AN ABSTRACT OF THE THESIS OF

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In Psychology presented on July 8, 2002

Title: The Effects of Age, Interview Style, Time Delay, and Temperament on Children's Suggestibility

Abstract approved: Redacted for Privacy

This study investigated the role of age, type of questions, and temperament characteristics on children's recall. Twenty-eight preschoolers and 28 elementary school children watched a videotape of a bike theft and were interviewed about it immediately and seven weeks later. All of the children received general, non-suggestive questions on the initial interview. For the delayed interview, half of the children were asked general questions and the other half were asked misleading questions. The focus of the analyses was on recall during the delay interview. Memory for central features of the theft was more accurate than for peripheral features. Preschoolers made more errors about the characters' appearance and also were more likely to change their answers when misleading questions were asked. Elementary school children also were influenced by misleading questions. Peripheral information provided about the crime was as inaccurate for both groups when given misleading questions, but not when given open-ended questions. However, older children resisted misleading suggestions more often than did younger children. Finally, temperament influenced recall such that easy-going children were able to provide higher proportion of accurate central features about the crime than were difficult children. In contrast, older children tended to comply with misleading suggestions if they had easy-going natures.

THE EFFECTS OF AGE, INTERVIEW STYLE, TIME DELAY, AND TEMPERAMENT ON CHILDREN'S SUGGESTIBILITY

A Thesis

Presented to

the Department of Psychology and Special Education

EMPORIA STATE UNIVERSITY

In Partial Fulfillment

Of the Requirement for the Degree

Master of Science

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by

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August 2002

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ACKNOWLEDGEMENTS

First I thank my parents for their unconditional support in helping me pursue my education. Without them I would not be where I am today.

I also thank Dr. Lauren Shapiro for her guidance and help. Her insistence and persistency forced me to stay focused and eventually led to the completion of this paper. In addition, I thank the Child Study Team for their devotion and participation in the project.

Thanks also goes to Dr. Weaver who was never short on encouragement, whose concern and support motivated me and helped me maintain my confidence. To Dr. Holmes and Dr. Karr, I am appreciative of their patience and input to this project.

Finally, I want to thank my best friend, my husband, Pat Weir. His neverending love and support helped me get through the toughest time. He willingly endured the chaos I put him through, and his humor was the source of my laughter. He is my biggest fan, and he made me a better person.

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CHAPTER 1

INTRODUCTION

In many cases of childhood abuse, children are often not only the victims but also the sole witnesses of the crime. The children are, therefore, the major sources of facts used to convict the perpetrators. However, some questions have been raised as to whether children can be reliable eyewitnesses. Specifically, criminal investigators are concerned about how well children can remember events and how accurately they report remembered information. Eyewitness researchers have found that several factors impact on the accuracy of children's recall, such as age or cognitive development, time, and interview techniques.

The adults who are involved in the prosecution of the perpetrator (e.g., parents, prosecutors, defense attorneys, social workers, therapists, etc.) approach the interview process with child victims from different agendas. That is, their interrogation of the crime is adjusted to suit their specific purposes (e.g., to remove the child from parental custody). Congruent with these goals, interviewers often use certain interview techniques, such as making misleading suggestions, which lead to implantation of false memories and reduce the accuracy of children's reports. It is not clear why some children comply with interviewers' suggestive remarks, whereas other children resist these suggestions (Ackil & Zaragoza, 1995; Ceci & Bruck, 1993; Ceci, Ross, & Toglia, 1987).

The present study is designed to investigate particular factors believed to affect suggestibility in young children. One factor to be examined is age because preschool aged children have been found to be more vulnerable than elementary school aged children. A second factor to be examined is interview style. In particular, children given

suggestive questions provide less accurate information than those who are given general prompts. A third factor to be examined is the passage of time between the witnessed event and testimony. Recall is more accurate when assessed immediately rather than after a long delay. A final factor to be examined is temperament which is one aspect of individual characteristics. Because temperament affects behavior, it is proposed that children with various temperament characteristics will be differentially affected by suggestive questions. It is not clear from the literature whether temperament moderates age differences in long-term recall and in suggestibility. This study will first present general information about memory processes and then provide a review of the literature investigating the role of age, interview technique, time, and temperament on children's vulnerability to suggestion.

General Memory Processes

In general, memory processing includes three steps: encoding, storage, and retrieval (Atkinson & Shiffrin, 1968). Encoding refers to one's ability to register information in the mind. Once the information is encoded, it may be stored in the brain for future usage. Retrieval refers to accessing and reporting previously stored information. Loss of information can occur during any of the three processing steps.

Ornstein, Larus, and Clubb (1991) presented several explanations as to why children do not always have accurate memory recall for events they experienced or witnessed. First, "not everything gets into memory" during the encoding stage (p. 151). Some information will never be registered in children's minds simply because they do not understand the event, are not interested in what is going on, or are too stressed by the event to pay attention to it. Second, if the child does encode the information, the

impression of the event may not be strong enough for long-term storage. Depending on how much involvement or participation the child has in the event, there are variations in terms of the strength of the memory trace. For instance, a child who watches the same cartoon show repeatedly is more likely to recall more details of the show in comparison to a child who only watches the show once. Finally, even if the information is encoded and stored, it does not guarantee a "perfect retrieval." The memory can be altered during the time between the encoding and retrieval called the post-event period. For example, changes in children's knowledge and/or cognitive abilities or exposure to similar events or to a suggestive interview can lead to inaccurate recall, a phenomenon called the "misinformation effect" (Ornstein et al., 1991). Over time, as forgetting is more likely, children become more vulnerable to suggestions (i.e., to accept false information).

According to Ceci and Bruck (1993), there are three major theories that explain the misinformation effect or how memories can be changed due to post-event suggestions. The first theory by Loftus and her associates (e.g., Ceci, Crotteau, Smith, & Loftus, 1994; Loftus & Hoffman, 1989) proposed that when false information is presented after an event occurs, it overwrites one's original memory and a new memory is created. That is, the post-event information becomes incorporated into memory making the false information "part of the truth." Thus, when the witness is asked about the event, he or she retrieves the incorrect information. In a second theory, Bekerian and Bowers (1983) argued that the new, false information does not replace the original memories. Instead, both the old and new information co-exist in memory, but that post-event suggestions enhance retrieval of the information from the "wrong" source. The third theory introduced by McCloskey and Zaragoza (1985) is that people accept false

information as a means for filling in the missing gaps of their memory for various aspects of an event that had not been encoded or had been forgotten. Evidence from the eyewitness literature indicates that regardless of which theory is used to explain the misinformation effect, the phenomenon occurs in both adult and child witnesses.

The Effect of Age on Memory

Age is one of the most studied factors in memory performance. Developmental differences in recall may be explained two ways. First, elementary school children are superior to preschool children at remembering information because their cognitive and linguistic abilities are better developed (Bruck, Ceci, & Hembrooke, 1998; Gordon & Follmer, 1994). Unlike young children, elementary school children have sophisticated strategies of encoding and retrieving information. Through experience, children learn that they can enhance their memories by repeatedly ruminating about the event. They can also recall more information by relating it to previous events. Linguistic differences associated with experience and age also affect children's memory reports. Specifically, language influences children's ability to recall event accurately on two levels: their ability to report and to describe the information and their ability to understand the questions presented to them. In summary, elementary school children are mentally capable of storing and recalling information more efficiently than are preschool children.

The second explanation for older children's better memory performance is the knowledge base theory (Bjorklund, 1987; Ornstein, Shapiro, Clubb, Follmer, & Baker-Ward, 1997). With age and experience, there are corresponding expansions in children's knowledge base that allows them to learn and to remember more information. When they encounter novel events, they have more sources to which to relate the new information.

The connection of events to existing knowledge facilitates and reinforces memory for new information. That is, better encoding produces better retrieval. In contrast, young children are not able to encode the new information well because of their limited life experiences, which in turns reduces their recall performance. Thus, young children's susceptibility to suggestive questioning techniques seems to be the result of developmental differences in knowledge and in language (Ratner, Bukowski, & Foley, 1992; Saywitz, 1988).

Several researchers have reported that free recall by preschool children is less complete than free recall by elementary school children and adults (Ceci & Bruck, 1993; Bjorklund et al., 2000). Baker-Ward, Gordon, Ornstein, Larus, and Clubb (1993) reported that three-year-old and five-year-old children had less exhaustive and accurate recall for their pediatric examinations than did seven-year-old children. Cassel and Bjorklund (1995) compared memory performance for a videotaped bicycle theft by adults, eight-year-olds, and six-year-olds. They found that six-year-olds remembered less information than did eight-year-olds and both child groups recalled significantly less information than did the adult group. Because the amount of information provided spontaneously by child witnesses is lower than that of adult witnesses, children are more likely to be asked suggestive or even misleading questions as a way of obtaining additional details about events. Unfortunately, this interview technique leads to a reduction in accuracy due to suggestibility. That is, children are more likely to accept false information or deny true information because of how the question is worded. For example, in Cassel and Bjorklund's (1995) study, both six- and eight-year-olds made more recall errors than did the adult group when asked suggestive questions. When comparing children aged six to

eight and nine to eleven years, Blackford (2000) also did not find age differences in the amount of inaccurate information provided, but the reports by older children contained a higher amount of accurate information than those by younger children.

Young children's limited cognitive and linguistic abilities combined with pressure from adult interviewers to comply with misleading information increases their suggestibility (Ceci & Bruck, 1993). In Ackil and Zaragoza's (1995) study, first graders, third graders, fifth graders, and college students watched a film about events that happened during summer camp. After the film, the experimenter read a brief summary of the events to all participants. The summary contained information that did not occur in the film. Half of the group was interviewed immediately after the experiment, whereas the other half returned for interview after one week. During the interview, all participants claimed items or details were viewed in the film when in fact they were only mentioned in the summary read by the experimenters. However, age did moderate the misinformation effect. The number of errors made by first graders was higher than third and fifth graders, who in turn, reported more false information than did the college group. In short, suggestibility occurs in all age groups, but young children are even more prone to it.

The Effect of Interview Questions on Memory

The types of questions presented to the children also affect the accuracy of their memory reports (Freeman, Lacohee, & Coulton, 1995; Poole & Lindsay, 1995). In general, all interview questions can be categorized as general, open-ended questions and leading questions. Open-ended questions contain only general statements (i.e., "Tell me what happened to the toy?") whereas leading questions consist of suggestive statements

in attempt to elicit a specific response. A positive leading question contains true information (e.g., "Was the car red?" when it was), whereas a negative leading or "misleading" question consists of false information (e.g., "Was the car black?"). Another example of a misleading question would be asking the witness about the model of the gun when there was no gun used in the crime.

