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Telisa L. Purdy for the Master of Science

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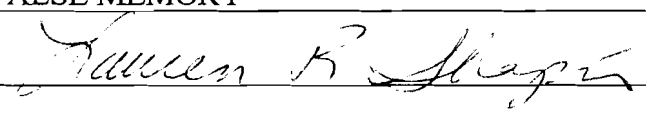
Title: ROLE OF INTERVIEWER AND TYPE OF INTERVIEW ON CHILDREN'S SUSCEPTIBILITY TO FALSE MEMORY

Abstract approved: 

This study investigated the role of interview factors on children's recall of a theft. Sixty children ages five through eight years were shown a video theft scene and interviewed immediately and again after one week. Children were either asked to elaborate on true and false information or were merely exposed to true and false information about the witnessed theft scene. Children who were pressured initially to confabulate, made more errors in recall than children who were not pressured to confabulate. Children in both groups were generally more confused about false events than about true events. They were also more likely to misattribute the source of new information than the source of old information. Children who were initially pressured to comply with inaccurate information made more errors than children who were only exposed to incorrect information when asked about false items for the second time. Old information was implanted because it was misattributed to the video more often than to past discussion. Various individual characteristics were related to children's ability to recall information accurately.

ROLE OF INTERVIEWER AND TYPE OF INTERVIEW ON CHILDREN'S SUSCEPTIBILITY TO FALSE MEMORY

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CHAPTER 1

INTRODUCTION

For the past 30 years, the accuracy of human memory in relation to eyewitness events has been a topic of both investigation and debate. More specifically, children's memories for eyewitness events have become the focus of many cognitive development studies being conducted today because children are witnesses to crimes but are not always used to testify. This may be because younger children are seen as being incapable of providing accurate testimony (Kapardis, 1997). Ceci and Bruck (1995) traced the beginning of this belief back to the Salem witch trials in which young girls testified falsely because of a variety of factors, including interrogation techniques that involved repeated interviews, suggestive questions, and forced elaboration, as well as social pressure. It is not clear whether the Salem girls themselves believed that the unrealistic testimonies they provided were accurate. Perhaps, the girls did come to believe the veracity of their reports. Recent research has shown these types of interview techniques may result in the formation of false memories or at the very least, render witnesses unable to determine the source of the information as their memories or the interrogators' suggestive remarks (Bruck & Ceci, 1997). However, the girls might have simply acquiesced to interrogators' suggestive questions because of social pressure, knowing that they provided false testimonies.

The main issue addressed in this paper is whether young children should be allowed to serve as eyewitnesses. The question posed, therefore, is "To what extent does suggestion affect the accuracy of children's eyewitness reports today?" The

answers to this question are important for several reasons. If a child is the victim of abuse or is witness to an act of crime, the testimony could be vital to the outcome of a legal case. In this type of setting, it is important to know that the child's report will not be considered inaccurate because of suggestions made to the child during questioning, especially when interviewed several times about the event by different people. Two related issues of concern include whether young children who are exposed to false information can distinguish what is real from what is imagined (reality monitoring) and what they witnessed from what has been told to them about an event (source monitoring). In this paper, general information about memory processes will be followed by a review of the literature investigating the role of various factors in children's vulnerability to suggestion and their ability to perform reality and source monitoring tasks.

Memory Processes

Atkinson and Shiffrin (1968) proposed an information processing model describing how memory worked. Essentially, information from the environment is encoded or represented in one's mind. If this information is important, then it will become stored and some or all of the information may be retrieved or reported in the future. According to Ornstein, Larus, and Clubb (1991), there are several implications of this theory. Not all information is encoded and even if it is, it may be forgotten or not reported (i.e., retrieval is not perfect). For example, a person living on a busy street may not think that a car driving by at 1:00 a.m. is a strange occurrence, and so does not encode the information. If asked about this car at a later time, the person would be unable to describe it. Another implication of this theory is

that the strength of the memory varies. A person who did encode the information about the car might remember exactly what time the car drove by, and where it turned, whereas another person might remember that a car drove by, but not recall details about it. This theory also implies that stored information can change because of information learned after the event occurred. A person encoding the car incident who had a strong memory for the details of the car, if questioned repeatedly about a blue car, might be unable to recall that the car was actually black.

There are two main theories that explain how memories can be changed by post-event suggestions. Loftus and her colleagues (Ceci, Crotteau, Smith, & Loftus, 1994; Loftus & Loftus, 1980) believed that original memories were erased or permanently changed due to suggestions used to elicit recall. This process of changing a memory can be considered an unconscious procedure on the person's part. That is, suggestions given to persons cause them to truly come to believe that the information is correct. In contrast, Bekerian and Bowers (1983) contended that the original memory remains intact, but that post-event suggestions hinder retrieval of it while the suggested information is easily accessed. According to this theory, it is possible that the change is either a conscious or unconscious procedure. For example, a prosecutor may ask a witness whether the man in the blue sweater hit the cashier during the robbery. An example of an unconscious memory interference would be when the witness reports the sweater was blue because it is readily available, but may at a later time remember that it was red. In contrast, a conscious memory interference process would be when the witness agrees with the suggestion of the blue sweater,

but is cognizant of either never knowing or temporarily not accessing the color of the sweater.

Suggestibility

Suggestibility has been traditionally defined as "the extent to which individuals come to accept and subsequently incorporate post-event information into their memory recollections" (Gudjonsson, 1986, p. 195). However, Bruck and Ceci (1997) argued that this definition would not encompass all aspects of the memory process that are affected by suggestibility, including encoding, storage, retrieval, and reporting. They indicated that researchers need to consider the interview context when evaluating which factors contribute to suggestibility. Bruck and Ceci's expanded definition has two main implications. First, misleading information may be unconsciously incorporated into memory, which changes what was stored, or a child may knowingly acquiesce to incorrect information because of motivational reasons, which does not involve memory alteration. Second, a child's susceptibility to suggestion may be affected by both social (e.g., interview context) and cognitive (e.g., memory) factors. For example, children may comply with suggestions when various forms of inducement and explicit threats are used by adults or when the questions used to elicit event recall are consistent with the children's stereotypes or expectations.

In the current investigation, several factors that may influence how children respond to a suggestion were examined. The first variable that was expected to influence the degree of suggestibility involved the individual characteristics of the child witness. The second set of variables involved the interview context, specifically

the way that testimony was elicited and the degree of familiarity the child had with the interviewer. Although the research reviewed below focuses on children, adults are also vulnerable to suggestion and their memory is similarly affected by these factors (Ackil & Zaragoza, 1998; Ackil & Zaragoza, 1995; Cassel & Bjorklund, 1995).

Suggestibility and individual differences. Certain qualities of child witnesses may affect their perception and understanding of an event, as well as the memory process itself. Three individual characteristics that are believed to contribute to a child's vulnerability to suggestion include age, temperament, and imagination. Of these characteristics, age has been studied the most. Eyewitness researchers have found that children were more susceptible to suggestion than were adults (Ackil & Zaragoza, 1995, 1998; Cassel & Bjorklund, 1995; Coxon & Valentine, 1997; Goodman & Reed, 1986). Furthermore, children's responses to suggestion differ by age. Specifically, younger children recall less information and are more susceptible to suggestion than are older children. In a study done by Leippe, Romanczyk and Manion (1991), 5- and 6-year old children gave less complete reports when asked general, open-ended questions and made more errors when given suggestions about an event they experienced than did 9- and 10-year-old children. In another study involving a directly experienced event, Goodman and Reed (1986) found that 3-year-olds were more suggestible, answered fewer questions correctly, recalled less information and identified the confederate less frequently than did 6-year-olds. Similarly, Roberts and Blades (1996) found that 4-year-olds complied more with suggestions of incorrect information about a witnessed event than did 10-year-olds. Thus, children ages 4 to 8 years old were less able to resist suggestions than were

children ages 9 and older. Although age is important, even children of the same age are not equally susceptible to suggestive questioning. Therefore, recent research has begun to examine other individual characteristics, such as temperament, to explain these differences.

Personality characteristics, such as temperament, can have an impact on how easily the child is misled by suggestive questions. Children ages 6 to 11 years who were classified by their parents as calm and less active were better able to recall experienced events more completely and accurately than those labeled highly active (Palmer, Brandt, & Chen, 1998). Chen and Shapiro (2000) also found that children of certain temperaments reacted differently to the type of questions used to elicit recall. Preschool and elementary children who were outgoing provided more information when interviewed about a witnessed event using general questions than did reserved children. However, when suggestive rather than general questions were used, children who were labeled highly emotional recalled less information. Similarly, Memon, Holley, Wark, Bull and Kohnken (1996) found that 8- and 9-year old outgoing children (i.e., those who talk more freely) made more error responses (i.e., volunteered previously suggested information) and fewer correct responses than did reserved children. This suggests that because of their personalities, some children are more vulnerable to suggestive questions and that this vulnerability affects their interview performance.

A final avenue for examining individual differences involved the children's imagination and their dissociation from reality (i.e., inability to stay focused on the here and now) which could also affect the accuracy of their memory. Can children

distinguish between fantasy and reality? Some indicators of vivid imagination in children are imaginary companions, elaborated play identities (i.e., a character or role the child plays) and personified objects (i.e., a toy or another object that the child treats as if it had its own personality) (Gleason, Sebanc & Hartrup, 2000; Putnam, 1997). Some children may have difficulty staying grounded in reality. This type of dissociation might be indicated by elaborated daydreams and difficulty paying attention to what is going on or being said around them. Children who have been abused or who have experienced another type of trauma tend to dissociate as a means of coping with their lives (Putnam, 1997). Both of these qualities can contribute to compliance. A child who has a vivid imagination might comply more easily because they enjoy or have experience in "pretending." However, a child who tends to be unaware of her surroundings at times might comply more easily because she is accustomed to another person telling her what happened or what was said. Singer and Singer (1990) found that children who have imaginary friends were also particularly sociable. This sociability could lead some children to have a greater desire to comply with authority figures questioning them. However, Lamb, Sternberg and Esplin (1994) found that by the time children were school age, fabrication of material was not related to the inability to distinguish fact from fantasy.

Suggestibility and interview context. There are several aspects of the interview context that can hinder accurate recall, including the types of questions used, the complexity of the language used in the question, social demands of the interview, and the interviewer role. First, consider the type of question used to elicit testimony. Lamb, Sternberg, and Esplin (1995) identified different types of questions

that were commonly used in interviews. The two types used in free recall interviews were open-ended questions that introduced a broad topic without any particular focus or implied expected response, and direct questions, which refocused the attention of the child onto the topic. There were also two types of forced choice questions that required a yes or no response. Leading questions provided specific information about a correct detail, whereas misleading or suggestive questions implied that incorrect information was correct. The types of questions asked of children in an interview can greatly affect the type of responses that are elicited. Police, social workers, and other adults often interview children who are scared and may not have the language to express what happened. Because young children and those who are reserved provide incomplete reports in response to general questions, interviewers often use leading and suggestive questions to query them and to refresh their memories about what happened. However, interviewers need to be aware of the effects these different types of questions can have on the accuracy of children's responses.

The factor of question type and how it affects children's suggestibility has been studied at length. Some researchers have found that children were more accurate when they were allowed to recall information on their own than when they were given forced choice questions (Roberts et al., 1997). Moreover, investigators have found that children responded correctly to forced-choice questions requiring a "yes" response more often than to those requiring a "no" response (Cassel & Bjorklund, 1995; Duncan, Whitney & Kunen, 1982). Thus, suggestions did impair children's ability to remember an event accurately (Ackil & Zaragoza, 1995; Ceci & Bruck, 1995; Lepore & Sesco, 1994; Lindsay, 1990; Poole & Lindsay, 1995).

However, the provision of suggestive questions did not necessarily mean that false information was implanted in children's memories (Roberts & Lamb, 1999; Toglia, Hembrooke, Ceci & Ross, 1994). These contradictory findings indicate that different factors and conditions contributed to when memory was distorted by suggestions given subsequent to the witnessed or experienced event (Toglia et al., 1994).

One of the factors to consider is the wording of the queries. Roberts and Lamb (1999) found that when interviewers distorted information presented by the children, the children were more likely to correct these distortions when they were embedded in simple utterances (short statements or questions) than when these distortions were embedded in complex utterances. Likewise, Carter, Bottoms and Levine (1996) found that the accuracy of children's reports was diminished when they were questioned in a complex manner. This implies the importance of phrasing questions in a manner that is easy for children to understand.

Another factor that may contribute to inaccurate memory is the social demands of the interview. The interviewer may give instructions to the witnesses that strongly encourage them to confabulate or to provide details about distinct parts of an event they did not experience or see. Common sense might suggest that witnesses would remember well the uncomfortable situation of being forced to lie about details that were not present in an event. However, research findings suggest otherwise. Ackil and Zaragoza (1998) studied the effects of forced confabulation in first graders, third and fourth graders, and college students. Half of the participants were in the forced condition in which they were told to provide an answer to every question and to guess if they did not know the answer. The other half were in the free condition in

which they were instructed to only answer a question if they were sure of their response, and not to guess. In both conditions, participants were asked five true-event questions and three false-event questions about a video that they watched. A significant forced confabulation effect occurred in each age group. These findings implied that not only were children susceptible to suggestion by way of forced confabulation, but that adults were not immune to it either. One implication of Ackil and Zaragoza's results was that forced confabulation would produce more memory distortions than mere exposure to false-event questions. As their study did not encompass a suggestion group, this issue needs to be investigated further.

