



Honors College Theses

4-1-2022

Further Investigating Suggestibility and False Memory

Angelina M. Blanchette
Georgia Southern University

Follow this and additional works at: <https://digitalcommons.georgiasouthern.edu/honors-theses>



Part of the [Cognition and Perception Commons](#)

Recommended Citation

Blanchette, Angelina M., "Further Investigating Suggestibility and False Memory" (2022). *Honors College Theses*. 689.

<https://digitalcommons.georgiasouthern.edu/honors-theses/689>

This thesis (open access) is brought to you for free and open access by Digital Commons@Georgia Southern. It has been accepted for inclusion in Honors College Theses by an authorized administrator of Digital Commons@Georgia Southern. For more information, please contact digitalcommons@georgiasouthern.edu.

Further Investigating Suggestibility and False Memory

An honors thesis submitted in partial fulfillment of the requirements for Honors in Psychology.

By
Angelina Blanchette

Under the mentorship of Dr. Lawrence Locker

ABSTRACT

This study investigated suggestibility in the context of effects of misinformation on memory. In the current study, participants viewed a video followed by comprehension questions followed by two sets of true/false questions and then the same set of comprehension questions including information in the true/false questions that was inconsistent with the video and comprehension questions negatively affected memory compared to the control condition. These findings are discussed in terms of theories relating to how misinformation affects memory.

Key Words: False Memory; Suggestibility; Coexistence Hypothesis; Misinformation

Thesis Mentor: _____

Dr. Lawrence Locker

Honors Director: _____

Dr. Steven Engel

April 2022
Psychology
Honors College
Georgia Southern University

Acknowledgements

I want to take the time to thank my mentor, Dr. Lawrence Locker; my honors advisor, Dr. Erin Martin; the honors director, Dr. Steven Engel; and the associate dean of the Honors College, Dr. Francis Desiderio for taking the time and energy to assist me in all areas of school as well as this thesis. Your guidance, care, assistance, and experience were extremely helpful in my quest to graduate as well as complete this requirement. It was a long road, and we walked it together. I cannot express my gratitude enough.

I also wish to thank my mom, Heather Blanchette; my dad, Brian Blanchette; my brother, Corbin Blanchette; my significant other, Chandler Lott; and all of my friends and other family members not mentioned. They helped me a lot throughout this journey, and I cannot express my love and appreciation for them in words that will fit this paper (it would quite honestly be longer than the paper). They constantly make sure that I strive for success in whatever I do and were extremely supportive.

Further Investigating Suggestibility and False Memory

False or altered memory due to misinformation is a critical area of study, as this has implications for the accuracy of eyewitness testimony due to leading questions (e.g., Loftus & Palmer, 1974; Zaragoza & Learned, 2009) and indeed the influence of misleading information on memory has been studied extensively (e.g., Loftus & Palmer, 1974; Christiansen & Ochalek, 1983). This topic has been in debate for years spurring from the earliest that is cited here, 1974, to the present. Loftus and Palmer (1974), for example, investigated leading questions and memory, conducted a study that involved participants watching videos of car accidents. Participants were then asked questions, with differing language, about estimating how fast the vehicles were traveling. That is, participants were asked the speed at which cars were going when they *hit* one another, whereas others were asked the same question but with the words *smashed*, *collided*, *bumped*, or *contacted*. Estimates of speed were significantly influenced by the verb used in the question, rather than the actual speed presented in the video (e.g., the use of the word *smashed* was associated with higher speed estimates). This indicates the aforementioned leading questions. The participants associated the speed with a verb that they heard. A second experiment presented participants with a video of a car accident. One group was not asked about the speed of the vehicles whereas the second group was asked about the speed using the word *smashed* as in the first experiment and a third asked using the word *hit*. Participants were asked to estimate the speed of the vehicles as well as answer questions about the video. The results revealed that the group that received the word *smashed* estimated higher speeds. Furthermore, in response to a critical question about the video concerning whether or not there was broken glass, the group who

received the question with the word *smashed* was more likely to say yes than the other two groups (Loftus & Palmer, 1974). They suggested that over a period of time, the memory for the original video and information after the video would be integrated in memory. The consequence is that one would be unable to distinguish the source of the information and that as a consequence of a word such as *smash*, the memory would be of a more severe accident (source confusion).

