorsing the misinformation items were 10.97 times more likely than participants in the consistent information condition. Stimulus condition and the interaction between PEI condition and stimulus condition were not significant (OR = 2.14, 95% CI [.97, 4.70], $p = .059$; OR = .61, 95% CI [.24, 1.58], $p = .312$, respectively). However, as seen in Figures 1a and 1b, the data do show a trend toward the video condition being associated with higher ME than the slideshow condition.

Accuracy

Accuracy was assessed by excluding the two target questions due to the presence of misinformation influencing accuracy in those questions. Overall accuracy was created through coding each memory test question for accuracy and then averaging across 13 memory test questions. One question about the color of the woman's hair was excluded from this analysis because two answers (e.g., "black" and "brown") were both chosen frequently and both answers were feasible. Average accuracy is presented in Figure 2, showing that accuracy for these items was about 60% correct and did not differ based upon which stimulus participants viewed. There was no significant difference in accuracy between stimulus conditions, t (242) = -.27, p = .79, d = -.034.

Confidence

Confidence was assessed through taking the average confidence level expressed across all of the memory test items. The first analysis excluded the target items to get a sense of the confidence level for items that were not affected by misinformation and the second analysis included the target items. As seen in Figure 3, confidence levels with and without the target items were not significantly different based on which stimulus participants viewed. There was no significant difference in average confidence level expressed for participants who viewed the slideshow in comparison to participants who viewed the video, t (240) = .26, p = .80, d = .03. In the second analysis, which included the target items, there was also no significant difference in confidence expressed between participants who saw the slideshow in contrast to those who saw the video, t (240) = .50, p = .62, d = .06. Hence, stimulus condition did not influence how confident participants are that they are remembering the event correctly.

Confidence for each target question was also assessed, parsing apart confidence by answers on each question (see Figures 4a and 4b). The coat color question showed the "signature

pattern" of the misinformation effect, with participants endorsing the misinformation item with high confidence. The stolen item question, however, did not show this same pattern, with participants who answered correctly showing higher confidence. A 2 (PEI: misinformation, consistent) x 2 (Answer: misinformation, consistent, filler) ANOVA analyzed confidence for each target item. For the coat color question, there was a significant main effect of PEI condition, F (1, 238) = 10.49, p = .0014, η^2 = .04, so that participants in the misinformation condition were significantly more confident in their answers than participants in the consistent information condition. There was also a significant main effect of answer, F (1, 238) = 4.96, p = .0077, η^2 = .04. A post-hoc Tukey test revealed that participants who chose one of the filler answers were significantly less confident (M = 37%) than participants who chose the correct answer (M = 54%, t = -3.04, p = .007) or the misinformation answer (M = 44%, t = -2.76, p = .017). The interaction was not significant. For the stolen item question, there was a significant main effect of answer, F (1, 238) = 7.68, p = .0006, η^2 = .06. A post-hoc Tukey test revealed that participants who answered correctly were significantly more confident (M = 69%) than participants who chose the misinformation item (M = 38%, t = -2.51, p = .034) or the filler item (M = 39%, t = -3.16, p = .005). Neither the main effect for PEI condition nor the interaction was significant.

Confidence and Accuracy (CA) Relationship

Overall CA relationship. To assess the relationship between confidence and accuracy, overall confidence was created by averaging confidence across each question in the memory test. Using this new overall confidence variable and the previously explained overall accuracy variable, we conducted a Pearson correlation between confidence and accuracy. There was a moderate, positive correlation between confidence and accuracy, which was significant, r = .416, p < .001. Another Pearson correlation was conducted, this time including the two target items.

Again, there was a moderate, positive, significant correlation between confidence and accuracy with the target items, $r = .398$, $p < .001$. Both with and without the target items, high confidence tends to predict accuracy, while low confidence tends to predict inaccuracy. This CA relationship for crime details is comparatively similar in magnitude to those reported the eyewitness identification literature (see Wixted & Wells, 2017).

Target items. Accuracy on the target questions was coded dichotomously so answers were either accuracy or inaccurate. To assess whether confidence is a predictor of accuracy in the present study, the CA relationship was assessed two different ways. First, point-biserial correlations were conducted on the target items to assess the CA relationship for crime details similarly to how it is commonly assessed in the eyewitness identification literature. Second, a mixed-effects logistic regression was conducted to account for the overall model and to assess the PEI conditions and stimulus conditions in their interactions with confidence as a predictor of accuracy.