Another factor of the interview context that influences suggestibility is the role of the interviewer. When the social demands of the interview are great because the interviewer's status, children may be pressured to comply with the questions being asked. Young children generally view adults as authority figures who are omnipotent and truthful in conversation (Ceci & Bruck, 1993). This makes children prone to interpret the repetition of a question by an adult as an indication that the previous answer was not satisfactory (Fivush & Schwarzmueller, 1995; Poole & White, 1995). In this situation, children might comply more easily to suggestive questions in order to avoid social discomfort.

Interviewer role and social demands of the interview may concomitantly affect recall. Children interviewed in a warm, supportive environment (e.g., established rapport prior to interview) are more likely to resist suggestive questions than children interviewed under intimidating circumstances (Carter, Bottoms & Levine, 1996). As a part of the environment, the interviewer has the potential to

influence a child's accuracy in a positive or negative way. Quas, Goodman, Schaaf and Luenberger (1997) reported that children were found to provide more accurate responses when interviewed by the same interviewer across all sessions than when questioned by a different interviewer. This could be due to the interviewer serving as a memory cue for what was previously talked about or because children want to behave consistently across test situations. In another study Bjorklund et al. (2000) asked children ages 5 and 7 years to view a one minute video of a bicycle theft. Children were interviewed immediately afterwards and again two days later by either the same or a different interviewer. Initially, children were given a free recall interview, followed by either nonleading or misleading questions. In the delayed interview, children were asked a series of questions containing correct, incorrect, and misleading information. Like Quas et al., this group found that the accuracy of children's memory was facilitated when they were questioned by the same interviewer. This was true even when the interviewer had suggested misinformation.

Suggestion is an important topic of research because of its proven ability to affect accuracy in recall. The literature indicates that children younger than age 9 were susceptible to reporting incorrect information that was suggested during an interview, but their temperament (e.g., sociability) and imagination mediated the ability to resist suggestible questions. In addition, although young children's reports were less complete than older children's, they were more accurate when general rather than forced-choice questions were used. Based on these results, the language of interview questions should be kept simple and the interviewer should not require a response if children do not recall the information requested. Moreover, the

interviewer should attempt to make the child feel comfortable, and when several interviews are necessary, the same person should perform them.

Reality and Source Monitoring Effects on False Memory

Another phenomenon related to suggestibility that also contributes to the inaccuracy of children's reports is implantation of false memories (Lindsay, 1990). False memories may be encoded and retrieved because children do not remember the source of the information. When a person incorrectly identifies the source of a piece of information, the implications of the story change dramatically. Interviewers contribute to the inaccuracy of a child's report because they or previous interviewers provided incorrect information, and the child could not distinguish what was told from what was witnessed. If, for example, children are told false details during an interview but they subsequently cannot remember the source of that information, they might then believe that the detail was part of their experience rather than something that was merely suggested to them (Ceci & Bruck, 1995).

Reality monitoring and source monitoring are two related concepts that involve determining the origin of a piece of information. Reality monitoring is the ability to distinguish fantasy from reality or the ability to distinguish imagined events from actual events. An example of this concept is a child who has a favorite stuffed animal. The child might know that the stuffed animal is not really alive, yet still treats the toy as if it were alive. Source monitoring is the ability to determine the source of an actual event. An example of this concept would be a person who learned a new piece of information but cannot recall whether it was heard on television or read in the newspaper (Ceci & Bruck, 1995).

Although Piaget believed that children were unable to distinguish reality from fantasy, psychologists refuted this notion in the 1970s (Ceci & Bruck, 1995). A further modification of this view can be seen in Harris, Brown, Marriott, Whittall, and Harmer (1991). In this study, four- and six-year old children were able to distinguish fantasy from reality when asked about fictional characters, such as ghosts and monsters. However, when children were asked to pretend there was an imaginary character in a box, several children behaved as though they thought the character was real. Some of the children who were told to pretend that the character was a monster did not want the experimenter to leave the room. Reality monitoring can play an important role when children are asked to imagine events or details. For example, potential confusions can occur when children are asked to remember actual and imagined events involving the same person (Roberts, 1996). Children may wonder if a certain event actually occurred, or if it only occurred in their imagination.

Source monitoring can be made more difficult by the subject matter of the questions. If, for example, children are asked about an incorrect detail that could have very well happened (i.e., plausible), they might agree with it more easily than if they were asked about an outrageous detail. Ackil and Zaragoza (1998) realized this possibility when they developed source monitoring questions for their study. Almost all of the questions they asked about false events were plausible given the story line in the video. That is, these false events were closely tied to a part of the video, and so did not cause undue alarm when they were suggested. One question, however, was

very implausible, and was in fact designed to alert the children that some of the other events they were asked about might not have happened either.

Source monitoring errors or confusions can form because of suggestions made repeatedly by more than one person or in more than one interview. A recent study found that three-and five-year-old children interviewed by the same experimenter across all interviews provided more accurate responses on source monitoring questions than those children who were interviewed by a different experimenter (Quas, Goodman, Schaaf, & Luenberger, 1997). In addition, children tended to deny inaccurately that they had previously been asked about an event. Quas et al. also found that five- and seven-year-old children interviewed by the same interviewer across all interviews made fewer source monitoring errors in recall when questioned about a video theft scene they had witnessed.

The accuracy of the children's memories and source monitoring abilities tended to be facilitated, not impaired by the presence of the same interviewer, even if the interviewer had previously suggested incorrect information (Bjorklund et al., 2000). Other research, however, has found that exposure to misleading suggestions can lead children to believe that they actually saw events that were only suggested to them by a different interviewer (Ackil & Zaragoza, 1995). A similar finding occurred in a study by Poole and Lindsay (1995) in which children interacted with a character called "Mr. Science" in their classroom and were interviewed. Half of the children later heard their parents repeatedly read a story to them about Mr. Science. The story described both events that the children had experienced and events that they had not experienced when they interacted with the character. When interviewed

about their interaction with Mr. Science three months later by a novel experimenter, the children provided almost as much information about events they had only heard about as events that they had experienced. Thus, it is not clear whether source monitoring will be facilitated or hindered by having the same or a different interviewer.

Other social factors (e.g., credibility, social pressure) affect children's source monitoring (Moston, 1990). The child's perception of the interviewer in regard to how much the person knows about the event can influence how much he or she is willing to "trust" that person. If children are unsure about the rationale of the activities they participate in, they may be forced to give the adult's actions meaning, which could lead to misunderstanding or further distrust of the interviewer.

However, even if children are warned before the interview that what they were told previously was not correct, thereby reducing the credibility of the source, they often continue to make source monitoring errors. This suggests that these errors are the result of true confusions on the part of the child (Lindsay, Gonzales & Eso, 1995). For example, in a study by Ackil and Zaragoza (1998) children were shown a video segment and later asked questions about the video, including both false and true events. When children returned one week later, they were told that the experimenter who questioned them before had made some mistakes and asked them about things that were not in the video. The children were then asked to help the experimenter figure out which things had actually happened in the video and which had not. Regardless of this explanation, a significant number of children still made source monitoring errors.

Reality monitoring research suggests that very young children may verbally distinguish between real and imagined events, but their behavior is not consistent with their reports. Children's ability to distinguish the source of information is dependent on the plausibility of the information with what happened in the event, but also on the familiarity the child has with the interviewer.

Present Investigation

Suggestibility clearly affects children's memory in significant ways. Several factors determine the extent to which a child will be susceptible to suggestion, including individual differences and the interview context. Reality monitoring and source monitoring also play major roles in children's suggestibility. Individual differences as well as the role of the interviewer can affect these abilities, which in turn could decrease the accuracy of a child's report.

All of these factors have profound implications for whether or not young children should be allowed to give testimonies in a court of law. Much research has been done to address this question, but there are still other factors that need to be investigated. First, the use of a familiar rather than a different interviewer usually enhances the accuracy of children's reports. However, it is not known what effect a familiar or different interviewer might have on children's source monitoring abilities. Secondly, children tend to be susceptible to suggestion when they are asked to imagine false details and later remember them. However, it is not known how this compares to the effects of merely suggesting false details to children. Finally, more information about the nature of the relationship between children's individual characteristics and their susceptibility to suggestion is also needed.

To investigate the effects of event and suggestion on recall, children's memories for a filmed bike theft were assessed. To examine the effects of time, suggestion and interviewer on children's source monitoring abilities, children were interviewed about the theft immediately after viewing the film and again (by either the same or a different interviewer) after a one-week delay. Children's temperaments were assessed by their parents during the first interview, and children's levels of imagination, dissociation and compliance were measured at the end of the second interview.

Hypotheses

The first question this study asked was "What are the conditions under which children are suggestible?" Hypothesis 1a predicted that children's recall would contain fewer errors in the suggested than in the forced condition. The reasoning behind this hypothesis was that children who were forced to comply with incorrect information would make more errors than would children who only had incorrect information suggested to them. Hypothesis 1b was that children would make fewer errors when they were interviewed by the same rather than a different interviewer. This was predicted because the presence of the same interviewer across interviews has been found to enhance, rather than inhibit recall in children. Hypothesis 1c predicted that children would make fewer errors when asked about true rather than false events. This hypothesis represented the idea that it is generally easier for a child to report true events than to comply with false information. Hypothesis 1d was that children would make fewer errors in the first interview than in the second interview. The thought behind this hypothesis was that children would be less likely

to report incorrect information in the first interview because the events were still fairly fresh in their minds. After one week, however, children may come to believe that some of the false events they were asked about actually occurred in the video.

The second question this study addressed was "Under what conditions are children's source monitoring abilities affected?" Hypothesis 2a predicted that children in the forced group would have less difficulty with source monitoring than children in the suggested group. This was predicted because the questioning style in the forced interview would more likely cause children to remember being forced to comply with each item, thereby making them less likely to inaccurately remember the source of the information. Hypothesis 2b was that, because of context cues, children who were interviewed by the same interviewer would have more difficulty with source monitoring than children in the different interviewer group. The presence of the same interviewer might cause children to confuse the source of items. Hypothesis 2c predicted that children would inaccurately conclude that they discussed true events previously more than simply seeing the events on the video. Because children were exposed to the true events, they might inaccurately recall having previously talked about them as well. Hypothesis 2d predicted that children would misattribute false events to the video more than to previous discussions. This reflected the idea that children would incorporate false events that were suggested to them into their memories, and that they would be unable to determine that the suggested event was only talked about, and not seen.

The final question this study asked was "How do individual characteristics affect children's ability to remember information correctly?" Hypothesis 3 predicted

that children who are more easily intimidated or who are more compliant will make more errors in recall and source monitoring tasks than children who are not easily intimidated and not as compliant. This hypothesis relied on past research, which indicated that individual differences did affect memory and recall.

CHAPTER 2

METHOD

Participants

A total of 60 children ages five through eight years (M = 6 years, 6 months; range = 5 years, 0 months - 8 years, 5 months) participated in the study. Five of these participants were eliminated and replaced in order to obtain similar mean ages within all four groups. Congruent with the demographics of the middle-sized, Midwestern city, the children were from predominantly middle-class households (6 lower-class, 45 middle-class, 9 higher-class), and 87 % of them were White. Children were drawn from those parents who responded to recruitment letters sent through area nursery and elementary schools. No monetary incentive was given to families, but children received small trinkets for their participation.

Design

The design of this study was a 2 (Type of first interview: forced vs. suggested) x 2 (Interviewer: same vs. different) x 2 (Time delay: immediate vs. one week) mixed model. The first two factors were between-subjects, and the third one was a within-subjects factor. Thus, there were four groups in this study with 15 children per group. One group consisted of children who were given the forced interview and had the same interviewer for both sessions (forced, same). A second group consisted of children who were given the forced interview and had a different interviewer for the second session (forced, different). In a third group, children were given the suggested interview and had the same interviewer for both sessions (suggested, same). Finally, a

fourth group contained children who were given the suggested interview and had a different interviewer for the second session (suggested, different).

Materials

Stimulus. A videotape of a trip to the zoo with an embedded theft scene was employed as the stimulus (Shapiro, 1997). The videotape was 12 minutes long and contained female twins engaging in different activities at the zoo. In the beginning of the video, there was a two-minute scene in which the twins witnessed a bike theft. The theft scene began with a male adolescent attempting to borrow the bike of a young girl. Despite the older child's efforts, the younger child would not lend him the bike. The perpetrator eventually snuck back to the scene and stole the bike.

