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THE ENHANCED COGNITIVE INTERVIEW, IMAGERY, REPETITION, AND DELAY: EFFECTS ON EYEWITNESS ACCURACY

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THE ENHANCED COGNITIVE INTERVIEW, IMAGERY, REPETITION, AND DELAY: EFFECTS ON EYEWITNESS ACCURACY

A DISSERTATION APPROVED FOR THE
DEPARTMENT OF PSYCHOLOGY

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ABSTRACT

In two experiments we examined the usefulness of the enhanced cognitive interview (ECI; Fisher & Geiselman, 1992) as both a research tool and interview protocol for use with victims and witnesses to crimes. The ECI was developed based on a variety cognitive theories and conversational techniques that have facilitated memory performance in laboratory experiments. Previous research has attempted to validate the ECI as an optimal interview technique, but there are limitations to those attempts (e.g., M. R. Davis, McMahon, & Greenwood, 2005; Milne & Bull, 2002). The present research offers a novel methodology to address these previous limitations. Experiment 1 examined the usefulness of the focused imagery component of the ECI and the effects of delay and repetition of interviewing on eyewitness accuracy. The results showed that the inclusion of focused imagery as part of the ECI significantly improved eyewitness recall accuracy, particularly for person details, and this advantage increased when the initial interview was delayed for a week compared to immediately after the witnessed event. The results also showed no change in eyewitness accuracy between an initial interview conducted immediately after the witnessed event and a repetition of the interview a week later. Experiment 2 examined the impact of the ECI on eyewitness identification accuracy, as little research has been done in this area. Previous research suggests that when eyewitnesses generate a sufficient amount of suspect detail, they are less likely to identify a suspect in a subsequent lineup. The results of Experiment 2 showed that compared to a control interview, there were no significant differences in selection rates with the ECI. Experiment 2 also failed to find the same benefits in recall accuracy that were found in Experiment 1. Implications and future directions are discussed.

CHAPTER 1 – INTRODUCTION

In her seminal work, Elizabeth Loftus highlighted the challenges that we face as cognitive researchers studying eyewitness memory (Loftus, 1979). Loftus showed that eyewitness memory is inherently malleable and vulnerable to corruption in a variety of circumstances. A recent review has further validated Loftus's work and highlighted the challenges that the legal community continues to face with eyewitness memory (Wells et al., 2006). Wells et al. point out that faulty eyewitness memory affects the outcome of many legal cases. In fact, since the mid-1990's around 75% of overturned convictions based on DNA evidence involved faulty eyewitness memory.

A more recent tool—the Cognitive Interview (CI)—has been developed to optimize the collection of information from eyewitnesses (Wells et al., 2000), but it has not been widely adopted in the United States (as it has been in other countries). Wells et al. (2006) concluded that only about 10% of the population in the United States actually benefits from this interview technique. The CI was developed by Geiselman, Fisher and colleagues in the mid-to-late 1980's and has been shown to be much more effective than standard police interview tactics traditionally used to interview victims and witnesses (Fisher & Geiselman, 1992; Fisher, Geiselman, Raymond, Jurkevich, & Warhaftig, 1987; Fisher & Schreiber, 2007; Geiselman et al., 1984; Geiselman, Fisher, MacKinnon, & Holland, 1985). The CI was revised in 1987 to add new cognitive and non-cognitive components, resulting in the Enhanced Cognitive Interview (ECI; Fisher, Geiselman, Raymond et al., 1987; Fisher & Geiselman, 1992).

The ECI has been used in several studies with several different control conditions and has always proven itself to elicit higher and often more accurate recall than those controls (for review, see Fisher & Schreiber, 2007). While the ECI has proven itself to be a useful alternative to traditional, closed-ended questioning techniques that law enforcement officials use, it has many complex components that have not been fully evaluated, either separately or—especially—in the context of the remaining components. There have been attempts to evaluate the effectiveness of the ECI in promoting eyewitness memory, but those attempts have failed to examine the interactive effects of particular components (e.g., Boon & Noon, 1994; Milne & Bull, 2002). The goal of the present research is to begin to assess how these complex components work together to facilitate eyewitness memory.

The majority of the research regarding eyewitness memory has focused on eyewitness identification accuracy (Wells et al., 2006). This is because false identifications have been the cause of many wrongful convictions. However, little research has actually examined eyewitness identifications using the ECI. Finger and Pezdek (1999) used portions of the ECI to examine their impact on the accuracy of suspect descriptions and subsequent identifications. Finger and Pezdek reported that when participants return 1-week after their interview, their was a benefit to identification accuracy compared to when participants made identifications immediately after their interviews. There are limitations to the generality of their findings because they did not use the full ECI and they only interviewed participants about suspect descriptions, not the entire witnessed event.

The current work will more fully explore the cognitive processes underlying the ECI and how those processes impact eyewitness identifications. In the following sections we will more fully discuss the cognitive processes thought to underlie the ECI techniques, the eyewitness literature that examines these processes, and two experiments designed to examine some of the possible interactive effects of ECI components. The results of the experiments will be discussed both in terms of basic cognitive processes and practical applications for the legal community.

CHAPTER 2 – LITERATURE REVIEW

Development of the Cognitive Interview

Fisher and colleagues developed the CI in the mid 1980's (e.g., Geiselman et al., 1985; Geiselman, Fisher, MacKinnon, & Holland, 1986). Since its original inception, the CI has been promoted as a superior eyewitness interview tool (for discussion, see Fisher & Castano, 2008). The CI has even been suggested as a more appropriate interview tool by the United States Department of Justice (Wells et al., 2000). The original CI was based on a set of four cognitive mnemonics that were designed to improve both the quantity and quality of information (Geiselman et al., 1984). These mnemonic devices elicit a higher quantity and quality of information compared to standard police interview techniques (Geiselman et al., 1984; Geiselman et al., 1985, 1986), but other questions still remain unanswered about this technique. We will elaborate and address those questions in following sections.

The four cognitive mnemonics that comprised the original CI technique were based on two key cognitive theories that were established in the literature: 1) the idea that there are multiple memory traces that can be activated to access an item in memory (Bower, 1967); and, 2) the encoding specificity hypothesis that states that the quality and amount of overlap between the encoded and retrieved memory contexts is directly related to the probability of recalling items from memory (Tulving & Thomson, 1973). The four mnemonics were: i) mental context reinstatement, ii) an instruction to recall everything, no matter the presumed importance of the information, iii) reverse retrieval order, and iv) a perspective-change instruction.

These mnemonics were implemented through the use of several different instructions (Geiselman et al., 1984). First, the participants were told to try and "reinstate in your mind the context surrounding the incident" (p. 76). Second, participants were told, "some people hold back information because they are not quite sure what they remember" (p. 76); participants were then encouraged not to edit their memories when recalling the event. Third, participants were encouraged to start at the beginning the first time they recall the event, but then on subsequent attempts they should try to use different recall orders, including starting at the end and working back to the beginning of the incident. Fourth and last, participants were encouraged to adopt the perspective of other people in the incident.

Research has shown that these mnemonics in isolation facilitate recall of simple stimuli in the laboratory. Smith (1979) showed that participants showed a significantly higher recall rate when the context at retrieval was the same as the context during encoding, compared to a different retrieval context. In fact, as will be discussed later in this section, this is one of the key components of the CI (e.g., Dando, Wilcock, & Milne, 2009). The mental reinstatement of context instruction (see, e.g., Geiselman et al. 1984) of the CI has been shown to increase recall output compared to a control condition (e.g., Boon & Noon, 1994; Milne & Bull, 2002). These findings are in line with the principle of encoding specificity.

The instruction to recall everything, no matter the perceived importance of the information is also an important mnemonic in the CI (e.g., Milne & Bull, 2002). This instruction was intended to increase overall memory output (Geiselman et al. 1984). By increasing recall output, it could allow more retrieval pathways to be activated, which is in line with a higher probability of recall output of additional items based on the mechanisms laid out by Bower (1967). Therefore, the instruction to recall everything allows for a cognitive process to become activated that allows for the facilitation of recall, which is the goal of the CI.

The third mnemonic is also beneficial to memory retrieval. The reverse recall order instruction in the CI is designed to change the focus of the eyewitness to items that they otherwise might not access (Geiselman et al., 1984). Whitten and Leonard (Whitten & Leonard, 1981) found that having participants recall autobiographical details in a reverse chronological order significantly improved memory performance. Whitten and Leonard concluded that by using a reverse-order recall strategy, participants were able to focus on aspects of the autobiographical details that they may not normally focus on, which lead to retrieval of previously unretrieved items. The process of retrieving these unretrieved items would cause the activation of additional memory traces, which would increase recall probability based on the mechanisms described by Bower (1967). By applying this instruction to the CI, Geiselman et al. (1984) allowed for the probability of additional memory access through the activation of additional memory traces, which has the potential to further facilitate recall with the CI.

The fourth mnemonic in the CI is the perspective-change instruction, which has underlying mechanisms similar to those of the reverse-order menomonic (Geiselman et al., 1984). Pichert and Anderson (1977) had participants read a narrative from the perspective of a homebuyer, burglar, or neither (control). The results showed that participants were able to recall more information consistent with the perspective that they used at encoding. Anderson and Pichert (1978) followed up this study by having participants read narratives from the perspective of either a homebuyer or a burglar and then recall the narrative from the same or different perspective of that used at encoding. They found that adopting a perspective different from that used at encoding led participants to change the type of information on which they focused. This change allowed for different details to be recalled relative to those participants had previously recalled. Similarly to reverse-order recall, the mechanisms underlying the perspective change would increase the number of active memory traces and increase context overlap, and that would lead to a higher recall probability based on the cognitive mechanisms that Bower (1967) and Tulving and Thomson (1973) described.

Thus far we have discussed the cognitive mechanisms underlying the CI; now we will briefly discuss the implementation of the CI as an interview technique. The CI occurs in several phases (Geiselman et al. 1985). During the first phase witnesses are given the context-reinstatement and recall-everything instructions and asked to engage in free recall of the event in question. After free recall is complete, the interviewer asks follow-up questions based on the information provided by the eyewitness. After this follow-up questioning phase, interviewers give eyewitnesses the instruction to use the reverse-order recall strategy to freely recall the event again. Following this phase is the last phase of the CI, the perspective-change phase in which the interviewers give eyewitnesses the instruction to use the perspective-change to engage in another free recall attempt.

Though the original CI has been shown to be superior to other interviewing techniques, there were still aspects of interviews that this interviewing technique had not taken into account (e.g., the social dynamics of an interaction, etc.). In an enhancement of the CI (refered to as the ECI from here on) to address these shortcomings. Fisher and colleagues (Fisher et al., 1987) revised the original CI to include a clearer set of guidelines for interviewers using the CI, and to include additional techniques to further optimize its effectiveness as an interview tool. Fisher et al. added instructions to limit interviewer's interruptions during the free narrative portion of the interview, as they noted this to be a particular problem hindering typical police interviews. They also added instructions to facilitate the organization of follow-up questions so they are more open-ended and in an order more consistent with the eyewitness's free recall account of the event. They compared the ECI to the original CI and found that there was a significant increase in correct recall with the ECI compared to the original CI. They also noted that there were no differences in incorrect or confabulated recall between the two. These revisions, discussed in detail next, thus further enhanced eyewitness recall performance.

Fisher and Geiselman (1992) published a set of guidelines on how to properly conduct and interview with the ECI. According to Fisher and Geiselman, the ECI contains the mnemonic techniques from the CI that facilitate eyewitness recall, with the addition of several guidelines on properly conducting an eyewitness interview. First the ECI incorporated several interpersonal communication techniques that have been shown to aid recall. These techniques include knowing when to establish and relinquish eye contact to facilitate the comfort of the eyewitness. Another of the techniques involved insuring that the eyewitness is aware that they are in complete control of the interview. Interviewers are also strongly encouraged never to interrupt an eyewitness during the interview process. These techniques were intended to insure that the eyewitness is comfortable with the interview process and to facilitate social interaction and information output (Fisher & Geiselman, 1992).

Fisher and Geiselman (1992) also provided additional guidelines for interviewers on how to formulate follow-up questions. They suggested that interviewers only ask questions pertaining to the information that an eyewitness has already recalled during earlier parts of the interview. The questions that are asked should begin with open-ended questions and proceed to more direct, closed-ended questions. For example, if an eyewitness mentions the suspect during the free recall stage of the interview but does not provide many additional details, then the interviewer should pose a question such as: “you mentioned the perpetrator, could you describe the perpetrator in more detail?” The interviewer can then proceed to more direct questions based on what the eyewitness recalls in response to the initial question (i.e. “You mentioned they had short hair, can you tell me what color it was?”). By following these guidelines Fisher and Geiselman suggested that an interviewer will facilitate the output of correct information while minimizing the likelihood of incorrect retrieval.

Fisher and Geiselman (1992) also added an additional mnemonic to the ECI, the use of focused imagery. Paivio (1971) postulated that visual and verbal information are stored in separate locations in memory. By using a focused imagery instruction during the follow-up questioning procedure, the interviewer can have the eyewitness access visual traces, which can help facilitate memory retrieval. Fisher and Geiselman (1992) contended that it is important to ask questions in a way that facilitates access not only to the concept traces, but also to the image traces that are stored in memory. This is done in the ECI by asking the eyewitness directly what mental images they remember from the incident and asking questions to probe those images. Fisher and Geiselman also stressed the importance of using multiple retrieval attempts to recall information. Multiple retrieval attempts have been shown to cause hypermnesia with eyewitnesses (Scrivner & Safer, 1988).