Point-biserial correlations for each target item, broken down first by PEI condition and then by stimulus condition are presented in Table 1. Overall, there was a moderate, positive, significant correlation between eyewitness confidence and accuracy on each target item. This correlation tended to erode for participants who were exposed to misinformation. Stimulus condition did not seem to impact the CA correlation systematically.

The mixed-effects logistic regression – analyzing confidence, stimulus condition, PEI condition, and respective interactions on accuracy – showed the same pattern of results as the point-biserial correlations. Confidence was a significant predictor of accuracy (OR = 1.03, 95% CI [1.01, 1.04], $p < .001$. That is, for every one percent increase in confidence on the target items, participants are 1.03 times more likely to be accurate, regardless of PEI and stimulus

condition membership. The interaction of PEI condition and confidence was also a significant predictor of accuracy (OR = .98, 95% CI [.96, 1.0], p = .046). That is, for participants in the misinformation condition, for every one percent increase in confidence, they were .98 times more likely to be accurate. In other words, when the misinformation condition is considered, there were smaller odds of being accurate as confidence increases. This is in line with the point biserial correlations that show a moderate CA correlation in the consistent information condition but a weak, non-significant CA correlation in the misinformation condition. Stimulus condition and all other interactions were non-significant.

Detection

Previous studies examining the misinformation effect distinguish between those who detect the misinformation ("detectors") compared to those who do not detect the misinformation ("non-detectors"). The current study gave participants the opportunity to retrospectively detect during the funneled debriefing. The funneled debriefing first gave participants opportunity to disclose that they detected the misinformation without prompting. At this first level, three participants were coded as detectors. The next level prompted participants to think specifically about the memory test. Nine participants were coded as detectors at this level.

Finally, we told participants the true purpose of the study and asked participants whether they thought they received misinformation or consistent information. Here, 53.69% of participants thought they had received consistent information and 46.31% thought they had received misinformation. Of the participants who did receive misinformation, 58.62% correctly responded that they had received misinformation, which is slightly above chance level of guessing. Of the participants who received consistent information, 64.84% correctly responded

that they had received consistent information. While many participants accurately guessed that the study was about memory, very few people were aware of the presence of misinformation.

CHAPTER 4: DISCUSSION AND CONCLUSIONS

The present study sought to determine whether the stimulus used to expose participants to a crime influences subsequent memory for the crime. While two competing hypotheses were presented, one that suggested that memory for the video would be *better* and one that suggested that memory for the video would be *worse*, neither hypothesis was supported. Participants who viewed the video did not significantly differ from participants who viewed the slideshow in overall memory performance. Participants who saw the slideshow reported remembering misinformation at a similar rate to participants who saw the video. Further, participants who viewed the video and slideshow did not significantly differ in how accurately they remembered other crime details besides the target misinformation items. Moreover, participants in either stimulus condition did not significantly differ in the confidence levels they expressed. Finally, the CA relationship was not impacted by stimulus condition. Together, these results suggest that the two stimuli used do not impact participants' memories for the crime.

Based on the results from Snow and colleagues (2014), one hypothesis posited that memory performance would be better for participants who viewed a video compared to a slideshow. This rests on the comparative realism present in a video compared to a slideshow – the moving picture of the video allows one to see relative size, position, and distance similar to how one would see these features in real life. In contrast, the still pictures of a slideshow lack these informative features. The data presented in the current study do not follow the same pattern as those from Snow et al. (2014), though, suggesting that comparing a video to a slideshow operates differently than comparing a real object to a photograph of an object. Perhaps because both the video and slideshow were viewed on a computer screen, they both lacked the informative features that are present in real life. Therefore, it is possible that a live event may

offer this additional information, and therefore differ from the video and slideshow in a pattern similar to that found in comparing real objects to photographs and sketches of those objects. Future research should explore this question.

The research presented does, however, support the findings of Megreya and Burton (2008), which showed that memory performance for faces did not differ when the face was shown live compared to when the face was shown in a static image. While the present study examined memory for objects, not faces, the findings taken together suggest that mode of presentation may not impact memory performance. Megreya and Burton do acknowledge that they create an ideal circumstance for identification performance in an attempt to establish baseline performance through the removal of a retention interval in their study. The present study, however, does include a retention interval between viewing and testing, and still did not find a difference due to stimulus condition.

