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SOURCE MEMORY PERFORMANCE

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ABSTRACT

The Effect of Feedback at Test on Source Memory Performance

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Previous research has demonstrated that witnesses can come to believe they saw details that were only suggested to them after the witnessed event. For both theoretical and practical reasons, there is interest in developing techniques that reduce the effect of misleading post-event information. The present study examined the effect of receiving feedback at the time of retrieval on eyewitness suggestibility. All participants watched a videotaped crime of a home burglary and then answered questions that contained misleading information. On a final source memory test, participants that were provided with feedback as to the accuracy of their attributions during the first part of the test, significantly reduced the number of source misattributions made on the second part of the test. Thus, feedback at retrieval appears to be a promising technique for reducing eyewitness memory errors.

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CHAPTER 1

EYEWITNESS SUGGESTIBILITY AND FEEDBACK

Although research has shown memory to be fallible and often inaccurate, our legal system still relies heavily on eyewitness testimony to identify and convict alleged criminals. An eyewitness account aids authorities in identifying the suspect(s) and tailors the breadth of their investigation. In addition, lawyers often rely on eyewitness testimony to sway the jury in their favor. However, the fact remains that both legal cases and previous research (e.g., Loftus, Miller & Burns, 1978; McCloskey & Zaragoza, 1985) have documented the fallibility of memory and its susceptibility to errors. One real-life example is the case of Lenell Geter, who served eighteen months of a life sentence for a series of armed robberies that he did not commit (Buckhout, 1984). The primary witness in the case had seen Geter in an early lineup and had failed to identify him as the perpetrator. However, this same witness later identified him in a subsequent lineup several months later. In this case, misidentification occurred because the witness falsely attributed the familiarity of Geter's face as evidence that he was the perpetrator.

One element of eyewitness memory that has been studied extensively is eyewitness suggestibility. Suggestibility concerns situations where witnesses incorporate post-event misleading information into their accounts of the witnessed event. This misleading post-event information could be encountered during questioning by law-enforcement personnel and lawyers, while talking to other witnesses, or from media accounts of the

event. Research examining the potential effects of post-event suggestion is generally conducted in three phases. First, participants view a simulated crime on videotape or slides. Next, they answer a series of questions about the event. The questionnaire includes misleading information that is presupposed in the questions. Finally, all participants take a memory test that includes items that were witnessed, items that were only suggested, and control items that were never encountered. A consistent finding in the literature is that participants will claim to have seen items in the event that were only suggested to them (e.g., Loftus, Miller, & Burns, 1978; McCloskey & Zaragoza, 1985; Lindsay, 1990; Zaragoza & Lane, 1994). This finding has been termed the *misinformation effect.*

Subsequent research has determined a number of factors that influence eyewitness suggestibility. For instance, participants whose attention is divided during the questionnaire are more likely to falsely attribute the suggestions to the event (Zaragoza & Lane, 1998). Other factors that affect suggestibility include the type of review participants engage in following the questionnaire (Lane, Mather, Villa, & Morita, under review), the age of the participants (younger vs. older adults; Lane & Villa, under review), and whether the suggestions are repeated multiple times (Mitchell & Zaragoza, 1996; Zaragoza & Mitchell, 1996).

One important remaining question is whether suggestibility can be substantially reduced by strategies initiated at retrieval. This point is important because there is often very little control over the conditions under which people witness the event, or are exposed to misleading post-event information. Therefore, strategies that could "undo" the effects of post-event suggestion would be especially useful for the legal system. In

the following study, this research problem was examined using a source-monitoring perspective (Johnson, Hashtroudi, & Lindsay, 1993). This approach was used because it is currently a dominant perspective in the eyewitness suggestibility literature, and because this type of assessment has a number of advantages over standard tests of eyewitness memory (Zaragoza & Lane, 1994).

In the following section, a number of the theoretical assumptions underlying this approach are summarized. The results of prior research on the use of warnings on suggestibility are then examined, followed by a review of the literature on the effect of feedback on memory retrieval.