Greene et al. (1982) conducted a series of experiments in order to further assess the effects of a warning when presented with misinformation. In the first experiment, they presented several slides to participants that depicted someone's wallet being stolen. Following the slides, participants were shown one of two narratives containing either inconsistent information about the slides or consistent information. Participants were told that the narratives were the work of police cadets composed as part of their training. Participants were also warned or not warned that inaccurate information may have been presented in the narratives. The warning was provided prior to viewing the slides, prior to the presentation of the narrative, or prior to a final memory test. In terms of memory performance, there was a marginal statistical trend such that a warning prior to the narrative was related to some improvement in memory if misinformation had been presented. However, if consistent information was presented, a warning diminished performance when compared to not having a warning. The second study was a replication except that the narratives included either inconsistent information or were neutral (i.e., did not refer to critical details at all). Their results revealed that warnings did improve performance compared to no warnings, but, even with a warning, accuracy was lower than participants who were not presented with inconsistent information. In the third

study, the purpose was to determine whether or not a post-event warning, in different time increments, would reduce the sensitivity of the participants to misinformation. The goal was to determine if participants would take the time to recall the events in their minds before the information was presented and be more resistant to misinformation if the participants were provided a warning followed by a time interval rather than immediately prior to the misinformation. Participants were given either five minutes or one minute prior to the intervening information following the slides. In terms of memory accuracy, this experiment showed no effect of the warning placement. In a fourth experiment, the goal was to determine if participants would use the warning as a good chance to recall or rehearse the information mentally. Participants were either warned or not that inconsistent information may be presented following the slides. After a five-minute interval, all participants were presented with a memory test rather than being presented any following information. The warning did not affect accuracy for the information. Greene et al. (1982) concluded that memory is distorted or altered by misinformation, and their results revealed only moderate benefits of a warning and suggested that more specific warnings (i.e., a warning indicating something about a particular detail such as the color of something in the slides) rather than the more general warning about inconsistent information may have been needed to yield a clearer effect of warnings. The warning did seem to make the participants less susceptible to inconsistent information to a degree, but this was not consistent across their experiments.

Christiaansen and Ochalek (1983) conducted a study to further assess how memory was affected by misinformation. That is, the extent to which memory for an event prior to misinformation is preserved with memory for following inconsistent

information (i.e., the coexistence hypothesis) versus the extent to which memory for an event is altered by the new information (i.e., the alteration hypothesis). They conducted an experiment in which participants were shown a short slide presentation of someone shoplifting from a store. After watching the slides, they were given accuracy tests, and after about 48 hours, they were given more testing materials in order to test their memory and accuracy as well as a narrative of the slides they viewed the prior day. One of the groups was given a warning after reading the narrative. The narrative contained either inconsistent information about critical details or was neutral. On the second day, as part of the process, for the groups that received the narratives with inconsistent information, a warning was provided for two of the groups either shortly after reading the narrative or just prior to a final memory assessment. Their results revealed that accuracy was lower overall for participants that received misleading information compared to neutral information. However, warnings did improve performance compared to no warnings for those that received misinformation within those that received it just before the final test being similar in accuracy to the neutral group. This result supported the coexistence hypothesis in that participants were able to access the correct information in memory if *sufficiently* warned about misinformation. This was one difference from the Greene et al. (1982) study. They felt that there was not a sufficient enough warning. This study made up for that inconsistency. For the second experiment, they replicated the first experiment with completely different materials. The major difference was a repetition of the warning for the group that received an initial warning shortly after the narrative, and a group that received a narrative with consistent information regarding key details, but also received a warning. The primary analysis revealed similar results to that of the first experiment, but

that the two groups receiving the warning were similar to the neutral group in this case, superior in the group that received no warning. Christiaansen and Ochalek (1983) provided evidence in favor of the notion that memory for an event and memory for misinformation can co-exist in memory in that a warning did allow for improved performance compared to no warning. The authors argued that, in their study, warnings may have been more effective than in previous studies as the warning was more or less ambiguous and therefore the nature of the warning may be an important factor. The authors also noted that the effects of their warnings were more evident based on analysis of accuracy for details for which participants were initially correct on the first day. Analysis of overall accuracy provided less support for the effect of the warning.

Further evidence for the ability of information following an event to influence memory of an earlier event was provided in a study by Loftus and Hoffman (1989). Loftus and Hoffman presented a vignette of an upstanding citizen named Mike. Mike witnessed a robbery and remembered several, if not all, details of this robbery. When the robber left, he grabbed a calculator and a hammer, but when Mike spoke to someone else in the store, she had seen the robber grab a screwdriver. When the police questioned Mike, they asked if the robber grabbed a hammer or a screwdriver. Mike said a screwdriver. The purpose of this vignette is to show that new information presented can alter how someone perceives their own memory, and to illustrate to the readers an example of memory failure for an important scenario. Loftus and Hoffman (1989) proposed three possibilities of this possible failure: misinformation acceptance; where the person who has received the misinformation does not sufficiently question that new information, impairment; which refers to clouded memories or weakened memory in

which a traumatic event allows for forgetfulness; and guessing. Misinformation acceptance played a larger role in the study presented. Mike saw the robber grab a hammer, but, when told something else, he now believes that the robber grabbed a screwdriver. He knows that the robber grabbed the hammer but was also told that he grabbed the screwdriver. Both pieces of information reside in his memory, but the recency of the information could have an effect on his responses.