Memory interviews. There were two versions of memory interview #1, forced and suggested, and two versions of memory interview #2, same interviewer and different interviewer. Both versions of memory interview #1 began with the experimenter reading a short paragraph explaining that police officers collect information from witnesses about crime, and that witnesses to a crime should tell the police everything they know. Memory interview #1 consisted of 6 questions corresponding to true events (i.e., ones that occurred in the video) and 6 to false events (i.e., ones that were not featured in the video but were feasible). The order of questions was consistent with the chronological sequence of events. Children who received the forced memory interview were instructed to provide an answer for every question and to guess if they did not know the answer. They were pressured not only to comply, but also to elaborate about each item on the interview, whether it was true or false. If children denied having seen an item, they were prompted up to three times

to gain compliance. For example, the first time children denied having seen a feature, they were told, "I thought the boy was wearing a hat. Tell me about the hat. What kind of hat or color hat was it?" The second time children did not comply, they were told, "Remember, I need an answer even if you have to guess. Some other children told me that the boy was wearing a hat. Tell me what kind of hat or color hat it was?" The third time, children were told to just guess. In contrast, children who received the suggested memory interview were instructed to respond "I don't know" if they did not know an answer and that they should not guess. Thus, the questions were asked and no elaboration of information was requested. Appendix A contains both versions of memory interview #1.

The two versions of the memory interview #2 were identical except for the role of the interviewer. In half of the interviews, children were questioned by the same interviewer that they had spoken to during the first session. In the other half, children were questioned by a different interviewer. Both versions of memory interview #2 consisted of 12 questions, half of which referred to true events and half to false events. True event questions referred to information portrayed in the video, whereas false event questions referred to information not portrayed in the video. In addition, both versions contained six questions focusing on information from interview #1 (OLD) and six questions focusing on information not addressed in interview #1 (NEW). For each of the 12 questions there were two formats used to test children's source monitoring ability. The first format addressed whether children reported the feature during the first interview, whereas the second format focused on

whether the feature was seen in the video. Appendix B contains both versions of memory interview #2.

Temperament questionnaire. The Carey Temperament Scales Behavioral Style Questionnaire for 3-7 year olds (McDevitt & Carey, 1996) was used. This questionnaire has been found to have a test-retest reliability of .81 (range .61 to .94), and a median alpha reliability of .70 (range .47 to .80), and the questionnaire ratings have at least moderate levels of validity (see Carey & McDevitt, 1995, for a review). The questionnaire consists of 100 questions divided into 9 subscales: activity, rhythmicity, approach, adaptability, intensity, mood, persistence, distractibility and threshold. Table 1 shows the definition for each temperament characteristic. For each question the participant's parent or guardian provided an estimation of how often the child usually behaves in a certain way for a given situation, ranging from 1 (almost never) to 6 (almost always). Appendix C contains a complete version of this questionnaire.

Dissociation-Imagination-Compliance Event (DICE) Checklist. For the purpose of this study, a nine-item checklist was developed to assess the three behavioral patterns of dissociation, imagination, and compliance that children may display. These three dimensions were expected to play a role in children's source monitoring ability, accuracy of their testimony, and their susceptibility to suggestive questions. Several researchers have used dissociation and/or imagination scales as a method for ascertaining whether children or adults were able to distinguish between real and fictional experiences (Eisen, 1997; Putnam, 1997). The Child Dissociative

Table 1

Definitions of Temperament Characteristics and Sample Questions

Activity Level: the amount of physical motion during daily routine

Rhythmicity: regularity of bodily functioning in sleep, hunger, bowel movements, etc.

Approach: responses to new person, places or events

Adaptability: the ease/difficulty with which the child can change to socially acceptable behavior

Intensity: the amount of energy in a response whether negative or positive

Mood: general amount of pleasant or unpleasant feelings

Persistence/Attention Span: how long the child stays with a task or activity

Distractibility: the effect of external stimuli (sounds, persons, etc.) on ongoing behavior

Threshold: general sensitivity or insensitivity to stimuli (sound, odor, taste, light, etc.)

Checklist (Putnam, 1997) has been used predominantly with traumatized children and it was not able to differentiate high from low imaginative, dissociative children who had not been traumatized. Children who are high on dissociation were expected to have difficulty determining the source of information (i.e., something viewed vs. something heard) during an interview. Therefore, the DICE was developed as a way of assessing dissociation in "nonabused" children. Children's imagination was expected to affect how willing they would be to confabulate when relating information about an event. In addition, although compliance was expected to influence how easily children would acquiesce with suggestions made by the interviewer, no measure of compliance had yet been developed for children.

A checklist consisting of five imagination items, two compliance items, and two dissociation items was constructed. A parent's version of this checklist was also created to obtain the parents' views of these three patterns in their children's behavior. Both versions of this checklist are included in Appendix E.

Scoring

First interview memory score. Children's protocols were examined for incorrect answers. A response of 'no' or 'I don't know' to true events indicated the number of misses, whereas a response of 'yes' or 'I don't know' to false events constituted the number of false alarms. Children were given one point for each type of incorrect answer.

Second interview source monitoring score. The number of incorrect answers in the second interview was scored using two sources. The first source involved

recall about what children saw in the video (SEE) and the second involved what children discussed in the first interview (TALK).

Table 2 shows how source monitoring errors were scored in Interview #2. In order to score old items, it was necessary to view children's responses in Interview #1. The following scoring corresponds to children's responses of 'yes' to features in Interview #1. For true events, "misses" were indicated by children's 'no' or 'I don't know' responses to whether they told the interviewer about the feature or whether they saw the feature in the video. For false events, "false alarms" were indicated by children's 'yes' or 'I don't know' responses to whether they saw the feature in the video, whereas "misses" were indicated by children's 'no' or 'I don't know' responses to whether they told the interviewer about the feature. The following scoring corresponds to children's responses of 'no' or 'I don't know' to features in Interview #1. For true events, "false alarms" were indicated by children's 'yes' or I don't know' responses to whether they told they interviewer about the feature, whereas "misses" were indicated by children's 'no' or 'I don't know' responses to whether they saw the feature in the video. For false events, "false alarms" were indicated by children's 'yes' or 'I don't know' responses to whether they told the interviewer about the feature or whether they saw the feature in the video.
New items were scored differently than old items because only responses from interview #2 were examined. For false events, "false alarms" were indicated by children's 'yes' or 'I don't know' responses to whether they saw the feature in the video or whether they told the interviewer about the feature. For true events, "false alarms' were indicated by children's 'yes' or 'I don't know' responses to whether

Table 2

Scoring for Second Interview Source Monitoring Errors

Item			False Alarms		Misses	
	Event		Talk	Video	Talk	Video
		First Interview				
		Response				
New						
	True	---	Yes/IDK*	--	--	No/IDK
	False	---	Yes/IDK	Yes/IDK	--	--
Old						
	True	Y	--	--	No/IDK	No/IDK
		N	Yes/IDK	--	--	No/IDK
	False	Y	--	Yes/IDK	No/IDK	--
		N	Yes/IDK	Yes/IDK	--	--

* IDK = I Don't Know

they told the interview about the feature, whereas "misses" were indicated by children's 'no' or 'I don't know' responses to whether they saw the feature in the video.

Temperament. For each of the 100 questions on the Carey Behavioral Style Questionnaire (BSQ), parents provided an estimation of how their children behaved in given situations ranging from 1 (almost never) to 6 (almost always). The response order of certain questions was reversed, such that a response of six indicated a low score instead of a high score. These reversals were instituted in order to control for any response set made by parents (see McDevitt & Carey, 1996). A subset of questions corresponded to each of the nine subscales on the BSQ. We totaled the scores for each subscale and then converted each sum using corresponding t-scores identified from a standardized table. High scores on each of the subscales indicated a more negative aspect of each characteristic. Specifically, a high score on activity level meant that the child is very active. A high score on the subscale of rhythmicity meant that the child is very irregular in regards to bodily functions. An approach, a high score indicated that the child is very hesitant when responding to new person's places and events. For the subscale of adaptability, a high score meant that the child is very slow to adapt to socially desirable behavior. A high score on intensity meant that the child is very intense in his or her responses. A high score on mood indicated that the child displays a great deal of unpleasant feelings. For the subscale of persistence/attention span, a high score meant that the child is very nonpersistent when it comes to tasks or activities. A high score on the subscale of distractibility

meant that the child is very often distracted by external stimuli. Finally, a high score on threshold indicated that the child is very sensitive to stimuli such as taste and odor.

Dissociation-Imagination-Compliance Event (DICE) score. Each "yes" answer to an item on this checklist was scored as one point, and each "no" answer was given zero points. In the case of a discrepancy between child and parent responses, the parent's response was accepted over the child's in the case of the imagination questions only. The total points possible on this checklist were nine. For the dissociation subscale, points could range between zero and three. Points on the imagination subscale could range from zero to four. Points for the compliance subscale could range from zero to two.

Procedure

Every participant came to the lab for two sessions. In the first session, each participant viewed the film under the belief that he or she was waiting for the experimenter to finish setting up. After the participant watched the movie, the experimenter administered the first memory interview. Half of the children received the forced memory interview (determined by random assignment) and the other half received the suggested memory interview. The parent or guardian completed background information about the family (see Appendix D), as well as the Carey Temperament Scale while the child was being interviewed.

One week later, the participant returned and either the same or a different experimenter administered the second memory interview. After the memory interview was completed, children were asked the questions from the DICE checklist. The

parent/guardian completed the parent's version of the DICE checklist during this session.

CHAPTER 3

RESULTS

Suggestibility

The first analysis addressed the question, "What are the conditions under which children are suggestible?" To assess this issue and to address Hypotheses 1a, 1b, 1c and 1d, children's responses to questions concerning which events occurred in the videotape were examined. Specifically, the numbers of features incorrectly recalled (i.e., misses, false alarms) initially and at one week were analyzed using a 2 x 2 x 2 x 2 (Condition x Interviewer x Event x Time) repeated measures analysis of variance. The between-subjects factors were condition (forced vs. suggested) and interviewer (same vs. different), whereas event (true vs. false) and time of interview (immediate vs. one week) served as the within-subjects factors. Tukey post-hoc tests were performed on all significant interactions ($p < .05$). The significant main effects of condition, $F(1, 56) = 72.29$, $p < .01$, of event, $F(1, 56) = 41.60$, $p < .01$, and of time, $F(1, 56) = 11.73$, $p < .01$, and the Event x Condition, $F(1, 56) = 54.16$, $p < .01$, Time x Condition, $F(1, 56) = 36.87$, $p < .01$, Event x Time, $F(1, 56) = 30.12$, $p < .01$, were interpreted within the Condition x Event x Time interaction, $F(1, 56) = 40.72$, $p < .01$. The data in Figure 1 clearly indicates that children would not have confabulated responses had they not been forced to do so. Children in the forced group inaccurately claimed to remember witnessing false events more than those in the suggested group did during the initial interview ($M = 4.8$, $SD = 1.42$ vs. $M = .7$, $SD = .79$). The remnants of this effect were still present, albeit marginally

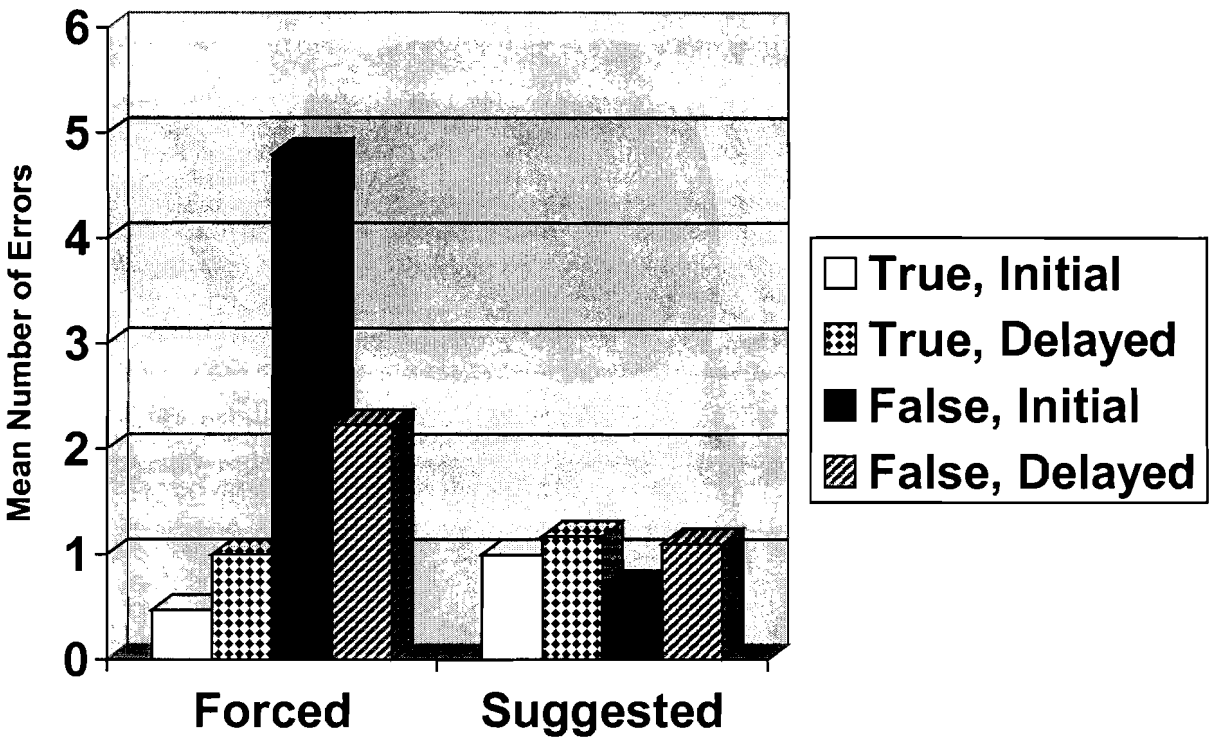

Figure 1. Mean Number of Errors by Event and Time of Interview for Each Condition

significant, during the delayed interview (M = 2.23, SD = 1.38 vs. M = 1.10, SD = 1.09). There were no significant differences in responses to true and false events by children in the suggested group. This finding suggests that forcing children to accept false events renders them more prone to memory distortions than simply suggesting incorrect information. Over time, children in the forced group were less likely to incorporate confabulated information into reports of what they had witnessed. Specifically, children misattributed fewer false events into eyewitness testimony given in the delayed interview than in the initial interview (M = 2.23, SD = 1.38 vs. M = 4.8, SD = 1.42). There was also a marginally significant main effect of interviewer, F(1,56) = 3.52, p = .066. This finding implied that there was a tendency for children to make more errors when interviewed by the same person than by a different person (M = 1.68, SD = 1.53 vs. M = 1.43, SD = 1.38).