Source Monitoring Framework

The processes involved in determining the origin of information are characterized by the Source Monitoring Framework (SMF) of Marcia Johnson (see Johnson, 1997, and Johnson, Hashtroudi, & Lindsay, 1993, for reviews). On average, different sources of information have different phenomenal characteristics associated with them. For instance, memories of perceived events are more likely to include perceptual detail (e.g., color, shape, sound) and contextual detail (e.g., time and place information) than memories of imagined events (Johnson, Foley, Suengas & Raye, 1988; Mather, Henkel, & Johnson, 1997). In contrast, memories of imagined events are more likely to include information about the cognitive operations involved (e.g., Durso & Johnson, 1980; Finke, Johnson, & Shyi, 1988). Thus, these average differences provide a basis for source judgments. Although these processes allow for accurate source monitoring, the distributions of memorial characteristics for different sources often overlap, thus leading

to source misattributions. Therefore, one might mistakenly judge that an imagined event was perceived if their memory for the event includes vivid perceptual and contextual detail. In addition, retrieval conditions can play a powerful role in the accuracy of source decisions. For instance, when participants adopt a more strict criterion during retrieval (e.g., Lindsay & Johnson, 1989; Marsh, Landau, & Hicks, 1997; Multhaup, 1995; Zaragoza & Lane, 1994), or are given enough time to retrieve sufficient source-relevant information (Johnson, Kounios, & Reeder, 1994; Zaragoza and Lane, 1998), their source judgments are more likely to be accurate.

According to the SMF, the misinformation effect occurs when participants who have been misled erroneously attribute the misleading information to the witnessed event at retrieval. Although the framework specifies a number of factors that can affect source monitoring accuracy in the eyewitness suggestibility paradigm, source misattribution errors (claiming to have seen an item that was only suggested) should increase as the similarity of characteristics associated with memories from the event and post-event sources increases, and the test used to assess eyewitness memory can affect the amount and type of evidence considered before claiming to have seen it in the witnessed event.

Reducing Suggestibility Errors with Retrieval Strategies

A number of studies have focused on the use of warning strategies as a way of improving source memory performance. A study by Greene, Flynn, and Loftus (1982) examined whether warning participants about the possibility of future misinformation would increase their resistance to that information. The results of this study found that when the presentation of the warning was just prior to exposure to the misleading post-

event information, participants exhibited a slightly greater resistance to the effects of suggestibility. However, the results of this research also concluded that presenting the warning immediately after participants had encountered the suggestions was not effective in reducing errors at test.

Recent research has found that when a very explicit warning is presented immediately following the misleading post-event information, the effects of suggestibility are reduced (Chambers and Zaragoza, 1993). Immediately after receiving the post-event questionnaire, participants in this study heard a confederate discredit the misinformation by angrily stating that the researcher was trying to trick them because the information from the questions was not actually in the video. After appearing flustered, the researcher decides to administer the source test anyway. Performance on the source test demonstrated that, unlike the previous research by Greene, Flynn, and Loftus (1982), discrediting the source of the misinformation in a salient manner after exposure to the suggested items can reduce suggestibility.

The work of Chambers and Zaragoza (1993) suggests that warnings immediately following misinformation can be effective, but does not address whether suggestibility can be reduced after a delay. A recent study by Lane, et al., (1999), examined whether warning instructions immediately prior to test could be effective in reducing suggestibility. This warning differed from prior work in that participants were told to focus on certain aspects or features of their recollective experience. These specific characteristics had been rated higher by participants in a pilot study (Lane, et al., 1998) for test items that had actually been seen in the witnessed event than for test items that had only been suggested. The experiment followed the standard eyewitness

suggestibility procedure. Participants saw a series of slides depicting a crime, answered questions about the event that included misleading information, and finally, took a source test. Participants in the Warning condition were told to use phenomenal characteristics (e.g., *what the object looked like* and *where it was located in the scene*) to help them accurately distinguish between items that were actually seen in the slides from items that were only suggested to them. The participants were further informed that in previous research people had rated these characteristics as being more vivid for items that were actually seen than for items they mistakenly thought they saw. Results revealed that providing a warning at the time of retrieval did reduce the number of source misattributions that participants made compared to those in a no-warning control condition. In addition, the results also found that providing a warning did not affect participants' ability to accurately remember items that were in the witnessed event. Thus, these participants appeared to weight these characteristics in their decision-making such that they were better able to discriminate between accurate and erroneous memories.