Children of all ages can provide fairly accurate information when given open-ended questions, even though preschool children tend to give less information than do elementary school children (Poole & Lindsay, 1995; Warren & Lane, 1995). Many interviewers use leading questions as a means for providing structure to elicit specific details and/or as a retrieval cue to facilitate overall recall, particularly for emotionally negative or stressful events. Gordon and Follmer (1994) interviewed children ages three, five, and seven years about a routine pediatric check-up. The interview began with open-ended questions ("Tell me what happened during your check-up" and "What parts of your body did doctor check?") and if the desired answers were not given by the children, non-leading ("Did the doctor check your eyes?") and leading questions (e.g., "Did the doctor shine a little light in your eyes?") were also asked. Although there were no age differences in accuracy for information reported using open-ended questions, younger children reported significantly less information than did older children. Consequently, the three-year-olds needed more leading questions to help recall information than did the five- and seven-years-olds.

Although leading questions are helpful in eliciting information from children, they also induce more false memory than do open-ended questions (Freeman et al., 1995; Poole & Lindsay, 1995). That is, young children are likely to make mistakes when

leading questions are asked. In the study by Gordon and Follmer (1994), the three-year-old group was less accurate than the five- and seven-year-old groups in response to leading questions about their pediatric examination. The three-year-olds had a 'yes' response bias when asked a 'yes-no' question about an event that did not occur during the examination. Other researchers have shown that preschoolers are easily influenced by the suggestive/misleading questions and tend to comply with the false information provided by the interviewers more than older children do (Cassel & Bjorklund, 1995; Ceci & Bruck, 1993). In summary, young children are vulnerable to suggestion and this misinformation effect is influenced by the time delay between the event and recall.

The Effect of Time Delay on Memory

Time also plays an important part in the children's memory performance. The longer the time interval between the event and the recall, the less information children remember. Numerous studies have confirmed that both adults and children are better at providing complete and accurate reports immediately after the occurrence of the event than after a long delay of several weeks (Baker-Ward et al., 1993; Roberts, Lamb, Sternberg, Beresford, 1997).

To reduce forgetting, researchers have explored the effect of providing several opportunities to report the event. They found children's memory performance was as accurate after various time delays as it was initially (Poole & White, 1995). Asking children to repeat the same event through multiple interviews gives them a chance to practice recalling the memory and, consequently, strengthens the memory trace. Poole and White (1991) conducted a study in which participants (four-, six-, and eight-years-old and adults) witnessed a staged dispute between two research assistants. Participants were

randomly assigned to experimental and control group. The experimental group was interviewed about the event twice: immediate and one week later. The control group, however, was not asked about the event until one week later. Regardless of age, a comparison of the amount of detail and accuracy of recall at one week indicated reports by participants in the experimental group were consistently better than those in the control group. Similar results were also found in Cassel and Bjorklund's (1995) study. Half of their participants were interviewed immediately, one week, and one month after viewing a videotape, whereas the other half were asked about the video immediately and one month later. Both adults and children who received three interviews recalled more information in comparison to those who were interviewed twice. Shapiro, Blackford, Brooks, and Chen (1997) asked children to participate in a birthday party that contained some atypical features (e.g., sang Old McDonald instead of Happy Birthday song). Half of the children were interviewed one and seven weeks after the party, whereas the other half were given an interview at seven weeks only. The repeated interview group was able to report more of the atypical features than did the single interview group. These studies clearly demonstrated the benefit of repeated interviews on children's recall across time.

In contrast, repeated interviewing may produce the opposite effect of reducing the accuracy of children's memory report. Children in Poole and White's (1991) study perceived the interviewers' repetition of questions as an indication that they did not give the right answers the first time, leading them to change their reports in order to "get it right." This effect was more pronounced when leading questions were presented during the delayed interview. Poole and White (1993) found young children were more likely to

change their answers when asked yes-no questions during a follow-up interview two years after the original interview.

Although susceptibility to misleading information typically increases when the time delay is long, this is not always the case. Blackford (2000) showed elementary school aged children a videotaped bicycle theft and interviewed them initially using either general, open-ended questions or misleading questions. After seven weeks, all of the children were interviewed using general, open-ended questions. She did not find deficits in recall for the delayed interview indicating that the initial effects of misleading suggestions did not last. Dent and Stephenson (1979) also found that the type of questions used initially led to differences in the amount of correct and incorrect information provided by elementary school children, but this effect dissipated two months later. These studies suggest variations in children's memory are due to a combination of post event timing and interview techniques.

Temperament: Measurement and Stability

Because age alone does not predict children's ability to recall information or to resist misleading suggestions, researchers have begun to examine individual characteristics, such as temperament. Bates (1989) defined temperament as "behavioral dispositions commonly used to distinguish one individual from another" (p. 5). Chess and Thomas (1977) conducted several longitudinal studies on the development and stability of temperament in childhood. They proposed temperament was a genetically determined personality trait that influenced how individuals react to the environment and adapt to new surroundings. Thus, temperament exerts a continuous influence on people's behavior throughout the lifespan, making it an index by which to measure personality.

Based on their longitudinal research findings, Chess and Thomas (1977) presented a model to classify children's temperament by using nine categories. These included activity (the energy level of the child), rhythmicity (regularity in a child's behavior), approach (whether the child's initial response to new stimulus is to approach or withdraw), adaptability (the length of time it takes a child to feel comfortable in a new situation), response (the intensity level of a child's reaction), mood (the quality of the child's emotional state), persistence (attention span), distractibility (the child's ability to disregard environment stimulation), and threshold (the level of stimulation necessary to evoke a response).

Although temperament serves a general indicator of how children respond to the environment, it is possible that it may change over time and across situations. Many studies were conducted to investigate the issue. Roberson (1997) explored temperamental stability in children from birth to nine years of ages. She found eight of the nine dimensions created by Chess and Thomas (1997) were fairly constant over time. However, persistence and approach were the most likely to become unstable after infancy. Sanson, Smart, Prior, Oberklaid, and Pedlow (1994) examined the stability of temperament from age three to seven across age, sex, and socioeconomic influence. They concluded the structure of temperament was similar for boys and girls across the ages. Moreover, variations in socioeconomic status led to only small, quantitative differences. Pedlow, Sanson, Prior, and Oberklaid (1993) investigated the stability of maternally reported temperament from infancy to eight years. The results substantially showed high scores on the consistency of temperament across the ages. In short, various researchers have found that childhood temperament is stable and consistent across age and time.

To assess temperament, different measurements have been developed. Based on Chess and Thomas's nine dimensions model (1977), Hegvik, McDevitt, and Carey (1982) created several batteries that are completed by parents, such as the Behavioral Style Questionnaire for ages three to seven and the Middle Childhood Temperament Questionnaire for ages eight to eleven. Martin (1988) argued that the problem with the nine dimensions model was that the categories overlapped. For example, response and mood were both designed to measure the intensity of a child's reaction to a novel situation. Therefore, Martin constructed a questionnaire called the Temperament Assessment Battery for Children (TABC) that focused on six dimensions, including activity, adaptability, approach/withdrawal, emotional intensity (a combination of response and mood), distractibility, and persistence.

The Effect of Temperament on Memory

Several research studies were designed specifically to investigate the relationship of temperament and memory in children. Greenhoot, Ornstein, Gordon, and Baker-Ward (1999) conducted an experiment to investigate the effects of interview condition on individual differences in children's memory. Three- and five- year-old children were interviewed one and six weeks after a pediatric examination. Half of the children were given a verbal interview, whereas the other half were provided dolls and props during the interview and were encouraged to act out their examination experience. The TABC was given to parents to assess their children's temperaments. Instead of correlating each of the six categories with the memory scores separately, Greenhoot et al. (1999) combined the Adaptability scores, Distractibility scores, and inversed Emotional Intensity scores to create a Manageability dimension. Persistence scores were also analyzed in conjunction

to recall. They found that high manageability was positively associated with high memory score for interviews obtained in the enactment setting (i.e., physical context of examination with props), whereas high level of persistence was negatively correlated with recall for interviews obtained in the verbal condition (i.e., no context provided). In other words, children with easy-going natures tended to remember more than those with difficult natures when interviews were embedded in a rich context. Highly persistent children recalled less information than non-persistent children in the absence of rich contexts. They also found children with low persistence were more likely to give "yes" response when leading questions were asked than those with high persistence.

Similar results were also found in Palmer, Brandt, Chen and Shapiro's (1998) study. Children age three to five years and six to eight years were invited to participate in an unique birthday party exposing them to some atypical activities (e.g., celebrating a stuffed cow's birthday). They were given memory interviews one week and seven weeks after the party. Parents completed the TABC to assess their children's temperament. Activity Level and Emotional Intensity were negatively correlated with memory accuracy at both the initial and delayed interviews. That is, those who are energetic and those who are easily distraught in novel situations reported a low proportion of correct information. In contrast, Ease of Management was positively correlated to first interview. Children who are able to stay calm and not disturbed by new environments retrieved a high proportion of information. These studies demonstrated a relationship between temperament and memory recall. The way in which children react to new experiences, such as adapting quickly, affected their ability to perceive, encode, store, and retrieve information about events.

Results from Greenhoot et al. (1999) and from Palmer et al. (1998) provided clear evidence of a relationship between temperament characteristics and the amount of accurate information children can recall about personal experiences. However, not much is known about whether temperament also plays a role in children's suggestibility when recall does not occur until long after a witnessed event, that is, at a time when memory loss is expected to be pervasive. Using data from Blackford (2000), Burress, James, and Shapiro (1999) examined the effects of temperament and suggestibility with children ages six- to eight-years-old and nine- to eleven-years-old. In general, children who are very active recalled less information about peripheral aspects of a videotaped bicycle theft than children who are sedentary. Also, children who are persistent recalled more peripheral details about the theft than those who lack perseverance. However, a negative relationship between accurate recall and temperament was not found for children exposed to the suggestive interview.

Present Study

The literature on eyewitness testimony shows children's vulnerability to suggestion varies due to age, type of interview questions, and post-event time interval. Specifically, preschool children are more susceptible to misleading suggestions than are elementary school children, especially after a substantial time delay. In addition, there is some evidence that individual temperament characteristics not only influence how much children can remember, but also how well they are able to resist misleading suggestions.