During both interviews, children in the forced group confused false features for actually experienced events more than they incorrectly rejected that true events had occurred. This effect was stronger in the initial interview (M = 4.8, SD = 1.42 vs. M = .47, SD = 1.17) than in the delayed interview (M = 2.23, SD = 1.38 vs. M = 1.0, SD = 1.29). Thus, the data suggests that children who were pressured to comply with information they knew to be untrue were more prone to confabulation than were those who were merely exposed to incorrect information. This finding raised the question of whether children were even aware of the source of the incorrect information.

Source Monitoring

The second analysis addressed the question, "Under what conditions are children's source monitoring abilities affected?" To address Hypotheses 2a, 2b, 2c

and 2d, the number of false events and true events reported in children's delayed protocols was examined. For false events, children had to recognize which features were never seen in the videotape or discussed initially (new items) versus those that were only discussed initially (old items). For true events, children had to differentiate between features that were only viewed on the videotape (new items) versus those that were viewed on the videotape and discussed initially (old items). Thus, the new items served as a base rate of errors, indicating children's willingness to assent to information that had not been discussed or seen previously. A 2 x 2 x 2 x 2 x 2 (Item x Condition x Interviewer x Source x Event) repeated measures analysis of variance was performed on the number of discussed and viewed features accurately recalled during the second interview. The between-subjects factors were condition and interviewer, whereas source (talked about with interviewer vs. seen on the video), item (new vs. old), and event served as the within-subjects factors. Various post-hoc analyses ($p < .05$) were performed on significant interactions as indicated below. A significant main effect of source, $F(1,56) = 31.48$, $p < .01$, was interpreted within a significant two-way interaction of Source x Condition, $F(1,56) = 4.98$, $p < .03$. Different t-test post-hoc tests indicated effects of source found for both conditions. As shown in Figure 2, when asked about various events, children in the forced group were more likely to misattribute them to previous discussions than to the videotaped theft ($M = 1.02$, $SD = .77$ vs. $M = .81$, $SD = .68$). Children in the suggested group made the same source misattribution error ($M = 1.05$, $SD = .76$ vs. $M = .57$, $SD = .70$). However, children in the forced group misattributed events to the video more than did children in the suggested group ($M = .81$, $SD = .68$ vs. $M = .57$, $SD = .70$).

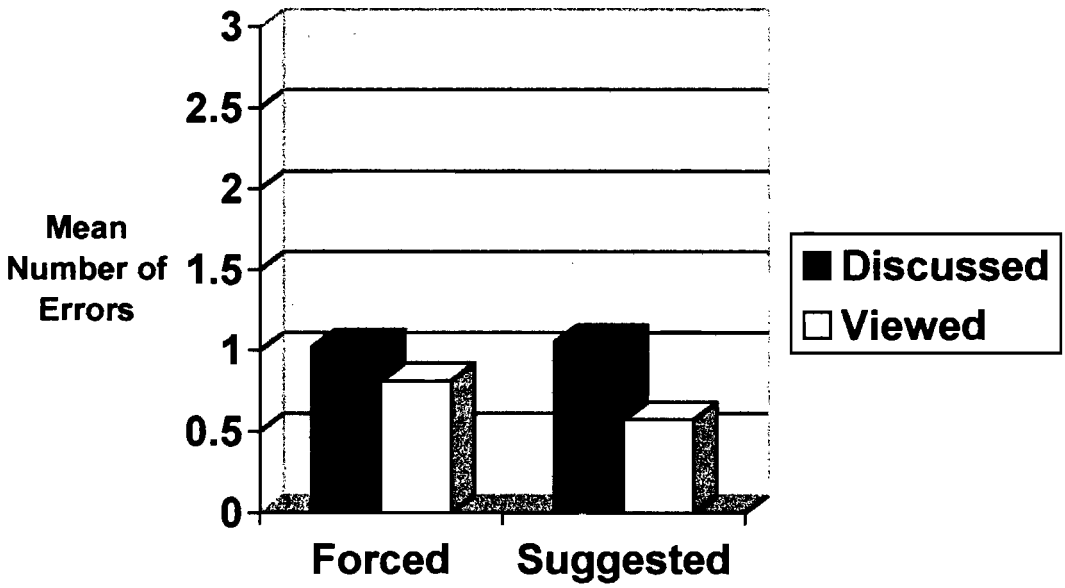

Figure 2. Mean Number of Errors by Source for Each Condition

These findings indicate that children had difficulty determining the source of information provided by the interviewer, regardless of condition. Moreover, forcing children to comply with information made it more likely that they would misattribute the event to the video than simply suggesting that it occurred. Also, significant two-way interactions of Item x Source, $F(1,56) = 71.17$, $p < .01$, and Event x Source, $F(1,56) = 61.90$, $p < .01$, were interpreted within the Item x Event x Source interaction, $F(1,56) = 20.55$, $p < .01$, through Tukey post-hoc tests ($p < .05$). Figure 3 shows that, as expected, children's confusion about whether they already reported true events was greater when the item was new rather than old ($M = 2.27$, $SD = .86$ vs. $M = .48$, $SD = .75$). Similarly, children misattributed confabulated events as having been in the video more when the item was old rather than new ($M = 1.3$, $SD = 1.01$ vs. $M = .42$, $SD = .72$). Children were less capable of recognizing that they had not discussed an event with the interviewer in the initial interview when the information was true than when it was false ($M = 2.27$, $SD = .86$ vs. $M = .62$, $SD = .72$). Moreover, children were more likely to claim incorrectly that they had talked about the event previously than they were to claim not having seen the event on the video, even though they had ($M = 2.27$, $SD = .86$ vs. $M = .52$, $SD = .56$). Children's vulnerability to confabulated items was evident by their greater misattribution of false events as real than as previously discussed ($M = 1.3$, $SD = 1.01$ vs. $M = .42$, $SD = .87$). The results suggest that children did have more difficulty determining that a true event was on the video than they did at judging whether or not they had discussed it previously. Thus, their error was in misattributing these events to the

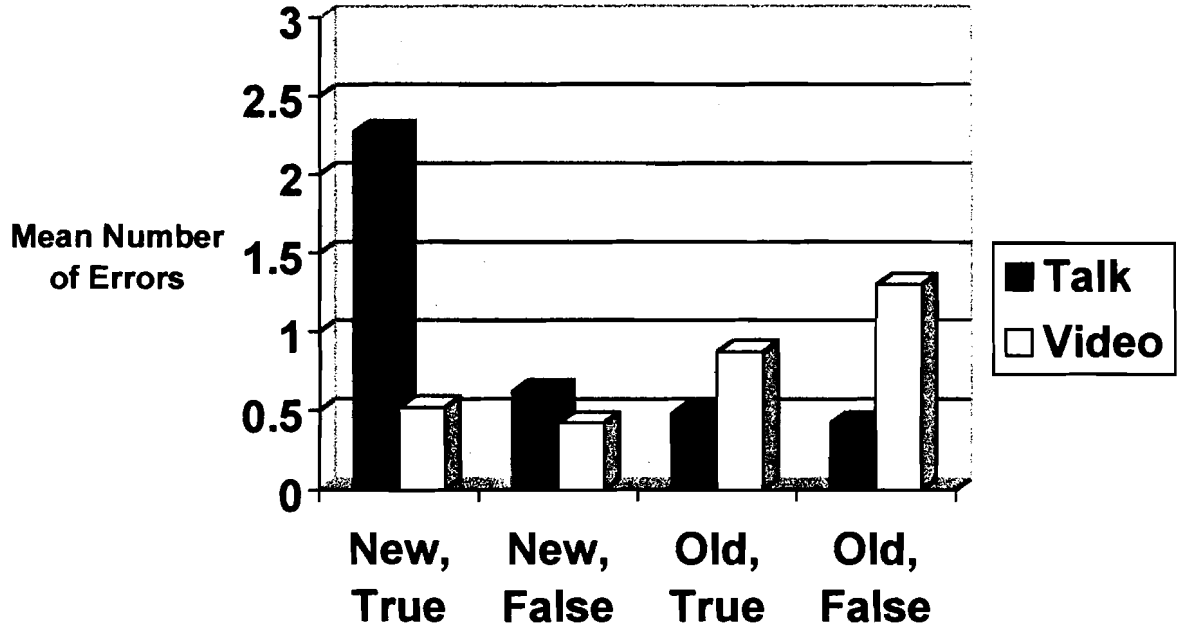

Figure 3. Mean Number of Errors for New and Old Items in True and False Events by Source

interview. This finding raised the question of whether the interviewer role contributed to source monitoring errors.

The significant main effects of item, $F(1,56) = 5.43$, $p < .02$, and event, $F(1,56) = 7.23$, $p < .01$, and the two-way interactions of Item x Condition, $F(1,56) = 5.43$, $p < .02$, Event x Condition, $F(1,56) = 37.85$, $p < .01$, and Item x Event, $F(1,56) = 129.47$, $p < .01$, as well as the interaction of Item x Event x Condition, $F(1,56) = 9.76$, $p < .05$, were interpreted within the Item x Event x Condition x Interviewer interaction, $F(1,56) = 6.43$, $p < .01$, using Tukey post-hoc tests ($p < .05$). Table 3 shows the means and standard deviations for this four-way interaction. Although interviewer role did affect error performance, it was more related to condition, rather than source. When the same interviewers asked children in the forced group about true events, children made more errors about new information than old information ($M = 1.43$, $SD = .37$ vs. $M = .23$, $SD = .42$). In contrast, if the same interviewers questioned children in this group about false events, they made more errors with old information than with new information ($M = 1.6$, $SD = .69$ vs. $M = .4$, $SD = .43$). Similarly, children in the forced group made more errors when the event was true than when it was false ($M = 1.43$, $SD = .37$ vs. $M = .4$, $SD = .43$) when questioned by the same person. In contrast, when the same interviewer asked this group about information discussed previously (i.e., old items), children made more errors when the event was false than true ($M = 1.6$, $SD = .69$ vs. $M = .23$, $SD = .42$). However, when asked by a different interviewer about information discussed previously, children in the forced group also made more errors when the event in question was false than true ($M = 1.5$, $SD = .6$ vs. $M = .33$, $SD = .52$). For children in the

Table 3

Mean Numbers of Errors for Old and New Items for Each Event by Condition and Interviewer Role

Condition		New Item		Old Item	
	Interviewer Role	True Event	False Event	True Event	False Event
Forced					
	Same	1.43 (.37)	.4 (.43)	.23 (.42)	1.6 (.69)
	Different	1.17 (.49)	.63 (.79)	.33 (.52)	1.5 (.6)
Suggested					
	Same	1.63 (.35)	.63 (.81)	.8 (.49)	.6 (.57)
	Different	1.53 (.3)	.13 (.4)	.5 (.6)	.63 (.64)

(standard deviations in parentheses)

suggested group, being interviewed by different people led them to commit more errors when presented with new information about true events than false events (M = 1.53, SD = .3 vs. M = .13, SD = .4). Moreover, children in this group made more errors when interviewed by different interviewers about true events for the first time (i.e., new items, M = 1.53, SD = .3) than for the second time (i.e., old items, M = .5, SD = .6). There was also a trend for children in the forced group to produce more errors than those in the suggested group about false events that were discussed previously when interviewed by the same people (M = 1.6, SD = .69 vs. M = .6, SD = .57). These findings indicate that the role of the interviewer differentially affects errors committed by children in the two groups. Children in the forced group made mistakes when interviewed by the same people, whereas children in the suggested group made errors when interviewed by different people. As indicated in results reported above, children had difficulty determining the source of information. Thus, the presence of the same interviewer not only led the children in the forced group to believe that they had discussed new information about true events previously, but also triggered the recall of old information about false events. In contrast, information presented in interviews was not elaborated upon for children in the suggested group, making the events less salient. Therefore, in the second interview children may have become confused about which true events were discussed previously with the other interviewers. Clearly, interview style did influence children's recall, however, some children may have been more affected than others because of their personality characteristics. This contention was examined in the next set of analyses.