The present study also found a moderate CA relationship for items that were consistent with the event, but also found that this relationship eroded in the presence of misinformation. This finding is in line with previous work demonstrating that misinformation erodes the CA relationship (Loftus, Donders, & Hoffman, 1989). This effect typically occurs because those who endorse misinformation report high confidence for inaccurate answers, which is known as the "signature pattern" of the misinformation effect (Higham, Blank, & Luna, 2017). In the present study, this signature pattern emerged for the coat color question but not significantly for the stolen item question. For the coat color question, participants who were given misinformation were significantly more confident in their answers than participants given consistent information, regardless of which answer they chose. The pattern was not consistent for the stolen item

question, though, showing that participants who answered correctly that a wallet was stolen were significantly more confident than participants who answered incorrectly.

This difference may be due to the centrality of the stolen item to the plot of the event, in comparison to the color of the coat. Because there were three perpetrators and one victim amongst a variety of bystanders, the color of clothing items may not be as distinct in participants' memories. However, only one item was stolen, and the item being stolen was a central part of the event. Therefore, it was harder to mislead participants about this item. In fact, this is demonstrated by the difference in misinformation endorsement between the items. As seen in Figures 1a and 1b, at least some participants in each condition chose the misinformation item for the coat color question. In contrast, only 2% of participants in the consistent information condition endorsed the misinformation for the stolen item question.

While previous studies on the misinformation effect have examined detectors compared to non-detectors, the present study did not find enough detectors at the first level of detection to accurately examine this distinction. When prompted to guess whether they received misinformation or consistent information, participants were only slightly above chance at guessing that they received misinformation. Clearly, while many participants accurately guessed that the study was about memory, very few people were aware of the presence of misinformation.

Limitations and Future Directions

One limitation to this study is that it uses participants who receive consistent information as the control group, rather than participants who receive no information. The typical misinformation paradigm gives participants in the control group no information (Tousignant, Hall, & Loftus, 1986). This discrepancy between a "consistent information" control group and a

"no information" control group is important because we can therefore not distinguish whether memory is impaired by the misinformation or improved by the consistent information. Previous research has shown that both processes occur (Chan, Thomas, & Bulevich, 2009; Loftus, Miller, & Burns, 1978). However, the focus of the present study is to compare across stimulus conditions, for which the contrast between misinformation and consistent information is held constant. Thus, the comparison in the magnitude of misinformation endorsement between the slideshow and video conditions is the key result, rather than the comparison of misinformation to consistent information. In verification of the results found, the present study found a rate of misinformation endorsement comparable to that of previous misinformation studies (Blank & Launay, 2014; Loftus, 2005).

Further, in previous studies, the rate of misinformation endorsement was not significantly different between consistent information and no information conditions; rather, the rate of *correct* answers differ between these conditions. Moreover, the differences between these conditions occur particularly when participants are questioned after a delay (Loftus et al., 1978). Because the current study occurred within a short period of time (approximately 30 minutes), this issue is still present but less concerning. While these findings suggest that the distinction between a consistent information control group and a no information control group do not impair the results in the current study, future research should examine this issue in the present context.

Another limitation of the present study is that it only compares two materials which are both computer-based. While a video, as compared to a slideshow, better approximates a real-world scenario because of the moving picture, participants are still viewing the event on a computer screen rather than in the real world. Future directions of this study include comparing these computer-based stimuli to a live simulated crime. This distinction is important because it

will allow the comparison of a real-world, three-dimensional experience of the crime as compared to these two-dimensional versions.

Conclusion

This study is of the first to directly compare the misinformation paradigm across research materials used to show participants the target event. The use of pallid materials, such as slideshows, in eyewitness research is often criticized in its lack of realism and applicability to the real-world eyewitness scenario. The present study compared the use of a slideshow to the use of a video – a more realistic representation of real-world processes.

The present study showed that misinformation endorsement, overall accuracy, overall confidence, and the CA relationship did not significantly differ depending on which stimulus participants viewed. The results presented provide support for the large body of research that has relied on slideshows to demonstrate the misinformation effect, suggesting that the results of these previous studies are not biased by the materials used.