Although most research has indicated misled children perform more poorly on recall tasks than non-misled children, it is still not clear how age, type of questions, time delay, and temperament affect suggestibility. To investigate the effects of age,

suggestion, and time on recall, I assessed preschool and elementary school children's memory for a filmed bicycle theft immediately and after seven weeks. Although all of the children received a neutral interview initially, half of them were misled during the delayed interview. Children's parents provided an index of temperament in order to investigate the role of this individual characteristic for the two age groups on suggestibility.

The present study was designed to examine specific issues underlying the misinformation effect. The first issue centers on the how the misinformation effect or suggestibility was affected by age. In comparison to older children, would younger children be more vulnerable to suggestions because they have fewer memory strategies, their memory is less complete, and their linguistic understanding of questions is less developed? Related to the age-suggestibility issue is the idea of timing of the interview on the age-suggestibility relationship. In Blackford's (2000) study, children subjected to a suggestive interview initially rather than a general interview reported a higher amount of incorrect peripheral information during the seven-week interview. However, children were not making mistakes initially nor were they wrong about the central aspects of the videotaped bicycle theft even after a seven week delay, despite the use of misleading questions. Moreover, no age differences in suggestibility were found. Would children confuse the central features, as well as the peripheral features of the theft if given suggestions at a time when forgetting was likely? Would younger children be more vulnerable to the misinformation effect than older children because of the delay in recall?

The second issue involved the role of temperament in the age-suggestibility relationship. Can children with certain temperament traits resist suggestions? Are young

children with certain temperament characteristics more vulnerable to suggestion than are older children with the same traits?

Hypotheses

The first set of hypotheses focused on the effects of age, interview questions, and type of features for memory in the delayed interview. Hypothesis 1a predicted younger children would recall the same amount of accurate information, but a higher amount of inaccurate information than will older children. Hypothesis 1b predicted children's accurate recall would be higher and inaccurate recall would be lower for the control (non-suggestive) group than for the experimental (suggestive) group. Hypothesis 1c predicted children would recall a greater amount of central information and a lower amount of peripheral information.

The second hypothesis concerned the age-suggestibility issue. Hypothesis 2 predicted developmental differences in reports by children in the suggestive condition. Specifically, older children would be more resistant to suggestions than would younger children, leading to a lower proportion of inaccurate recall and higher consistency scores.

Hypothesis 3a predicted there would be a positive correlation between inaccurate recall and both manageability and persistence. Children who are compliant and those who are not persistent are expected to recall a high amount of inaccurate information. Hypothesis 3b predicted a correlation between both temperament subscales and suggestibility. That is, children who are easy-going, and less persistent would give more answers that were in compliance with the misleading information.

CHAPTER 2

METHOD

Participants

Participants were 29 preschoolers (four- to five-year-olds) and 30 elementary school children (nine- to ten-year-olds) from a small city in east, central Kansas. One preschooler and two elementary school children did not return to complete the second interview and therefore were eliminated from the sample. The children were mostly White, and from middle-class families. Half of the children were boys. Participants were recruited from two sources. First, university faculty and staff were asked to volunteer their children. Second, parental consent letters (see Appendix A) were sent home with children at the preschools and elementary schools in the Emporia, Americus, Reading, and Admire areas. The letter consisted of a brief description of the study including purposes, procedure, and time involved, as well as a consent form. Parents who agreed to have their children participate in the study were contacted, and appointments were scheduled for them.

Materials

Stimuli. A VHS videotape of a trip to the zoo with an embedded theft scene was developed and used specifically for this project. The videotape was 12 minutes long and featured female twins who visited the zoo. There was a two-minute sequence at the beginning of the film in which the twins witnessed a bike theft. Despite several attempts to borrow a younger girl's bike, a teenage boy was repeatedly denied permission to use it. The boy left the scene, sneaked back, and then stole the bike.

Memory interview. The interview questions focused on various aspects of the bike theft event and specifically gave information about (a) the bike characteristics, (b) the actions portrayed, (c) the actors' physical characteristics, and (d) the actor's clothing. The memory interviews consisted of either a general or a suggestive format. The general memory interview format (see Appendix B) was hierarchically organized to become more specific in nature to produce the maximum amount of information. A general open-ended question (e.g., "Tell me everything that happened.") was asked, followed first by a temporal, open-ended question (e.g., "What is the first thing that happened?") and then by non-leading questions (e.g., "Tell me the color of the bike."). Finally, both positive leading (which suggests correct answers) and misleading (which suggests incorrect answers) questions were presented, but only to elicit information not previously provided. The order of positive leading and misleading questions were counterbalanced to minimize bias. The suggestive memory interview format (see Appendix C) consisted of the general and temporal open-ended questions followed by misleading questions only.

The Temperament Assessment Battery for Children (TABC; Martin, 1988). The TABC assessed six temperament characteristics in children. Based on Thomas and Chess' (1977) model, Martin used only six of the nine dimensions, including Activity, Adaptability, Approach/Withdrawal, Emotional Intensity, Distractibility, and Persistence (see Appendix D). The test-retest reliability after one year of the Parent Form of the TABC ranged from .43 to .70 for mothers and .37 to .62 for fathers. Criterion validity was obtained using school performance as this was closely related to children's cognitive abilities. The ranges were .76 for reading grades and .65 for mathematics grades.

Procedure

Each child was brought to the university by his or her parents. The child was introduced to two experimenters and then brought by one of them to a room to watch the zoo video. While the child was watching the video, the second interview was being scheduled with the parent for seven weeks later (minus two days or plus three days). After the video, children were brought to another room for a memory interview. During the interviews, parents were asked to complete demographic information (see Appendix E) and the TABC.

Half of the children at each age were in the control group and the other half were in the experimental group determined by random assignment. Children in the control group were given a general interview for both the initial and the seven-week delay interview. Children in the experimental group were given the general interview initially, but a suggestive interview after seven weeks. All interviewers were trained by an experienced faculty member. The interviews were videotaped and then reviewed to allow the experimenters to insert any information into the transcription that was not written down during the interview.

Scoring

Recall data. The theft event was comprised of 13 central features and 15 peripheral features (see Table 1). The central features, which were considered by most people to be the essential and salient aspects of an event, were categorized as related to the crime or to characters' physical appearance. Peripheral features, in contrast, represent less important aspects of the event (e.g., the color of the victim's t-shirt) and were grouped as related to the crime or to characters' physical appearance as well.

Table 1

List of Central and Peripheral Features

13 Central Features	15 Peripheral Features
The Crime	*The Crime*
Victim was the owner of the bike.	Victim initially sitting on the bench.
Victim and perpetrator argued over the bike.	Perpetrator touched the bike.
Victim and perpetrator struggled over the bike.	Perpetrator punched the victim.
Perpetrator stole the bike.	Victim moved the bike away from the perpetrator.
Color of the bike.	Perpetrator's reaction to victim's refusal to lend the bike.
Model of the bike.	Perpetrator called victim a name.
	Victim's emotional response to the theft.
	Father came up to the victim.
Characters' Physical Appearance	*Characters' Physical Appearance*
Perpetrator's name.	Victim's name.
Perpetrator's hair color.	Victim's hair color.
Perpetrator's hair length.	Father's hair color.
Perpetrator's was taller than the victim.	Perpetrator's shoes.
Perpetrator's was older than the victim.	Victim's clothing.
Perpetrator's clothing.	Victim's shoes.
Perpetrator's gender.	Perpetrator's watch.

For both central and peripheral features, accurate memory referred to the information portrayed in the film, whereas inaccurate memory consisted of confabulations (i.e., information not portrayed in the film, but spontaneously produced in response to open-ended or non-leading questions) and false alarms (i.e., incorrect information accepted as factual in response to misleading questions). To code the general interviews, three levels of coding were developed to indicate the degree to which the description of the feature was complete. A partially correct (incorrect) response containing an incomplete description was assigned one point, a basic correct (incorrect) response consisting of a complete description was given two points, and an elaborative correct (incorrect) response comprising a basic response with details received three points. Using the color of the bike for an example, a partial response would be "Dark," a complete response would be "Black," and an elaborative response would be "Black with Trek written on it."

To score the suggestive interviews, accurate answers in response to open-ended questions were coded in the same way as the general interviews (i.e., using completeness scores) as shown in the coding scheme (Appendix F). However, adjustments were made to the inaccurate scores when children provided inaccurate answers in response to the misleading questions in accordance with the chart shown in the coding scheme. In contrast, if no features were accurately mentioned in response to open-ended questions, then accurate and inaccurate scoring was based on children's responses to misleading questions as indicated on the chart in the coding scheme.

The accurate and inaccurate features were then tallied separately and eight proportions for memory were calculated — accurate central crime, accurate central

appearance, accurate peripheral crime, accurate peripheral appearance, inaccurate central crime, inaccurate central appearance, inaccurate peripheral crime, and inaccurate peripheral appearance. Each proportion was computed by dividing the total points in the completeness score by the total number of points possible (18 points for central crime, 20 points for central appearance, 24 points for peripheral crime, and 20 points for peripheral appearance). The total number of possible points differed due to the level of completeness possible (e.g., not all features had partial and elaborated responses) and to the number of features (i.e., six for central crime, seven for central appearance, eight for peripheral crime, and seven for peripheral appearance).

Interrater reliability was established for the master coder and faculty advisor by initially obtaining a minimum of 90% agreement. Using 20% of the interview protocols, the interrater reliability ranged from $r = .93$ to $r = .97$.

Consistency data. To determine how the misleading suggestions affected delayed reports by children in the suggestive group, consistency in responses was examined. Two types of codes were used--swayed and non-swayed responses. A *swayed* response was coded when children provided accurate responses for a feature in the first interview, but inaccurate responses to that feature in the delayed interview. A *non-swayed* response was coded when children provided an accurate response for a feature during the open-ended section of the delayed interview and was able to provide an accurate response again for that feature during the misleading question section. Proportions were calculated for central and peripheral features in the same way producing four memory scores — central swayed, peripheral swayed, central non-swayed, and peripheral non-swayed.