Individual Differences and Memory

The third set of analyses addressed the question, "How do individual characteristics affect children's ability to remember information correctly?" Correlations were performed for each group (forced, suggested) separately. The first set of Pearson correlations examined the three subscales of the DICE (imagination, dissociation, and compliance) with the number of errors children made about true and false information provided in the first interview. The results from the forced group showed a few different correlations with the DICE subscales. In the first interview, imagination was negatively correlated with true events, $r(30) = -.43$, $p < .02$, but was positively correlated with false events $r(30) = .47$, $p < .01$. Highly imaginative children made fewer errors when asked about true events, but a greater number of errors when asked about false events than did unimaginative children. Dissociation was also negatively correlated with true events, $r(30) = -.39$, $p < .03$, indicating that children who scored high on dissociation made fewer errors when asked about true events than those who scored low on dissociation. There were no correlations between the suggested group and the DICE subscales.

The second set of Pearson correlations examined the relationship between the DICE subscales and the two memory sources (discussed, viewed) for old and new events that were false and true from the second interview. In the forced group, there was a positive correlation between compliance and the number of errors made about false events that were introduced for the first time during the second interview, $r(30) = .48$, $p < .01$. Highly compliant children made more misattributions about false

events than did children who are less compliant. Again, there were no correlations between the suggested group and the DICE subscales.

The third set of Pearson correlations conducted examined the nine dimensions of temperament (activity, rhythmicity, approach, adaptability, intensity, mood, persistence, distractibility and threshold) with the true and false events from the first interview. In the suggested group, errors made when asked about false events correlated positively with rhythmicity, $r(30) = .4$, $p < .03$, and with intensity, $r(30) = .53$, $p < .01$. Children who are irregular in their daily functioning made more errors than children who are rigid in their daily activities or behaviors. Also, children who respond to life enthusiastically made more errors when asked about false events than did children who are less dynamic. There were no correlations found between children in the forced group and temperament characteristics.

The fourth set of Pearson correlations conducted examined the nine dimensions of temperament with the two memory sources (discussed, viewed) for old and new events that were false and true from the second interview. In the forced group, errors made about new, true events when the source of the information was the previous discussion correlated positively with approachability, $r(30) = .38$, $p < .04$, and with adaptability, $r(30) = .41$, $p < .02$. Children who scored high on approachability are very hesitant in their responses to new people, places, or events. They made more errors when asked about new, true events whose source was the previous interview than did children who scored low on approachability. High scores on adaptability indicated that children are slow to adapt to socially acceptable behavior. They made more errors when the source of new, true events was previous

discussion than did children who adapt more quickly. Adaptability was also negatively correlated with errors made when asked about old, true events whose source was previous discussion, $r(30) = -.39$, $p < .03$. Children who are quick to adapt to socially acceptable behavior made more errors when asked if they had previously discussed old, true events than did children who are slower to adapt.

In the suggested group, errors made when asked whether children had seen previously discussed, true events on the video were positively correlated with rhythmicity, $r(30) = .45$, $p < .01$, adaptability, $r(30) = .39$, $p < .03$, persistence, $r(30) = .39$, $p < .03$, and mood, $r(30) = .39$, $p < .03$. Children who scored high on rhythmicity do not require a set regiment of daily functioning. In comparison to less flexible children, they made more errors when asked whether the source of old, true events was the previous discussion. Children who are slow to adapt to socially acceptable behavior made more errors when asked about whether the source of previously seen old, true events was the video than did children who are able to adapt more quickly. Children who scored high on the persistence subscale have a low attention span. Children who are not task oriented made more errors when asked whether they had seen previously discussed, true events on the video than did children who attend well to tasks. Also, moody children made more errors when asked about true items from the video that they had previously discussed than did pleasant children.

The number of errors made when children were asked whether new, true items had been discussed was correlated with mood, $r(30) = -.37$, $p < .05$, intensity, $r(30) = -.37$, $p < .03$, and distractibility, $r(30) = -.40$, $p < .03$. Pleasant children made more errors when asked if the source of new, true items was previous discussion than did

moody children. Also, children who are less dynamic in response to life made more errors when asked if the source of new, true items was previous discussion than did enthusiastic children. The distractibility correlation indicates that children who are rarely distracted by external stimuli made more errors when asked if they had previously discussed new, true items than did easily distracted children.

Distractibility was also positively correlated with errors made when asked if new, false items were previously seen on the video, $r(30) = .48$, $p < .01$. Children who are often distracted by external stimuli were more likely to make errors when asked if the source of new, false items was the video than were children who are not distractible. One final negative correlation was found between errors made on old, true items whose source was previous discussion and sensory threshold, $r(30) = -.38$, $p < .04$. Children who are not very sensitive to stimuli made more errors when asked if the source of old, true items was previous discussion than did children who are insensitive to stimuli.

CHAPTER 4

DISCUSSION

The purpose of the present study was to investigate children's eyewitness testimony and the factors that may affect accuracy. Specifically, this study sought to explore how interview style, interviewer role, and eyewitnesses' individual characteristics affected suggestibility and source monitoring abilities

Suggestibility

The first question posed was, "What are the conditions under which children are suggestible?" Interview style was expected to exert a large effect on recall. Results from this study supported Hypothesis 1a that children's recall would contain fewer errors in the suggested than in the forced condition. The reasoning behind this hypothesis was based on past research, which found that children who were forced to comply with incorrect information would make more errors than would children who were not pressured in this way (Ackil & Zaragoza, 1998; Fivush & Schwarzmueller, 1995; Poole & White, 1991). Congruent with past research, this study found that children in the forced group suffered from being pressured initially to confabulate. The present findings replicated Ackil and Zaragoza's results that forcing children to comply with confabulated information led to implantation of false memories. The present study also extended Ackil and Zaragoza's findings in that it was able to compare directly a suggestion group and a forced confabulation group in order to ascertain the difference between mere exposure and false-event questions. The data clearly indicate that children would not have confabulated had they not been forced to do so. There were consequences of making children comply with suggested

information. First, children produced more misattributions immediately than over time. This result contrasts with Hypothesis 1d that children would make more errors in the delayed interview than in the immediate interview. The rationale had been that children would be less likely to report incorrect information in the first interview because the events were still fresh in their minds. However, forcing children to comply worked better than was originally thought in that they did report inaccurate information in the initial interview. Additionally, children were able to shed their misconceptions by reporting fewer false events when given a relaxed interview. Second, children were generally more confused about the occurrence of false events than true events. Thus, Hypothesis 1c was confirmed because children made fewer errors when discussing the occurrence of true events than false events.

In addition to interview style, there are other reasons why children may not provide accurate testimony. Many times when children are questioned about an abusive situation, they do not always have the same person interviewing them. This study was interested in the role of the interviewer in recall for this reason. Many studies have either used the same person across interviews to reduce experimental variance (e.g., Blackford, 2000; Chen & Shapiro, 2000) or used different interviewers to reduce social awkwardness during questioning (Ackil & Zaragoza, 1998). However, very few studies have examined how interviewer role affected what children reported (e.g., Bjorklund et al., 2000). Hypothesis 1b, that children's memory of videotaped theft would be less accurate when they were interviewed by a different rather than the same person, was not confirmed. In fact, there was a tendency for the opposite trend in that children made more errors when interviewed

by the same person than by a different person. This finding contrasted with previous reports that inaccuracy in children's memory was reduced when the same rather than a different interviewer questioned them (e.g., Bjorklund et al., 2000). The present study's results may have differed from those of Bjorklund et al. because their videotaped theft was not embedded in a zoo scene and their children were questioned using open-ended questions followed by misleading suggestions that were not stated in a way to make children comply. It is possible that the present study did not find an effect for interviewer because the condition effects were so robust. That is, children were exposed to true and false information presented by the interviewers under different interview conditions. In contrast, the children in Bjorklund et al.'s study were only exposed to misleading information and were not asked to comply with it. Thus, the effect of interviewer role in the current study may have been subdued by the effect of interview style.

This study was consistent with past findings supporting the contention that interviewers should rely on general, open-ended questions in order to obtain accurate testimony (Cassel & Bjorklund, 1995). When interviewers do not know whether or not an event occurred, suggesting that it did and then asking children to elaborate on it will lead to false memories (Ackil & Zaragoza, 1998). Suggestion alone has affected recall when introduced at a time when children's memory about the event has faded (Chen & Shapiro, 2000), but not shortly after viewing the event (Blackford, 2000). The implication of the current findings for people in the legal and clinical professions is that requesting compliance and elaboration through repeated questioning will lead to inaccurate testimony. However, over time much of the

implanted information obtained through "tainted" interviews will dissipate if children are not forced to elaborate on previous disclosures. Unfortunately, what is typically done is that the new interviewer relies on the initial testimony to question children. Thus, by repeating incorrect information, children's memory for false events becomes stronger. What is not clear is how forcing children to comply with false information initially will be affected by longer time delays between interviews, by interviewers who do not indicate that errors were made previously, and by forcing children to comply in additional interviews. In addition, testing younger or older children, as well as adults would also extend the knowledge in this area.

Source Monitoring

The second question posed was "Under what conditions are children's source monitoring abilities affected?" Along with children's memories for the source of information, it was also important to take into account whether the type of information being considered was old (discussed previously) or new (introduced for the first time). The rationale was that children would be less capable of determining the source of information when it was old than when it was new. In trying to determine the source of old information, children would have to recall the event, recall the interview, and then compare the two in order to determine which one was the source of the information. Determining the source of new information, however, is often mainly a recognition task.

Children were not able to distinguish the source of information as a witnessed event instead of a discussion about the event. They had more difficulty when questioned about true events that were introduced for the first time during the second

interview. Thus, they were more likely to misattribute the new information as old information. Style of interviewing also mediated the role of the interviewer on recall. Children had difficulty determining that true information had not been previously reported when the same interviewer questioned children in the forced group and a different interviewer questioned children in the suggested group. In the former group, it is assumed that forcing children to comply and elaborate on information led to deeper processing and may have led to encoding the interviewer with the information (Craik, 1979). Thus, the interviewer served as a cue during recall. In contrast, those in the suggested group might have experienced a sense of familiarity with the material, but were not able to use the interviewer to cue them about whether the information had been reported previously. Therefore, Hypothesis 2b, that children would have more difficulty with source monitoring when interviewed by the same rather than a different interviewer, was confirmed for the forced group and disconfirmed for the suggested group.

When asked about the source of a true event that had not been previously discussed, children made more errors about the source than when asked about old items. This finding supported Hypothesis 2c, which predicted that children would inaccurately conclude that they discussed true events previously rather than simply seeing the events on the video. The rationale was that children would recall true events so well that they would have difficulty distinguishing the source of the information. Children were so sure that they had witnessed the event that they incorrectly assumed they had also told the interviewer about it previously. Future

interviewers should be aware of this tendency for children to confuse the source of a true detail.

Hypothesis 2a stated that children in the forced group would have less difficulty with source monitoring than children in the suggested group. This was predicted because the questioning style in the forced interview would more likely cause children to remember being forced to comply with each item, thereby making them more aware that the interviewer, rather than the video, was the source of the information. This hypothesis was disconfirmed. Children in the forced condition made more errors than children in the suggested condition when asked about false items for the second time. Thus, it is possible that children became dedicated to their answers because of cognitive dissonance such that if they had complied, then they decided that they must believe it happened (Festinger, 1957).

With children in both groups, old information was implanted because it was misattributed to the video more often than to past discussion. This supported Hypothesis 2d, which predicted that children would misattribute false events to the video more than to previous discussions. This finding implies that previously talked about false events were implanted into children's memories such that they actually recalled having witnessed the events. Ackil and Zaragoza (1998) also found similar source monitoring errors. When questioned by the same interviewer, children made more errors on old information than on new information. They also made more errors when asked about old, false information than old, true information, regardless of the interviewer. It was possible that children were making suggestibility and source

monitoring errors not only because of the interview style and the interview role, but also because of their individual characteristics.

Individual Differences

The final question posed was "How do individual characteristics affect children's ability to remember information correctly?" Interview style and individual characteristics must be considered together to understand the results. For children in the forced group, imagination played a large role in their ability to remember information correctly during the initial interview. This interview style may have helped children to focus on true events, but allowed their imaginations to expand on false events. Not surprisingly, this interview style was most detrimental to testimony produced during the delayed interview by compliant children.