Another important finding of Lane, et al. (1999) was that participants in a third condition who were told to make ratings of recollective experience on the clarity of their memory for the object and location did not significantly decrease their errors relative to the no-warning control condition. In other words, these participants did not spontaneously use these characteristics unless specifically told to do so. In the real-world, it would be difficult to apply this warning to reduce suggestibility unless there are some general characteristics that discriminate between accurate and inaccurate memories, or unless the investigators knew the specific characteristics that would be discriminative in a particular context. These possibilities are both unlikely and hence it would be more

helpful if witnesses could calibrate their own decision-making such that they focused on the characteristics that would be most discriminative for them.

Research on Feedback at Retrieval

Although research on feedback has produced an extensive literature demonstrating the effects of feedback during training (e.g., Kohl & Guadagnoli, 1996; Lai & Shea, 1998; Salmoni, Schmidt, & Walter, 1984), only a handful of studies have manipulated feedback at the time of retrieval. The main finding of these studies is that receiving feedback can increase the accuracy of memory performance (Allen & Bragg, 1968; Titus, 1973). An early study investigated the effect of group pressure on the retention of learned verbal material (i.e., paired-associates task). Allen & Bragg (1968) exposed participants to either correct or incorrect feedback or no feedback at the time of recall. Either a group or an individual provided feedback to the participants and differences between the two conditions failed to reach significance. Importantly though, receiving feedback, despite the source, significantly affected recall memory performance. Specifically, providing correct feedback enhanced recall and incorrect feedback reduced recall.

A second study applied signal detection theory in order to design feedback to reduce the number of false alarm errors on a recognition test (i.e., claiming to have seen items that were never encountered on the list; Titus, 1973). Participants were given six exposures to a 15-word list prior to a recognition test that required participants to respond whether each item was old or new. Prior to testing, participants were informed about the costs and rewards of having a false alarm or a hit. This method was used to assess whether performance could be improved in a recognition memory task if participants in

different conditions were given feedback. Participants who received feedback during the test significantly reduced their false alarms. In addition, signal detection analyses revealed that the feedback led participants to adopt a more conservative response (decision) criterion.

The use of feedback in the above studies led to success in improving both recall and recognition memory. While it is clear that feedback can have positive effects, it must be used carefully. For instance, providing inaccurate feedback can lead to a decrease in recall (Allen & Bragg, 1968). In addition, feedback may not always be helpful when the discrimination being made at retrieval is more difficult. In both of the above studies, participants only had to discriminate between items they had studied and items they had not. However, in eyewitness suggestibility studies, participants have encountered the misleading information in the context of a description of the witnessed event. Thus, it is by no means obvious that feedback will necessarily be helpful in this particular context.

The Present Study

The use of feedback at retrieval has yet to be examined in the context of eyewitness suggestibility research. The purpose of this experiment was to investigate how receiving feedback at test affects source memory judgments and to determine if participants use this feedback to calibrate the weighting of the appropriate characteristics and the accuracy of their memories without explicit instructions to do so.