To create proportions for swayed responses, the number of swayed responses was divided by the number of accurate features reported in the immediate interview. For example, the proportion of swayed responses would be .43 if a child recalled 7 features accurately initially, but 3 of these features were inaccurately recalled in the delayed interview. In contrast, to calculate proportions for non-swayed responses, the number of non-swayed responses was divided by the number of accurate features reported at the open-ended level in the delayed interview. Thus, if a child provided 6 features accurately at the open-ended level and 3 of these were correctly recalled again in the misleading question section, the proportion of non-swayed response would be .50.

Temperament. For each of the 48 questions of the TABC, parents provided an estimation of how their children behaved in given situations ranging from one (never) to seven (always). A subset of eight questions corresponded to each of the six subscales (e.g., Activity Level) on the TABC. For some of the questions, the score was reversed (e.g., '2' became a '6') because of the way the question was worded. The total scores of each subscale were then added together producing a sum for each characteristic. Finally, each sum was converted to a t-score using a standardized table.

CHAPTER 3

RESULTS

As expected, the preliminary analysis confirmed the immediate accurate and inaccurate memory scores for crime and for appearance by the general and suggestive groups did not differ. Therefore, the focus of the following analyses was on the delayed memory scores for crime and for appearance.

Accurate Delayed Memory

To address Hypotheses 1a, 1b, and 1c, two separate 2 x 2 x 2 (Condition x Age x Feature) mixed model Analyses of Variances (ANOVAs) were conducted, with both condition (general vs. suggestive) and age (4-5 years vs. 9-10 years) as the between-subjects factors and feature (central vs. peripheral) as the within-subjects factor. The first analysis used accurate crime scores and the second used accurate appearance scores from the delayed interview as the dependent variables. For crime, there were no main effect or two-way interactions, however, the Feature x Age x Condition interaction was significant, $F(1, 56) = 6.40, p < .05$. A Tukey post-hoc analysis ($p < .05$) was performed. Table 2 displays the mean proportions and standard deviations of accurate central and peripheral information about the crime by age and condition. As shown in Table 2, when misleading questions were used, the amount of central information about the crime provided by younger children was lower than that provided by older children. In contrast, when general questions were used, age differences were only found for the amount of peripheral information provided about the crime. Older children in the suggestive group were also affected by misleading suggestions. First, they provided less peripheral

Table 2

Mean Proportions and Standard Deviations of Accurate Central Crime Scores and Accurate Peripheral Crime Scores by Age and Interview Condition

Age	Condition	*n*	Central	Peripheral	Total
Preschool Children					
	General Condition	14	.55 (.11)	.50 (.05)	.53 (.08)
	Suggestive Condition	14	.44 (.19)	.50 (.19)	.47 (.19)
	Total		.50 (.15)	.50 (.12)	.50 (.14)
Elementary School Children					
	General Condition	14	.61 (.09)	.60 (.10)	.61 (.09)
	Suggestive Condition	14	.58 (.10)	.48 (.11)	.53 (.11)
	Total		.60 (.10)	.54(.11)	.57 (.10)

Note. Standard deviation in parentheses.

information about the crime than those in the general group. Second, they were less capable of providing peripheral than central information about the crime.

For accurate appearance features, main effects of age, $F(1, 56) = 6.19, p < .05$, and of feature, $F(1, 56) = 89.26, p < .01$, were found. Younger children ($M = .48$, $SD = .18$) provided less information about characters' appearance than did older children ($M = .57$, $SD = .13$). All children provided more information about central ($M = .63$, $SD = .15$) than peripheral appearance items ($M = .42$, $SD = .17$).

Inaccurate Delayed Memory

The second analysis addressed Hypothesis 1a, 1b, 1c, and 2 by examining the inaccurate information provided by the children. Again, two separate 2 x 2 x 2 (Condition x Age x Feature) mixed model ANOVAs were conducted, one using inaccurate crime scores and the other using inaccurate appearance scores during the delayed interview as the dependent variables.

For crime, the effect of feature, $F(1, 56) = 7.60, p < .01$, was interpreted within the significant Feature x Age x Condition interaction, $F(1, 56) = 6.41, p < .05$. A Tukey post-hoc analysis ($p < .05$) was performed. Table 3 displays the mean proportions and standard deviations of inaccurate central and peripheral information about the crime by age and condition. As shown in Table 3, when given a suggestive interview, younger children made proportionally more errors than did the older children about central crime features. However, both age groups made proportionally the same amount of errors about peripheral crime features when misled. In addition, condition effects were found for the younger group. Preschoolers who received suggestive questions made proportionally more errors about central crime features than those who received the general questions.

Table 3

Mean Proportions and Standard Deviations of Inaccurate Central Crime Scores and Inaccurate Peripheral Crime Scores by Age and Interview Condition

Age	Condition	*n*	Central	Peripheral	Total
Preschool Children					
	General Condition	14	.11 (.05)	.21 (.06)	.16 (.06)
	Suggestive Condition	14	.25 (.20)	.22 (.18)	.24 (.19)
	Total		.18 (.13)	.22 (.12)	.20 (.13)
Elementary School Children					
	General Condition	14	.10 (.07)	.13 (.07)	.12 (.07)
	Suggestive Condition	14	.11 (.09)	.20 (.10)	.16 (.10)
	Total		.11 (.08)	.17 (.09)	.14 (.09)

Note. Standard deviation in parentheses.

Children in the general group were not immune from developmental differences in errors. Younger children reported proportionally more inaccurate information about peripheral crime features than did older children.

For inaccurate appearance features, main effects of age, $F(1, 56) = 9.77, p < .05$, and of feature, $F(1, 56) = 75.25, p < .01$, were found. Younger children ($M = .24$, $SD = .17$) provided a higher proportion of incorrect information about appearance than did older children ($M = .14$, $SD = .10$). All children reported high proportion of incorrect information about peripheral ($M = .28$, $SD = .17$) than central appearance ($M = .10$, $SD = .13$).

Consistency Scores

The next set of analyses focused on the suggestive group to determine whether age and type of information played a role in suggestibility as predicted in Hypothesis 2. The first analysis examined whether children who provided accurate information in the initial interview were misled by the suggestions in the second interview (i.e., swayed). The second analysis focused on whether children who provided accurate information in the second interview when responding to general, open-ended questions were able to resist subsequent suggestions (i.e., not swayed). Two separate 2 (Age: 4-5 years vs. 9-10 years) x 2 (Feature: central vs. peripheral) mixed model ANOVAs using the proportion of swayed and non-swayed responses as the dependent variables. The between-subjects factor was age and the within-subjects factor was feature.

There was a main effect of age for both swayed, $F(1, 28) = 4.50, p < .05$, and non-swayed responses, $F(1, 28) = 10.55, p < .01$. Younger children's delayed reports ($M = .26$, $SD = .20$) contained a higher proportion of misled information than did those by

older children (M = .15, SD = .10). Not surprisingly, older children provided a lower proportion of inaccurate answers in response to suggestive questions than did younger children (M = .85, SD = .14 vs. M = .54, SD = .46). There was also a main effect of feature for swayed responses, $F(1, 28) = 16.99$, $p < .01$, showing a higher acceptance of misleading suggestions about peripheral (M = .27, SD = .19) than central information (M = .14, SD = .14).

Temperament

Next, Hypothesis 3a and 3b were examined by focusing on the relationship between children's behavioral style and suggestibility. In the first analysis, children's delayed memory scores were correlated with persistence and with a constructed subscale called "manageability." Manageability was created by combining Adaptability, Ease-of-Management, and the inverse of Emotional Intensity subscales from TABC and represented Easiness-Difficulty dimension of children's temperament. Only these two dimensions were used because they have been directly linked to children's cognitive performance (Greenhoot et al., 1999). In the second analysis, the consistency scores (swayed and non-swayed) were correlated with persistence and manageability.

Correlation between behavioral style and delayed memory scores. Separate correlations were conducted for each condition examining the relationships between persistence and each of the memory scores and between the composite manageability measure with each delayed memory score. Although there were no significant findings for the general group, correlations were found for the suggestive group.

Children who were persistent provided few inaccurate central details about characters' appearance, $r(28) = -.42$, $p < .05$. In addition, children who are considered

easy-going provided many accurate central features about the crime, $r(28) = .39, p < .05$, and few inaccurate central, $r(28) = -.48, p < .01$, and peripheral details about appearance, $r(28) = -.41, p < .05$.

Correlation between behavioral style and consistency scores. Separate correlations were conducted for each age group examining the relationships between persistence and each consistency score (swayed and non-swayed responses) and between the composite manageability measure with each consistency score (swayed and non-swayed responses). Although there were no significant findings for the younger group, one correlation was found for the older group. Older children who are easy-going were more likely to provide swayed responses than those who are difficult, $r(28) = .56, p < .05$. No correlation was found between the non-swayed responses and these temperament traits.

CHAPTER 4

DISCUSSION

The impact of age, type of questions, and time interval on children's memory for a witnessed event was examined. The investigation focused on how misleading questions influenced preschool and elementary school children's delayed recall and whether temperament characteristics mediated children's compliance to false suggestions.

Age and Suggestibility

The first issue addressed in this study focused on the age-suggestibility issue. Hypothesis 1a predicting age differences in inaccurate, but not accurate recall, was partially supported. Specifically, younger children's recall contained a higher proportion of inaccurate features about the crime features, but not appearance, than did older children. Although there was no support for Hypothesis 1b, limited support for Hypothesis 1c was indicated. Specifically, higher accuracy was found for recall of central than of peripheral features in characters' appearance, but not in crime. Additionally, inaccuracy was higher when children recalled peripheral rather than central crime and appearance features.

Hypothesis 2 was concerned with the influence of age in children's vulnerability to misleading suggestions. This issue was addressed in both the analysis of memory scores and of consistency scores. Clearly, the younger children were more vulnerable to suggestions than were older children, particularly for central crime features. Similarly, younger children were more likely to change their responses to be consistent with misleading information than were older children. Unlike Blackford (2000) who only found age differences in the seven-week recall of peripheral features, this study

demonstrated that introducing suggestive questions at a time when forgetting has occurred will detrimentally affect recall of even basic aspects of a crime. In contrast, the degree of inaccuracy in younger children's reports for central crime features was lower when given open-ended rather than misleading questions. Older children were more likely, in general, to resist accepting false information than were younger children. However, they were not immune to the misleading questions. Elementary school children were as inaccurate as preschool children in reporting peripheral crime features when misled, but not when given open-ended questions. The findings demonstrated the importance of using an unbiased, non-suggestive interview style when dealing with children, especially preschoolers. Indeed, Cassel and Bjorklund (1995) stressed the notion that young children could be reliable eyewitness, even after a long delay, if the questioning techniques employed (i.e., open-ended or unbiased questions) were carefully sculptured to meet their specific developmental needs.