Evaluation of the CI and ECI

Geiselman et al. (1984) published the original evaluation of the CI in which they compared it to a control interview that was comprised of an interview without the aid of the four mnemonics that are unique to the CI. Using a staged event in which one instructor entered a classroom and took the projector from the lecturing instructor, Geiselman et al. had particpants return at a 48hr delay to be interviewed. This initial evaluation of the CI showed that the mnemonics aided participants in recalling more correct information compared to the control interview. The CI also led to more incorrect recall during the follow-up questioning phase. These findings were independently replicated in another laboratory to further support the effectiveness of this interview (Aschermann, Mantwill, & Kohnken, 1991).

Geiselman et al. (1984) showed the superiority of the CI, but they failed to control for several key factors that could have been important. First, the experimenter did not directly interview participants; they were given recall booklets with instructions for each portion of the interview. Subsequent experiments with the CI used a more structured interview format instead of booklets. A second limitation is that there were only eight participants per interview condition, though that was enough power to reach statistical significance. The last specific limitation with this study is that the authors examined correct and incorrect recall, but they failed to directly examine accuracy. This limitation is particularly troubling because higher incorrect recall rates directly affect eyewitness accuracy. Nevertheless, despite these limitations, the study provides evidence that the mnemonic devices in the CI do indeed improve recall performance for eyewitnesses. Fortunately, other studies have rectified these limitations.

Geiselman et al. (1985) followed up their original evaluation of the CI and furthered the support for the CI as a better interview technique in the laboratory. Geiselman et al. showed participants crime videos and conducted the interviews at a 48hr delay. As in the original study, in this study Geiselman et al. used the CI and standard control condition[1] as well as hypnosis, a novel condition. The results showed that the CI and the hypnosis conditions performed equally well eliciting correct information and there were no differences in output of other types of information. One of the main advantages that the CI showed was that the implementation time was vastly superior to the hypnosis interviews by almost 20 min. They also argued that it is easier to train interviewers to conduct the CI than other interview techniques but this claim must be qualified by the fact that they used experienced law enforcement officials to conduct the interviews in the study.

Research has also shown that the CI could help inoculate against the negative effects of misinformation if the interview is conducted prior to exposure to the misinformation (Geiselman, Fisher, Cohen, & Holland, 1986). Geiselman and Padilla

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[1] The standard control condition or standard police interview as it is often refered to by Fisher and collegues (e.g., Fisher and Schreiber, 2007), is difficult to operationalize because there are no specific guidelines used to train officers in the United States (Wells et al. 2006). Fisher and Schreiber merely state that the standard interview condition should be one that is currently in practice, but that will vary across different time periods and regions because of the diversity of interview techniques used in the real world (Wells et al. 2006).

(1988) also extended the original CI to use with child eyewitnesses. They had children view a video of a liquor store holdup and interviewed them after a three-day delay with either a standard police interview or a CI. Their results showed that children performed significantly better when interviewed with the CI than with the standard interview. There results further the validity of the CI as an interview tool and extend its use to a wider population of individuals. Other researchers have also examined the usefulness of the CI with child witnesses (Flin, Boon, Knox, & Bull, 1992).

Fisher and colleagues have replicated these results several times (Fisher, Geiselman, & Amador, 1989; Geiselman, Fisher, Cohen, Holland, & Surtes, 1986; Geiselman, Fisher, MacKinnon et al., 1986), each time showing the CI to be superior to other interview techniques (for review, see Geiselman, 1988). In addition to having law enforcement officials use the CI to interview participants, Fisher and colleagues have also trained police officers to interview real eyewitnesses. Fisher, Geiselman, and Amador (1989) trained half of a group of police officers to conduct CIs with eyewitnesses to a real crime following the collection of baseline interview recordings. After the training more recorded interviews were gathered and blind raters rated all interviews. The results showed that when the CI was used in real situations there was a significant improvement in the number of details that the officers were able to elicit from eyewitnesses with the CI compared to their previous techniques.

Boon and Noon (1994) made an attempt to validate the CI by isolating each of the components of the CI and examining the impact that each had on eyewitness memory. There were 5 conditions in their study: 1) recall everything followed by reverse order; 2) recall everything followed by change perspective; 3) recall everything followed by context reinstatement; 4) recall everything followed by try again; and 5) no special instructions followed by try again. Boon and Noon chose this design because the report everything instruction is the part of the CI most often used by eyewitness interviewers, even when not using the CI. There was a 48hr delay between the initial encoding of the video and the interview. During the interview participants were given instructions based on the condition to which they were assigned and were asked to write everything that they could remember from the critical video during both recall attempts.

Boon and Noon (1994) reported no differences in recall performance during the initial recall portion of the interview for the groups using the mnemonic components of the CI and all were superior to the no instruction control group. There was also significant improvement during the second recall session for all mnemonics except the change perspective instruction. Their results show that the individual components of the CI are superior to no instruction. Boon and Noon reported novel results isolating each of the mnemonic strategies of the CI, others have replicated this evaluation method.

Milne and Bull (2002) also examined the validity of the CI by isolating each mnemonic component, but they only looked at the four original mnemonic components from the original CI. Milne and Bull did use a rapport building phase that was not part of the original CI, but was added to the ECI, but they failed to include other ECI components. There were two phases in their interviews, an initial free recall phase followed by one of the following six conditions designed to examine each of the mnemonics in isolation: 1) recall everything condition, 2) mental reinstatement of context condition, 3) reverse-order recall condition, 4) perspective-change condition, 5) recall everything + mental reinstatement of context condition, and 6) additional free recall control condition. Their results showed that the combination of the context reinstatement and recall everything instructions was superior to all other conditions except the context reinstatement instruction alone; the context reinstatement condition did not itself differ from the remaining four conditions, which did not differ amongst themselves. They concluded that the combination of the mnemonics could be important in enhancing recall with the ECI.

There are four main limitations to the design and procedures used by Milne and Bull (2002) to validate the mnemonic components of the CI. First, there was a limited sample size (average n = 5.6 per cell). With so few n per condition they could have suffered from low power and not detected existing differences. There were numerical differences between their conditions that may have reached significance with a larger sample. Second, they failed to examine the interactive effects that each of the components have on the other components. In fact, they and others (e.g., Fisher & Schreiber, 2007) mention that the benefit of the ECI is the result of the combination of the components. They found that the combination of the recall everything instruction and context reinstatement produced superior recall compared to all but the context reinstatement condition alone. This finding indicates that there could be an advantage to including multiple mnemonics in the CI, but their design failed to systematically address this issue. Third, they failed to use the full ECI. They did use the rapport building component of the ECI, but they failed to examine all of the mnemonic components of the ECI, namely they left out the focused imagery component. Lastly, they used an explicit encoding instruction with the participants. This is not an ecologically valid approach as real witnesses are not aware ahead of time that they are about to view a crime that they will need to remember at a later time. These limitations do not allow any concrete conclusions to be drawn about the effectiveness of the ECI, though it does underscore the need to study the ECI in its entirety and not in isolation.

Dando, Wilcock, and Milne (2009) also attempted to validate an individual component of the ECI. They examined the usefulness of just the mental reinstatement of context portion of the ECI. Dando et al. had participants view a crime video and then interviewed them after a brief distractor task. Dando et al. included the initial components of the ECI: rapport building, transfer control to the witness, free recall phase, and follow-up questioning phase. Prior to the free recall phase, Dando et al. manipulated the mental context reinstatement instruction between groups. Participants either mentally reinstated context, drew a sketch of the original context, or did not reinstate context (control). The results showed that both context reinstatement groups were more accurate than the control group with no increase in incorrect recall rates. They did report an increase in confabulated items in the mental reinstatement of context condition, compared to the control and sketch context conditions. The findings reported by Dando et al., like those reported by Milne and Bull (2002), further underscore the need to study the ECI in full in a way that will allow the combination of the components to be examined.

Davis et al., (2005) also attempted to validate the use of the mnemonic components of the ECI. Unlike Milne and Bull (2002) and others (e.g., Boon & Noon, 1994; Dando et al. 2009), Davis et al. (2005) used the full ECI and attempted to validate a shortened version of the ECI to reduce the amount of time it takes to conduct an interview with the ECI. Unlike other studies, Davis et al. used an incidental learning task to expose participants to the critical video clip. This is one of the positive aspects of their procedures. Following the initial exposure and a 2-3hr delay participants were interviewed in one of three conditions. For the control condition, Davis et al. used the structured interview (SI; e.g., Memon, Wark, Holley, Bull, & Koehnken, 1997). The SI consists of those components of the ECI that do not include the cognitive mnemonics (cf. Memon et al. 1997). Therefore the SI includes building rapport, turning over control of the interview, free recall etc. The other two conditions were the full ECI or a modified ECI (MCI). The MCI consisted of all of the components of the ECI with the exception of the perspective-change and reverse-order recall instructions. These components were replaced by two additional free recall attempts. While replacing these components is not the most optimal way to evaluate the full ECI, Davis et al. included these components to equate the number of interview phases in their design. Their results showed that there were no differences between the ECI and MCI in correct recall and both were superior to the SI. They also reported that there were no differences among any conditions in incorrect, or confabulated recall and no differences in accuracy across the three conditions. Davis et al. failed to shorten the amount of time in which it took to conduct the MCI in that there were no differences in the amount of time it took to conduct either the ECI or the MCI.

While Davis et al. failed to shorten the interview time, they did use a better evaluation technique. They used the full ECI and compared that to their MCI and an SI. Removing components from the full ECI and using the full ECI as a comparison condition allows for the examination of the combinatory effect of the mnemonic components. This is a better technique because, as has previously been discussed, it is thought the true benefit of the ECI comes from such a combination (e.g., Fisher &

Schreiber, 2007). One downside to the design Davis et al. used was that they removed two components at the same time. Therefore the interactive effects of the ECI are less clear because the lack of a difference between the ECI and their MCI could be the result of removing both components (i.e. they are not necessary) or they could be the result of the additional free recall phases added to the MCI to equate for the number of interview phases. While this is a limitation there are other, more positive aspects of their design that should be highlighted. In addition to their removal/comparison approach to examining the ECI, they also used an incidental learning task. Using an incidental learning task is important from an ecological validity perspective. Eyewitnesses are not aware that they are going to witness a crime a priori, and therefore laboratory experiments should mimic this as closely as possible. Also their methods, had they conducted them differently, would have allowed them an opportunity to observe any interactive effects that might occur with the addition/subtraction of ECI components. The design of Experiment 1 was directly motivated by the limitations reviewed here. Namely, it allowed us to examine the interactive effects of one of the components of the ECI and do so in a manner that is more ecologically valid than most of these validation studies.

Other attempts have been made to validate the ECI in a variety of situations. The ECI was validated for use with children eyewitnesses (Saywitz, Geiselman, & Bornstein,1992) as long as the questions used during the follow-up questioning phase are age appropriate (Memon, Cronin, Eaves, & Bull, 1993). However, when children are given a cued test following an ECI at a 5-month delay, the benefits of the ECI disappear (Flin et al., 1992). The ECI has also been shown to improve eyewitness memory of the actual interview itself compared to a control interview (Kohnken, Thurer, & Zoberier, 1994). Memon, Holley, Milne, Koehnken, and Bull (1994) failed to revalidate the use of the ECI with police officer interviewers, but these results were confounded with the fact that not all officer interviewers used all aspects of the ECI. Fisher et al. (1989) also found that one of the officers trained to use the ECI failed to do so and there was no subsequent improvement in eyewitness recall.

Other studies have been published since the ECI was developed, but many of those have failed to use the ECI and opted instead for the CI, a problem that Fisher and colleagues in particular have pointed out (Fisher & Schreiber, 2007). In fact, Fisher and Schreiber argue that the mnemonics of the original CI comprise only about 10% of the ECI (but Fisher and Schreiber do not identify the scale for this estimate) and that researchers are failing to take full advantage of the other aspects of the technique. A meta-analysis of the relevant CI literature also showed that about half of the published studies used the original CI compared to the ECI (Kohnken, Milne, Memon, & Bull, 1999).

ECI and Eyewitness Identification Accuracy: Foundation for Experiment 2

While the ECI has proven useful in facilitating recall, including person descriptions, few attempts have been made to apply the ECI to eyewitness identifications. Fisher and colleagues have attempted such an application and found that the ECI does not improve eyewitness accuracy rates (e.g., Fisher, Quigley, Brock, Chin, & Cutler, 1990 as cited in Fisher & Schreiber, 2007). It is difficult to critically evaluate the Fisher at al. study, given the brevity of the second-hand description, but Gwyer and Clifford (1997) and Finger and Pezdek (1999) also found that the ECI did not improve eyewitness identification accuracy. There were some limitations to Gwyer and Clifford's and Finger and Pezdek's studies that should be addressed. The maximum delay used in these studies was 4 days and 1 week, respectively. This could be an issue because previous research has shown that, when eyewitnesses provide detailed verbal description, their identification accuracy suffers at shorter delays (for review, see Meissner, Sporer, & Schooler, 2007). However, Meissner and Brigham (2001) point out that if the delay is sufficient (> 30 minutes), this decrease in accuracy is marginalized. However, the studies reported by Meissner and Bringham only had participants give a suspect description, they did not conduct a full interview. It could be that a longer delay is necessary for this decrease in accuracy to become marginalized. Especially when a more thorough interview is conducted (such as the ECI), because of the increase in recall of person details that these interviews seem to produce (e.g., Fisher et al. 1990, as cited in Fisher & Schreiber, 2007). Further, Finger and Pezdek only used a portion of the ECI's components (omitted reverse-order recall and perspective-change), which limits generalization of their findings to the impact that the full ECI will have. Experiment 2 attempts to clarify the shortcomings in this area of the literature and validate the ECI with eyewitness identifications.