Further evidence for the influence of misinformation effects on memory was shown by Zaragoza and Learned (2009). The purpose of the Zaragoza and Learned's (2009) study was to determine if false memories were affected by emotional consequences. The participants were shown a short video followed by a retention interval of thirty minutes. Different groups received different emotional consequences based on the videos they were shown. Some were shown a video of campers that encountered a snake on a boat in the middle of the lake while some were shown a video of a fight that broke out between campers, and someone was injured as they fell to the ground. In order to add these consequences to the retelling of the films, there was leading information that described the emotions of a character in the film the participants viewed (i.e., embarrassed, frightened, pained). Zaragoza and Learned (2009) then added false information to a retelling of the video. The results revealed that memories were more likely to be misattributed to the leading information provided by the researchers while adding this emotional consequence. That is, participants are hearing or reading a retelling of something they had just witnessed, and they are more likely to misattribute the new information as being from the original video or memory. With the addition of the emotional consequences on this area though, they found that repeated exposure to the

emotional stimuli in the video did in fact have an effect on whether the misleading information was remembered or not. It also led to a greater likelihood of memory error in whether participants remembered the false information and actually believed they saw it in the original video. They attributed personal feelings to the characters presented in the video (i.e., the embarrassment felt by a character is relatable to something that participant may have encountered in their past). They labeled this type of “confusion” source misattribution. This is defined by the authors as mixing true memory with that of information after the fact (Zaragoza & Learned, 2009). Lindsay (1993) also interpreted the misinformation effect in terms of source confusion. That is, people tend to remember more recent information rather than what they have seen already. Specifically, Lindsay’s research revealed that many eyewitness accounts are influenced by the new information they have encountered.

Hupbach et al. (2009) created a new paradigm in order to test misinformation acceptance in which participants are shown a set of different objects (e.g., balloon, bow, calculator, toy car, etc.). The control group is reminded of these objects 48 hours later, while the experimental group is not. They are then shown another set of objects that differ from the original objects (e.g., apple, battery, book, etc.), and after another 48-hour period, they are asked to recall either the first or second set of objects. They found that the participants that were reminded of the first set were better at recalling the first set. Hupbach et al. (2009) also found that the participants utilized memory updating which refers to a change in memory. According to the authors, this effect is when a new, more recent, memory introduced collides with a similar existing memory and the prior memory is altered to match this new one. Since the second set of objects was shown or given to

the participants at a closer time to the recollection step, those objects influenced the recollection of the first set of objects.

A recent study specifically examined suggestibility in relation to memory change. Mastroberardino and Marucci (2013) created a study utilizing the Gudjonsson Suggestibility Scale version two (GSS2). They were specifically interested in whether responses on this scale reflected compliance, (i.e., how easily one will submit to coercion), or interrogative suggestibility, which they defined as altered memory due to the internalization of leading information. The participants were asked to listen to a narrative of approximately two minutes in length and then recall the narrative to the best of their ability. They were then asked to wait for 50 minutes as a retention interval before recalling the narrative a second time. They were then given a 20-question quiz with 15 leading questions containing information that did not coincide with the narrative. After being told that some of their answers were incorrect, they took the quiz a final time. Finally, they were asked to complete a questionnaire containing information presented in the study and participants were asked to identify the source of the information (e.g., indicate information was from the narrative or the questions). A second experiment was conducted that was the same as the first except that there were two groups that either recalled the narrative immediately as in Experiment One, or after a 24-hour delay. The experimenters concluded that although responding in their study was attributable to mostly compliance, there results could also be accounted for to some extent by responding based on internalization of information (i.e., reflecting memory change).

The Current Study

Pino (2015), in a recent review of the literature, Pino discussed the notion of *suggestibility* in the context of interrogations and interrogative suggestibility, which refers to one being asked questions multiple times in a forceful manner to obtain an answer that the interrogator wishes to hear, which is widely used and also known as leading questioning. Pino also noted that suggestibility can be a function of an interrogative influence or suggestibility that arises incidentally. The present study will focus primarily on the latter. That is, primarily passive rather than interrogative suggestibility. In the world today, people potentially encounter misinformation from a number of sources. Although the advent of the internet has made information easy and quickly available to anyone with internet access, this has also increased the exposure to sources of incorrect or deliberate misinformation. Several people check the news daily as well. That, in and of itself, might be viewed as a form of passive suggestibility if there is exposure to misinformation that conflicts with accurate information and memory, or perception of accurate information is altered. Anderson and Rainie (2017) conducted several surveys regarding misinformation and the internet. They found, for example, a high percentage of people (i.e., 64%) believe that misinformation in news causes considerable confusion.