In summary, preschoolers were more likely than elementary school children to comply with false suggestions and thus, reported a higher degree of inaccurate information about central aspects of the crime when misled. The age differences in the amount and accuracy of information reported when children were misled were consistent with past research findings (e.g., Ceci & Bruck, 1993). In the best case scenario, such as when general, open-ended questions are used, recalling information accurately requires children to be able to interpret the question and then to retrieve the relevant information from long-term storage (Cassel, Roebers, & Bjouklund, 1996). When faced with suggestive questions, however, children must perform two additional tasks. First, they must mentally compare the incorrect information suggested by interviewers to what is

stored, which requires holding both pieces in mind simultaneously. Second, they must tell the adult interviewer the information presented to them was incorrect and then provide the correct information. These tasks are very difficult for young children not only because their cognitive abilities are still developing, but also because they succumb to the social demands of the interview (Bruck, Ceci, & Hembrooke, 1998). In particular, the latter task would require children to contradict someone perceived as an authority figure and to provide a response beyond a simple yes/no consistent with the question level. The finding that younger children were more willing than older children to accept misleading suggestions (i.e., swayed), even for central aspects of the crime, supports this interpretation.

Temperament and Suggestibility

The second issue centered on the role of temperament in children's suggestibility. The analyses correlated children's behavioral styles (persistency and manageability) with the memory scores and the consistency scores. Hypothesis 3a predicting children who were persistent and those with difficult natures would make few errors was partially confirmed. Those who strive to complete even difficult tasks had lower inaccurate recall about the characters' physical appearances than those who rarely persisted. The need for persistence is important because of the stimuli and the interview process. That is, the crime was embedded within another event; thus, only children who were persistent would have abstracted information relevant to the crime from the distracting zoo scenes. In addition, the interview process could be long, so those who are persistent would have provided the most complete reports. Contrary to expectation, it was the easy-going children who provided accurate recall for central aspects of the crime. However, it is

possible that easy-going children were more willing to comply with the tasks in the experiment, including attending to the stimulus and encoding important information (Greenhoot et al., 1999).

Partial support for Hypothesis 3b was indicated because easy going children complied with false information (i.e., swayed) more than difficult children, but only for the elementary school group. The latter was somewhat surprisingly because younger children were expected to be more vulnerable than older children to misleading questions. Moreover, older children in general were less likely to change their accurate responses to comply with inaccurate suggestions. In accordance with the social mechanism theory (Ceci & Bruck, 1993), it is possible that compliance stems from sensitivity by older children with easy-going natures to the social pressures associated with suggestive techniques.

In summary, the findings demonstrated some relationship between temperament and recalls. Specifically, manageability moderated both accurate and inaccurate recall, as well as influenced whether or not children would change their accurate responses in compliance with inaccurate information. The dimension of persistence had less impact on recall. Logically, however, persistence was associated with appearance, which is a less salient aspect of events than is crime.

Conclusions

This study provided further evidence that exposing children to misleading suggestions at a time when forgetting has begun caused them to make more errors in recall than those who were given general, open-ended questions. Elementary school children may fall victim to inaccuracy in peripheral rather than in central aspects of the

crime due to suggestive questioning during a delayed interview. In contrast, when preschool children are misled, they are more vulnerable than elementary school children to errors in delayed recall of central aspects of crimes. Finally, manageability was associated with memory and the ability to resist suggestion. This finding is important because it raises the issue of how children's personality style and interview questions affect memory accuracy.

There are several implications of this research for those in legal and clinical professions. First, one should be particularly cautious when interviewing children long after the event occurred because forgetting itself is likely to affect accuracy. Specifically, adults who are tempted to obtain testimony from children should not use leading questions which are likely to result in inaccurate recall, especially for central aspects of the crime. In addition, interviewers should be aware that individual characteristics will influence children's resistance to suggestion. That is, to obtain complete and accurate reports, clinicians or legal professionals may need to break down the interview sessions for those who lack persistence. Similarly, because easy-going children are more likely to comply with adult's requests, interviewers should be careful not to hinder recall through suggestive questioning.

Future research should focus on whether children's ability to resist false suggestions is associated with the type of information or features for other events. For instance, are there differences in terms of children's recall for actions and character appearance for emotional event? It is possible that when emotion associated with the event is negative, children may not be able to attend and encode information. Another issue for new research is whether children are more vulnerable to suggestion when

interviewed by someone who is familiar with the event. Finally, researchers should also assess other aspects of individual characteristics, such as motivation and assertiveness to examine whether these traits affect suggestibility.

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Appendix A

Parental Consent Letter

Dear Parents:

Permission has been given by your child's school to send home this letter. The members of the Child Study Team at Emporia State University are conducting a series of studies examining children's memory of events. There is very little information about how well elementary school children remember activities they have witnessed over long delay intervals. We would like to invite children ages 4 to 5 and 9 to 10 to participate in a study that looks at what children remember about events they see in movies. The research project will help us understand children's ability to testify in legal situations.

The main focus of this project is to find out how much children remember about witnessed activities. In this study, children will watch a 10 minutes film showing children doing different activities, such as looking at animals at the zoo, talking about a bike, and eating snacks. Children will be interviewed two times. The first time will be immediately after the 10 minutes film and the second time will be seven weeks following the viewing of the film. In the interviews, children will be asked general questions, such as "Tell me what happened," and specific questions, such as "Was the weather clear and sunny?" about activities that may or may not have happened.

We hope that you will want your children to take part in this study. Please indicate your decision (Yes or No) on the permission form and then sign the form. Your children should return one of the forms to their teachers by next week. If you state Yes, one of the Child Study Team members will contact you and schedule your children's interviews at Emporia State University (E.S.U.), Visser Hall, at times that are convenient for both you and your children. We expect each interview to take about 30 to 45 minutes. The interviews will be videotape recorded to provide us with an accurate record of the children's recall. To guarantee confidentially, we will only refer to your child by first name on the videotape, whereas written records of each participating family will be identified only by numbers. The videotape records will be coded and kept in a locked cabinet in our laboratory at E.S.U.

In addition, while these assessments are being made, we would appreciate your assistance in filling out information about your background and about your child's temperament. These questionnaires should take no more than 15 minutes to complete. We think that differences among children in these areas may help us understand the types of responses children give in the interview. All the information that we gather will be kept private and used for research purposes only. Please note that we are interested in reporting average findings for each age group, not the information from individual children and their families. For example, we plan to report general findings at psychological conferences and in research journals. Also, a summary of the results will be made available to the school and sent to parents upon request.

The study will not involve any risk to your children. In fact, based on our previous work, we are confident that your children will find it interesting and enjoyable. Also, participation is completely voluntary and you and your children will be free to leave at any time. If you have any questions about this study, please call Dr. Shapiro at 316-341-5810 (office) or 316-342-1989 (home) or leave a message at 316-341-5317 and we will respond as soon as possible.

Thank you very much for your consideration.

Sincerely,

Lauren R. Shapiro, Ph.D.
Assistant Professor

PERMISSION FORM

I have read the information concerning the procedures and purposes of this study on children's memory. I am aware that interviews will be videotape recorded and I agree to fill out information on my background and on my child's temperament. All of this information will be kept private and confidential. I have been given the name of someone to contact to ask questions about the procedures and possible risks involved. I also understand that my child and I may withdraw from the study at any time.

_____ Yes. I give permission for my child _____ to take part in this study.
_____ No. I do not want my child _____ to take part in this study.
_____ Please send me a copy of the results. My mailing address is _____
_____
_____
_____

_____ _____ _____
Child's Date of Birth Parent's or Guardian's Signature Date

Contact _____ Day Phone _____
Best time of day _____ Eve. Phone _____
Best days _____

** Please return this copy of the permission form with your signature to the teacher.

TEAM: Cheryl Blackford, Elizabeth Brooks, Chiung-Fen Chen, Travis Hamrick, Corey Palmer, Cristi Brandt, Derrick McNutt, Beckie Rendoff, Darby Cochran.

Appendix B

General Memory Interview Format

General instructions for asking questions: Be certain to start with questions #1 and #2. Write down the features on the checklist as they are mentioned. For Q#1, ask the children to elaborate on each feature that is mentioned after they list all features (e.g., Tell me more about _____). For Q#2 and the specific questions, follow up with elaboration immediately. For most items listed on the checklist, there is a corresponding question in the Specific Questions section. Write down Open-ended (OE) answers next to the appropriate item (i.e., in response to questions #1 or #2). If mentioned at the OE level, Do NOT ask the corresponding specific questions. The number of the specific questions is located to the right of the checked items. Write "Y" for yes and "N" for no to represent child's responses to leading questions.

Instructions to children for the memory interview: *Turn on camcorder and sit across the child.* **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 will be asking you lots of questions. If you don't understand a question, just say "I don't understand what you mean." Also, if I ask a question and you don't remember or you are not sure about the answer, just tell me, "I don't know". I'm going to write down everything you say so try not to talk too fast. Ok, are you ready? *Begin the interview questions after the child indicates he or she is ready.*

Open-ended & Temporal, open-ended questions

OE = open-ended questions TOE = temporal, open-ended questions.

Questions #1 (open-ended): **Tell me what happened to the bike.** *Let the child list ALL the features before you go back through the list to ask for elaboration.*

After the child finishes his/her description, ask: **What else happened with the bike?** *Repeat the question until list is completed.*

When the child's list seems exhausted, ask: **Was there anything else that happened to the bike?**

For EACH feature mentioned, but not elaborated, ask: **You said _____. Tell me more about _____.** *[Example: Tell me more about the bike. If the child says "Took it" then ask clarification question:* **What did the boy do when he took the bike?** *or* **How did he take it?***]* [Note to interviewer: The goal here is to get as complete elaboration as possible without leading the child.]

Question #2 (temporal, open-ended): **Good job. You told me some (a bunch of) things I needed to know. Now I want you to think about what happened with the boy and the girl again. But this time, I want you to start from the beginning and go all the way to the end. Try not to leave anything out.** *Remember to follow up IMMEDIATELY on any NEW feature mentioned.*

What was the first thing that happened?