CHAPTER 3 – EXPERIMENT 1

The main purpose of Experiment 1 was to examine the usefulness of including the focused imagery instruction as part of the ECI. Focused imagery was added to the ECI as a way to access multiple types of memory traces based on Paivio's theory of separate memory traces for visual and verbal information (1971). If this theory is correct, then we expect that including the focused imagery instruction with the rest of the ECI components will improve eyewitness recall and accuracy. On the other hand, as Loftus points out in her seminal work, people do not encode exact copies of the events that they witness (Loftus, 1979). Instead, they encode the important pieces of the event and use other knowledge to fill in the gaps of the memory. This is the reconstructive process of memory (Loftus, 1979). In fact, much of the work on eyewitness memory has shown just how susceptible memories are to reconstructive errors (D. Davis & Loftus, 2007). If this is the case with focused imagery in the ECI, then focused imagery would likely contribute to an increase in memory errors and as such, be detrimental to the accuracy of eyewitness reports elicited using the ECI.

Experiment 1 also examined the impact of interview repetition and delay on eyewitness memory. These variables were selected because not all eyewitnesses are interviewed immediately following a crime and some eyewitnesses are interviewed multiple times. Further, the focus imagery mnemonic may be particularly important because eyewitnesses could rely on reconstructive processing more at a delay, which could impair accurate recall. On the other hand, eyewitnesses could have a greater need to cue memory for visual details at a delay, which could be beneficial. In order to achieve more ecological validity than many other studies using the ECI, Experiment 1 utilized an incidental learning procedure to mimic what occurs with real eyewitnesses. Eyewitnesses rarely expect to witness a crime.

Finally, Experiment 1 also examined the impact of working memory capacity (WMC) on eyewitness performance with the ECI. This is potentially an important covariate to examine in the laboratory because it is one that cannot be examined easily in the real world even though witnesses most likely vary greatly in WMC across individuals and across time for any given individual. Eyewitnesses will have different attentional resources when confronted with the critical event and WMC is highly related to available attentional resources. It is likely that eyewitnesses with limited WMC will recall less information during the free recall portion of the ECI but may maximally benefit from the other mnemonic components of the ECI.

Method

Participants

Seventy-seven participants were recruited for Experiment 1 from introductory psychology courses at the University of Oklahoma. All participants were fluent in English and over 18 years of age. Of these, only 71 completed all portions of Experiment 1 and are included in the analyses. Demographic information can be found in Table 3.1.

Design

A 2 (Focused Imagery: present vs. absent) x 2 (Initial Delay: immediate vs. 1-week) between-subjects design was used to examine the effects on eyewitness memory of including focused imagery in the ECI and of delaying the initial interview. See Figure 3.1 for a graphical representation of the design and procedure. Those participants that were interviewed in the immediate condition also returned after a week's delay for a follow-up interview in the same focused imagery condition. This nested within-subjects factor allowed us to examine the effects on eyewitness memory of repeated interviewing. All participants were tested and interviewed individually.

Counterbalancing

Previous research has shown that different types of information are more dominant than others. Specifically, people recall action details more frequently and accurately than other types of information (e.g., Memon et al., 1997). Accordingly, the order of the follow-up questions addressing each of these three types of details was counterbalanced to control for output interference that could arise because of the tendency for eyewitnesses to recall action details first and more predominantly than either context or person details. The design was randomized in blocks of 24 to account for the six item-order types and four factorial conditions. A total of 72 participants were required to fill the full counterbalanced design, however one subject failed to complete all portions of the experiment, therefore the design was not completely filled.

Procedure and stimuli

After obtaining informed consent for participation and audio recording, participants were asked to rate a series of 30 sec video clips as to the likelihood that they would experience the events depicted in the videos in everyday life. Four videos were presented on a desktop computer, including the critical video depicting a male entering a female's office, conversing with her, and taking some money from her purse while she turns around to retrieve a file. The critical video appeared in the third position in the sequence to promote the incidental nature of the task and to create some interference as would occur in a real-world situation. The filler videos also depicted actions involving people in everyday settings. The videos for Experiment 1 did not contain audio in order to eliminate variability due to auditory aspects of the stimuli. Participants gave an average rating of 2.18 out of a 7-point Likert scale to the critical video, indicating the events in the critical video were unlikely to occur in their normal everyday lives.

Following the initial rating task, participants completed a working memory measure (described below) as a distractor task. The working memory measure is also used as a covariate in subsequent analyses. After participants completed the working memory measure they were either interviewed (immediate initial interview condition) or dismissed and asked to return a week later to complete the rest of the experimental tasks (delayed initial interview condition). Participants in the immediate condition, following their initial interview, were asked to return a week later to complete the rest of the experimental tasks (delayed repeated interview condition). In both the immediate and delayed interview conditions, participants were interviewed during the follow-up session. After the final interview participants were debriefed and dismissed.

Working memory measure. Working memory capacity was measured using a counting operation span task (CSPAN; Engle, Tuholski, Laughlin, & Conway, 1999), which requires participants to count and keep track of the number of blue circles in arrays of three-nine circles with a variety of other stimuli present. Trials contained between two and six responses. After the response trials participants were then presented with a recall box and asked to recall the previous trial numbers in serial order. Participants were correct if they reported the serial order correctly for each recall request. The final score consisted of the total number of correctly recalled numbers given that the serial order was correct.

Interviews. The interview format included all aspects of the ECI as described by Fisher and Geiselman (1992) and discussed in Chapter 1, except as modified by the manipulations described above. Repeated interviews were conducted using the same imagery condition as in the initial interview. The author conducted all interviews for Experiment 1, to insure better control of interview quality for this first experiment using the ECI, notwithstanding that the author was obviously not naïve to the design or hypotheses in the current experiment. During the initial phase of the interview the interviewer greeted the participants and rapport was established. Following this phase of the interview, the instruction phase occurred in which the interviewer explained the parameters of the interview and the expectations of the subject during the interview. Any questions were answered and the interviewer then delivered the recall instructions. The recall instructions for the free recall phase included the instruction to recall everything, no matter the perceived relevance, and the mental reinstatement of context instruction. Following the free recall phase instructions, the interviewer answered any questions the participants had and then turned the interview over to the subject to begin the free recall session. Participants were never interrupted during the free recall phase and it lasted until a period of silence persisted for at least one-minute.

Following the free recall phase, participants were asked follow-up questions in a counterbalanced order as described earlier. To the extent that participants received focused imagery instructions, they were given at this point. For focused imagery, participants were instructed to close their eyes and try to recall the images from the critical event and report the relevant item type details from those images. During the follow-up questioning phase participants were asked open-ended questions about information that they had produced in the free recall phase and about subsequent information that they recalled during the follow-up questioning phase. Participants were never asked questions about information from which they had not recalled at least some detail (e.g., if they mentioned the perpetrator they were then asked if they would describe the perpetrator). After the follow-up questions were exhausted, participants were then asked to perform a reverse-order recall task. After the reverse-order recall was complete, participants were asked to perform a perspective-change recall task. Again, participants were never interrupted during these phases of the ECI and recall continued until a full minute had passed since the subject's most recent output. Following this phase participants were debriefed (assuming it was the last or only interview) and dismissed.

Scoring procedure. The scoring procedure that is used for the proposed studies is similar to that used by other researchers with the ECI (e.g., Hutcheson, Baxter, Telfer, & Warden, 1995; Milne & Bull, 2002) with one exception: Individual item types were scored as action, context, and person information as opposed to action, person, object, and surrounding item types. The object and surrounding item types were combined into a general context item type for simplicity and because of the difficulty in distinguishing between the two types. Individual reported details were scored as correct, as incorrect (e.g., recalling a blue shirt when it was red), or as a confabulation (e.g., recalling a getaway car when there was no car present in the scene), and these scores were used to calculate an output-bound accuracy measure (e.g., Gudjonsson & Clare, 1995; Pansky, Koriat, & Goldsmith, 2005). Output-bound accuracy is simply the number of correctly recalled items divided by all recalled items. Output-bound accuracy has been argued as a more appropriate measurement technique because it not only reflects correct recall but incorrect recall and confabulation details (e.g., Fisher & Schreiber, 2007). Output-bound accuracy is also arguably more appropriate from an eyewitness perspective because it reflects not only the quantity but also the quality of the information recalled by the eyewitness. It is often more important in a legal setting that whatever the eyewitnesses produce—for example, on the witness stand—be accurate than that they produce as much information as possible. In addition, high levels of incorrect recall waste law enforcement time and resources (e.g., Pansky et al. 2005).

Results

Analysis of WMC Covariance with Focused Imagery and Delay

The results of the CSPAN task were analyzed using a 2 (Focused Imagery: Present vs. Absent) x 2 (Initial Delay: Immediate vs. 1-week) between-subjects ANCOVA with the CSPAN score for each subject used as a covariate. The results showed that CSPAN performance did not significantly account for any additional variance in the model, $F < 1$. The CSPAN results were not used in any other analyses because they failed to account for any additional variance.

Analysis of Single Interview Overall Accuracy Rates

A 2 (Focused Imagery: Present vs. Absent) x 2 (Initial Delay: Immediate vs. 1-week) between-subjects ANOVA was used to examine overall eyewitness accuracy in Experiment 1. Figure 3.2 displays the results. The results showed that there was a significant main effect for initial delay, $F(1, 67) = 14.54$, $MSE = .086$, $p = .0003$, recall was more accurate for the immediate interviews ($M = .96$, $SE = .009$) than for the delayed interviews ($M = .70$, $SE = .07$). There was a marginal main effect of imagery, $F(1, 67) = 2.96$, $MSE = .086$, $p = .089$ showing that recall was more accurate with focused imagery

(*M* = .89, *SE* = .04) than with no focused imagery (*M* = .77, *SE* = .07). There was no significant interaction between imagery and delay, F (1, 67) = 2.31, *MSE* = .086, $p > .1$. Simple effects analyses for the delayed interview condition showed that there was a marginal difference between the focused imagery conditions, t (34) = 1.65, $p = .10$, such that participants in the focused imagery condition were more accurate at a 1-week delay (*M* = .81, *SE* = .07) than participants in the no focused imagery condition (*M* = .59, *SE* = .11). A simple-effects analysis for the immediate interview conditions showed that there was no significant difference between the focused imagery conditions t (33) = .66, p = .51, participants in the immediate focused imagery condition were just as accurate (*M* = .97, *SE* = .01) as those in the immediate no focused imagery condition (*M* = .93, *SE* = .02). These results thus provide weak evidence that there is a benefit for using the ECI with focused imagery at a delay and no benefit during the initial interview.

Analysis of Repeated Interview Overall Accuracy Rates

A 2 (Focused Imagery: Present vs. Absent) x 2 (Interview: Immediate vs. Repeated) mixed-model ANOVA with the last factor as the within-subjects factor was used to examine the impact of focused imagery on repeated interview accuracy. Figure 3.3 displays the results. The results revealed no significant main effects or interactions, all *F*'s < 1.

Item Type Analyses for Single Interviews

The results were further broken down by item type (i.e. Action, Context and Person details) and analyzed with a 2 (Focused Imagery: Present vs. Absent) x 2 (Delay: Immediate vs. 1-week) x 3 (Item Type: Action, Context, Person) mixed-model AVOVA with the last factor the within-subjects factor and output-bound accuracy as the dependent variable. Figure 3.4 displays the results. There was an overall significant main effect of delay, F (1, 67) = 18.28, MSE = .173, $p < .0001$, which showed that participants were more accurate in the immediate interview conditions, (M = .86, SE = .01) than in the delayed interview conditions, (M = .62, SE = .06). There was also a significant main effect of focused imagery, F (1, 67) = 6.50, MSE = .173, p = .01, that showed that participants were more accurate when they used focused imagery (M = .81, SE = .03) than when they did not (M = .66, SE = .06).

The present analysis treating item type explicitly as a within-subjects factor thus yields a different statistical conclusion for the main effect of focused imagery than when item type is ignored as in the earlier analysis. This discrepancy is in part due to different weightings of the individual item types based on the differences in the number of individual items within each item type. Because there happened to be a different number of items available to recall for each item type (N action = 51, N context = 56, N person = 36), they are weighted differently in the aggregated analyses. Therefore, the differences in the overall accuracy rates reported previously and the segregated analyses reported here are in part an artifact of the unequal weighting of item types in the aggregated analyses reported earlier. Only in the present analysis are certain effects detected, when the equal weighting of items is taken into account. Therefore, it could be argued that this is a more appropriate way to analyze these data because they are not affected by the different number of items that happened to be available for each item type.

A further argument can be made for examining the results based on item type. The item type factor is a within-subjects factor and the variance associated with that factor is being absorbed into the error term of the aggregated analysis. Treating it as a within-subjects factor here allows for its within-subjects variance to be segregated from the error term in the model. This is a more appropriate treatment because it allows between-subjects effects to be appropriately detected.

The results showed that there was a significant main effect for item type, F (2, 134) = 39.21, MSE = .018, p < .0001, that indicated differences in item type accuracy rates for action (M = .83, SE = .04), context (M = .76, SE = .04), and person (M = .63, SE = .03) details. The results also showed a marginal interaction between delay and focused imagery, F (1, 67) = 3.37, MSE = .173, p = .07, indicating that there is a difference in accuracy at different delays depending on the focused imagery condition. These effects are explored in more detail in subsequent analyses. There were no other significant interactions to report, all other F's < 1.