Congruent with past research, variations in children's temperament were related to their ability to recall information accurately (Chen & Shapiro, 2000; Memon et al., 1996; Palmer et al., 1998). One of the most enlightening findings about children's temperament was related to adaptability. Children who are slow to adapt to socially acceptable behavior were making source errors when asked about true events. This could be because they are also slower to think about whether or not they had actually seen or talked about the event previously. Source monitoring errors were affected by an interaction of temperament and interview style. Difficulty in determining the source of true information was more of an issue for children in the suggested group when it was only seen on the video, but was more prevalent for those in the forced group when it was both discussed and seen on the video.

Other temperament characteristics were not found to be significantly related to recall for children in the forced condition. Because children in the forced condition had to comply, it is proposed that any potential effects of individual characteristics on performance were suppressed by this interview style. In contrast, rhythmicity, intensity, and mood did influence the ability of children in the suggested group to provide accurate testimony. Children who have irregular daily functioning and those who are energetic were making misattributions about false events initially and had difficulty determining the source of true events. It could be that because these children do not perceive details in the same way as other children do, even mild suggestions had detrimental effects. Source monitoring performance on true events was also poor by moody children who may ignore statements by the interviewer.

Conclusions

This study was important because it further supported the finding that forcing children to fabricate information in an interview caused them to make more errors in recall than children who were not forced to confabulate. In addition, children had difficulty in determining whether the source of information was from a video or a previous discussion, particularly when discussing new, true events and old, false events. The interview style and interviewer role both mediated performance. Individual characteristics did have some effect on children's susceptibility to false information. However, these characteristics had a more noticeable effect on source monitoring errors.

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APPENDIX A

Memory Interview Questions

Instructions to children for introducing experimenters:
Hello. My name is _____. I am going to talk to you later, when I finish setting up.

Instructions to children for watching the movie:
Your parents told me that you like watching movies. You can sit right here to see a short home movie that someonw took when my friends went to the zoo. *Then go to the room with the child and say,* **I want you to watch the movie. Enjoy the film.**

Instructions to children to go with interviewers: After the film ends, the interviewer will enter the room and ask the child to follow him/her to another room for the next phase of the experiment (i.e., the memory interview).

Guidelines for Obtaining Child Consent: Not to interviewer: It is absolutely mandatory that each child, regardless of age, be given the opportunity to decline participation in the research. The following script provides a suggested way to obtain verbal consent from the children. Of course, this suggested procedure must be used with flexibility to accommodate the characteristics of children's styles of interaction. However, each child must be explicitly asked whether or not he or she wishes to take part in the interviews. Moreover, if the child does not want to continue, he or she may quit. The child's wishes must be respected.

Your mommy/daddy said it would be okay if we talk for a little over here (point towards the room)**. I'll tell you a little more about it when we get there, o.k.?**

>>if the child says, 'yes': **Good. Let's go there. [skip to p. 2]**

>>if the child hesitates, but does not decline or indicates he or she is not sure, then say: **It's o.k. if you want to think about it before you tell me. I'll be talking to lots of children your age. Would it be o.k. if we go and talk?**

>>if the child needs reassurance from the parents, then take the child to the waiting room and let him or her see the parents. Parents will be told not to pressure the children. After a couple of minutes, then say: **O.k. Do you feel better now? Are you ready to go and talk in the other room? Your parents will wait here while we talk.**

>>if the child declines participation, then say: **That's o.k. Sometimes children don't feel like talking. Thanks for coming. Have a good day.**

Interactions with the child during the interview process: >>During the interview, a child who asks to stop may be told: **We are almost done, let's just finish these last few question, o.k.?**

>>if the interview is not near completion, the interview may say: **This doesn't take too long. It would help me if you could talk to me a little more. If you want we could take a little break and get a drink of water or something.**

>>*After the break:* **Are you ready to talk to me some more?**

>>*If the child resists continuing after a couple of attempts to regain involvement, the interview should be terminated. The interviewer should say:* **That's o.k. Sometimes children don't feel like talking. Thanks for coming. Have a good day.**

>>*At the end of the interview, the child will be praised for his or her performance and thanked for helping.*

Memory Interview #1
Forced Version

Instructions to children for the memory interview: [Turn on camcorder]
I am going to put on this camera to help me remember everything you say. _____*(child's first name)* **everyone who works with me gets a special number and yours is**_____*(subject number)*, **but you don't have to remember that.**

Sometimes something happens to people and they need to call the police to get some help. The police officers' job is to find out more information. So they go around asking if anyone saw what happened. If people know any information, they are supposed to tell the police what they saw. You just saw a movie about twins who went to the zoo. I was told that the twins saw something happen to a bike. So if the police asked them about that, they would have to tell everything they saw. My job is also important because I want to find out how much children can remember about activities that they see.

I don't know what happened in the movie because I didn't watch it. So I want you to tell me everything you REALLY REALLY remember about what happened to the bike. But, I don't need to know anything about what the twins did at the zoo.

I have spoken to several children who told me what happened, but I need some more information. I will be asking you questions about what you saw. If you don't understand a question, just say, "I don't understand what you mean." It is really important that I find out what you remember.

I need an answer for every question. So if I ask a question and you don't remember or you are not sure about your answer, I want you to guess.

When the boy first walked over to the girl, she called him by name.
1. **Was the boy's name Frankie?**

   If the child says YES, then say:

   How many times did she call him Frankie?

   If the child says NO or IDK the FIRST TIME, then say:

   I thought that the boy's name was Frankie. How many times did she call him Frankie?

   If the child says NO or IDK the SECOND TIME, then say: **Remember I need an answer, even if you have to guess. Some other children told me that his name was Frankie. Tell me how many times she called him Frankie.**

   The third NO or IDK, encourage the child to guess. **Just guess.**

Think about what the boy looked like.

2. Was the boy short?

If the child says YES, then say:

Tell me more about his body. How small was he? You can use this chart to show me how short he was. *(point to the 3 1/2 foot mark)*

If the child says NO or IDK the FIRST TIME, then say:

I thought that the boy was short. Tell me more about his body. How small was he? You can use this chart to show me how short he was.

If the child indicates 5'6" or taller, say: **That's not short. Some other children told me he was short. Try again and show me how short he was.**

If the child says NO or IDK the SECOND TIME, then say: **Remember I need an answer, even if you have to guess. Some other children told me that the boy was short. Tell me how short he was.**

The third NO or IDK, encourage the child to guess. **Just guess.**

3. Did the boy have short hair?

If the child says YES, then say:

Tell me about his hair. How did he wear it? *(get the child to point to how long it was using his/her face)* **Point on your head to how far his hair came down.**

If the child says NO or IDK the FIRST TIME, then say:

I thought that the boy had short hair. Tell me about his hair. How did he wear it? *(get the child to point to how long it was using his/her face)* **Point on your head to how far his hair came down.**

If the child says NO or IDK the SECOND TIME, then say: **Remember I need an answer, even if you have to guess. Some other children told me that the boy had short hair. Tell me how he wore it. Point on your head how far his hair came down.**

The third NO or IDK, encourage the child to guess. **Just guess.**

Think about what the boy was wearing.

4. Was the boy wearing a black shirt?

If the child says YES, then say:

Tell me about his shirt. What kind of shirt was it?

If the child says NO or IDK the FIRST TIME, then say:

I thought that the boy was wearing a black shirt. Tell me about his shirt. What kind of shirt was it?

If the child says NO or IDK the SECOND TIME, then say: **Remember I need an answer, even if you have to guess. Some other children told me that the boy was wearing a black shirt. Tell me what kind of shirt it was.**

The third NO or IDK, encourage the child to guess. **Just guess.**

5. **Was the boy wearing a hat?**

If the child says YES, then say:

Tell me about his hat. What kind of hat or color hat was it?

(accept style or color responses)

If the child says NO or IDK the FIRST TIME, then say:

I thought the boy was wearing a hat. Tell me about the hat. What kind of hat or color hat was it? *(accept style or color responses)*

If the child says NO or IDK the SECOND TIME, then say: **Remember I need an answer, even if you have to guess. Some other children told me that the boy was wearing a hat. Tell me what kind of hat or color hat it was.** *(accept style or color responses)*

The third NO or IDK, encourage the child to guess. **Just guess.**

The boy was interested in the bike. He went over to the bike to look at it.

6. **Did you see the decorations on the bike?**

If the child says YES, then say:

Tell me about the decorations. What did they look like?

If the child says NO or IDK the FIRST TIME, then say:

I thought that there were decorations on the bike. Tell me about the decorations. What did they look like?

If the child says NO or IDK the SECOND TIME, then say: **Remember I need an answer, even if you have to guess. Some other children told me that there were decorations on the bike. Tell me what they looked like.**

The third NO or IDK, encourage the child to guess. **Just guess.**

7. **Was the color of the bike black?**

If the child says YES, then say:

Tell me more about the bike. Was it all black?

If the child says NO or IDK the FIRST TIME, then say:

I thought that the bike was black. Tell me more about the bike. Was it all black?

If the child says NO and seems to be talking about the decorations, say:
Except for the decorations was the bike all black?

If the child says NO or IDK the SECOND TIME, then say: **Remember I need an answer, even if you have to guess. Some other children told me that the bike was black. Tell me if it was all black.**

The third NO or IDK, encourage the child to guess. **Just guess.**

The girl noticed the boy near her bike and she stopped singing. She went over to the boy to talk to him.

8. **The boy and the girl began arguing. Were they arguing because he said he was smarter than she was?**

If the child says YES, then say:
Tell me about the argument. What did they say to each other?
(if child says it was about the bike, then read the following):

If the child says the argument was about the bike, then modify with:
There was another argument. I thought that it was because the boy thought he was smarter than the girl. Tell me about the argument. What did they say to each other?

If the child says NO or IDK the FIRST TIME, then say:
I thought they were arguing because the boy thought he was smarter than the girl. Tell me about the argument. What did they say to each other?

If the child says NO or IDK the SECOND TIME, then say: **Remember I need an answer, even if you have to guess. Some other children told me that they were arguing because he said he was smarter. Tell me what they said to each other.**

The third NO or IDK, encourage the child to guess. **Just guess.**

After the argument, the girl didn't want to be near the boy anymore.

9. **Did the girl move the bike away from the boy?**

If the child says YES, then say:
Where did she move it to?

If the child says NO or IDK the FIRST TIME, then say:
"I thought that the girl moved the bike away from the boy. Where did she move it to?"

If the child says NO or IDK the SECOND TIME, then say: **"Remember I need an answer, even if you have to guess. Some other children told me that she moved the bike. Tell me where she moved it to."**

The third NO or IDK, encourage the child to guess. **Just guess.**

The boy was angry and did something mean.

10. Did the boy take the bike, even though the girl told him not to take it?

IF the child says YES, then say:

Tell me about when he took it. What did he do?

If the child needs clarification, then say: **How did he do it?**

If the child says NO or IDK the FIRST TIME, then say:

"I thought that the boy took the bike, even though the girl told him not to take it. Tell me about when he took it. What did he do?"

If the child needs clarification, then say: **How did he do it?**

If the child says NO or IDK the SECOND TIME, then say: **"Remember I need an answer, even if you have to guess. Some other children told me that he took the bike. Tell me what he did."**

If the child needs clarification, then say: **How did he do it?**

The third NO or IDK, encourage the child to guess. **Just guess.**

The girl wanted to get her bike back but she couldn't.

11. Was it because she was wearing a dress?

IF the child says YES, then say:

Tell me about the dress. What did it look like?

(accept color or style)

If the child says NO or IDK the FIRST TIME, then say:

I thought that she couldn't get the bike back because she was wearing a dress. Tell me about her dress. What did it look like? *(accept color or style)*

If the child says NO or IDK the SECOND TIME, then say: **"Remember I need an answer, even if you have to guess. Some other children told me that she was wearing a dress. Tell me about her dress. What did it look like?** *(accept color or style)*

The third NO or IDK, encourage the child to guess. **Just guess.**

12. When the mother came over to the girl, did the mother yell at the girl for losing her bike?

IF the child says YES, then say:

What did her mother say to her?

(if child says it was the father, then read the following):

If the child says it was the father, then modify with:

The mother was also there. I thought that when the mother saw the girl, she yelled at her for losing the bike. What did her mother say to her?

If the child says NO or IDK the FIRST TIME, then say:

I thought that when the mother came over to the girl she yelled at her for losing the bike. What did her mother say to her?

If the child says NO or IDK the SECOND TIME, then say: **"Remember I need an answer, even if you have to guess. Some other children told me that the mother yelled at the girl. Tell me what her mother said to her.**

The third NO or IDK, encourage the child to guess. **Just guess.**

Thank you for helping me. You did a great job!

Memory Interview #1
Suggested Version

Instructions to children for the memory interview: [Turn on camcorder]
I am going to put on this camera to help me remember everything you say. _____*(child's first name)* everyone who works with me gets a special number and yours is_____*(subject number)*, but you don't have to remember that.