In the following study, the primary manipulation concerned whether or not feedback was received during Part 1 of the source test. In essence, the first part of the source test functioned as practice for Part 2 of the source test where no feedback was given,

regardless of condition. All participants watched a videotape of a simulated burglary and then answered questions about the event. Within the post-event questionnaire, misleading items were suggested that were not seen in the witnessed event. Within each version of the post-event questionnaire, the misleading items were suggested once, thrice, or never presented. Finally, participants then engaged in a source memory test that was divided into two parts. During Part 1 of the source test, participants in the Feedback condition were given the correct source of the test statement immediately after making their source judgments. They were told to use this information to assess the accuracy of their judgments. The impact of this manipulation was evaluated on their performance during the second half of the test. In the Control condition, participants were not given the correct answer; rather a new test statement was read every 10 seconds. It was predicted that participants in the Feedback condition would use the feedback to assess the accuracy of their judgments and consequently use that information to calibrate and increase the accuracy of their judgments for test items on Part 2 of the source test.

CHAPTER 2

METHOD

Participants

One hundred twenty-eight undergraduate students (60 men and 68 women) from the University of Nevada, Las Vegas participated in partial fulfillment of a class credit. Sixty-four participants were randomly assigned to the two experimental conditions (i.e. Feedback and Control Conditions). Data from a total of nine participants was dropped and replaced by succeeding participants. Five participants were dropped due to experimenter error (i.e., the entire length of the videotape was not shown) and four participants were dropped because English was their second language and they exhibited great difficulty understanding and following the instructions of the experimenters.

Materials

The eyewitness event was a videotaped simulation (approximately five minutes) of a home burglary and a car chase titled "Catching the Fleeing Violator" (a training video from the Ohio State Police). The videotape was shown on a 27" color monitor.

The post-event questionnaire consisted of 37 questions about the video. Within the questions, there was misleading information that was not actually seen in the video. For example, for the suggestion "the thief wore gloves," participants were asked, "At the beginning of the scene, a young man dressed in jeans, a t-shirt, and gloves entered the

house. Did he enter through the door?" An additional example is provided in Table 1. There are a total of twelve critical statements across the experiment: *The thief wore gloves, the driver smoked a cigarette, the police thought the driver was DWI, the thief had a gun, the neighbor's name was Mrs. Anderson, one of the police officers was drinking coffee, the thief took a ring, the thief pulled a window shade down, the driver jumped a curb with the car, the police said that they would shoot, the thief put on his seat belt,* and *there was a barking dog.* There were three versions of the post-event questionnaire that were equally assigned within each condition. In any given version, four of the critical items were control (never-presented) items, four of the critical items were suggested once, and four of the critical items were suggested thrice.

The source test was broken down into two parts, and there were 16 test statements in each part of the source test or 32 test statements combined. For each statement that participants heard, they were asked to indicate the source of the information for each test statement. They chose from four possible sources: *Video Only, Questions Only, Both, or Neither.* Across both parts of the source test, there were a total of eight suggested items (i.e., those that only appeared in the post-event questions): Four of the statements were suggested once and four of the statements were suggested thrice. There were also four control (never-presented) statements that were never suggested and four statements that were filler items that were neither in the video or suggested in the questions. In addition, there were eight statements that were only in the video and eight statements that were both in the video and in the questions. These statements were divided so that each type of statement appeared equally often in both parts of the source test.

The two-part audiotape that was played during the administration of the source test contained the 32 test statements. Regardless of condition, Part 1 of the audiotape contained 16 test statements and Part 2 contained the remaining 16 statements. For counterbalancing purposes, each question version had two audiotapes: Order 1 and Order 2. The order determined which set of 16 statements was presented in Part 1 and Part 2. The audiotapes for Part 1 of the Feedback Condition contained a test statement, a short pause (average 5 seconds), and then the correct answer to the statement was presented. Thus, it was necessary to have two audiotapes (Order 1 and Order 2) for each version of the questions because the correct answer was read only during Part 1 and the critical items differed depending on the version of the post-event questions. The audiotape for Part 2 of the Feedback Condition was identical to the audiotapes made for the Control Condition. The audiotapes for both Part 1 and Part 2 of the Control Condition contained a test statement and then a short pause (approximately 7-8 seconds) before the next test statement was presented. No feedback as to the accuracy of the participants' decision was given. The total time for the presentation of the test statement, source judgment, and presentation of the correct answer (only in Part 1 of the Feedback Condition), regardless of condition, was ten seconds across the entire experiment. The audiotapes were played on a Sony tape recorder.