The interaction in this model is similar to the interaction reported previously for the overall eyewitness accuracy and the conclusions are similar in this case. The interaction between delay and focused imagery is driven by significantly poorer performance in the delayed-no imagery condition, compared to the delayed-imagery condition. There was a marginal simple effect of focused imagery in the immediate interview condition reflecting an advantage when focused imagery was used, F (1, 33) = 3.91, MSE = .01, p = .056. There was also a significant simple effect of focused imagery in the delayed condition reflecting an advantage when focused imagery was used, F (1, 34) = 5.11, MSE = .33, p = .03. These results show that the marginal interaction is driven by a greater effect of focused imagery for delayed interviews, as compared to immediate interviews.

Further analyses were performed to examine the interaction between focused imagery and delay for each individual item type. A 2 (Focused Imagery: Present vs. Absent) x 2 (Delay: Immediate vs. 1-week) between-subjects ANOVA examined the accuracy rates for action details. The results showed that there was a significant main effect of delay, F (1, 67) = 14.38, MSE = .085, p = .0003, participants recalled action details significantly more accurately during immediate interviews (M = .96, SE = .009) than during delayed interviews (M = .70, SE = .07). There was also a marginal main effect for focused imagery for action details, F (1, 67) = 3.03, MSE = .085, p = .086, that showed action details were recalled nominally more accurately when focused imagery was used (M = .89, SE = .038) than when no focused imagery was used (M = .76, SE = .066). The interaction between delay and focused imagery failed to reach significance, F (1, 67) = 2.25, MSE = .085, p = .14.

Planned comparisons examining accuracy rates for the main effect of item type revealed that action details were significantly more accurate than person details and there was no difference in accuracy between the action and context details, F (1, 210) = 15.42, MSE = .09, $p < .0001$, F (1, 210) = 1.92, MSE = .09, p = .167, respectively. Context details were also recalled more accurately than person details, F (1, 210) = 6.46, MSE = .09, p = .01. These differences in accuracy are driven largely by the significantly higher incorrect recall rates for person details compared to action and context details, F (1, 67) = 100.72, MSE = 5.25, $p < .0001$, F (1, 67) = 68.16, MSE = 4.33, $p < .0001$, respectively. The difference in accuracy rates across item types is also due to lower overall correct recall rates of person details compared to action and context details, F (1, 67) = 121.60, *MSE* = 38.65, *p* <.0001, *F* (1, 67) = 36.05, *MSE* = 23.34, *p* < .0001, respectively. Mean recall rates by item type are in Table 3.2.

A 2 (Focused Imagery: Present vs. Absent) x 2 (Delay: Immediate vs. 1-week) between-subjects ANOVA also examined the accuracy rates for context details. A significant main effect of delay, *F* (1, 67) = 13.66, *MSE* = .071, *p* = .0004, showed that participants were more accurate during immediate interviews (*M* = .88, *SE* = .016) than during delayed interviews (*M* = .64, *SE* = .06) for context details. There was also a significant main effect of focused imagery, *F* (1, 67) = 5.25, *MSE* = .071, *p* = .025, that showed that participants are more accurate when focused imagery is used in the interviews (*M* = .83, *SE* = .037) than they were when no focused imagery was used (*M* = .68, *SE* = .06). There was also a significant interaction, *F* (1, 67) = 4.65, *MSE* = .071, *p* = .034, that indicates that there were greater differences in accuracy rates in the focused imagery conditions, across the delay conditions. Simple effects analyses showed that indeed, this interaction is the result of a participants recalling more accurately in delayed interviews when focused imagery (*M* = .78, *SE* = .071) was used, *t* (34) = 2.32, *p* = .026, compared to when no focused imagery was used (*M* = .50, *SE* = .098). The simple effects analysis between the immediate focused imagery conditions showed that there were no differences between the immediate focused imagery condition (*M* = .88, *SE* =.02) and the immediate no focused imagery condition (*M* = .87, *SE* = .027), *t* (33) = .19, *p* = .22.

Person detail accuracy rates were also examined with a 2 (Focused Imagery: Present vs. Absent) x 2 (Delay: Immediate vs. 1-week) between-subjects ANOVA. The results showed a significant main effect of delay, *F* (1, 67) = 18.62, *MSE* = .052, *p* < .0001, that indicates that participants were more accurate during immediate interviews (*M*

= .75, *SE* = .02) than during delayed interviews (*M* = .52, *SE* = .05). A significant main effect for focused imagery, *F* (1, 67) = 10.24, *MSE* = .05, *p* = .002, also shows that participants were more accurate when focused imagery was used (*M* = .72, *SE* = .03) than when no focused imagery was used in the interview (*M* = .54, *SE* = .05). The interaction between focused imagery and delay for person accuracy failed to reach significance, *F* (1, 67) = 1.77, *MSE* = .05, *p* = .18. Simple effect analyses revealed that participants were significantly more accurate for person details when focused imagery was used during immediate interviews (*M* = .80, *SE* = .029) than when no focused imagery was used in immediate interviews (*M* = .63, *SE* = .032), *t* (33) = 2.31, *p* = .027. Simple effects analysis also showed that participants were significantly more accurate for person details when focused imagery was used at a delay (*M* = .64, *SE* = .057) than when no focused imagery was used at a delay (*M* = .39, *SE* = .079), *t* (34) = 2.49, *p* = .017. The simple effect show that there is an advantage for person detail accuracy when focused imagery is used both immediately and at a 1-week delay. Further analyses revealed that participants were significantly more accurate in the focused imagery condition when interviewed immediately compared to a delay, *t* (34) = 2.48, *p* = .018. Participants were also significantly more accurate when interviewed immediately when no focused imagery is used compared to a delay, *t* (33) = 3.48, *p* = .001.

Item Type Analyses for Repeated Interviews

The repeated-interview accuracy results were also broken down by item type and examined with a 2 (Focused Imagery: Present vs. Absent) x 3 (ItemType: Action, Person, Context) x 2 (Interview: Immediate vs. Repeated) mixed-model ANOVA with the last two factors as the within-subjects factors. Figure 3.5 displays the results. There was no significant main effect of focused imagery, $F < 1$. The results showed that there was an overall main effect for item type, $F(2, 66) = 67.14$, $MSE = .013$, $p < .0001$. Action details were recalled at a higher rate ($M = .95$, $SE = .015$) than were context details ($M = .87$, $SE = .017$) and person details ($M = .73$, $SE = .02$). There was also a significant interaction between item type and focused imagery across time, $F(2, 66) = 3.60$, $MSE = .013$, $p = .032$. No other main effects or interactions were significant, all F's < 1.

A simple effects analysis showed that the interaction between item type and focused imagery was the result of the higher accuracy rates for person details during the initial interview with focused imagery ($M = .80$, $SE = .03$) condition compared to the no focused imagery ($M = .70$, $SE = .032$) condition, $t(33) = 2.31$, $p = .027$. These differences in accuracy rates for person details did not emerge with repeated interviews, $t(33) = .91$, $p = .37$. There were no differences in accuracy for action details across the focused imagery conditions for immediate interviews, $t(33) = .81$, $p = .4$. There were also no differences in accuracy for action details for repeated interviews, $t(33) = -.89$, $p = .38$. Further analyses failed to find any significant differences in accuracy for context details for either immediate interviews, $t(33) = .19$, $p = .84$, or repeated interviews, $t(33) = -.25$, $p = .80$, regardless of whether focused imagery was used.

Item Gains and Losses

The last analyses examine the impact of focused imagery on the number of items participants gained or lost across repeated interviews. Items gained are items that were recalled during the repeated interview given that they were not recalled during the initial interview. Items lost are those items that were recalled during the immediate interview that were not recalled during the repeated interview.

As for items gained, a 2 (Focused Imagery: Imagery vs. No Imagery) x 3 (Item Type: Action, Context, Person) mixed-model ANOVA with item type as the within-subjects factor show that there was no main effect on item gains across the focused imagery conditions, $F < 1$. Results are displayed in Figure 3.6. The results showed there was a significant Item Type effect on gains, $F(1, 33) = 7.66$, $MSE = .0009$, $p = .001$. Within-subjects contrasts showed that the were more overall gains in person details compared to context details, $F(1, 33) = 12.54$, $MSE = .0016$, $p = .001$. A contrast also showed that overall there were more item gains for Action details than for context details, $F(1, 33) = 13.56$, $MSE = .0016$, $p = .0008$. These results show that regardless of whether focused imagery was used there were significantly more gains for action and person details during the repeated interview. There was no interaction between the focused imagery conditions and Item Types, $F < 1$.

As for items lost across the delay between repeated interviews, a 2 (Focused Imagery: Imagery vs. No Imagery) x 3 (Item Type: Action, Context, Person) mixed-model ANOVA with Item Type as the within-subjects factor showed that there was no main effect on item losses across the focused imagery conditions, $F < 1$. Results are displayed in Figure 3.7. The results show that again there was a main effect of losses for Item Type, $F(2, 66) = 9.51$, $MSE = .001$, $p = .0002$. Within-subjects contrasts showed that there significantly more action and person details lost during the repeated interview regardless of focused imagery, $F(1, 33) = 18.45$, $MSE = .002$, $p < .0001$, $F(1, 33) = 8.72$, $MSE = .002$, $p = .005$, respectively. The interaction between focused imagery and item type for losses was also not significant, $F(2, 66) = 2.44$, $MSE = .001$, $p = .095$.

These results show that while there was better retention of person details with focused imagery in the ECI and more gains of both action and person details overall, there were also more overall losses of action and person details across both types of the ECI during the repeated interview.

Discussion

The results from the present experiment show that using the focused imagery instruction with the ECI is beneficial to eyewitnesses. This benefit is particularly noticeable after a 1-week delay between the critical event and the initial interview. The results for the longer delay-focused imagery condition are in line with Paivio's (1971) theory that participants may be able to access both verbal and visual traces more effectively. In particular, the results showed that person details were recalled more accurately when focused imagery was used compared to no focused imagery. This advantage in accuracy for person details when focused imagery was used was observed when the interview was conducted immediately following the critical event and when the initial interview was delayed for 1-week. These results further support the contention that eyewitnesses may benefit from accessing visual information for person details with the focused imagery component of the ECI (e.g., Paivio, 1971).

Further conditional analyses show an advantage for person and action detail gains across repeated ECI interviews. This was true regardless of whether focused imagery was used. However, there were also more action and person details lost across repeated interviews regardless of whether focused imagery was used. These results show a clear trade-off in memory performance across repeated interviews using the ECI. This trade-off in gains and losses could be due to a number of factors. One possible explanation is that the interactive effects of the mnemonic components of the ECI could cause a trade-off in the types of information retained across repeated interviews. Another explanation is that the new items that were recalled in the follow-up interviews could cause some interference that prevents the lost items from being recalled. This issue will be explored further in Chapter 5.

The overall results indicate that the focused imagery instruction is a beneficial portion of the ECI, especially when the interview is delayed for 1 week. The design used in Experiment 1 allows assessment of the impact of the individual component of focused imagery to be examined within the ECI. Using such a design could ultimately allow for the examination of the interactive effects of the combination of components in the ECI. Fisher and Schreiber (2007) have argued that this interaction is key to the success of the ECI. Therefore, utilizing such an experimental design in future experiments could allow for the examination of the interactive benefits of the ECI.

The results of the current experiment, while mixed, do show that there is a benefit for using the full ECI with focused imagery during initial interviews because eyewitness accuracy for person details is superior in this instance. This could prove maximally beneficial from an eyewitness identification perspective because eyewitnesses could provide investigators a more accurate description of suspects. This could allow a more accurate eyewitness lineup to be constructed (e.g., Malpass, Tredoux, & McQuiston-Surrett, 2007). If this is the case then an argument must be made for using the ECI during both immediate and delayed initial interviews. It could be maximally beneficial to use the ECI immediately and have witnesses return at a delay to make an identification. A longer delay between descriptions and identifications has been shown to positively impact eyewitness accuracy (e.g., Meissner et al., 2007). Experiment 2 explores this further.

CHAPTER 4 – EXPERIMENT 2

Previous studies have shown that, relative to other interview techniques, the ECI generally has a negligible impact on suspect identification accuracy (Finger & Pezdek, 1999; Gwyer & Clifford, 1997). This is despite the fact that witnesses tend to generate more detailed suspect descriptions with the ECI (e.g., Fisher et al., 1990 as cited in Fisher & Schreiber, 2007). The previous studies using the ECI have either not utilized all of the components of the ECI (Finger & Pezdek, 1999), or failed to use what could be better lineups (Gwyer & Clifford, 1997), or do not provide enough detail to fully understand the methods used (e.g., Fisher et al., 1990 as cited in Fisher & Schreiber, 2007). These limitations are troubling given the positive findings reported in Experiment 1 with person details and other reports in the literature that have shown similar benefits with the ECI (for review, see Fisher & Schreiber, 2007). The current experiment seeks to address these limitations and examine whether the ECI can be used to facilitate eyewitness identification accuracy.

The current experiment investigates two potential reasons for this surprising null effect. The first is the use of a non-optimal lineup generation procedure. Gywer and Clifford constructed their lineups by selecting foils based on the physical features that they shared with the suspect. Malpass et al. (2007) discuss the drawbacks of this selection criterion and argue lineups be generated based on eyewitness descriptions of the suspects. In fact, Malpass and Devine (1981) found that when eyewitness descriptions of the suspect are used, more accurate identifications are made.