Because the purpose of many eyewitness studies is to capture a real-world phenomenon, the choice of ecologically valid materials is vital. The current study is a step toward systematic investigation of the influence of materials used in eyewitness research. There are many important future directions to extend the research presented. Of these, the comparison of these computer-based stimuli to a live, in-person simulated event is critical to fully address the discussed criticism of many eyewitness studies. Further, with advents like virtual reality goggles, the possibilities for feasible yet ecologically valid research become more attainable, and future research should explore these avenues.

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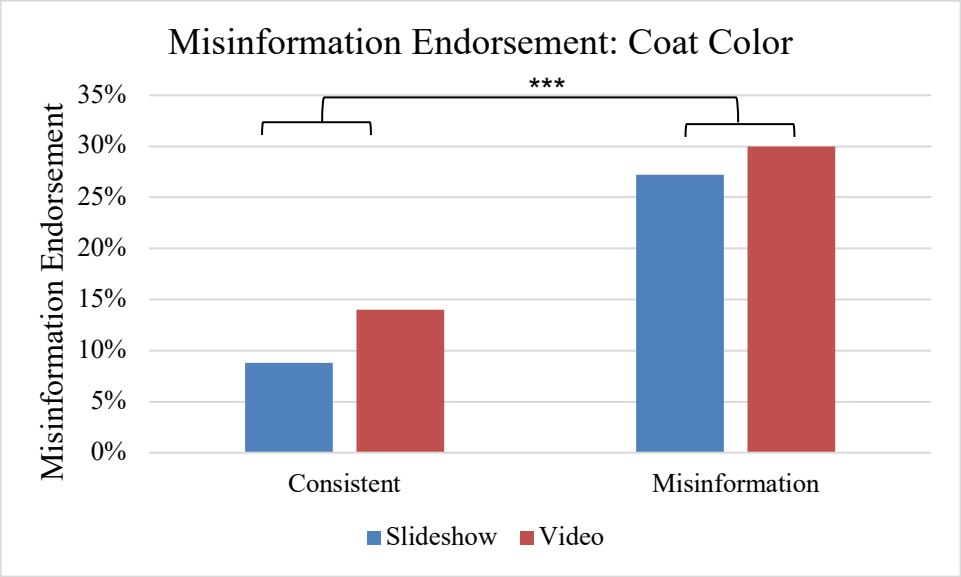

Figure 1a. Percent of participants who endorsed the misinformation item "Red Coat," broken down by PEI condition and stimulus condition.

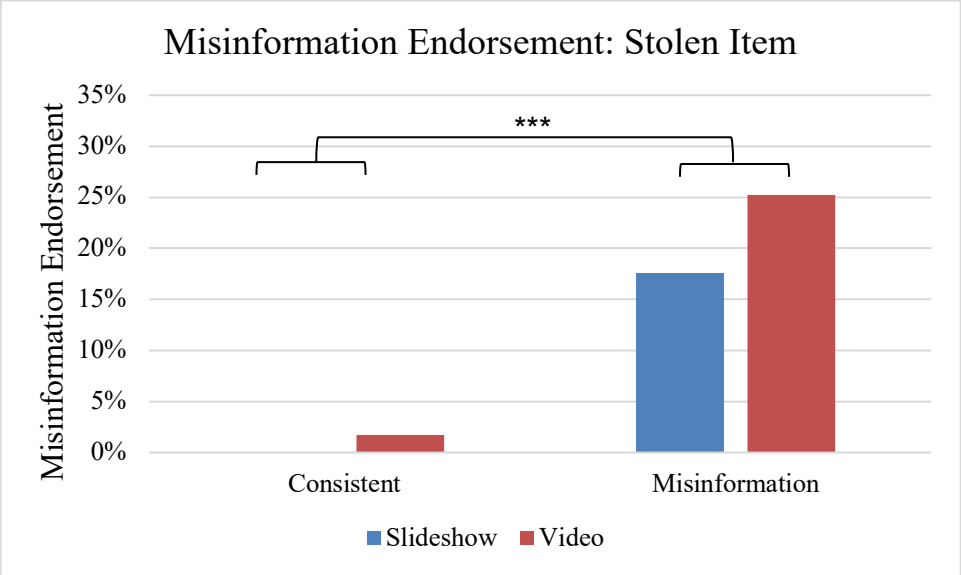

Figure 1b. Percent of participants who endorsed the misinformation item "Camera," broken down by PEI condition and stimulus condition.