Procedure

Participants were run in groups of 1-5. Participants in both conditions viewed a short videotaped scene (5 minutes) of a burglary. Following the video, they completed the post-event questionnaire about the event they had just watched. Participants were warned

that because the video contained so many details, they might have to answer more than one question about some events or parts of the film, but that they were not to go back and check or change previous answers. Immediately after completion of the post-event questionnaire, participants engaged in a filler task (word search puzzle) for a total of 10 minutes. Next, the source test was administered in two parts. Participants in both conditions were informed that they would hear statements that were contained *only in the video, only in the questions that they read and answered earlier, both in the video and in the questions, or neither in the video nor mentioned in the question they answered earlier*. Both parts of the source test asked participants to indicate whether the information contained in the statement was presented only in the video, only in the questions, in both, or in neither. Participants in both conditions were told that they must make their decisions fairly quickly after each statement is read because a new test item would be presented every 10 seconds. For Part 1 of the Feedback Condition, participants were informed that they would hear the test statement, then there would be a pause (average 5 seconds), and then the correct answer would be presented before the next test item was read. Thus, participants would know immediately how accurate they were in their source decision. They were further instructed to use this information to assess the accuracy of their judgments. In Part 1 of the Control Condition, participants heard the same statements however, they did not receive any feedback as to the accuracy of their judgments. Rather, they only heard a new test item every 10 seconds.

Finally, Part 2 of the source test was identical for both conditions. The Control Condition was informed that the procedure for Part 2 was exactly the same as it was for Part 1. That is, they would hear 16 additional statements presented every 10 seconds and

would need to make their judgments accordingly. However, the Feedback Condition was instructed that the procedure for Part 2 was exactly the same, with one exception. The exception was that they would not receive any feedback as to the accuracy of their judgments. Rather they would just hear 16 additional statements presented every 10 seconds and would need to make their judgments before the next item was presented.

TABLE 1 Example of a Critical Item Suggested Within the Post-Event Questionnaire

- The Critical Item (Statement on Source Test): The driver smoked a cigarette.
- Control Question (the critical item above was NOT suggested):
  - Meanwhile, the driver was waiting in front of the house. Did he appear anxious?
- Suggestive (Misleading) Question - Suggested Once
  - Meanwhile, the driver was smoking a cigarette while he waited in front of the house. Did he appear anxious?
- Suggestive (Misleading) Questions – Suggested Thrice
  - Was the driver, who was sitting in the car smoking a cigarette while he waited, listening to the radio?
  - Meanwhile, the driver was seen sitting in the car smoking a cigarette while waiting. Was he wearing a "Harley Davidson" hat?
  - Meanwhile, the driver was smoking a cigarette while he waited in front of the house. Did he appear anxious?

CHAPTER 3

RESULTS

The results of this study are in line with previous eyewitness suggestibility findings using this paradigm and provide support for the research hypothesis. All reported analyses were conducted with an alpha level of .05. The mean age of the participants was 20.7 ($F < 1$). In addition, participants' performance at test did not yield any significant gender differences and will not be reported.

Performance on Source Test, Part 1

Part 1: Accurate Source Attributions

Although the data of primary interest is from Part 2 of the source test, Part 1 data provides information regarding potential differences between the conditions during "training." The proportions of accurate responses for Part 1 of the source test are provided in Table 2. Analyses revealed no significant differences between the Feedback and No Feedback conditions for any item type. That is, participants in the two conditions were equally accurate at attributing test items to their actual source (Video: $F(1, 126) = 2.74$, $MSE = .051$; Questions: $F(1, 126) = 1.54$, $MSE = .130$; Both: $F(1, 126) = 1.40$, $MSE = .059$; Neither: $F < 1$, all $ps > .05$).