>> If the child says IDK, I don't remember, or I already told you, then you may respond: a). **Think about all the things you told me about the bike. Which one happened first.** *Or b).* **You told me a lot of things. Think about which one was the first thing.**

Prompt the child continuously by asking: **What happened next (after that)?** *Repeat as often as necessary.*

For each feature mentioned, but not elaborated, ask: **You said _____. Tell me more about _____.** *[Example: Tell me more about the bike. If the child says "Took it" then ask clarification question:* **What did the boy do when he took the bike?** *or* **How did he take it?***]*

When the child seems finished, ask: **Is that the last thing that happened?**

When the child has told you all that she or he can, proceed to Specific Questions and ask about those items not already mentioned.

Specific Questions with Positive-leading and Negative-leading Questions

LQ = leading question; PLQ = positive leading question; NLQ = negative leading question

Check the checklist before asking the questions. You may say: **I just need a minute to check my notes.** *On the checklist, mark an X next to leading questions the child has already provided answers at the OE or TOE level. Do NOT ask those questions.*

On the checklist, write down answers to leading questions on the line provided. If you need to ask the follow-up questions (PLQ & NLQ), write down "Y" for yes, and "N" for no, and "IDK" for I don't know or don't remember next to each one.

>> Only ask these questions if the answers were NOT mentioned in response to the OE or TOE level. If the child provides the WRONG answers at these levels, ask leading questions for ACTION ONLY.

>> Also, if the children just nod or shake their heads, tell them **It is really important that you tell me your answer in words.**

>> If the child is responding with "I think" or "Maybe", then remind then, **It is really important that you only tell me what you REALLY REALLY remember about what**

happened in the movie. *Don't let the children infer information, have then report ONLY what they saw. Be sure to ask then if they remember whether it happened or not, by saying* **Do you remember _____?.**

>> If the child is asked first leading question and gives a spontaneous response before you can ask the second leading question, then say **So…..,** *and then state the question.*

>> If the child does not respond, or answers "I don't know" to the leading questions, ask BOTH the positive and negative leading questions that follow.

>> If the child says, "Yes" to both the positive and negative leading questions, repeat both options and then ask the child to choose one by saying **Which one was it?**

>> If the child says "No" to both the positive and negative leading questions, move on the next question.

Start the questions by saying: **You did a good job. I have some more questions for you. I want you to think about what happened with the bike again. For these questions, I need you to tell me only what you REALLY, REALLY remember. If you don't remember or you are not sure about your answers, just tell me, "I don't know".**

The Bike Characteristics

I need to know more about the bike that was taken.

1). **Tell me whose bike it was?** *If the child does not understand the question, ask the alternative question.* **Who did it belong to?**

>> If the child tells you boy or girl, skip to #2.

>> If the child responds IDK or doesn't respond, then ask:

PLQ: **Did the bike belong to the girl?**

NLQ: **Did the bike belong to the boy?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

2). **Tell me the color of the bike.**

>> If the child tells red or other colors, skip to #3.

>> If the child responds IDK or doesn't respond, then ask:

PLQ: **Was the bike black?**

NLQ: **Was the bike red?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

3). **Tell me what type of bike it was.**

>> If the child tells you some type (even the wrong one) skip to #4.

>> If the child tells you it was a ten speed, ask 3a and 3b.

>> If the child responds IDK or doesn't respond, then ask:

PLQ: **Was it a mountain bike?**

NLQ: **Was it a ten speed bike?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

>> If the child responds IDK to PLQ or NLQ, yes to ten speed, ask 3a and 3b.

3a (PLQ): **Was it a bike for both boys and girls?**

3b (NLQ): **Was it a bike only for boys?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

The Actions Portrayed

I need to know a little more about what happened between the girl and the boy.
4). **Tell me what the girl was doing when they boy first came up to her.**

>> If the child tells you siting (without bench) and singing (without songs), skip to #5

>> If the child already provided partial answer during OE or TOE level, ask the alternative questions. You may repeat the question, if necessary, before going on to ask the leading questions. **You told me _____, what else was the girl was doing when the boy first came up to her?** *For each new feature mentioned, but not elaborated, ask* **You said _____, tell me more about _____.** *Repeat the question as many time as necessary.*

>> If the child provides partial answers (swing or sing only), ask the alternative question before asking leading the questions pairs that was not mentioned. **You told me _____, what else was the girl doing when the boy first came up to her?**

>> If the child responds IDK or doesn't respond, then ask BOTH set A and set B:

A. PLQ: **Was she sitting on a bench?**
NLQ: **Was she swinging on a swing?**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

B. PLQ: **Was the girl singing songs?**
NLQ: **Was the girl eating crackers?**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

5). **What songs did someone sing in the movie?**

>> If the child tells Bingo and RRRYB, skip to #6.

>> If the child only mentions one song, ask the alternative question and repeat the question when necessary. **If you said _____ sang _____, can you tell me if _____ sang another song?** *If the child says "Yes",* **What other song did s/he sing?**

If the child can not remember the name of the other song, ask leading questions for set containing other song.

>> If the child responds "nothing", IDK or doesn't respond, then ask BOTH set A and set B:

A. PLQ: **Did someone sing "Bingo"?**
NLQ: **Did someone sing "Itsy Bitsy Spider?"**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

B. PLQ: **Did someone sing "Row Row Your Boat"?**
NLQ: **Did someone sing "Mary Had a Little LamB?"**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

>> If the child claims not to know the songs mentioned, just say **That's o.k.**

6). **Tell me what the boy did when he first saw the bike?**

>> If the child says touch it, skip to #7.

>> If the child mentions look or took it, then ask the alternative question: **You said the boy _____ when he first saw the bike, did he do anything else.** *For each new feature mentioned, but not elaborated, ask* **You said _____, tell me more about _____.** *Repeat the question as many times as necessary.*

>> If the child responds "nothing", IDK or doesn't respond, then ask:

A. PLQ: **Did the boy touch it with his hand?**
NLQ: **Did the boy kick it with his foot?"**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

7). **Tell me, did the boy and the girl argue about anything?**

>> If the child gives answer indicating the argument was about girl's refusal to let the boy use the bike, skip to #8.

>> If the child merely responds "Yes", then ask elaboration question. **Tell me what they argued about.**

>> If the child responds IDK or doesn't respond, or the child's answer does not clearly indicate that one child did not want the other one to use the bike, then ask:

PLQ: **Did the girl want the boy to leave the bike alone?**

NLQ: **Did the girl want the boy to sit somewhere else?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

8). **Tell me, did the boy touch the girl?**

>> If the child says touch girl's arm or physically demonstrates the area, skip to #9.

>> If the child merely responds "Yes", then ask elaboration question. **Tell me how the boy touched the girl.** *or* **What did he do?**

>> If the child responds IDK or doesn't respond, then ask:

PLQ: **Did the boy punch the girl's arm?**

NLQ: **Did the boy pat the girl's head?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

9). **Tell me what the girl did when the boy first tried to walk off with the bike?**

>> If the child gives answer indicating they struggled and the girl moved the bike the other side of the bench, skip to #10.

>> If the child provides answer for only one pair, then ask the other leading question pair.

>> If the child responds "nothing", IDK or doesn't respond, then ask BOTH set A and set B:

A. *PLQ:* **Did the girl struggle over the bike?**

NLQ: **Did the girl kick over the bench?"**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

B. *PLQ:* **Did the girl move the bike to the other side of the bench?**

NLQ: **Did the girl push the bike under the bench?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

10). **Tell me what the boy did when the girl wouldn't let him use the bike?**

>> If the child gives answer indicating the boy slit his throat with his finger and came back to ride away with the bike, skip to #11.

>> If the child says one feature, ask the alternative question. **You told me the boy _____, tell me what else the boy did when the girl wouldn't let him use the bike.**

>> If the child says "Took it", then ask elaboration question. **What did the boy do when he took the bike?** or **How did he took it?**

>> If the child provides answer for only one pair, then ask the other leading question pair.

>> If the child responds "nothing", IDK or doesn't respond, then ask BOTH set A and set B:

A. *PLQ:* **Did the boy pretend to slit his throat with his finger?**

NLQ: **Did the boy stick out his tongue at the girl?"**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

B. *PLQ:* **Did the boy grab the bike and ride away?**

NLQ: **Did the boy knock the bike down and walk away?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

11). **Tell me, did the boy call the girl a name?**

>> If the child says a stupid jerk, jerk, or other name even the wrong one, skip to #12.

>> If the child merely responds "Yes", then ask elaboration question. **Tell me the name he called her.**

>> If the child responds IDK or doesn't respond, then ask:

PLQ: **Did he call her "a stupid jerk"?**

NLQ: **Did he call her "a dumb baby?"?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ

12). **Tell me, did the girl do anything when the boy rode away on the bike?**

>> If the child gives answer indicating the girl was angry and stomped her foot, skip to #13.

>> If the child says one feature, ask the alternative question. **You told me the girl _____, did the girl do anything else when the boy rode away on the bike?**

>> If the child says "Yes", ask elaboration question: **Tell me what she did.**

>> If the child provides answer for only one pair, then ask the other leading question pair.

>> If the child responds "nothing", IDK or doesn't respond, then ask BOTH set A and set B:

A. PLQ: **Did the girl get angry?**

NLQ: **Did the girl get sad?"**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

B. PLQ: **Did the girl stomp her foot?**

NLQ: **Did the girl begin to cry?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

13). **Tell me who came up to the girl when she was upset.**

>> If the child says mother or father, skip to #14.

>> If the child responds "nobody", IDK or doesn't respond, then ask:

PLQ: **Did her father come up to her?**

NLQ: **Did her mother come up to her?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

14). **Tell me what the girl's father/mother did when s/he saw the girl was upset?**

*** For this question, refer to #13 above. Use "mother" if the child indicated the mother comforted the victim. If the child indicated the father comforted the victim, or the child did not know, use the word "father". If the child indicated mother, they say "she" whereas you should use "he" for the father.*

>> If the child says put a hand on the girl's shoulder, skip to #15.

>> If the child responds "nothing", IDK or doesn't respond, then ask:

PLQ: **Did s/he put a hand on the girl's shoulder?**

NLQ: **Did s/he go running after the boy?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

The Actors' Physical Characteristics

I need to know a little more about the boy.

15). **Tell me the boy's name.**

>> If the child gives a name even the wrong one, skip to #16.