The second potential reason for this surprising null effect is verbal overshadowing. Verbal overshadowing refers to an impairment in the accuracy of identifying a non-verbal stimulus (e.g., suspect) after verbally describing the stimulus (Schooler & Engstler-Schooler, 1990). Verbal overshadowing has been shown to have a negative effect on the accuracy of face identification (for a review, see Meissner & Brigham, 2001) and has been implicated as an important factor in eyewitness identification of suspects (Brown, Lloyd-Jones, & Robinson, 2008; Meissner, 2002). Verbal overshadowing is particularly problematic for the ECI because elaborative techniques such as perspective changing and reverse-order recall that can increase the amount of information that is recalled verbally, tend to exacerbate verbal overshadowing effects (Meissner & Brigham, 2001). Thus, when eyewitnesses are asked to make a suspect identification shortly after going through an ECI, whatever potential benefits the ECI might have on suspect identification accuracy are likely thwarted by such verbal overshadowing.

However, Finger and Pezdek (1999) found that when a delay is introduced between an interview that uses some aspects of the ECI and the identification task, the verbal overshadowing effect disappears. Others have also shown that inserting a delay between suspect descriptions and suspect identifications improves identification accuracy, resulting in a release from the verbal overshadowing effect (Lloyd-Jones & Brown, 2008; Meissner, 2002; Meissner & Brigham, 2001). Further, as the results from Experiment 1 show, when an interview was repeated at a one-week delay, very few person details are lost. This could mean that when the ECI is used, the verbal overshadowing effect is prolonged. However, based on the results from Experiment 1, the visual traces of those items might be retained when participants are asked to make an identification, which should release them from the verbal overshadowing effect. The current study will address these shortcomings in the literature and attempt to apply the ECI in a way that is beneficial to eyewitness identification research.

Method

Participants

Sixty-six participants were recruited for the current experiment from psychology courses (28 from Introduction to Psychology and 33 from Cognitive Psychology) at the University of Oklahoma. Five participants failed to follow instructions and were subsequently discarded from the analyses leaving $N = 61$. Participants received course credit for participation. All participants were self-described as fluent in English and over 18 years old. See Table 4.1 for demographic information.

Design

To utilize the benefit of information retention—as discussed with Experiment 1, we used a delay between the interview and identification task to increase the accuracy of the suspect identification—a 2 (Interview Type: SI vs. ECI) × 2 (Lineup Type: target present vs. target absent) between-subjects design was used. See Figure 4.1 for a graphical depiction of the design. All eyewitness identifications were performed at a one-week delay based on the results from previous studies that show the maximal benefit for a release from verbal overshadowing occurs at a delay (e.g., Finger & Pezdek, 1999).

Materials

The materials used in Experiment 2 were similar to those used in Experiment 1 with the following exceptions. The videos used in the current experiment contained sound to add more ecological validity to the stimuli. The critical video depicted the theft of a cellular telephone, whereas the critical video in Experiment 1 depicted the theft of money from a purse.

Procedure

As in Experiment 1, after consent was obtained, participants performed an implicit rating task on a series of videos (discussed in *Materials)* followed by the CSPAN task, described in Experiment 1. Following the CSPAN task participants were interviewed in their randomly assigned interview condition. After the interview was completed participants were reminded of their follow-up appointments and dismissed. During their follow-up sessions participants completed the suspect identification task. After this task was complete, participants were debriefed and dismissed. The ECI was conducted in a similar manner to the description in Experiment 1 that included focused imagery. The SI was comprised of all of the components of the ECI except the cognitive mnemonic components (cf. Memon et al. 1997). Additionally, to equate the phases of the two interviews, the SI used additional free recall attempts in the place of the perspective-change and reverse-order recall phases of the ECI.

Interviewers and interviewer training

For Experiment 2**,** two undergraduate students were trained by the author to conduct two types of interviews—the Structured Interview (SI) and the Enhanced Cognitive Interview (ECI)--using training procedures similar to those used by other researchers in the eyewitness literature (e.g., Gwyer & Clifford, 1997). Training was conducted on an individual basis and included written instructions for added clarification. Interviewers received training in: beginning an interview, building rapport, transferring control of the interview to the witness, practicing good interview behavior, facilitating an interview, note-taking for follow-up questioning, designing questions, using the cognitive components of the ECI, and closing an interview. Guidelines were provided for all possible conditions, so that the interviews would be administered as similarly as possible. Training techniques included individual instruction, role-playing, and multiple individual practice sessions. All interviewers were required to practice the SI and ECI techniques as well as social/conversational principles of investigative interviewing.

Additionally, all interviewers received instructions on the importance of fair and unbiased lineup presentations, including avoiding providing feedback to the eyewitnesses, and avoiding biased lineup instructions (e.g., Malpass et al., 2007). Prior to running participants, the author tested each interviewer's knowledge of interviewing methods and reviewed the necessary components and the interviewers were periodically monitored by the author to ensure there was no drift away from ECI and SI procedures. The interviewers were naïve to the theoretical reasoning of the design and to the predicted outcomes for Experiment 2.

Lineup Construction

The lineup construction was based on the guidelines described by Malpass et al. (2007). Typically, lineup construction—the selection of lineup foils—is based either on similarity to a suspect's features or on eyewitness descriptions of the perpetrator. Malpass and colleagues suggested that eyewitness lineups should be constructed, when possible, based on eyewitness descriptions. Research has shown that using eyewitness descriptions of perpetrators to generate lineups leads to the most effective and least biased lineup construction (Malpass & Devine, 1981; Malpass et al., 2007). Malpass et al. have demonstrated that the relationship between lineup bias and effective size is quite dependent based on the choosing rate of witnesses. Malpass et al. (2007) define an unbiased lineup as a lineup in which each lineup member has an equal chance of being selected. Effective lineups are those in which a naïve participant is equally likely to select any of the foils (including the suspect) based on an adequate description. Furthermore, this lineup construction method is thought particularly useful for the ECI because of the superior accuracy rates for person details recalled during the ECI. Accordingly, we used each participant's description of the perpetrator as the basis for selecting foils for the lineup. To the extent that participants did not generate enough person details for the perpetrator during the interview to construct an effective lineup, lineup selection was based on a randomly selected lineup based on the few details given (Malpass et al., 2007). Lineups were constructed during the week's delay between the interview (conducted immediately after the witnessed crime) and the identification task. Each participant's lineup was constructed by the author, who was then blind to a participant's interview condition. Lineup foils were selected from the Florida Department of Corrections Offender database (http://www.dc.state.fl.us/InmateInfo/InmateInfoMenu.asp). Not surprisingly, there was a significant negative correlation between the number of descriptors provided by a participant and the number of possible foils available from the database that matched the description, $r = -.53$, $p < .0001$.

Simultaneous lineups—those in which all photos are presented at once in an array—were used, inasmuch as research has shown that there are few instances in which there are differences in accurate identification rates between simultaneous and sequential lineups, and those differences do not clearly favor one type of lineup (Carlson, Gronlund,

& Clark, 2008; Gronlund, Carlson, Dailey, & Goodsell, 2009). Furthermore, simultaneous lineups are most commonly used in the United States by law enforcement officials (Malpass et al. 2007). In the current experiment the suspect (guilty for target present [TP] lineups; innocent for target absent [TA]) was in the fifth position of a six-person lineup photo array (the bottom middle position of a 2 x 3 matrix). Therefore, the lineup for a participant was based as closely as possible to the participant's description of the suspect, in order to have the fairest lineup possible. TA lineups were constructed similarly, except that the fifth position was filled with a sixth foil based solely on the participant's perpetrator description.

Results

Analyses of Overall Recall Accuracy

A 2 (Interview Type: ECI vs. SI) x 2 (Lineup Type: TP vs. TA) between-subjects ANOVA was used to examine the impact that the ECI and SI had on eyewitness recall. Figure 4.2 displays the results. The results revealed that there were no significant main effects of interview type or lineup type on overall accuracy, nor was there a significant interaction of those variables, Fs < 1. Separate analyses were conducted with the proportion of correct, total incorrect recall and total confabulations; no effects or interactions were significant, Fs < 2.80, p > .1.

Analyses of Accuracy by Item Type

The results of Experiment 2 were further broken down by item type. A 2 (Interview Type: ECI vs. SI) x 2 (Lineup Type: TP vs. TA) x 4 (Item Type: Action, Context, Conversation, and Person) mixed-model ANOVA with item type as the within-subjects factor examined the impact that the ECI and SI have on eyewitness at the item type level. Figure 4.3 displays accuracy results. The results showed that there again were no significant differences in accuracy or interactions between the interview type and lineup type factors, nor did they interact with the item type variable. This finding is particularly surprising because we did see differences in Experiment 1, particularly for person details. This makes it difficult to expect any differences in identification accuracy because there was no advantage for person details for the ECI.

There was a significant difference in accuracy at the item type level, F (3, 174) = 24.38, MSE = .016, p < .0001. Further contrasts collapsing across interview and lineup types showed that action details were significantly more accurate than context details, F (1, 58) = 31.97, MSE = .024, p < .0001. Action details were also significantly more accurate than person details, F (1, 58) = 64.52, MSE = .024, p < .0001. These differences show the superiority of action details accuracy that has previously been reported in the literature (e.g., Memon et al. 1997). There were no significant differences between action details and conversation details, F < 1. Further contrasts showed that recall of person details was also significantly less accurate than that for context details, F (1, 58) = 6.09, MSE = .031, p = .016. These results are similar to those of Experiment 1 in which person details were less accurate than other details types. Conversation details were also more accurate than person details, F (1, 58) = 45.39, MSE = .031, p < .0001. There was also an accuracy advantage for conversation details over context details, F (1, 58) = 10.81, MSE = .049, p = .0017, which shows that eyewitnesses were more accurate for conversational aspects of the stimuli than contextual aspects.

Next, we collapsed across interview and lineup conditions and performed analyses on incorrect and confabulation rates as they directly impact accuracy. Mean recall rates for recall types collapsed across conditions can be found in Table 4.2. These analyses revealed that the differences in item type accuracy rates are driven by higher incorrect and confabulation recall rates in the context and person details. In particular person details showed higher levels of both incorrect and confabulated items than did action details, $F(1, 58) = 55.14$, $MSE = 3.60$, $p < .0001$, and $F(1, 58) = 8.77$, $MSE = .538$, $p = .0044$, respectively. This explains the poorer accuracy rates for person details in Experiment 2. There were also higher incorrect recall rates for context details than for actions details, $F(1, 58) = 34.24$, $MSE = 1.49$. Participants in Experiment 2 also recalled more incorrect context details than conversation details, $F(1, 58) = 31.25$, $MSE = 1.61$, $p < .0001$. An additional contrast showed that there were higher incorrect recall rates for person details compared to context details, $F(1, 58) = 18.36$, $MSE = 2.63$, $p < .0001$. No other contrast reached significance $Fs < 2.34$, $ps > .13$. These results show that the differences in accuracy rates were driven by higher incorrect and confabulation recall rates. These higher rates were largely in the person and context detail types. The results reported here are not in line with the results reported in Experiment 1 for person details.

Analyses of Suspect Descriptions

A 2 (Interview Type: ECI vs. SI) x 2 (Lineup Type: TP vs. TA) between-subjects ANOVA examining the suspect descriptions revealed that there was a significant main effect of interview type, $F(1, 56) = 4.42$, $MSE = 4.10$, $p = .04$. These results show that the ECI ($M = 6.13$) elicited more overall suspect descriptors than did the SI ($M = 5.03$). These findings replicated the findings reported by Fisher and colleagues (e.g., Fisher et al., 1990 as cited in Fisher & Schreiber, 2007). We also examined suspect descriptions by recalled item type (i.e., correct, incorrect, and confabulations) and found no significant differences for interview type, lineup type or an interaction between the two, *Fs* < 1.01, *ps* > .3. These findings are not in line with the overall suspect descriptor advantage reported above. It seems that while the overall number of descriptors reported may have reached significance, these findings may merely be an artifact of a nominal increase in incorrect recall in the ECI condition. Therefore the findings reported by Fisher and colleagues may be an artifact of a nominal increase in incorrect description information. However, because of the brevity of their description, we cannot know this for certain.

Lineup Performance

A Chi-Square analysis comparing the overall accuracy rates between the ECI and SI conditions showed no significant differences, χ^2 (1, N = 30) = .03, p = .86. Figure 4.4 displays the results. A Chi-Square analysis comparing overall accuracy rates between the TP and TA lineup conditions also revealed no significant differences, χ^2 (1, N = 30) = .31, p = .58. Figure 4.5 displays the results. A Chi-Square analysis comparing the accuracy rates of participants that chose an individual in the lineup and those that did not also revealed no significant differences, χ^2 (1, N = 20) = .56, p = .46. Figure 4.6 displays the results. These results show that there was no significant impact on eyewitness identification accuracy for lineup type, interview type, or conditionalized on participants that chose an individual from a lineup. These results are in line with previous results in the ECI literature (e.g., Gwyer & Clifford, 1997).

Lineup Construction Evaluation

Analyses examining correlations between overall suspect information recalled, correct suspect information recalled, suspect information recall accuracy, identification accuracy, propensity to choose and lineup foils available were also conducted. Of these, only one correlation reached significance, which was the negative correlation between the overall amount of suspect information recalled and the number of available foils to select from the foil database, $r = -.53$, $p < .0001$. These results indicate that there was no relationship between the amount of accurate suspect information recalled and lineup selection.

Discussion

The results showed that there was no advantage for the ECI compared to the SI for recall accuracy. There were also no differences in recall accuracy for the lineup type conditions. They also show that there was poorer recall accuracy for several key item types that did not differ across the between-subjects variables. Specifically, there were poorer accuracy rates with person details that were caused by higher incorrect recall rates. Therefore, Experiment 2 failed to replicate the findings both of Experiment 1, and prior studies that have shown that the ECI is superior to the SI in both overall recall and accuracy. This lack of a finding does not support the use of the ECI over multiple free recall trials such as was used in the SI. The results from Experiment 2 also question the usefulness of the cognitive mnemonics used in the ECI because they did not prove to be more useful in the current experiment as they have in previously published studies (cf. Fisher & Schreiber, 2007).