TABLE 2 Proportion of Accurate Responses on Part 1 of the Source Test

Item Type (Actual Source)	Control	Feedback
Video-Only	.84 (.028)	.77 (.028)
Questions-Only	.45 (.040)	.52 (.040)
- Questions-Only (Suggested Once)	.47 (.047)	.56 (.047)
- Questions-Only (Suggested Thrice)	.44 (.049)	.47 (.049)
Both	.71 (.030)	.66 (.030)
Neither	.89 (.031)	.88 (.031)

Note. Standard errors are provided in parentheses.

Part 1: Source misattribution errors (suggestibility)

The data in Table 3 illustrates that on Part 1 of the source test, participants in both conditions were equally likely to misattribute the source of items that were suggested in the post-event questionnaire to the video ($F < 1$). Thus, these results suggest that while participants were actively receiving feedback, it had no effect on the accuracy of their source attributions.

TABLE 3 Proportion of Overall Source Misattributions (claiming they saw items in the video) on Part 1 of the Source Test

Item Type	Control	Feedback
Overall suggested items	.41 (.034)	.38 (.034)
- items suggested once	.34 (.042)	.27 (.042)
- items suggested thrice	.49 (.048)	.48 (.048)
Never-presented control items	.11 (.029)	.11 (.029)

Note. Standard errors are provided in parentheses.

Performance on Source Test, Part 2

Part 2: Accurate Source Attributions

The data for suggested items, as well as control, both and video items are reported in Table 4. Participants in the Feedback condition were significantly more accurate in identifying the source of suggested item as *Questions-Only* than those in the Control condition, $F(1, 126) = 5.59$, $MSE = .095$, $M = .60$ and $M = .47$, respectively, $p < .05$. When the suggested items are broken down into items that were suggested once and thrice, results for thrice suggested items followed along the same lines.

For items in the questions that were suggested thrice, the Feedback condition was again significantly more accurate than the Control condition at attributing suggested items to the *Question-Only* response, $F(1,126) = 4.33$, $MSE = .163$, $M = .59$ and $M = .45$, respectively, $p < .05$. However, comparing the data of items that were only suggested once in the questions failed to yield a significant difference between the two conditions ($F(1, 126) = 1.40$, $MSE = .140$, $p > .05$).

Participants' responses to never-presented control items were analyzed and results did not differ by condition ($F < 1$). Therefore, participants in the Feedback condition were no more likely than those in the Control condition to claim to have seen or read items that were not included or presented in any of the experimental materials. In addition, participants in the Feedback and Control conditions did not differ significantly in accurately attributing items that were both in the video and in the questions to the *Both* response, or in making correct attributions of items from the video to the *Video-Only* response (all Fs < 1). In other words participants in both conditions were equally likely

to accurately attribute items that were encountered only in the video, or that were in both the video and the post-event questionnaire to their original source.

TABLE 4 Proportion of Accurate Responses on Part 2 of the Source Test

Item Type (Actual Source)	Control	Feedback
Video-Only	.81 (.028)	.85 (.028)
Questions-Only	.47 (.039)	.60 (.039) *
- Questions-Only (Suggested Once)	.53 (.047)	.61 (.047)
- Questions-Only (Suggested Thrice)	.45 (.050)	.59 (.050) *
Both	.61 (.028)	.64 (.028)
Neither	.88 (.029)	.88 (.029)

Note. An asterisk (*) denotes statistical significance at $p < .05$. Standard errors are provided in parentheses.

Part 2: Source misattribution errors (suggestibility)

The source misattributions of greatest interest in this study occur when participants claim to have seen in the video items that were only suggested to them in the context of the questions. This occurs when participants attribute the questions-only items to either the video, or both the video and the questions. The data for both conditions are presented in Table 5. Participants who received feedback during the first part of the source test made significantly fewer source misattribution errors for suggested items than participants who received no feedback (controls), $F(1, 126) = 7.34$, $MSE = .246$, $M = .25$ and $M = .38$, respectively, $p < .01$. In other words, Feedback participants were less likely to claim that suggested items from the questions were encountered in the video.