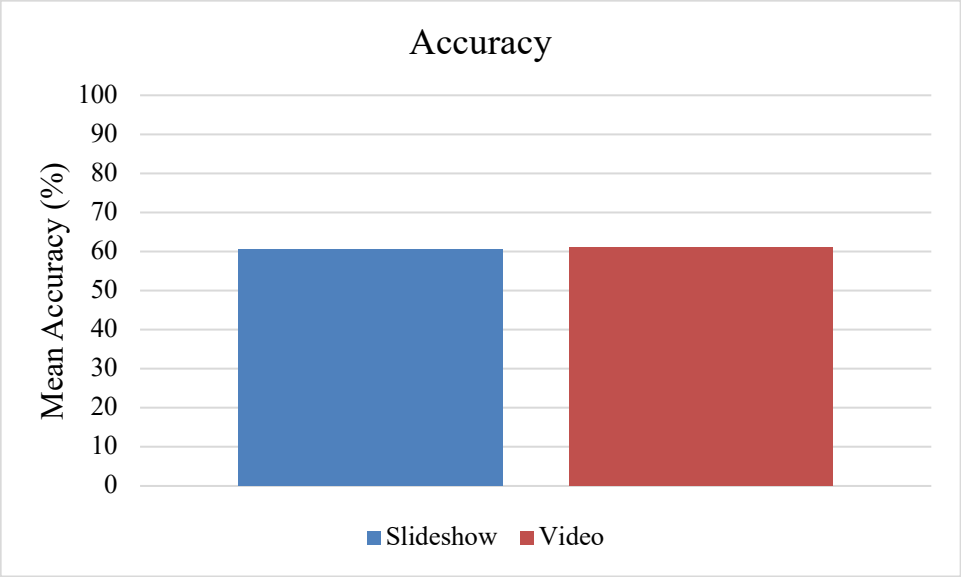

Figure 2. Average accuracy across the memory test, excluding the two target questions.

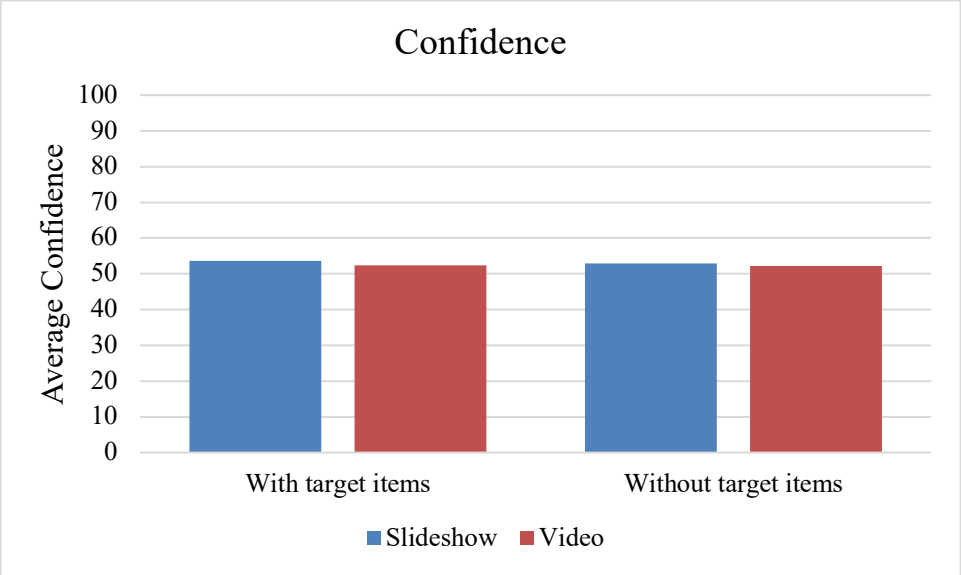

Figure 3. Average confidence for answers on the memory test, shown with the target (PEI) items and without the target items.