The purpose of the current study is to further investigate the relationship between suggestibility and memory to further test the influence of misinformation on memory and the coexistence hypothesis. The methodology in the current study was derived from the methodology utilized by Mastroberardino and Marucci (2013). That is, an event will be presented (a video) and participants will be asked to answer questions about the event.

Following the event, participants will be asked to answer seven comprehension questions pertaining to the video, then two sets of 20 true/false questions that either contain contradictory information (are leading or contain misinformation and are therefore incidentally suggestive) or are neutral in regard to the comprehension questions.

Following this, participants will be asked to again answer the comprehension questions presented earlier. Furthermore, two groups will also be presented instructions reminding them that errors can occur when responding in order to passively prime or prompt them to consider the possibility of making errors after the first set of true/false questions., whereas the control group will only receive instructions to answer as accurately as possible. Finally, similar to previous research that has assessed the coexistence hypothesis (e.g., Greene et al., 1982; Christiaansen & Ochalek, 1983) one group of participants will, prior to the final set of comprehension questions, be informed that contradictory information may have been presented. If intervening information as a form of suggestibility is contradictory to a prior event and has an effect on responding, then performance on the comprehension questions presented at the end of the study should be poorer than performance on the questions immediately following the video. If suggestibility in terms of the prompt in the instructions has an influence on responding, we predict that this would be reflected in differences in responding between the first set and second set of true/false questions. That is, if the prompt leads participants to question responses, they may change their answers from the first set to the second set of true/false questions. Finally, if participants' memory is not altered, but rather the memory of the original memory is preserved, we would expect that the group that is informed that

contradictory information may have been presented would perform similar to the control and better than the group that was not informed.

Method

Participants

Participants were recruited from undergraduate psychology courses from Georgia Southern University for this study and were 18 years of age or older ($N = 150$, $M = 19.58$, $SD = 3.11$). Participants were recruited using the SONA registration website, and the experiment was conducted utilizing the Qualtrics platform. Participants received course credit for participation. Of the 150 participants, 115 were women and 35 were men; 88 were European, 35 were African American, 14 were Hispanic, 2 were Asian, 1 Native Hawaiian/Pacific Islander, and 7 indicated two or more races and 3 preferred not to specify or indicated other or did not want to specify. There were no restrictions on participation except that the participants had to be 18 years of age or older. The study received approval from the Georgia Southern University institutional review board.

Materials

The current study utilized a YouTube video concerning 15 facts about rabbits. Seven multiple choice questions were created concerning seven facts presented in the video (See Appendix A). Two sets of 20 True/False questions were created based on the video (See Appendices B & C). Experimental questions were fifteen false and five true such that the majority of questions contradicted the video and the comprehension questions. The control true/false questions were composed of fifteen true questions and five false questions such that the majority of questions did not contradict the video. This set of questions was neutral in regard to the comprehension questions in that none of the

control true/false questions were related to the seven facts referred to in the comprehension questions.

Procedure

All stimuli were presented on the Qualtrics platform and participants utilized their electronic devices such as computer, personal laptops, personal cellular device, or personal tablet device to complete the study. Participants were presented a short video concerning 15 facts about rabbits. Following the video all participants answered seven comprehension questions about the video (see Appendix A). Following the comprehension questions, there was a one-minute retention interval. Participants were then randomly assigned to a control, experimental or experimental-informed condition. The two experimental groups then received 20 true/false questions, 15 of which are leading questions in that they were “false” answers and contained information contradictory to the seven comprehension questions and other facts present in the video (see Appendix B). The control group received 20 true/false questions, 15 of which were consistent with the video, but neutral in regard to the comprehension questions (i.e., no questions were related to the facts tested in the comprehension questions; See Appendix C). Following the 20 true/false questions there was a 2-minute retention interval followed by the 20 true/false questions randomized to a different order. The control group received instructions prior to the second set of questions to answer as accurately as possible. The two experimental groups received instructions asking them to answer as accurately as possible, but also reminding them of errors or possible errors when answering from memory. The instruction served as a cue to prime the idea of being inaccurate (See Appendix D for group instructions). Following the second set of true/false questions, all

participants received the seven comprehension questions randomized to a different order. The control and experimental groups were presented instructions to answer the questions as accurately as possible. The experimental-informed group received instructions that indicated that the true/false questions contained information contradictory to the video and to answer as accurately as possible based on their memory of the initial video (See Appendix D). Following the comprehension questions, participants were asked to complete demographic questions (See Appendix E) and then exited the survey.