Sometimes something happens to people and they need to call the police to get some help. The police officers' job is to find out more information. So they go around asking if anyone saw what happened. If people know any information, they are supposed to tell the police what they saw. You just saw a movie about twins who went to the zoo. I was told that the twins saw something happen to a bike. So if the police asked them about that, they would have to tell everything they saw. My job is also important because I want to find out how much children can remember about activities that they see.

I don't know what happened in the movie because I didn't watch it. So I want you to tell me everything you REALLY REALLY remember about what happened to the bike. But, I don't need to know anything about what the twins did at the zoo.

I have spoken to several children who told me what happened, but I need some more information. I will be asking you questions about what you saw. If you don't understand a question, just say, "I don't understand what you mean." It is really important that I find out what you remember.

Also, if I ask you a question and you don't remember, or you are not sure about your answer, just tell me, "I don't know." So if you don't know, I DO NOT want you to guess. OK, are you ready?

*Read the question, write down the yes or no answer and any spontaneous response by the child. You can ask for clarification of an answer, but **DO NOT** try to get elaboration.*

When the boy first walked over to the girl, she called him by name.
1. Was the boy's name Frankie?

Think about what the boy looked like.
2. Was the boy short?

3. Did the boy have short hair?

Think about what the boy was wearing.
4. Was the boy wearing a black shirt?

5. Was the boy wearing a hat?

The boy was interested in the bike. He went over to the bike to look at it.
6. Did you see the decorations on the bike?

7. Was the color of the bike black?

The girl noticed the boy near her bike and she stopped singing. She went over to the boy to talk to him.
8. The boy and the girl began arguing. Were they arguing because he said he was smarter than she was?

After the argument, the girl didn't want to be near the boy anymore.
9. Did the girl move the bike away from the boy?

The boy was angry and did something mean.
10. Did the boy take the bike, even though the girl told him not to take it?

The girl wanted to get her bike back but she couldn't.
11. Was it because she was wearing a dress?

12. When the mother came over to the girl, did the mother yell at the girl for losing her bike?

Thank you for helping me. You did a great job!

APPENDIX B

Memory Interview #2
Same Interviewer

Instructions to children for the memory interview: [Turn on camcorder]
I am going to put on this camera to help me remember everything you say. _____*(child's first name)* **everyone who works with me gets a special number and yours is**_____*(subject number)*, **but you don't have to remember that.**

Sometimes something happens to people and they need to call the police to get some help. The police officers' job is to find out more information. So they go around asking if anyone saw what happened. If people know any information, they are supposed to tell the police what they saw.

Experimenter will say:

Remember when you spoke to me a week ago? I asked you some questions about the video you watched. My job is to find out how much children can remember about activities that they see. Well, I made some mistakes and asked you about some things that never happened in the video. This time I really need your help in figuring out which things had REALLY happened in the video and which had NOT. Just tell me "YES" or "NO" for each question and do the best you can.

When the boy first walked over to the girl, she called him by name.
1. **a)** When you talked to me last week, did you tell me the boy's name was Frankie?
b) When you watched the video, did you hear the girl call the boy Frankie?

Think about what the boy looked like.
2. **a)** When you talked to me last week, did you tell me the boy was short?
b) When you watched the video, did you see that Frankie was short?

3. **a)** When you talked to me last week, did you tell me that the boy had short hair?
b) When you watched the video, did you see that the boy had short hair?

4. **a)** When you talked to me last week, did you tell me that the boy had blonde hair?
b) When you watched the video, did you see that the boy had blonde hair?

Think about what the boy was wearing.
5. **a)** When you talked to me last week, did you tell me that the boy was wearing blue jeans?
b) When you watched the video, did you see that the boy was wearing blue jeans?

The boy was interested in the bike. He went over to look at it.

6. **a)** When you talked to me last week, did you tell me that there were decorations on the bike?
b) When you watched the video, did you see the decorations on the bike?

7. **a)** When you talked to me last week, did you tell me that the bike belonged to the girl?
b) When you watched the video, did you see that the bike was the girl's?

The girl noticed the boy near her bike and she stopped singing. She went over to the boy to talk to him. The boy and girl began arguing.

8. **a)** When you talked to me last week, did you tell me that they were arguing because he said he was smarter than she was?
b) When you watched the video, did you see that they were arguing because he said he was smarter than she was?

9. **a)** When you talked to me last week, did you tell me that the boy pulled the girl's hair when she wouldn't let him have the bike?
b) When you watched the video, did you see the boy pull the girl's hair when she wouldn't let him have the bike?

After the argument, the girl didn't want to be near the boy anymore.

10. **a)** When you talked to me last week, did you tell me that the girl moved the bike away from the boy?
b) When you watched the video, did you see the girl move the bike away from the boy?

The boy was angry and did something mean.

11. **a)** When you talked to me last week, did you tell me that the boy was in the picnic area when he took the bike?
b) When you watched the video, did you see that the boy was in the picnic area when he took the bike?

The girl wanted to get her bike back but she couldn't.

12. **a)** When you talked to me last week, did you tell me that the girl's dog chased the boy when he stole the bike?
b) When you watched the video, did you see the girl's dog chase the boy when he stole the bike?

Thank you for helping me. You did a great job.

Memory Interview #2
Different Interviewer

Instructions to children for the memory interview: [Turn on camcorder]
I am going to put on this camera to help me remember everything you say. _____*(child's first name)* everyone who works with me gets a special number and yours is_____*(subject number)*, but you don't have to remember that.

Sometimes something happens to people and they need to call the police to get some help. The police officers' job is to find out more information. So they go around asking if anyone saw what happened. If people know any information, they are supposed to tell the police what they saw.

Experimenter will say:

Remember when you spoke to _____ a week ago? S/He asked you some questions about the video you watched. Well, _____ made some mistakes and asked you about some things that never happened in the video. This time I really need your help in figuring out which things had REALLY happened in the video and which had NOT. Just tell me "YES" or "NO" for each question and do the best you can.

When the boy first walked over to the girl, she called him by name.

1. **a)** When you talked to _____ (experimenter's name), did you tell her/him the boy's name was Frankie?
b) When you watched the video, did you hear the girl call the boy Frankie?

Think about what the boy looked like.

2. a) When you talked to _____ (experimenter's name), did you tell her/him the boy was short?
b) When you watched the video, did you see that Frankie was short?

3. a) When you talked to _____ (experimenter's name), did you tell her/him that the boy had short hair?
b) When you watched the video, did you see that the boy had short hair?

4a) When you talked to _____ (experimenter's name), did you tell her/him that the boy had blonde hair?
b) When you watched the video, did you see that the boy had blonde hair?

Think about what the boy was wearing.

5. a) When you talked to _____ (experimenter's name), did you tell her/him that the boy was wearing blue jeans?
b) When you watched the video, did you see that the boy was wearing blue jeans?

The boy was interested in the bike. He went over to look at it.
6. a) When you talked to _____ (experimenter's name), did you tell her/him that there were decorations on the bike?
b) When you watched the video, did you see the decorations on the bike?

7. a) When you talked to _____ (experimenter's name), did you tell her/him that the bike belonged to the girl?
b) When you watched the video, did you see that the bike was the girl's?

The girl noticed the boy near her bike and she stopped singing. She went over to the boy to talk to him. The boy and girl began arguing.
8. a) When you talked to _____ (experimenter's name), did you tell her/him that they were arguing because he said he was smarter than she was?
b) When you watched the video, did you see that they were arguing because he said he was smarter than she was?

9. a) When you talked to _____ (experimenter's name), did you tell her/him that the boy pulled the girl's hair when she wouldn't let him have the bike?
b) When you watched the video, did you see the boy pull the girl's hair when she wouldn't let him have the bike?

After the argument, the girl didn't want to be near the boy anymore.
10. a) When you talked to _____ (experimenter's name), did you tell her/him that the girl moved the bike away from the boy?
b) When you watched the video, did you see the girl move the bike away from the boy?

The boy was angry and did something mean.
11. a) When you talked to _____ (experimenter's name), did you tell her/him that the boy was in the picnic area when he took the bike?
b) When you watched the video, did you see that the boy was in the picnic area when he took the bike?

The girl wanted to get her bike back but she couldn't.
12. a) When you talked to _____ (experimenter's name), did you tell her/him that the girl's dog chased the boy when he stole the bike?
b) When you watched the video, did you see the girl's dog chase the boy when he stole the bike?

Thank you for helping me. You did a great job.

APPENDIX C

Behavioral Style Questionnaire

for 3-to-7 year-old children

by Sean C. McDevitt, PhD, and William B. Carey, MD

Child's Name _____ **Gender** _____

Child's Date of Birth ____/____/____ **Present Age** _____
Month Day Year

Rater's Name _____

Rater's Relationship to Child _____

Date of Rating ____/____/____
Month Day Year

Instructions

1. There are no right or wrong or good or bad answers, only descriptions of your child.
2. Please base your rating on your child's recent and current behavior (the last four to six weeks).
3. Rate each question separately. Some items may seem alike but are not the same. Do not purposely try to present a consistent picture of your child.
4. Use extreme ratings where appropriate. Try to avoid rating only near the middle of each scale.
5. Rate each item quickly. If you cannot decide, skip the item and come back to it later.
6. Rate every item. Please skip any item that you are unable to answer due to lack of information or any item that does not apply to your child.
7. Consider only your own impressions and observations of the child.

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Phone: 1-800-405-2313 Fax: 1-602-494-2688

Using the scale below, please darken the circle in the space that tells how often the child's recent and current behavior has been like the behavior described by each item.

1 = ALMOST NEVER 2 = RARELY 3 = VARIABLE, USUALLY DOES NOT 4 = VARIABLE, USUALLY DOES 5 = FREQUENTLY 6 = ALMOST ALWAYS

		ALMOST NEVER					ALMOST ALWAYS
1. The child is moody for more than a few minutes when corrected or disciplined.	1	①	②	③	④	⑤	⑥
2. The child seems not to hear when involved in a favorite activity.	2	①	②	③	④	⑤	⑥
3. The child can be coaxed out of a forbidden activity.	3	①	②	③	④	⑤	⑥
4. The child runs ahead when walking with the parent.	4	①	②	③	④	⑤	⑥
5. The child laughs and smiles while playing.	5	①	②	③	④	⑤	⑥
6. The child moves slowly when working on a project or activity.	6	①	②	③	④	⑤	⑥
7. The child responds intensely to disapproval.	7	①	②	③	④	⑤	⑥
8. The child needs a period of adjustment to get used to changes in school or at home.	8	①	②	③	④	⑤	⑥
9. The child enjoys games that involve running or jumping.	9	①	②	③	④	⑤	⑥
10. The child is slow to adjust to changes in household rules.	10	①	②	③	④	⑤	⑥
11. The child has bowel movements at about the same time each day.	11	①	②	③	④	⑤	⑥
12. The child is willing to try new things.	12	①	②	③	④	⑤	⑥
13. The child sits calmly while watching TV or listening to music.	13	①	②	③	④	⑤	⑥
14. The child leaves or wants to leave the table during meals.	14	①	②	③	④	⑤	⑥
15. Change in plans bother the child.	15	①	②	③	④	⑤	⑥
16. The child notices minor changes in mother's dress or appearance (clothing, hairstyle, etc.).	16	①	②	③	④	⑤	⑥
17. The child does not acknowledge a call to come in if involved in something.	17	①	②	③	④	⑤	⑥
18. The child responds to mild disapproval by the parent (a frown or shake of the head).	18	①	②	③	④	⑤	⑥
19. The child settles arguments with playmates within a few minutes.	19	①	②	③	④	⑤	⑥
20. The child shows strong reaction to things, both positive and negative.	20	①	②	③	④	⑤	⑥
21. The child had trouble leaving the mother the first 3 days when he/she entered school.	21	①	②	③	④	⑤	⑥
22. The child picks up the nuances or subtleties of parental explanations (example: implied meaning).	22	①	②	③	④	⑤	⑥
23. The child falls asleep as soon as he/she is put to bed.	23	①	②	③	④	⑤	⑥
24. The child moves about actively when he/she explores new places.	24	①	②	③	④	⑤	⑥
25. The child likes to go to new places rather than familiar ones.	25	①	②	③	④	⑤	⑥
26. The child sits quietly while waiting.	26	①	②	③	④	⑤	⑥
27. The child spends over an hour reading a book or looking at the pictures.	27	①	②	③	④	⑤	⑥
28. The child learns new things at his/her level quickly and easily.	28	①	②	③	④	⑤	⑥
29. The child smiles or laughs when he/she meets new visitors at home.	29	①	②	③	④	⑤	⑥
30. The child is easily excited by praise.	30	①	②	③	④	⑤	⑥
31. The child is outgoing with strangers.	31	①	②	③	④	⑤	⑥
32. The child fidgets when he/she has to stay still.	32	①	②	③	④	⑤	⑥
33. The child says he/she is "bored" with his/her toys and games.	33	①	②	③	④	⑤	⑥
34. The child is annoyed at interrupting play to comply with a parental request.	34	①	②	③	④	⑤	⑥
35. The child practices an activity until he/she masters it.	35	①	②	③	④	⑤	⑥
36. The child eats about the same amount at supper from day to day.	36	①	②	③	④	⑤	⑥
37. Unusual noises (sirens, thunder, etc.) interrupt the child's behavior.	37	①	②	③	④	⑤	⑥
38. The child complains when tired.	38	①	②	③	④	⑤	⑥