>> If the child responds IDK or doesn't respond, then ask:

PLQ: **Was the boy's name Frankie?**

NLQ: **Was the boy's name Ashley?**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

16). **Tell me, what color was the boy's hair?**
>> If the child gives a color even the wrong one, skip to #17.
>> If the child responds IDK or doesn't respond, then ask:
PLQ: **Was the boy's hair dark brown?**
NLQ: **Was the boy's hair light blonde?**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ

17). **Tell me, how did the boy wear his hair?**
>> If the child gives answer indicating short, skip to #18.
>> If the child responds IDK or doesn't respond, then ask BOTH set A and set B:
A. PLQ: **Did he wear it short?**
NLQ: **Did he war it long?"**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ
>> If the child responds "Medium", "Long", the ask set B
B. PLQ: **Did he wear it down?**
NLQ: **Did he wear it in a pony-tail?**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ.
>> If the child already said medium or long at OE or TOE level, ask: **You told me the boy had medium (long) hair, Can you tell/show me how he wore it?** *If necessary, use the alternative question:* **Tell/show me what length (how long) it was?** *If the child says IDK or doesn't respond, ask set B (above).*

18). **Tell me the girl's name.**
>> If the child gives a name or says kid, sport, we never learn it, skip to #19.
>> If the child responds IDK or doesn't respond, then ask:
NLQ: **Was the girl's name Frankie?**
NLQ: **Was the girl's name Ashley?**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

19). **Tell me, what color was the girl's hair?**
>> If the child gives a color even the wrong one, skip to #20.
>> If the child responds IDK or doesn't respond, then ask:
PLQ: **Was her light blonde?**
NLQ: **Was her hair dark brown?**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

20). **Tell me which of the children was taller.**
>> If the child indicates which one was taller even the wrong one, skip to #21.
>> If the child responds IDK or doesn't respond, then ask:
PLQ: **Was the boy taller?**
NLQ: **Was the girl taller?**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

21). **Tell me which of the children was older.**
>> If the child indicates which one was older even the wrong one, skip to #22.
>> If the child responds IDK or doesn't respond, then ask:
PLQ: **Was the boy older?**
NLQ: **Was the girl older?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

Now let's talk about the father (mother). *Depends on what the child said on #13.*
22a). **Tell me what the father (mother) looked like.**
>> If the child answers the question, use elaboration questions for each NEW feature, such as **Tell me more about _____.**
22b). **Tell me, what color hair did the father (mother) have?** *Only ask if not answered in #22a.*
>> If the child gives a color even the wrong one, skip to #23.
>> If the child responds IDK or doesn't respond, then ask:
PLQ: **Was the father's (mother's) hair dark brown?**
NLQ: **Was the father's (mother's) hair light blonde?**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ

The Actors' Clothing

Now I need to know about the clothes that children were wearing.
23a). **Tell me everything the boy was wearing.**
>> If the child mentioned clothes already in OE or TOE level, then ask the alternative question as often as necessary before asking leading questions. **You said the boy was wearing _____. Can you tell me what else he was wearing?** *or* **Was he wearing anything else?**
>> If the child answers the question, use elaboration question after each NEW feature, such as **Tell me more about _____.**
>> Do NOT ask the leading question pair that the child has already answered, either correctly or incorrectly.
>> If the child provides answers for only one pair, then ask the other leading question pair.
>> If the child responds IDK or doesn't respond, then ask BOTH set A and set B:
PLQ: **Was he wearing a black shirt?**
NLQ: **Was he wearing a pink shirt?**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ.
23b). **What type of shoes was he wearing?**
>> If the child indicates any type of shoes even the wrong one, skip to #25.
>> If the child responds IDK or doesn't respond, then ask:
PLQ: **Was he wearing hiking shoes?**
NLQ: **Was he wearing sandals?**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

24a). **Tell me everything the girl was wearing.**
>> If the child mentioned clothes already in OE or TOE level, then ask the alternative question as often as necessary before asking leading questions. **You said the girl was wearing _____. Can you tell me what else she was wearing?** *or* **Was she wearing anything else?**
>> If the child answers the question, use elaboration question after each NEW feature, such as **Tell me more about _____.**
>> Do NOT ask the leading question pair that the child has already answered, either correctly or incorrectly.
>> If the child provides answers for only one pair, then ask the other leading question pair.
>> If the child responds IDK or doesn't respond, then ask BOTH set A and set B:
PLQ: **Was she wearing jeans?**
NLQ: **Was she wearing shorts?**
Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

24b). **What type of shoes was she wearing?**

>> If the child indicates any type of shoes even the wrong one, skip to #25.

>> If the child responds IDK or doesn't respond, then ask:

PLQ: **Was she wearing sneakers?**

NLQ: **Was she wearing sandals?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

25). **Tell me, who was wearing a watch?**

>> If the child indicates who was wearing a watch even the wrong one, skip to #26.

>> If the child responds "no one", "father", IDK, or doesn't respond, then ask set A.

A. PLQ: **Was the boy wearing a watch?**

NLQ: **Was the girl wearing a watch?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

>> If the child responds IDK or doesn't respond, or answer "Yes" to PLQ, ,ask set B:

A. PLQ: **Was it a big black watch?**

NLQ: **Was it a small gold watch?**

Be sure to get clarification if the child responds Yes to both PLQ and NLQ.

26). **Tell me, was the older child a girl or a boy?**

>> If the child says IDK or doesn't response, then ask

PLQ: **Was the older child a boy?**

NLQ: **Was the older child a girl?**

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

Appendix C

Suggestive Memory Interview Format

Instructions: Administer the first half of General Memory Interview, which includes the Open-ended and Temporal, open-ended questions. When the child has told you everything s/he can remember, instead of asking Specific Questions with both positive and negative leading questions, ask the suggestive questions as instructed below. Ask ALL questions regardless of their previous answers.

You did a good job. I have some more questions for you. I have interviewed several children who told me what happened, but I need more information, so I need you to tell me only what you REALLY REALLY remember. If you don't remember or you are not sure about your answer, just tell me, "I don't know." Think about what happened to the bike again. *Ask ALL questions regardless of previous answers. Do NOT ask the child to elaborate his/her answers. Do NOT discourage them from elaborating either. If the child just nods or shakes head, tell them* **It is really important that you tell me your answer in words.**

The Bike Characteristics

I need to know more about the bike that was taken.
1). **The bike belonged to the boy, didn't it?**

2). **Was the color of the bike red?**

3). **The bike was a ten speed, wasn't it?**
>> If the child responds "No", skip to #4.
>>If the child responds Yes or IDK to ten speed, ask **Was the bike only for boys?**

The Actions Portrayed

I need to know a little more about what happened between the girl and the boy.
4). **Think about what the girl was doing when the boy first came up to her.**
4a). **The girl was swinging on a swing, wasn't she?**
4b). **Was the girl eating cracker?**

5). **Think about the song someone sang in the movie.**
4a). **Did someone sing "Itsy Bitsy Spider"?**
4b). **Someone sang "Mary Had a Little Lamb", is that right?**

6). **Now I want you to think about when the boy first saw the bike. Did the boy kick it with his foot?**

7). **The boy and girl were arguing about something. Was it that the girl wanted the boy to sit somewhere else?**

8). **The boy patted the girl's head, didn't he?**

9). **I want you to think about when the boy first tried to walk off with the bike.**
9a). **Did the girl kick over the bench?**

9b). **The girl pushed the bike under the bench, didn't' she?**

10). **Think about when the girl wouldn't let the boy use the bike.**
10a). **Did the boy stick out his tongue at the girl?**
10b). **The boy knocked the bike down and walked away, didn't he?**

11). **The boy called the girl "a dumb baby", didn't' he?**

12). **Now think about when the boy rode away on the bike.**
12a). **The girl got sad, didn't she?**
12b). **Did the girl begin to cry?**

13). **Who came up to the girl when she was upset – it was her mother, wasn't it?**

For the following questions, use "mother" whether the child indicated the mother or not.
14). **When the mother saw the girl was upset, did she go running after the boy?**

The Actors' Physical Characteristics

15). **I need to know a little more about the boy. The boy's name was Ashley, wasn't it?**

16). **Was the boy's hair light blonde?**

17). **Think about the boy's hair.**
17a). **The boy wore his long hair down, didn't he?**
17b). **Was his long hair in a pony-tial?**

18). **Now I need to know about the girl. Was the girl's name Frankie?**

19). **Her hair was dark brown, wasn't it?**

20). **The girl was taller than the boy, wasn't she?**

21). **Was the girl a few years older than the boy?**

22). **Now let's talk about the mother. Was the mother's hair light blonde?**

The Actors' Clothing

Now I need to know about the clothes the children were wearing.
23). **First, think about what the boy was wearing.**
23a). **Was he wearing a pink shirt?**
23b). **He was wearing sandals, wasn't he?**

24). **Now think about what the girl was wearing.**
24a). **The girl was wearing shorts, wasn't she?**
24b). **Was the girl wearing sandals?**

25). **The girl was wearing a watch, wasn't she?**
>> If the child responds Yes, IDK, or doesn't respond, ask **Was it a small gold watch?**
Thank you for helping me. You did a great job.

Appendix D

TEMPERAMENT ASSESSMENT BATTERY FOR CHILDREN

Parent Form

Child's Name _____ Age (in Months) _____ Date _____

Sex M F (Circle) Ethnicity Caucasian, Black, Hispanic, Oriental, Other _____ (circle one)

Respondent's Name _____ Relation: Father, Mother Other _____ (circle one)

This questionnaire is designed to gather information on the way your child behaves in different situations. Each statement asks you to judge whether that behavior occurs "*hardly ever, infrequently, once in a while, sometimes, often, very often, or almost always.*" Please circle the number "1" if the behavior *hardly ever* occurs, the number "2" if it occurs *infrequently*, etc. Please try to make this judgment to the best of your ability, based on how you think your child *compares to other children about the same age*. Also, please make these judgments based on your child's behavior during the *last 3 months*.