Results

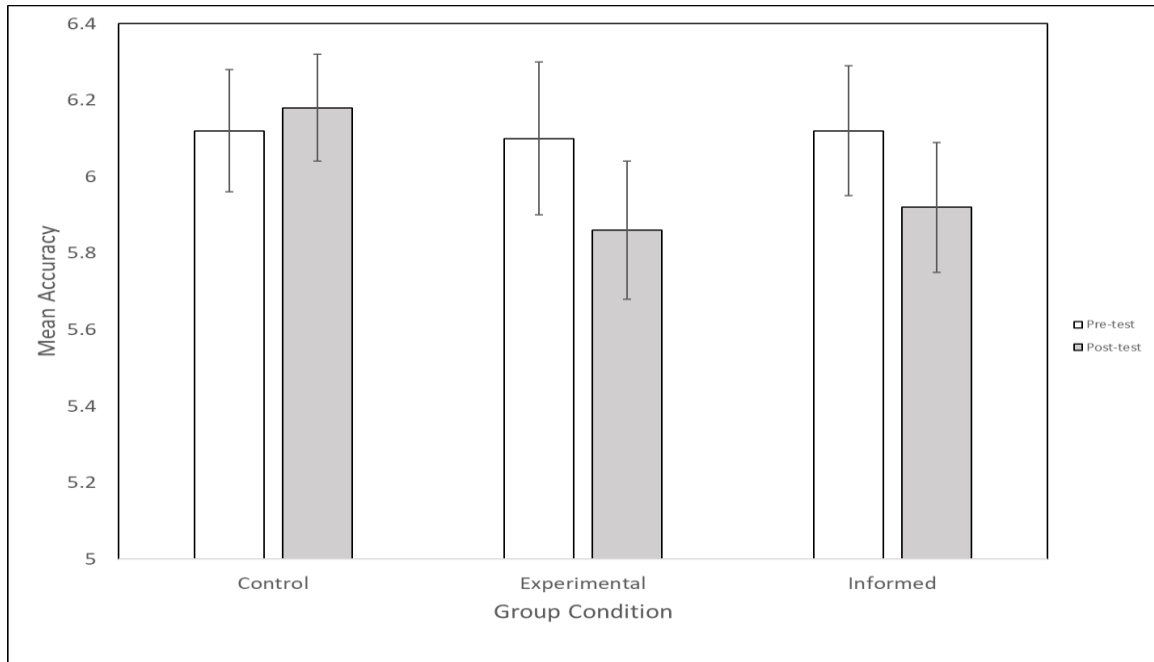
A 2 x 3 (Pre-Post Comprehension x Condition) mixed Analysis of Variance (ANOVA) was used to analyze the data. There was a main effect of pre-post comprehension questions, $F(1, 147) = 6.78, p = .010, \eta^2_p = .044$. such that the overall accuracy of participants with the first set of comprehension questions ($M = 6.11, SD = 1.22$) was higher than the second ($M = 5.99, SD = 1.17$). There was no difference between the control ($M = 6.15, SD = 1.06$), the experimental ($M = 5.98, SD = 1.29$) and the experimental-informed group ($M = 6.02, SD = 1.12$) on comprehension question accuracy, $F(1, 147) = .29, p = .752, \eta^2_p = .004$. There was also a significant interaction $F(1, 147) = 3.70, p = .027, \eta^2_p = .048$. Simple-effect paired samples *t*-tests revealed that, within the control group, there was no difference in accuracy between the pre-comprehension questions ($M = 6.12, SD = 1.13$) and post-comprehension questions ($M = 6.18, SD = 1.03$), $t(50) = -1.00, p = .322$, Cohen's $d = .14$ (see figure 1). Within the experimental condition, participants' accuracy was significantly higher for the pre-comprehension questions ($M = 6.10, SD = 1.37$) than the post-comprehension questions ($M = 5.86, SD = 1.27$), $t(48) = 2.72, p = .009$, Cohen's $d = .39$. Within the experimental-

informed condition, participants accuracy trended higher for the pre-comprehension questions ($M = 6.12$, $SD = 1.17$) than the post-comprehension questions ($M = 5.92$, $SD = 1.19$), but this difference was not statistically significant $t(49) = 1.94$, $p = .058$, Cohen's $d = .27$.