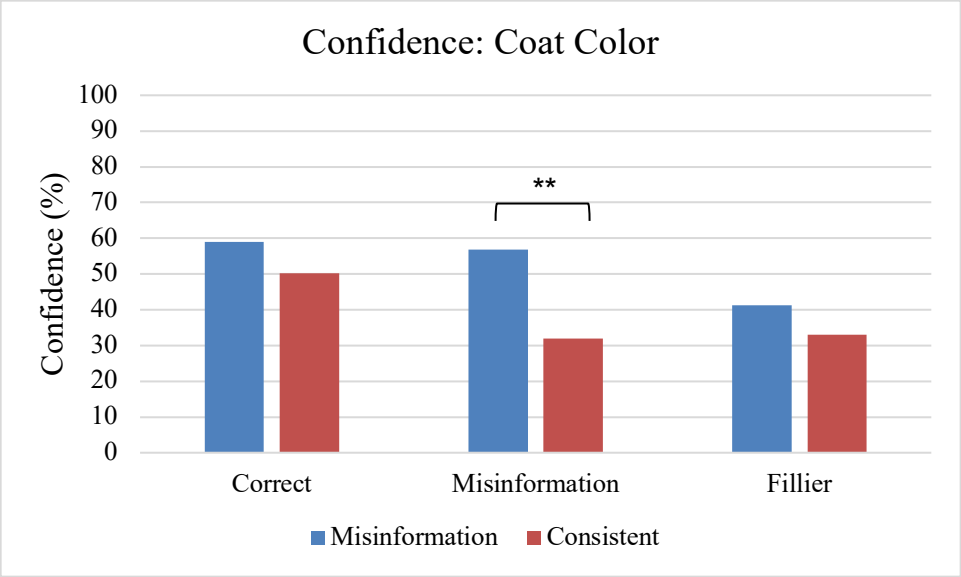

Figure 4a. Confidence for the coat color question broken down by the answer on the question and PEI condition. Confidence levels marked with ** are significant at the .01 alpha level.

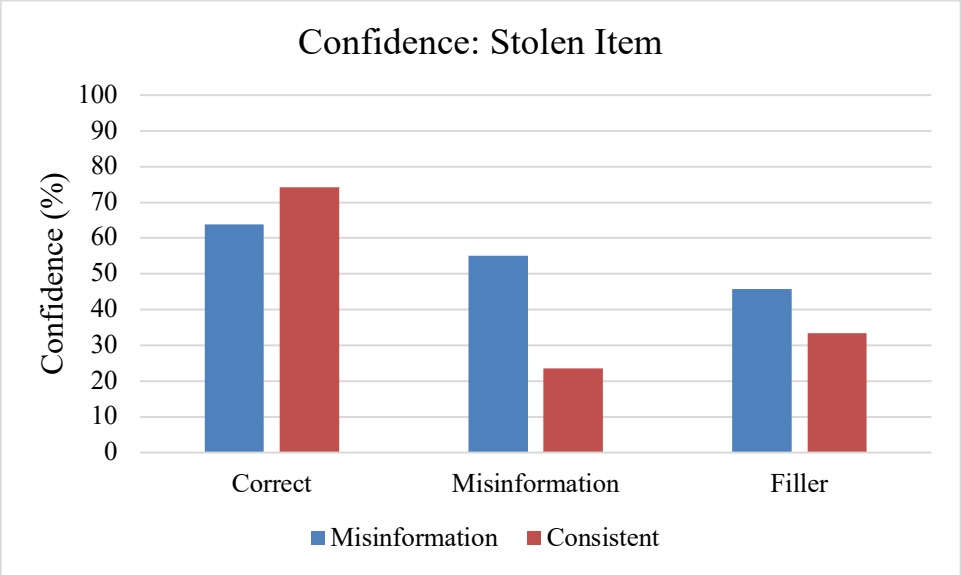

Figure 4b. Confidence for the stolen item question broken down by the answer on the question and PEI condition.

Table 1

Point-biserial Correlations Between Confidence and Accuracy on Each Target Item

	Target Items	
	Coat Color	Stolen Item
PEI Condition		
Misinformation	.0741	.1483
Consistent Information	.2927***	.3493***
Stimulus Condition		
Slideshow	.0233	.2748**
Video	.2036*	.2433**

Note. Correlations marked with *, **, or *** are significant at the .05, .01 or .001 alpha level, respectively.