The results of Experiment 2 also showed that there was no advantage to using the ECI with regards to eyewitness lineup identification accuracy. While these findings are surprising, given the care taken to design Experiment 2, they are in line with other studies that examined eyewitness identification accuracy within the ECI framework (e.g., Finger & Pezdek, 1999; Gwyer & Clifford, 1997). There were also no differences between the accuracy rates between TP or TA lineups. Further, there were no differences in accuracy between choosers and non-choosers. These results failed to find any benefit for using either the ECI or the SI with regards to eyewitness identification performance.

From a practical perspective, Experiment 2 shows the complexities of using the ECI in a study of this nature. While Experiment 1 showed a benefit for using the full ECI for person details, Experiment 2 failed to show such a benefit. While Experiment 2 did show an increase in descriptive information, this increase was also contaminated with incorrect recall. Because of this, perhaps it is not surprising that law enforcement officials are hesitant to adopt such an interview procedure (e.g., Wells et al., 2006). In all, the findings of Experiment 2 are somewhat surprising given the nature of the available literature demonstrating the benefits of the ECI.

Perhaps the differences in the efficacy of the ECI between Experiments 1 and 2 are due to the interviewers in Experiment 2. However, the interviewers in Experiment 2 were trained in a manner similar to other published studies using the ECI. The author also monitored the interviews throughout the experimental process and the interviews were conducted in a manner similar to that of Experiment 1. Therefore, it is unlikely that this difference is the cause for the disparate results between Experiments 1 and 2. Perhaps then it is the case that, because participants in Experiment 2 were all interviewed immediately, there was no opportunity for the benefit of the ECI to become noticeable. This benefit was noticeable after a 1-week delay in Experiment 1.

A future study could delay the initial interview for 1-week and delay the identification task an additional 1-week (2-weeks from the critical event). It may be that this procedure could allow for the benefit of the ECI to emerge with suspect identifications. Fisher and Geiselman (1992) also point out that using multiple retrieval attempts is an important part of the ECI. In Experiment 2, the SI condition received the same number of retrieval attempts—albeit free recall attempts—as did participants in the ECI condition, they were just not accompanied by the presumed beneficial cognitive mnemonics. Perhaps then, simply using additional recall attempts in an immediate interview offers the same benefits as those offered with the ECI.

CHAPTER 5 – GENERAL DISCUSSION

The results of Experiment 1 showed a significant advantage for the ECI with the focused imagery instruction. Experiment 2 failed to show the same advantage compared to a standard SI. The results of the current studies offer mixed support for the ECI as an optimal eyewitness interview technique. The ECI has been touted in the literature as a superior interview technique that allows eyewitnesses to engage several cognitive processes that they would not normally engage, in order to facilitate recall (e.g., Fisher & Schreiber, 2007; Kohnken et al., 1999). The results of these two studies offer conflicting evidence regarding the validity of this claim.

While Experiment 1 showed positive benefits for eyewitnesses interviewed with the ECI both immediately and at a delay, Experiment 2 failed to show the same benefits. In fact, it could be argued that the opposite was found. Experiment 2 showed an increase in incorrect recall rates that negatively impacted eyewitness accuracy rates. While this has been found in the literature before (e.g., Kohnken et al., 1999), it is not always the case (e.g., Fisher et al., 1987). While prior research reports mixed effects with regards to incorrect recall rates with the ECI, Experiment 2 in particular seems to have suffered from the negative effect of incorrect recall. More to the point, the incorrect recall rates with Experiment 2 seem to have erased any positive effect on accuracy that the ECI normally provides.

While the results varied across experiments, Experiment 1 provided a novel finding that focused imagery within the ECI framework is indeed beneficial. Further, this novel finding allows us to better understand the potential for the components of the ECI to interact in a way that facilitates memory. Fisher and Schreiber (2007) specifically noted this to be one of the more important aspects of the ECI. In fact, examining the ECI in way to understand the interaction of the individual cognitive components with each other is one reason that they noted that the other attempts to validate the ECI have fallen short. As discussed earlier, previous attempts to validate the ECI have only examined individual components of the ECI in isolation (e.g., Boon & Noon, 1994; Milne & Bull, 2002). In studies that have not isolated individual components, researchers have examined the ECI in such a way that any interactive effects were masked by the evaluation method (M. R. Davis et al., 2005). While the findings from these studies are mixed, Experiment 1 offers the first empirical evidence that at least the focused imagery component of the ECI combines with the other components in a way to facilitate eyewitness memory.

While the argument has been made that the mnemonic components of the ECI interact to facilitate memory (Fisher & Schreiber, 2007), this claim has not been empirically tested. Experiment 1 offers evidence to support this claim, at least with focused imagery. However, Experiment 2 failed to replicate this finding. Further, the lack of replication in Experiment 2 could be due to a negative interaction between the mnemonic components of the ECI. Pichert and Anderson (1977) and Anderson and Pichert (1978) found that the perspective-change instruction benefited additional recall of items related to the new perspective adopted. However, they failed to report any incorrect recall rates. It could be that the perspective-change instruction could induce some reconstructive processes, based on prior schemas, to become active leading to higher incorrect recall rates. If this is the case, then some components of the ECI, namely the perspective-change mnemonic, could negatively interact with the other components to have a negative impact on overall eyewitness accuracy rates. Future research should examine this further.

These results are challenging from an applied perspective because they fail to show the previously reported robustness of the ECI. Because of this, caution must be taken when generalizing this interview technique to real world settings with eyewitnesses and victims. Experiment 1 showed that the ECI does have components that are beneficial to eyewitnesses by allowing them to engage more cognitive processes than would normally be engaged. As reported, Experiment 2 failed to replicate such findings. The results of the two Experiments presented here present a challenge to the state of the ECI literature and to the legal community at large. While it has been suggested that the ECI be adopted across the United States (Wells et al., 2000), the results from Experiment 2 failed to support such a suggestion.

One surprising finding was that WMC did not impact the recall performance of eyewitnesses in the current experiments. This is a novel and noteworthy finding because it shows that these techniques can be successfully applied to adults with a variety of WMCs. This could be another argument in support of the use of the ECI because it allows eyewitnesses to overcome any WMC limitations that they might face in standard police interviews. Research has shown that higher working memory capacity could help inoculate against eyewitnesses becoming susceptible to misinformation effects (Jaschinski & Wentura, 2002). However, it seems that WMC did not affect eyewitness recall in the current studies. It could also be argued that the participants in the current study had higher than average WMCs, but the mean performance in the CSPAN task does not indicate that this is the case, $M = 36.57$ and $M = 35.40$, in Experiment 1 and 2 respectively, out of a possible total score of 60. Given these results, it seems likely that the current interview techniques, both the ECI and the SI, may overcome any detrimental WMC effects.

The results of Experiment 2 failed to find any significant effects with eyewitness identification accuracy. As previously mentioned, these results were surprising. However, research has shown that an increase in suspect description errors can negatively impact eyewitness identification accuracy (Meissner et al. 2007). Given that there was an increase in the recall of incorrect person details in both the ECI and SI conditions of Experiment 2, this could likely be an explanation for the lack of an effect. However, there were no differences in suspect detail accuracy or incorrect recall across the interview conditions in Experiment 2. Therefore, this is likely not the case. Further, no such findings existed in Experiment 1. If participants had made eyewitness identifications in Experiment 1, then perhaps there would have been a different outcome. Future research with the ECI should not be limited simply to eyewitness recall and accuracy but should also focus on eyewitness identification accuracy, as this could be key to impacting future policy decisions with the ECI.

Future work with the ECI should also focus on designing experiments to continue to systematically examine the ECI in a way that will continue to shed light on the cognitive processes underlying this technique. Specific examination of the perspective-change mnemonic is a prime candidate for such an examination. Given the findings of Pichert and Anderson (1977) described earlier, it could be that the perspective-change causes participants to induce schema consistent information that could lead to reconstructive processes becoming active. If this is the case, then indeed the perspective-change is negatively interacting with the other components of the ECI to wash away its beneficial effects. Experiment 1 has offered a way to test these assertions by simply removing the perspective-change component of the ECI and comparing it to the full ECI. A future experiment should examine this. Another future study could examine the impact that using a focused imagery instruction without a verbal description has on eyewitness accuracy at a delay, following an initial interview. This may allow for a release from verbal overshadowing. The results from Experiment 1 suggest that visual details of person information may still remain in memory after a week's delay.

Given the findings of Experiments 1 and 2, a future study should examine the use of focused imagery with the SI to see if there is a benefit in eyewitness accuracy. It could be that adding focused imagery to the SI may be as beneficial as the full ECI. An additional study should also examine the use of focused imagery and context reinstatement immediately before lineup identifications. This could allow eyewitnesses to access visual information without accessing their verbal descriptions, which could improve identification accuracy.

In a similar manner as is discussed above, Experiment 1 showed that the focused imagery component of the ECI positively benefits the ECI when combined with the other ECI components. Future research should continue to examine the various aspects of the ECI to determine which aspects are beneficial and which are not. The methodology used in Experiment 1 also allows for a better understanding of the cognitive processes that are underlying the ECI. This is of particular importance from a policy perspective because it will allow us to better understand how memory is affected with the ECI. Being able to understand this is key to affecting policy decisions about the adoption of this technique.

Policy decisions should not be made based on the fact that the ECI seems to work (cf. Malpass et al., 2008), they should be based on the fact that we know why and how the ECI works and under what circumstances.

In conclusion the results from the current studies provide a great deal of insight into the challenges of interviewing eyewitnesses and the complexity of the circumstances that real interviewers face. These results also show that much more work needs to be done to further validate—or invalidate—the ECI as an optimal interview technique. The novel approach used in Experiment 1 should be adopted to systematically understand the interactive effect that each of the cognitive mnemonics has in regards to their contribution to the ECI, both from a practical and theoretical perspective. These results also provide clear evidence that the ECI should not be adopted without such further systematic examination.

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TABLE 3.1

Experiment 1 Demographics

Race	N	Ethinicity	N	Gender	N	Age Range	N
White	56	Hispanic	4	Male	17	Min	18
Black	6	Non-Hispanic	67	Female	54	Max	24
Middle Eastern	1						
Asian	3						
American Indian	2						
No Response	3						

TABLE 3.2

Mean Recall Rates by Item Type from Experiment 1

Item Type	*N*	*M*	*SE*
Correct			
Action	71	17.39	1.08
Context	71	12.72	0.79
Person	71	9.30	0.58
Incorrect			
Action	71	0.52	0.11
Context	71	1.21	0.15
Person	71	3.24	0.26
Confabulations			
Action	71	0.34	0.08
Context	71	0.90	0.17
Person	71	0.32	0.06

TABLE 3.3

Mean Recall Rates by Item Type and Condition from Experiment 1

Interview Condition	Recall Type	N Total Items	*N*	*M*	*SE*
Immediate-Imagery			18		
Action	Correct	51		23.00	1.24
	Incorrect			0.44	0.18
	Confabulation			0.28	0.16
Context	Correct	56		15.28	1.25
	Incorrect			1.33	0.26
	Confabulation			0.56	0.20
Person	Correct	36		12.89	0.84
	Incorrect			3.11	0.46
	Confabulation			0.28	0.11
Immediate-NoImagery			17		
Action	Correct	51		21.35	1.56
	Incorrect			0.53	0.26
	Confabulation			0.47	0.19
Context	Correct	56		15.35	1.34
	Incorrect			1.35	0.40
	Confabulation			1.29	0.50
Person	Correct	36		10.41	0.78
	Incorrect			4.24	0.48
	Confabulation			0.24	0.11
Delayed-Imagery			18		
Action	Correct	51		13.33	1.94
	Incorrect			0.89	0.27
	Confabulation			0.39	0.16
Context	Correct	56		11.94	1.45
	Incorrect			1.11	0.27
	Confabulation			0.94	0.36
Person	Correct	36		8.33	1.06
	Incorrect			3.06	0.53
	Confabulation			0.39	0.12
Delayed-NoImagery			18		
Action	Correct	51		12.11	2.51
	Incorrect			0.22	0.17
	Confabulation			0.22	0.13
Context	Correct	56		8.44	1.71
	Incorrect			1.06	0.30
	Confabulation			0.83	0.20
Person	Correct	36		5.61	1.20
	Incorrect			2.61	0.59
	Confabulation			0.39	0.14

TABLE 4.1

Experiment 2 Demographics

Race	N	Ethnicity	N	Gender	N	Age Range	N
White	37	Hispanic	7	Male	12	Min	18
Black	8	Non-Hispanic	53	Female	49	Max	27
Middle Eastern	3	No Response	1				
Asian	2						
American Indian	5						
Native Islander	1						
No Response	5						

TABLE 4.2

Mean Recall Rates by item Type from Experiment 2

Item Type	N Total Items	*N*	*M*	*SE*
Action	15	61		
Correct			6.94	0.32
Incorrect			0.23	0.07
Confabulation			0.13	0.04
Context	18	61		
Correct			6.15	0.42
Incorrect			1.15	0.15
Confabulation			0.26	0.09
Conversation	7	61		
Correct			3.84	0.13
Incorrect			0.23	0.07
Confabulation			0.05	0.04
Person	23	61		
Correct			9.18	0.51
Incorrect			2.02	0.22
Confabulation			0.40	0.09