A second issue concerns the misinformation or *source misattribution* effect (Zaragoza & Lane, 1994). This concerns whether participants were more likely to misattribute suggested items to the video than non-presented control items. A 2 x 2 mixed model ANOVA was conducted with Feedback (feedback vs. no feedback) as a between subjects variable and type of item (suggested vs. never-presented control) as a within-subjects variable. Results revealed a main effect for type of item ($F(1, 126) = 23.88$, $MSE = .087$, $p < .01$), but no significant interaction ($F(1, 126) = 3.26$, $MSE = .087$, $p > .05$). In other words, both conditions showed a robust source misattribution effect.

Although the main hypothesis was confirmed, it is informative to examine whether feedback was any more or less effective depending on the number of times an item was suggested. The pattern of findings for thrice-suggested items was similar to that of the "overall" (all suggested items) results. Feedback participants were less likely to claim that thrice suggested items were encountered in the video ($F(1, 126) = 5.63$, $MSE = .153$, Feedback $M = .29$ and Control $M = .45$, $p < .05$). However, the difference between Feedback and Control conditions for once-suggested items failed to reach significance ($F(1, 126) = 1.23$, $MSE = .102$, $p > .05$). Thus, it appears that feedback has stronger effects for suggested items that are well-remembered.

The repetition effect is the notion that as the number of times a post-event item is suggested or repeated increases, participants are more likely to claim that the item was in the video or witnessed event (Zaragoza & Mitchell, 1996). Participants in both conditions were more likely to misattribute thrice- than once-suggested items to the video (Repetition: $F(1, 126) = 11.15$, $MSE = .107$, $p < .01$; Interaction: $F(1, 126) = 1.54$, MSE

= 107, $p > .05$). Thus, although feedback appeared to be more effective for reducing errors to thrice- than once-suggested items, it did not eliminate the repetition effect.

TABLE 5 Proportion of Overall Source Misattributions (claiming they saw items in the video) on Part 2 of the Source Test

Item Type	Control	Feedback
Overall suggested items	.38 (.035)	.25 (.035) *
- Items suggested once	.27 (.040)	.20 (.040)
- Items suggested thrice	.45 (.049)	.29 (.049) *
Never-presented control items	.13 (.035)	.13 (.035)

Note. An asterisk (*) denotes statistical significance at $p < .05$. Standard errors are provided in parentheses.

CHAPTER 4

DISCUSSION

The eyewitness situation presents a difficult memory task because information for what was actually witnessed is often confused with post-event information that is later obtained through other sources (e.g., legal authorities, other witnesses, or the media). As mentioned earlier, participants in eyewitness suggestibility studies will often claim to have seen items in the event that were only suggested to them (e.g., Loftus, Miller, & Burns, 1978; McCloskey & Zaragoza, 1985; Zaragoza & Lane, 1994). However, eyewitness testimony is often a crucial element in identifying the suspect(s) or convincing juries during trials. In an effort to identify techniques that can be used to reduce the effects of eyewitness suggestibility, this study explored the effect of receiving feedback identifying the correct source of the information at the time of retrieval on later source judgments. Results from the second half of the source test indicate that receiving feedback during the first half of the test significantly reduced the number of source misattributions. Further, this manipulation did not affect the accuracy of participants' attributions of video-only items. Thus, the results of this study suggest that the use of feedback at retrieval could be a useful technique in reducing the number of eyewitness memory errors.

The results of this study suggest that feedback at retrieval may reduce, but not eliminate source misattributions. More specifically, participants who received feedback

reduced their overall misattributions of suggested items to the event, but their rate of source misattributions was higher for suggested items than plausible but non-presented control items. One factor that seems to affect the usefulness of feedback is the memorability of the suggested item. The effect of feedback was significant for thrice- but not once-suggested items. In other words, feedback appears to be a useful technique when information is encountered more than once and therefore, may be more accessible in memory.