A 2 x 3 (First-Second True-False x Condition) mixed Analysis of Variance (ANOVA) was conducted to analyze accuracy on the two-sets of true-false questions by condition. There was no main effect of first-second true-false questions $F(1, 147) = 1.271$, $p = .261$, $\eta^2_p = .009$. There was no difference in accuracy between the first ($M = 17.06$, $SD = 2.21$) and second ($M = 16.95$, $SD = 2.22$) sets of true-false questions. Accuracy did not differ significantly between the control ($M = 17.22$, $SD = 1.91$), the experimental ($M = 16.77$, $SD = 2.22$) and the Experimental-Informed ($M = 17.02$, $SD = 2.27$) groups, $F(1, 147) = .56$, $p = .574$, $\eta^2_p = .008$. There was no interaction, $F(1, 147) = .17$, $p = .846$, $\eta^2_p = .002$.

Figure 1.

Mean accuracy for the pre-post comprehension questions by group.



Note: Bars represent plus/minus one standard error of the mean.

Discussion

The primary analysis revealed a main effect for pre and-post comprehension question accuracy, such that overall accuracy was lower for the post-comprehension questions than the pre-comprehension questions. However, there was also a significant interaction between the pre-and-post comprehension question accuracy and condition. Specifically, there was no pre-post difference in accuracy on the comprehension questions for the control group. For the experimental group, accuracy did drop significantly after being exposed to the contradictory information presented in the intervening true-false questions. Finally, although there was a statistical trend toward significance, pre-post comprehension accuracy did not statistically differ for the experimental-informed group. Wording of the true/false questions had a clear effect on

accuracy for the experimental group that did not receive a warning of possible inaccurate information. This finding is consistent with prior research that has found that information following an event that is leading or inaccurate can have a negative effect on memory accuracy (e.g., Christiaansen & Ochalek, 1983; Green et al., 1982; Hupbach et al., 2009; Loftus & Palmer, 1974). These results cannot be attributed to simple memory lapse between the two presentations of the comprehension questions as the control group, which experienced the same delay, exhibited no changes in accuracy. Among the explanations that have proposed the effect of misinformation on memory, there has been a distinction in terms of the extent to which memory decrements reflect a change or alteration (e.g., Hupbach et al., 2009), versus selection from memory of the more recent misinformation versus the accurate memory of an earlier event (i.e., co-existence hypothesis, e.g., Christiaansen & Ochalek, 1983; Pino, 2015).

In an attempt to further distinguish between these possibilities, a second experimental group was presented with instructions that suggested that incorrect information may have been included prior to the final comprehension questions. Statistically, the informed group did not differ in terms of pre-post comprehension question accuracy. However, the data did trend toward a difference and thus some caution may be warranted in terms of strong conclusions. This finding does suggest that informing them that intervening information may have been inconsistent with information from the initial video may have mitigated the impact of the contradictory intervening information. This may provide some evidence in favor of the coexistence hypothesis. Assuming the theory does apply, it should be noted that the results did trend toward a significant difference, and therefore mitigation due to indication that incorrect

information was presented was relatively small. It is possible that stronger manipulation in terms of a warning about misinformation may be needed as Christiaansen and Ochalek (1983) suggested. Indeed, the warning in this study was not specific as well as more general, similar to that used by Greene et al. (1982). Thus, also similar to the findings by Greene et al., the evidence in favor of an effect of the warning is not entirely conclusive in the current study. For example, stronger manipulation may lead to better memory traces of the initial information and yield a clearer difference between experimental groups with and without additional feedback concerning the presence of misinformation. Alternatively, a stronger manipulation may lead to greater alteration or confusability in memory and illustrate that subsequent information does not mitigate the influence of misinformation in this context. Thus, the current results do not provide sufficiently strong evidence to conclude that the results are better attributed to an error in retrieval or change in the initial memory, although they do provide tentative support of the coexistence notion.

A prompt was also utilized to passively suggest or prime the notion of making errors or inaccuracy for the two experimental groups (see appendix D). However, the extent to which the presence or absence of the wording concerning possibility of error impacted the outcome would appear to be minimal. As the instructions did not result in changes in accuracy between the two sets of true/false questions for the two experimental groups, it is possible that the manipulation may not have been sufficiently salient (compared to active or passive deception or more interrogative suggestibility) to have accounted for any substantial variance in responding.

It should also be noted that this subject is in constant debate and has extensive research on the topic. There are many different reasons that are being hypothesized, and this depicts several may be at fault for different participants. It can be seen that false information does indeed have a significant role in the alteration of memory in some way, but it is still in debate on how this happens.