FIGURE 3.1

Experiment 1 Design and Procedure

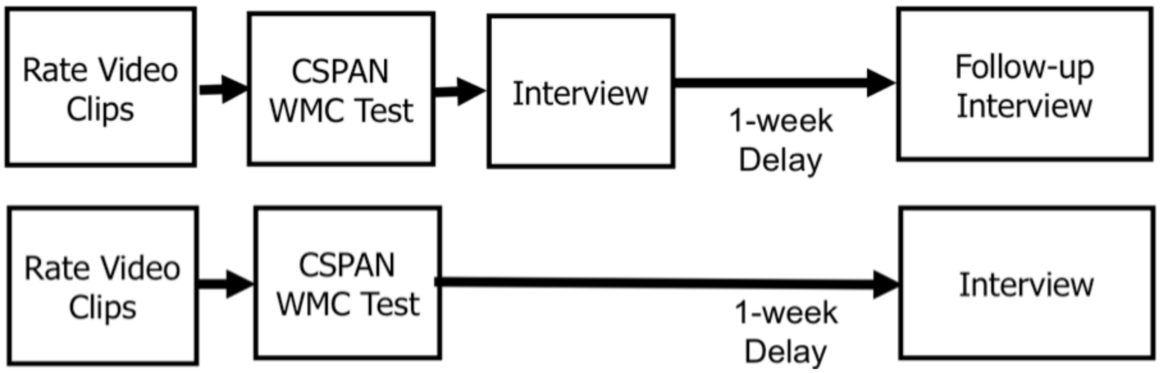

FIGURE 3.2

Overall Accuracy Rates for Experiment 1

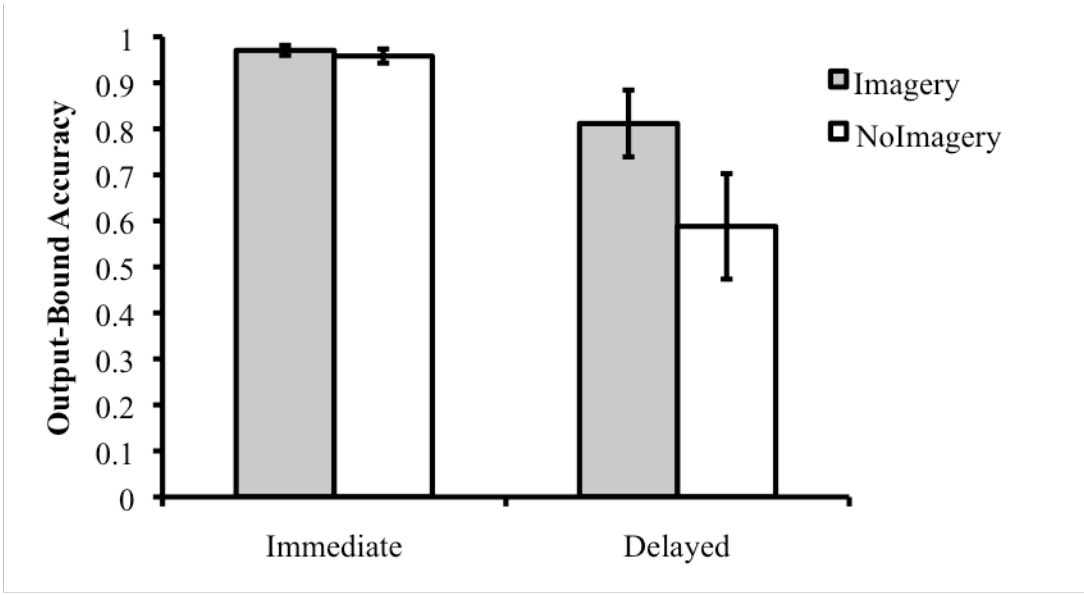

FIGURE 3.3

Overall Accuracy Rates for Repeated Interviews from Experiment 1

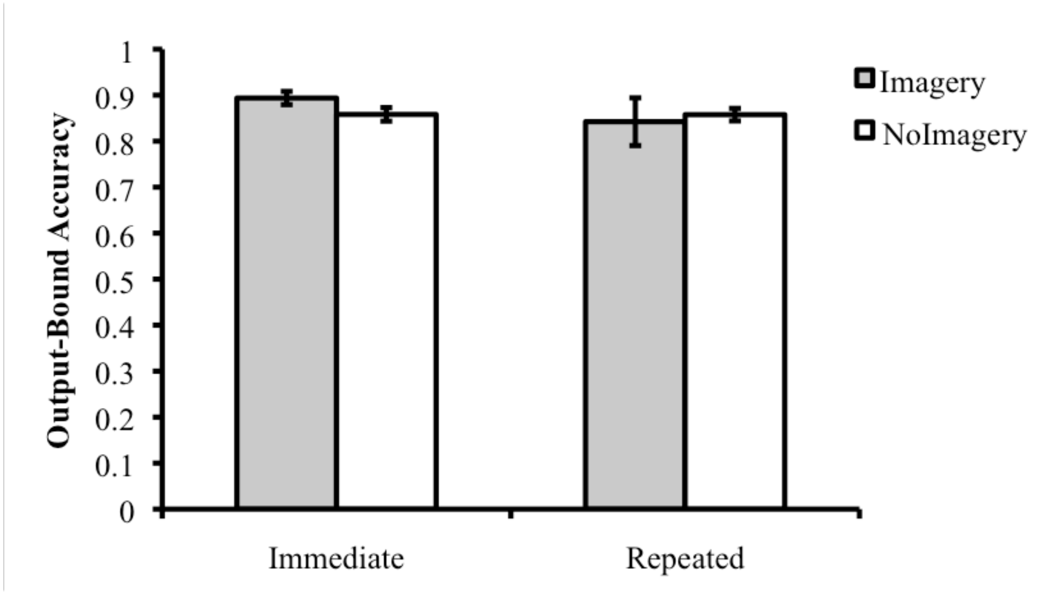

FIGURE 3.4

Accuracy Rates by Item Type and Condition from Experiment 1

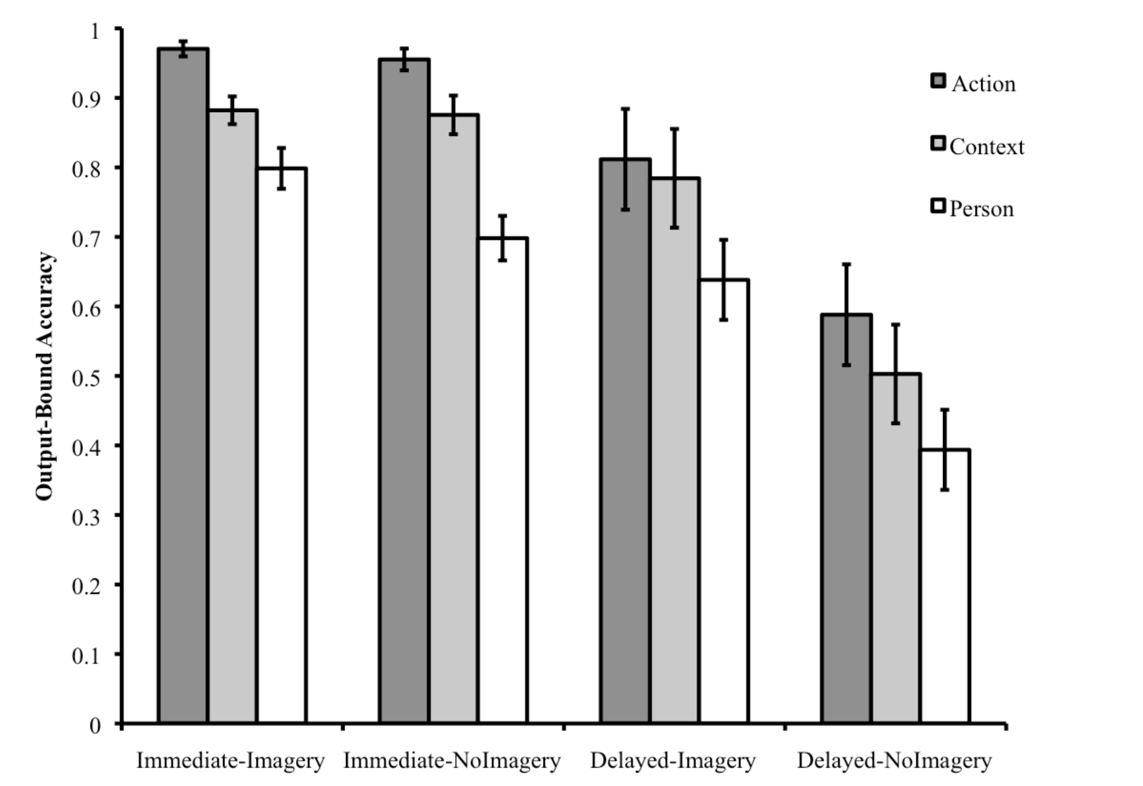

FIGURE 3.5

Accuracy Rates by Imagery and Item Type for Repeated Interviews from Experiment 1