The results of this experiment are consistent with research conducted within the Source Monitoring Framework (e.g., Marsh, Landau, & Hicks, 1997; Multhaup, 1995; Zaragoza and Lane, 1998). Participants in both conditions misattributed misleading items they had only read about to the witnessed event. Further, the usefulness of feedback is consistent with other research conducted using this framework. For example, manipulations that lead participants to adopt a stricter criterion during retrieval (e.g., Marsh, Landau, & Hicks, 1997; Multhaup, 1995), to scrutinize the source of their memories more closely (e.g., Lindsay & Johnson, 1989), or to use characteristics that are discriminative with respect to source (Lane, et al., 1999), results in lower rates of source misattribution. Theoretically, feedback should lead participants to focus on characteristics that are discriminative with respect to source, and to weight those characteristics more heavily in their source judgments. Feedback has the additional advantage of having people determine their own set of discriminative characteristics, and thus could be potentially more useful in real-world eyewitness situations.

The present study is essentially a first look at the effects of feedback on eyewitness suggestibility and source memory performance. Although the results of this study are

promising, it is not the claim of this research that feedback at test is the ultimate solution to reducing source misattributions. For example, receiving incorrect feedback can reduce recall memory (Allen & Bragg, 1968). In addition, research examining the effect of confirming feedback on witnesses' retrospective reports about the witnessing experience, found that receiving confirming and disconfirming feedback distorted their recollections of how confident they were during the identification and as well as other judgments relevant to their testimony, such as the quality of the view they had or the speed with which they had identified the person (Wells & Bradfield, 1998 & 1999). Thus, the use of feedback could lead to accuracy or error depending on the content and the context in which it is given.

A number of factors could potentially affect the usefulness of feedback and these factors should focus subsequent research on the topic. For instance, the delay between encountering the misinformation and receiving feedback regarding one's recollections may be critical. In this study, the delay between encountering the misleading post-event information and the source test was 10 minutes. Because feedback was only effective in reducing the misattribution of thrice-suggested items, there is reason to believe that memory for the source of the suggestions is important. If an increased delay resulted in greater forgetting of the source of suggested items (the questions), then it is possible that feedback would be of little use. This could be an important factor because often long periods of time elapse between the actual witnessing of an event and the time when a witness's account of the event is taken. Similarly, it would be interesting to manipulate the time interval between receiving feedback during Part 1 of the source test and later performance on Part 2. In real-life situations, the time between the initial account of the

witnessed event to authorities and the time they are called to give their testimony does not occur immediately afterwards, as it did with Part 1 and Part 2 of the source test.

It may be possible to increase the efficacy of feedback in reducing source misattribution errors in eyewitness memory. Previous work by Lane et al. (1999) suggests that although participants do not spontaneously use discriminative characteristics (e.g., vividness of memory for the object and the location) to help them increase source accuracy, they are able to significantly reduce the number of source errors when they are given explicit instructions to use these characteristics. Although feedback was useful in the present study for reducing source errors, it is possible that some participants still did not use an optimal weighting of characteristics in their source judgments. This suggests that having subjects make ratings of various characteristics and providing feedback may help them better calibrate their decision-making by making them aware of characteristics that could potentially be discriminative. Thus, combining these techniques could lead to an even greater decrease in the number of source errors that are made at retrieval.

Although, this area is only in the beginning stages of investigation, the use of feedback could potentially be an effective technique for reducing errors in eyewitness testimony. For example, police and authorities often have knowledge of forensic evidence (e.g., surveillance videotapes or physical evidence) prior to interviewing witnesses. If the authorities have evidence of particular facts, they could use these to help witnesses better calibrate their memory decisions. However, this should not be done haphazardly. It is also entirely possible to introduce misleading information in this same fashion. Therefore, further studies examining the effects of feedback within this

paradigm are needed before the results can be applied to real-world witnesses. Regardless of the outcome, providing feedback at retrieval is a promising technique for reducing memory errors.

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