Future Directions and Limitations

In terms of future directions and limitations, there a number of directions to consider. For example, a future replication could be conducted in person as opposed to online. This would allow for stronger manipulations, particularly in terms of suggestibility such as the researcher indicating that responses were in error rather than the passive suggestion that errors could occur. A use of more coercive rather than passive suggestibility may yield more of an effect. This could take the form of active deception such that participants are informed that they were in error in responding (e.g., Mastroberardino & Marucci (2013). A further addition for a future replication could be the inclusion of a reflection at the end of this study. For the reflection at the end of the survey, the participants would be asked from where they remember the material similar to the study by Mastroberardino and Marucci (2013) discussed above. This would help confirm the source of their answer and provide further insight into the influences on responding and the issue of the extent to which memory is changed versus responding is based on confusion of source. A potential limitation in the current study was the use of a factual video about rabbits as opposed to a video of a scenario that might better reflect a real-life eyewitness event (e.g., a mock video of a robbery). This would better reflect the events that people might be called to remember in real life such as in a situation requiring

eye-witness testimony. The inclusion of emotional components could be another future direction in order to examine emotional material in the context of suggestibility effects (e.g., Zaragoza and Learned, 2009). Another future direction would be a closer replication of the study by Mastroberardino and Marucci (2013) with longer retention intervals than used in the current study, perhaps also including a warning prior to the final test to better distinguish between compliance and changes of memory in terms of outcomes. Another limitation is that the sample is composed of primarily female participants. Future research should try to include a more equal balance of males and females. Although the current study did provide some further insight into how memory is affected by inconsistent information, future research could include stronger manipulations of the variables that may yield clearer results particularly in terms of suggestibility in the context of memory alteration versus source confusion.

Conclusion

This study was aimed at assessing the extent to which leading information would affect memory. This is a critical question given the number of persons in jail or prison due to eyewitness testimony that may be inaccurate. The Innocence Project (2011) has determined that approximately 20,000 people in the United States are convicted due to false convictions. Many have been exonerated due to new DNA testing. In order to possibly help reduce this number even more in the future, more research needs to be done in this field. The topic needs to be addressed in greater detail particularly in terms of exploring the role of altered memory in this context in order to reduce or eradicate the problem of false confessions.

References

- Anderson, J., & Rainie, L. (2020, August 17). *The Future of Truth and Misinformation Online*. Pew Research Center: Internet, Science & Tech. Retrieved March 22, 2022, from <https://www.pewresearch.org/internet/2017/10/19/the-future-of-truth-and-misinformation-online/>
- Christiaansen, R. E., Ochalek, K. (1983). Editing misleading information from memory: Evidence for the coexistence of original and postevent information. *Memory & Cognition*, *11*(5), 467–475. <https://doi.org/10.3758/bf03196983>
- Drivdahl, S. B., Zaragoza, M. S., & Learned, D. M. (2009). The role of emotional elaboration in the creation of false memories. *Applied Cognitive Psychology*, *23*(1), 13–35.
- Greene, E., Flynn, M. S., Loftus, E. F. (1982). Inducing resistance to misleading information. *Journal of Verbal Learning and Verbal Behavior*, *21*(2), 207–219. [https://doi.org/10.1016/s0022-5371\(82\)90571-0](https://doi.org/10.1016/s0022-5371(82)90571-0)
- How many innocent people are in prison? Innocence Project. (2011, December 12). Retrieved March 30, 2022, from <https://innocenceproject.org/how-many-innocent-people-are-in-prison/>
- Hupbach, A., Gomez, R., & Nadel, L. (2009). Episodic memory reconsolidation: Updating or source confusion? *Memory*, *17*(5), 502–510. <https://doi.org/10.1080/09658210902882399>
- Lindsay, D. S. (1993). Eyewitness suggestibility. *Current Directions in Psychological Science*, *2*(3), 86–89. <https://doi.org/10.1111/1467-8721.ep10770942>
- Loftus, E. F., & Hoffman, H. G. (1989). Misinformation and memory: the creation of

new memories. *Journal of Experimental Psychology: General*, 118(1), 100.

Loftus, E. F., & Palmer, J. C. (1974). Reconstruction of automobile destruction: An example of the interaction between language and memory. *Journal of Verbal Learning & 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)

Loftus, E. F., & Pickrell, J. E. (1995). The formation of false memories. *Psychiatric Annals*, 25(12), 720–725. <https://doi.org/10.3928/0048-5713-19951201-07>

Mastroberardino, S., & Marucci, F. S. (2013). Interrogative suggestibility: Was it just compliance or a genuine false memory? *Legal and Criminological Psychology*, 18(2), 274–286. <https://doi.org/10.1111/j.2044-8333.2012.02048.x>

Michele W. Berger Writer. (2018, May 8). *Wrongful convictions reported for 6 percent of crimes*. Penn Today. Retrieved February 25, 2022, from <https://penntoday.upenn.edu/news/first-estimate-wrongful-convictions-general-prison-population>

O, Pino. (2015). Memory construction, suggestibility effect and eyewitness: From laboratory to legal contexts. *International Journal of Forensic Science & Pathology*, 12. <https://doi.org/10.19070/2332-287x-150003e>