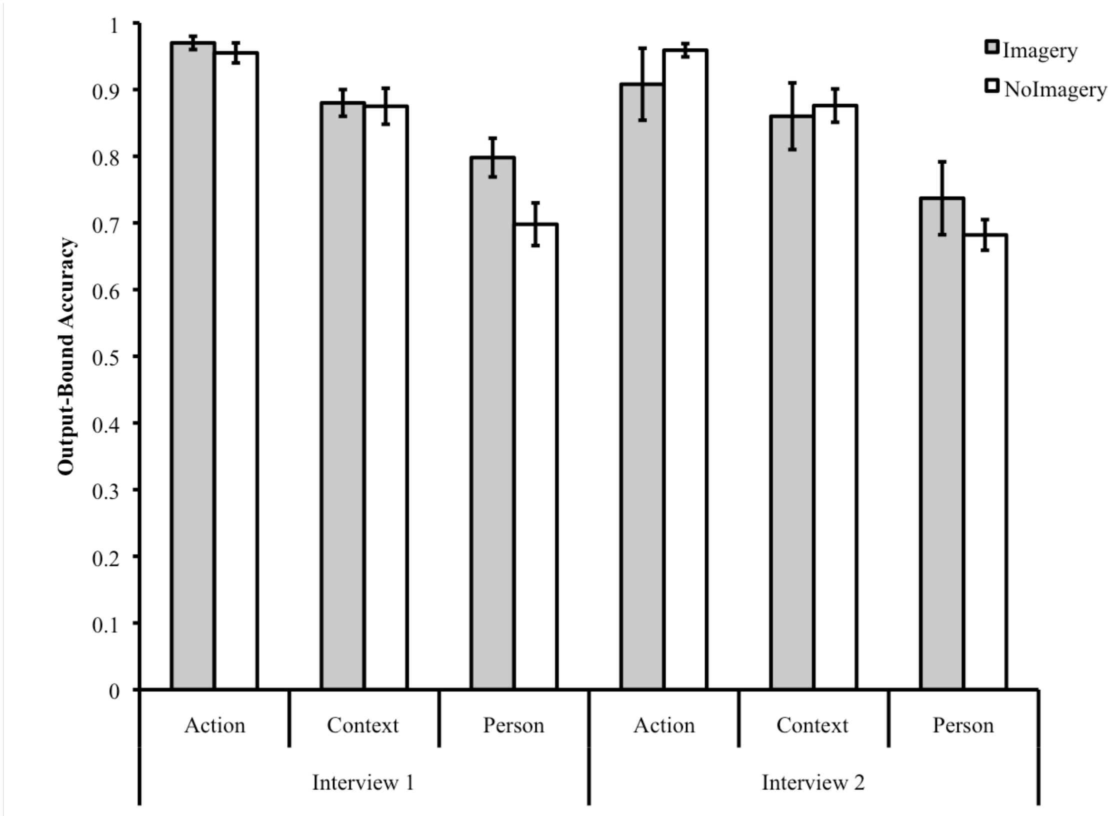

FIGURE 3.6

Proportion of Items Gained Across Repeated Interviews from Experiment 1

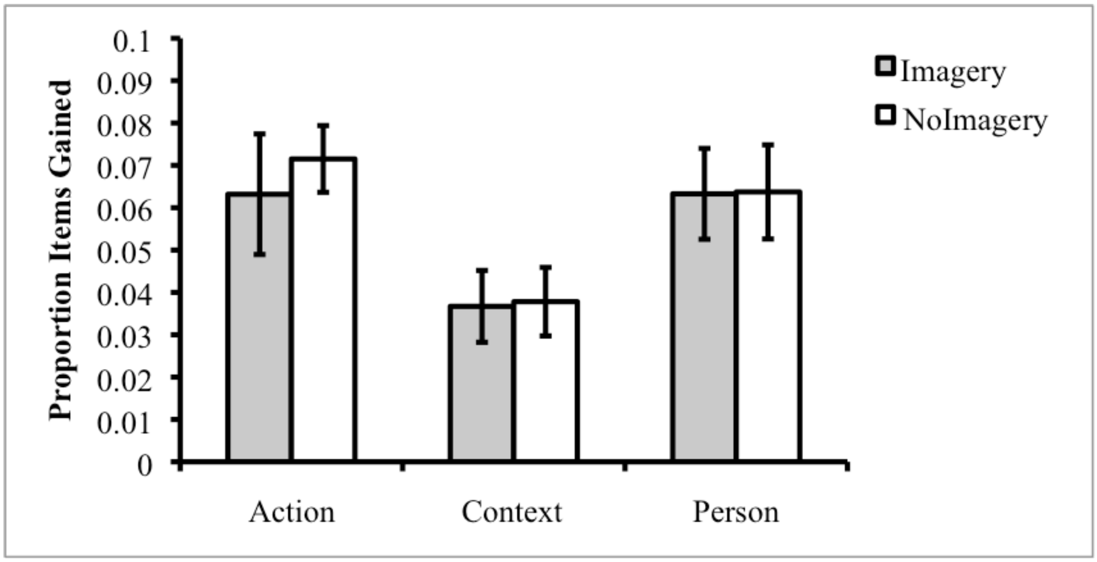

FIGURE 3.7

Proportion of Items Lost Across Repeated Interviews from Experiment 1

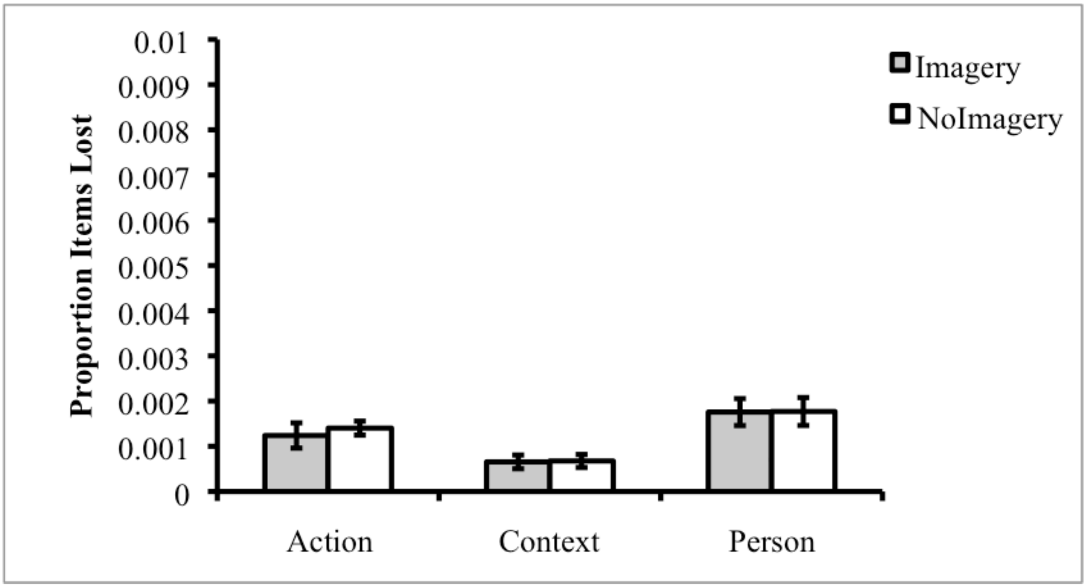

FIGURE 4.1

Experiment 2 Design and Procedure

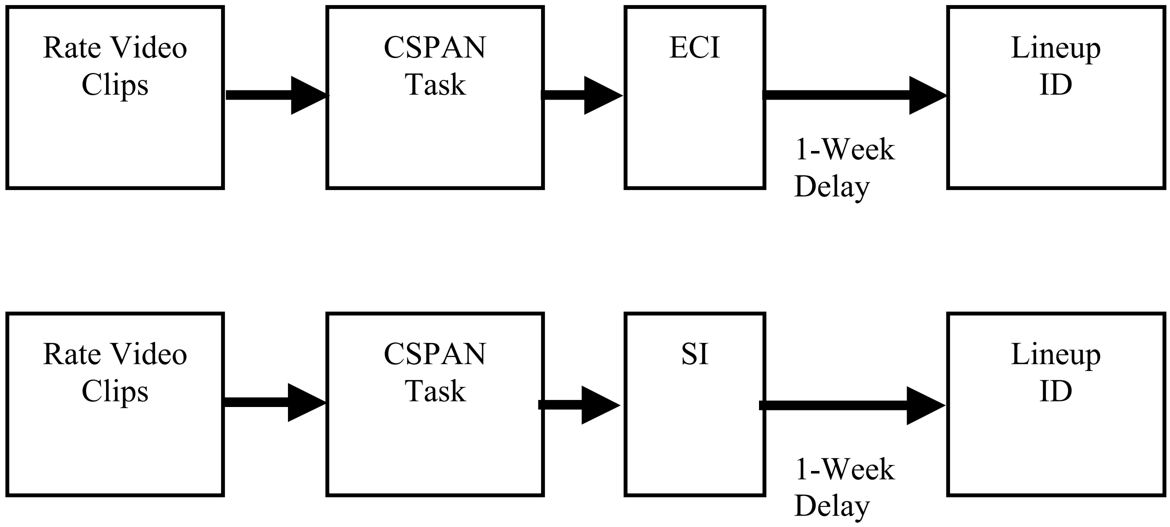

FIGURE 4.2

Overall Accuracy Rates by Condition from Experiment 2

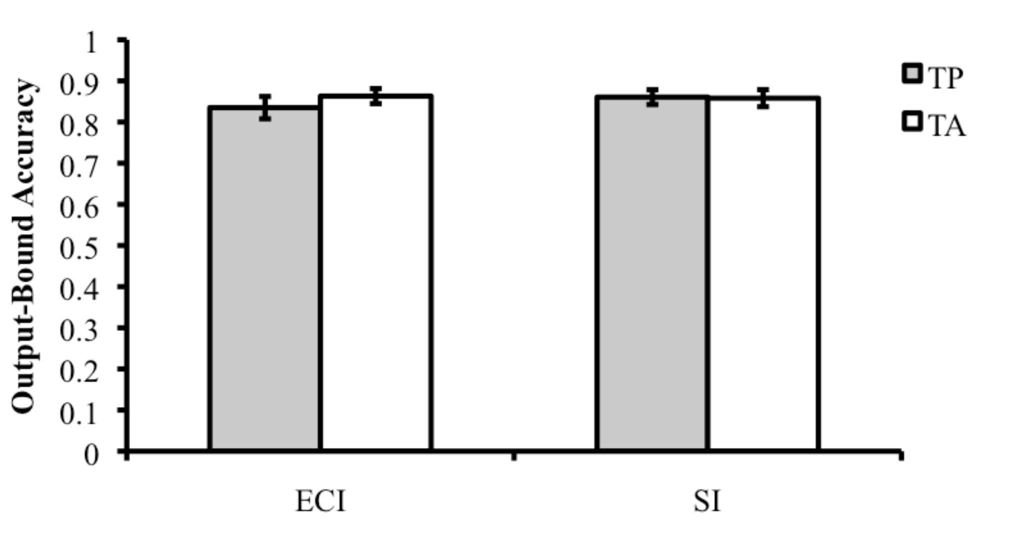

FIGURE 4.3

Accuracy Rates by Condition and Item Type from Experiment 2

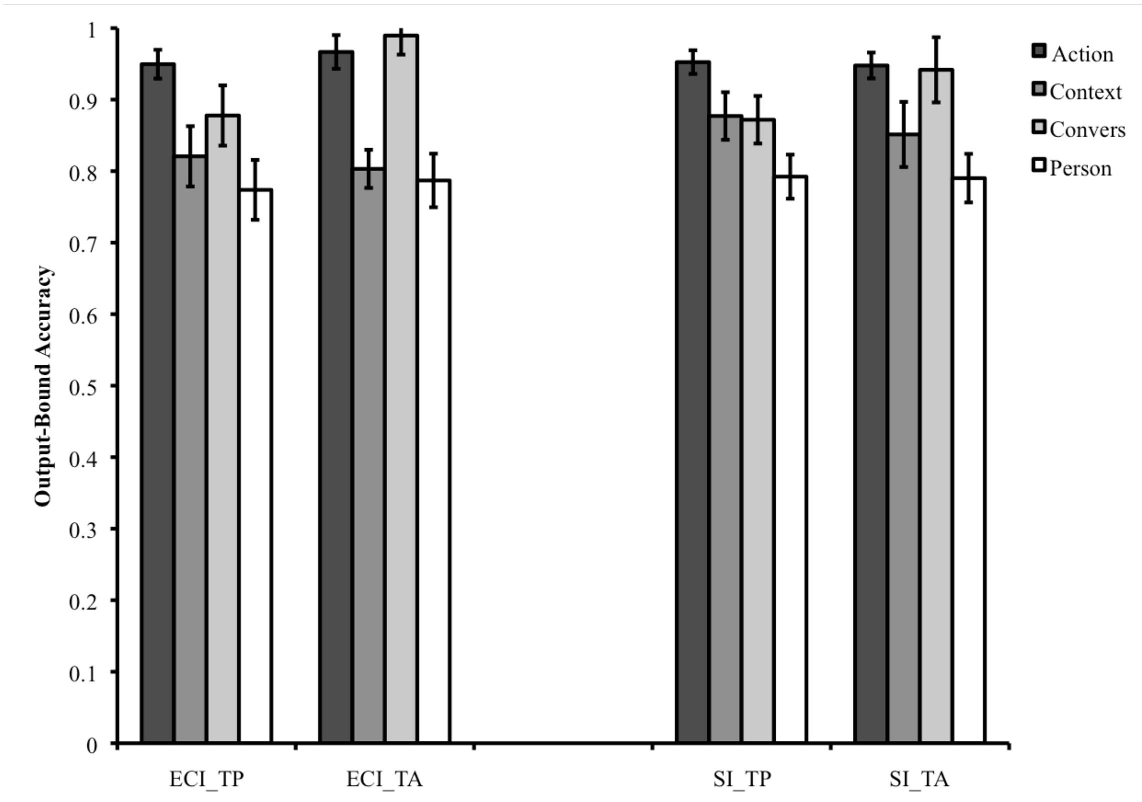

FIGURE 4.4

Eyewitness Identification Accuracy Rates by Lineup Type from Experiment 2

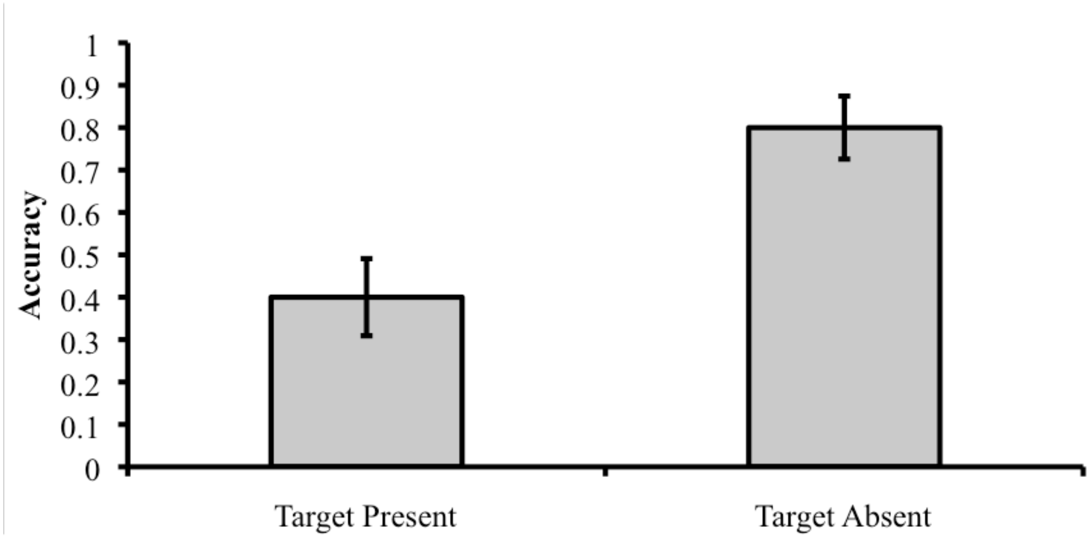

FIGURE 4.5

Eyewitness Identification Accuracy Rates by Interview Condition from Experiment 2

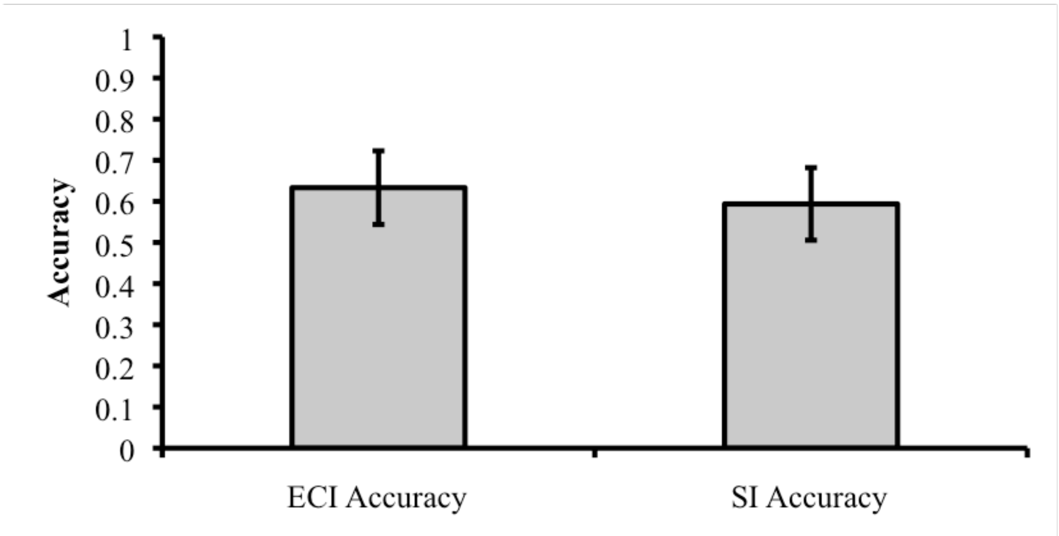

FIGURE 4.6

Eyewitness Identification Accuracy Rates Based on Choosing Propensity from Experiment 2