1 = ALMOST NEVER 2 = RARELY 3 = VARIABLE, USUALLY DOES NOT 4 = VARIABLE, USUALLY DOES 5 = FREQUENTLY 6 = ALMOST ALWAYS		ALMOST NEVER					ALMOST ALWAYS
39. The child loses interest in a new toy or game the same day.	39	①	②	③	④	⑤	⑥
40. The child becomes engrossed in an interesting activity for one half hour or more.	40	①	②	③	④	⑤	⑥
41. The child cries intensely when hurt.	41	①	②	③	④	⑤	⑥
42. The child reacts strongly to kidding or lighthearted comments.	42	①	②	③	④	⑤	⑥
43. The child approaches children his/her age that he/she doesn't know.	43	①	②	③	④	⑤	⑥
44. The child plays quietly with his/her toys and games.	44	①	②	③	④	⑤	⑥
45. The child is outwardly expressive of his/her emotions.	45	①	②	③	④	⑤	⑥
46. The child is enthusiastic when he/she masters an activity and wants to show everyone.	46	①	②	③	④	⑤	⑥
47. The child is sleepy at his/her bedtime.	47	①	②	③	④	⑤	⑥
48. The child stops an activity because something else catches his/her attention.	48	①	②	③	④	⑤	⑥
49. The child is hungry at dinnertime.	49	①	②	③	④	⑤	⑥
50. The child holds back until sure of himself/herself.	50	①	②	③	④	⑤	⑥
51. The child looks up when someone walks past the doorway.	51	①	②	③	④	⑤	⑥
52. The child becomes upset if he/she misses a regular television program.	52	①	②	③	④	⑤	⑥
53. The child reacts strongly (cries or complains) to a disappointment or failure.	53	①	②	③	④	⑤	⑥
54. The child accepts new foods within one or two tries.	54	①	②	③	④	⑤	⑥
55. The child has difficulty getting used to new situations.	55	①	②	③	④	⑤	⑥
56. The child will avoid misbehavior if punished firmly once or twice.	56	①	②	③	④	⑤	⑥
57. The child is sensitive to noises (television, doorbell) and looks up right away.	57	①	②	③	④	⑤	⑥
58. The child prefers active outdoor play to quite play inside.	58	①	②	③	④	⑤	⑥
59. The child dislikes milk and other drinks if not ice cold.	59	①	②	③	④	⑤	⑥
60. The child notices differences or changes in the consistency of food.	60	①	②	③	④	⑤	⑥
61. The child adjusts easily to changes in his/her routine.	61	①	②	③	④	⑤	⑥
62. The child eats about the same amount at breakfast from day to day.	62	①	②	③	④	⑤	⑥
63. The child seems to take setbacks in stride.	63	①	②	③	④	⑤	⑥
64. The child cries and whines when frustrated.	64	①	②	③	④	⑤	⑥
65. The child repeats behavior for which he/she has previously been punished.	65	①	②	③	④	⑤	⑥
66. The child looks up from playing when the telephone rings.	66	①	②	③	④	⑤	⑥
67. The child is willing to try new foods.	67	①	②	③	④	⑤	⑥
68. The child needs encouragement before he/she will try new things.	68	①	②	③	④	⑤	⑥
69. The child cries or whines when ill with a cold or upset stomach.	69	①	②	③	④	⑤	⑥
70. The child runs to get where he/she want to go.	70	①	②	③	④	⑤	⑥
71. The child's attention drifts away or lapses when listening to parental instructions.	71	①	②	③	④	⑤	⑥
72. The child becomes angry with one of his/her playmates.	72	①	②	③	④	⑤	⑥
73. The child is reluctant to give up when trying to do a difficult task.	73	①	②	③	④	⑤	⑥
74. The child reacts to mild approval from the parent (a nod or smile).	74	①	②	③	④	⑤	⑥
75. The child requests "something to eat" between meals and regular snacks.	75	①	②	③	④	⑤	⑥
76. The child rushes to greet the parent or greets loudly after absence during the day.	76	①	②	③	④	⑤	⑥
77. The child looks up when he/she hears voices in the next room.	77	①	②	③	④	⑤	⑥

1 = ALMOST NEVER 2 = RARELY 3 = VARIABLE, USUALLY DOES NOT 4 = VARIABLE, USUALLY DOES 5 = FREQUENTLY 6 = ALMOST ALWAYS

		ALMOST NEVER					ALMOST ALWAYS
78. The child protests when denied a request by the parent.	78	①	②	③	④	⑤	⑥
79. The child ignores loud noises when reading or looking at pictures in a book.	79	①	②	③	④	⑤	⑥
80. The child dislikes a food that he/she had previously seemed to accept.	80	①	②	③	④	⑤	⑥
81. The child stops what he/she is doing and looks up when the parent enters the room..	81	①	②	③	④	⑤	⑥
82. The child cries for more than a few minutes when hurt.	82	①	②	③	④	⑤	⑥
83. The child watches a long (1 hour or more) TV program without getting up to do something else.	83	①	②	③	④	⑤	⑥
84. The child spontaneously wakes up at the usual time on the weekends and holidays.	84	①	②	③	④	⑤	⑥
85. The child responds to sounds or noises unrelated to his/her activity.	85	①	②	③	④	⑤	⑥
86. The child avoids new guests or visitors.	86	①	②	③	④	⑤	⑥
87. The child fidgets when a story is being read to him/her.	87	①	②	③	④	⑤	⑥
88. The child becomes upset or cries over minor falls or bumps.	88	①	②	③	④	⑤	⑥
89. The child interrupts an activity to listen to conversation around him/her.	89	①	②	③	④	⑤	⑥
90. The child is unwilling to leave a play activity that he/she has not completed.	90	①	②	③	④	⑤	⑥
91. The child is able to fall asleep when there is conversation in a nearby room.	91	①	②	③	④	⑤	⑥
92. The child becomes highly excited when presented with new toy or game.	92	①	②	③	④	⑤	⑥
93. The child pays attention from start to finish when the parent tries to explain something to him/her.	93	①	②	③	④	⑤	⑥
94. The child speaks so quickly that it is sometimes difficult to understand him/her.	94	①	②	③	④	⑤	⑥
95. The child wants to leave the table during meals to answer the doorbell or phone.	95	①	②	③	④	⑤	⑥
96. The child complains of events in school or with playmates that day.	96	①	②	③	④	⑤	⑥
97. The child frowns when asked to do a chore by the parent.	97	①	②	③	④	⑤	⑥
98. The child tends to hold back in new situations.	98	①	②	③	④	⑤	⑥
99. The child laughs hard while watching television cartoons or comedies.	99	①	②	③	④	⑤	⑥
100. The child has "off" days when he/she is moody or cranky.	100	①	②	③	④	⑤	⑥

GENERAL IMPRESSIONS OF CHILD'S TEMPERAMENT

In comparison with other children you know who are the same age as your child, how would you rate your child in the following areas? Mark 1 to 6 on the right to correspond to the descriptions below.

1. Activity level-the amount of physical motion during daily routine.	1	①	②	③	④	⑤	⑥
1-very inactive 2-inactive 3-somewhat inactive 4-somewhat active 5-active 6-very active							
2. Rhythmicity-regularity of bodily functioning in sleep, hunger, bowel movements, etc.	2	①	②	③	④	⑤	⑥
1-very regular 2-regular 3-somewhat regular 4-somewhat irregular 5-irregular 6-very irregular							
3. Approach-responses to new persons,places,events.	3	①	②	③	④	⑤	⑥
1-not hesitant 2-very slightly hesitant 3-somewhat hesitant 4-moderately hesitant 5-hesitant 6-very hesitant							
4. Adaptability-the ease/difficulty with which your child can change to socially acceptable behavior.	4	①	②	③	④	⑤	⑥
1-very quick to adapt 2-adaptable 3-somewhat adaptable 4-somewhat slow to adapt 5-slow to adapt 6-very slow to adapt							
5. Intensity-the amount of energy in a response whether negative or positive.	5	①	②	③	④	⑤	⑥
1-very mild 2-mild 3-somewhat mild 4-somewhat intense 5-intense 6-very intense							
6. Mood-general amount of pleasant or unpleasant feelings.	6	①	②	③	④	⑤	⑥
1-very pleasant 2-pleasant 3-somewhat pleasant 4-somewhat unpleasant 5-unpleasant 6-very unpleasant							
7. Persistence/Attention Span-how long your child stays with a task or activity.	7	①	②	③	④	⑤	⑥
1-very persistent 2-persistent 3-somewhat persistent 4-somewhat nonpersistent 5-nonpersistent 6-very nonpersistent							
8. Distractibility-the effect of external stimuli (sounds, persons, etc.) on ongoing behavior.	8	①	②	③	④	⑤	⑥
1-rarely distracted 2-seldom distracted 3-sometimes distracted 4-regularly distracted 5-often distracted 6-very often distracted							
9. Threshold-general sensitivity or insensitivity to stimuli (sound, odor, taste, light, etc.).	9	①	②	③	④	⑤	⑥
1-very nonreactive 2-nonreactive 3-somewhat nonreactive 4-somewhat sensitive 5-sensitive 6-very sensitive							
10. How manageable is this child?	10	①	②	③	④	⑤	⑥
1-very easy 2-easy 3-somewhat easy 4-somewhat difficult 5-difficult 6-very difficult							

APPENDIX D

Parental Background Information

Instructions: *In order to interpret children's memory performance, it would be very helpful for you to provide us with some background information. Of course, you are under no obligation to fill in every question, but we would appreciate it if you would complete the form.*

Please provide the following information.
Child's first name:_____ Gender: M F Date of Birth: _____
Ethnic Background (check all that apply):
Caucasian __ African American __ Hispanic __ Asian __
Other (specify) _____
Number of hours per day child watches educational t.v. _____

Your relationship to the child: ____ mother ____ father ____ grandparent
____ guardian ____ Other (specify) _____

Mother's Occupation: _____
(Please specify the job - such as meat packer, not where you work)
Years of Education (indicate highest level):
___ completed graduate degree
___ college graduate
___ some college, no degree
___ high school graduate or vocational school graduate
___ partial high school (more than 9th grade)
___ junior high school (completed 7th through 9th grade)
___ less than seven years of school

Father's Occupation: _____
(Please specify the job - such as meat packer, not where you work)
Years of Education (indicate highest level):
___ completed graduate degree
___ college graduate
___ some college, no degree
___ high school graduate or vocational school graduate
___ partial high school (more than 9th grade)
___ junior high school (completed 7th through 9th grade)
___ less than seven years of school

Family Income:
Less than $10,000 __ $10,000 - 20,000__ $21,000 - 30,000__
$31,000 - 40,000 __ $41,000 - 50,000__ $51,000 - 60,000__
$61,000 - 70,000__ More than $70,000 __

Do you have other children in your family? ___ If so, please indicate the date of birth, sex, and name of each child below.

Date of Birth Sex of child Name

APPENDIX E

Interview #2 Posttest
IMAGINATION CHECKLIST

You did a good job. Now I want to know more about <u>you</u>. I have a few questions about different things you might do.

1. When you're playing, do you ever pretend you're someone else?

2. Do you have any friends who no one else can see?

3. Do you ever have pretend conversations with people in your head?

4. Do you think your stuffed animals can see and hear you?

5. When people are talking to you, do you ever start thinking about something else and then realize that you don't know what they said?

6. Do you ever get confused about whether something actually happened or if it was a dream?

7. Do you ever make up your own words or your own meanings for words?

8. A) Let's say all the other kids are saying your shirt is yellow, but you know it's blue. Do you go along with them anyway so you can still be friends?

   B) What if it was a grown-up who was saying your shirt was yellow? Would you agree with them just because they were a grown-up?

IMAGINATION CHECKLIST
Parent's Version

The following questions regard your child's imagination. Please base your answers on your child's recent and current behavior (the last eight to ten weeks).

1. During play, does your child ever pretend to be someone else?

2. Does your child have any imaginary friends?

3. Does your child seem to have pretend conversations with people who are not there?

4. Does your child act as though his/her stuffed animals or toys are alive?

5. When your child is being spoken to, does he/she ever not pay attention to what was said (i.e., as though he/she were "off in another world")?

6. Does your child ever seem to confuse real events with dreams?

7. Does your child ever invent his/her own words or meanings for words?

8. A) Let's say all the other kids are saying your child's shirt is yellow, but he/she knows it's blue. Would your child agree with them anyway in order to remain friends?

   B) If it were an adult who was saying your child's shirt was yellow, would he/she agree with the adult?

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Telisa L Purdy

Signature of Author

5/8/01

Date

Role of Interviewer and Type of Interview on Children's Susceptibility to False Memory

Title of Thesis

Signature of Graduate Office Staff Member

May 8, 2001

Date

approved