Appendix A

Multiple-Choice Comprehension Questions

- Q1. What was the presenter's name?
- a. **Abby**
 - b. Jane
 - c. Anna
 - d. Susan
- Q2. The color of *most* of the rabbits shown in the video was _____.
- a. brown
 - b. **grey**
 - c. black
 - d. white
- Q3. Rabbits were referred to as *crepuscular* which means they are active _____.
- a. only around noon time.
 - b. only during afternoon times.
 - c. **during morning and evening times.**
 - d. randomly throughout the daytime.
- Q4. Rabbits are considered to be very _____ animals.
- a. **clean**
 - b. dirty
 - c. very vocal
 - d. difficult to train
- Q5. Rabbits eat _____ which they need available 24 hours a day, 7 days a week.
- a. rice

b. hay

c. carrots

d. fiber

Q6. Rabbits appear not to sleep much because they _____.

a. move around a great deal while they sleep.

b. are always awake during the night and morning.

c. only sleep in the afternoon, not at night or morning.

d. sleep with their eyes open.

Q7. The cost of caring for rabbits _____.

a. is always very inexpensive as rabbits do not cost very much to maintain under any circumstances.

b. is unknown as no one has ever calculated the cost of maintaining rabbits.

c. can be very expensive depending upon where one lives and how they are maintained.

d. can be very low as rabbits only need to eat once or twice a week.

Appendix B

Control Group True/False Questions

- The presenter says that rabbits are much like dogs throughout the video. (F)
- All rabbits are not able to learn tricks. (F)
- Rabbits are never destructive. (F)
- There are 49 breeds of domestic rabbits. (T)
- Rabbits are not considered to be rodents. (T)
- Rabbit's nails never stop growing. (T)
- Rabbits can be litter trained. (T)
- Rabbits can't throw up. (T)
- Rabbits have five toes on each of their front paws. (T)
- Rabbits have four toes on each of their back paws. (T)
- Rabbits' teeth never stop growing. (T)
- The word quick is shown in the video describing nails. (T)
- Rabbits only eat specific kinds of poop. (T)
- The litter boxes shown in the video were blue. (T)
- Rabbits tend to destroy lots of things. (T)
- A rabbit was shown eating lettuce in the video. (T)
- Rabbits are not very vocal and don't tend to make noises a great deal of the time. (T)
- Rabbits were compared to mice at one point in the video. (F)
- Rabbits have the same number of toes on both the front and back paws. (F)
- The rabbits were never seen eating carrots. (T)

Appendix C

Experimental Groups True/False Questions

The presenter says that rabbits can be like cats at one point in the video. (T)

All rabbits can learn tricks. (T)

Rabbits can be very destructive. (T)

There are 49 breeds of domestic rabbits. (T)

Rabbits are not considered to be rodents. (T)

Rabbit's nails stop growing very early in their life. (F)

Most of the rabbits presented in the video were white. (F)

Rabbits can throw up. (F)

Rabbits are mainly active only around noon. (F)

Rabbits move around a great deal while sleeping. (F)

Rabbits' teeth stop growing with age. (F)

The word quick is shown in the video describing hair growth. (F)

Rabbits never eat their poop. (F)

Rabbits are considered very dirty animals. (F)

Rabbits hardly ever make a mess of things. (F)

The presenter's screen name was Anna. (F)

Rabbits are very vocal and make noises a great deal of the time. (F)

Rabbits require a consistent diet of carrots 7 days a week. (F)

Rabbits are not expensive and are easy to care for. (F)

The rabbits were seen eating carrots. (F)

Appendix D

Group Instructions

Control Condition Instructions Following the 1st set of True/False Questions: “Please answer the following True/False questions as accurately as possible.”

Experimental Group(s) Instructions Following the 1st set of True/False Questions: “It is possible that errors in accuracy can occur when answering questions from memory. Please answer the following True/False questions as accurately as possible.”

Control Group and Experimental Group instructions prior to the 2nd presentation of the comprehension questions: “Please answer the following set of comprehension questions as accurately as possible.”

Experimental-Informed Group instructions prior to the 2nd presentation of the comprehension questions: “The preceding true/false questions contained many questions in which the information did not match the video. Please answer the following set of comprehension questions as accurately as possible based on your memory of the initial video.”

Appendix E

Demographic Questions

Age:

Gender:

Male

Female

Other (Specify)

I prefer not to respond

Race/Ethnicity:

African American or Black

American Indian or Alaskan Native

Asian or Asian American

European American or White

Hispanic or Latinx

Native Hawaiian/Pacific Islander

Two or more races, non-Hispanic

I prefer not to respond