1 hardly ever	2 infrequently	3 once in a while	4 sometimes	5 often	6 very often	7 almost always

1.	My child is shy with adults he/she does not know.	1	2	3	4	5	6	7
2.	When my child starts a project such as a model, puzzle, painting, he/she works at it without stopping until completed, even if it takes a long time.	1	2	3	4	5	6	7
3.	My child can sit quietly through a family meal without fidgeting in his/her chair or getting out of his/her chair.	1	2	3	4	5	6	7
4.	When a new family rule is made for my child, he/she adjusts fairly quickly to it.	1	2	3	4	5	6	7
5.	My child cries and screams so hard he/she gets red in the face and short of breath.	1	2	3	4	5	6	7
6.	If my child is in a bad mood, he/she can easily be joked out of it.	1	2	3	4	5	6	7
7.	When first meeting new children, my child is bashful.	1	2	3	4	5	6	7
8.	When my child is read a story, he/she becomes bored or distracted in a half hour or less.	1	2	3	4	5	6	7
9.	My child is uncomfortable showing off or performing in front of new visitors to the home.	1	2	3	4	5	6	7
10.	My child is at ease within a few visits when visiting at someone else's home.	1	2	3	4	5	6	7
11.	When upset or annoyed with a task, my child whines briefly rather than yelling or crying.	1	2	3	4	5	6	7
12.	If my child wants a toy or candy (while shopping), he/she will easily accept something else offered instead.	1	2	3	4	5	6	7
13.	When my child moves about in the house or outdoors, he/she runs rather than walks.	1	2	3	4	5	6	7
14.	If desired outdoor activity must be postponed due to bad weather, my child stays disappointed for most of the day.	1	2	3	4	5	6	7
15.	My child prefers active games involving running and jumping, etc., rather than games in which he/she must sit.	1	2	3	4	5	6	7
16.	If my child resists some procedure, such as having hair cut, brushed, or washed, he/she will continue to resist it for at least several months.	1	2	3	4	5	6	7
17.	When taken away from an activity my child enjoys, he/she tends to protest strongly, by intense fussing.	1	2	3	4	5	6	7
18.	When my child is promised something in the future, he/she constantly keeps reminding parents.	1	2	3	4	5	6	7
19.	When in the park, at a party, or visiting, my child will go up to strange children and join in their play.	1	2	3	4	5	6	7
20.	If my child is shy with a strange adult, he/she quickly (within a half hour or so) gets over this.	1	2	3	4	5	6	7
21.	My child sits still to have a story told or read, or a song sung.	1	2	3	4	5	6	7

1 hardly ever	2 infrequently	3 once in a while	4 sometimes	5 often	6 very often	7 almost always

22.	When scolded or reprimanded by parents, my child reacts mildly, such as whining or complaining, rather than strongly, with crying or screaming.	1	2	3	4	5	6	7
23.	When my child becomes angry about something, it is difficult to sidetrack him/her.	1	2	3	4	5	6	7
24.	When learning a new physical activity (such as hopping, skating, bike riding), my child will spend long periods of time practicing.	1	2	3	4	5	6	7
25.	When my child and a playmate are together, the other child gets more upset about things (sharing toys, taking turns, etc.) than my child.	1	2	3	4	5	6	7
26.	When the family takes a trip, my child immediately makes himself/herself at home in the new surroundings.	1	2	3	4	5	6	7
27.	When shopping together and mother does not buy candy, toys, or clothing that child wants, he/she cries and yells.	1	2	3	4	5	6	7
28.	If my child is upset, it is hard to comfort him/her.	1	2	3	4	5	6	7
29.	When the weather is bad and my child is confined to the house, he/she runs around and cannot be entertained by quiet activities.	1	2	3	4	5	6	7
30.	My child is immediately friendly with and approaches unknown adults who visit our home.	1	2	3	4	5	6	7
31.	When in the doctor's office for some uncomfortable procedure, my child is difficult to manage despite reassurance or promises of rewards for good behavior.	1	2	3	4	5	6	7
32.	When a toy or game is difficult, my child will quickly turn to another activity.	1	2	3	4	5	6	7
33.	In a new situation such as a nursery school, my child is still uncomfortable even after a few days.	1	2	3	4	5	6	7
34.	Although my child dislikes some procedures (such as nail cutting or hair brushing), he/she will easily allow it if watching television or being entertained while it is done.	1	2	3	4	5	6	7
35.	My child can sit quietly through an entire children's movie, baseball game, or a long TV program.	1	2	3	4	5	6	7
36.	When my child objects to wearing certain clothing, he/she argues loudly, yells, cries.	1	2	3	4	5	6	7
37.	My child tends to give up when faced with a puzzle or a block structure that is difficult.	1	2	3	4	5	6	7
38.	When there is a change in daily routine, such as not being able to go to school, change of usual daily activities, etc., my child easily goes along with the new routine.	1	2	3	4	5	6	7
39.	When sitting, my child swings his/her legs, fidgets, or generally has his/her hands in constant motion.	1	2	3	4	5	6	7
40.	The first time my child is left in a new situation without mother (such as school, nursery), he/she gets upset.	1	2	3	4	5	6	7
41.	If my child starts to play with something and I want him/her to stop, it is hard to turn his/her attention to something else.	1	2	3	4	5	6	7
42.	My child gets involved in quiet activities such as crafts, watching television, reading, or looking at picture books.	1	2	3	4	5	6	7
43.	My child feels free to smile and laugh when around people for the first time.	1	2	3	4	5	6	7
44.	When away from home (for example, on vacation), my child has difficulty in adjusting to routines and schedules that are different from those at home.	1	2	3	4	5	6	7
45.	My child seems to take things matter-of-factly, accepts events in stride without getting very excited.	1	2	3	4	5	6	7
46.	When playing with a friend, my child gets bored with one activity sooner than the other child.	1	2	3	4	5	6	7
47.	My child can be stopped from pestering if he/she is given something else to do.	1	2	3	4	5	6	7
48.	My child can be happy for a car ride of an hour or more if he/she has a favorite toy or game to play with.	1	2	3	4	5	6	7

Thank You

Appendix E

Demographic Information Form

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 group: (check all the apply)
_____ Caucasian _____ African American _____ Hispanic _____ Asian
_____ Native American _____ Other (specify)

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

Mother's Occupation: _____
(please specify the job title, not where you work)

Years of Education (indicate highest level)
_____ completed graduate degree
_____ college graduate
_____ some college, no degree
_____ high school 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 title, not where you work)

Years of Education (indicate highest level)
_____ completed graduate degree
_____ college graduate
_____ some college, no degree
_____ high school 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 – 20,999 ____ $21,000 – 30,999
____ $31,000 – 40,999 ____ $41,000 – 50,999 ____ $51,000 – 60,999
____ $61,000 – 10,999 ____ $ 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.

Appendix F

General and Suggestive Interview Coding Scheme

The Child Study Team members will score the correct and erroneous information on individual coding sheets. The value will reflect the completeness of the answer. The response will then be coded based upon the prompt level at which the information is given (i.e., OE-1, TOE-1, OE-3, and LQ) in the scoring sheet. The coded features are grouped into four categories: central crime (six features), central appearance (seven features), peripheral crime (seven features), and peripheral appearance (eight features). Total points for each category will be added for both correct and incorrect responses. Thus for each interview eight sets of scores will be yielded: correct central crime, incorrect central crime, correct central appearance, incorrect central appearance, correct peripheral crime, incorrect peripheral crime, correct peripheral appearance, incorrect peripheral appearance.

The first numeric score will indicate how completely the children answered the question. The coding for correct/incorrect point values will be assigned at all open-ended level as follows: Elaborated credit (3 points) will be given when the children gives correct/incorrect information with details (e.g., **curly** brown hair) and/or dialogue, Complete (2 points) will be given when the children give correct/incorrect information alone, and Partial (1 point) will be given when they give some correct/incorrect information (e.g., detail or correct dialogue). Credit for elaboration does not have to be given at the time the correct/incorrect response is given. For example, children can provide this information at the OE-1, OE-3, or even in response to an NLQ in the

suggestive interview. The point value of 0 will be assigned when the children do not respond with an answer, or if they indicate they do not know the answer.

The second numeric score will reflect the level (i.e., OE-1, TOE-1, or LQ) at which the children respond correctly/incorrectly. For example, if they correctly/incorrectly respond at the opened –ended level (OE-1 or TOE-1), the point value assigned will be 4. In addition, the OE-3 prompt level point value assigned will be 2. Finally, if the correct/incorrect response is supplied at the LQ level the point value assigned will be 1. The prompt level point will reflect the level at which the correct/incorrect information is given, not based on the level the elaboration was given. For example, should the children give correct/incorrect dialogue at the OE-1 level, but not give the correct/incorrect answer until the OE-3 level the point value assigned for level will be 2 reflecting the level where the correct information was obtained. However, if the correct response is not given at all the children will receive credit for the elaborated response and assigned a point value based reflective of the level at which the elaboration is given. The point values are weighted to reflect the difficulty of the task.

Special cases

1). If children initially give the wrong answer but later, during the interview, correct themselves, it is considered a spontaneous correction and will be coded as if the wrong answer had not been given. For example, when a child provides the correct information when asked about another feature. Another example is when a child responds affirmatively to both the PLQ and the NLQ and is subsequently asked to choose which one is the correct response and he or she correctly responds and later give erroneous information spontaneously, then code the information as error only.

2). Both the gist dialogue and the verbatim statement will be scored as elaboration whether it is given as a direct quote or given indirectly. For example, it is not necessary for the children to remember the exactly wording of "Get back here, stop, stop, that's my bike, come back, come back," it would be acceptable for children to state that the girl yelled to come back, or to state "She said, come back with my bike."

3). In all cases, the children will be given the maximum number of points. For example, if a child gives correct dialogue at the OE-1 level, but does not receive credit for the specific feature until the LQ level the coder will figure the score both ways and allow the child the maximum point value. However, if no information is provided for a feature due to an experimenter/interviewer error (IE) no credit will be given unless the correct response is given prior to the error. Further, if the child provides information at the OE-1 or TOE-1 level, but the interviewer mistakenly asks for information for the same features at the OE-3 or LQ level, coders should ignore the OE-3 or LQ level response.

General interview scoring

A.) Open-ended responses: see above instructions to score OE-1, TOE-1, and OE-3 responses.

B.) For the leading questions use the following chart to assign numeric scores.

Positive LQ	**Negative LQ**	**Score**	**Specific Terms**
IDK	No	1C point	Correct Denial
IDK	Yes	1E point	False Alarm
No	IDK	1E point	Miss
Yes	IDK	1C point	Hit
Positive LQ	**Negative LQ**	**Score**	**Specific Terms**
No	No	1E/1C point	Miss + Correct Denial
Yes	Yes	1C/1E	Hit + False Alarm
Yes	No	2C points	Hit + Correct Denial
No	Yes	2e points	Miss + False Alarm

Suggestive interview scoring

The suggestive interview will be scored in the same manner for answers given at the OE-1, TOE-1 level. In addition, the following chart will assist in clarifying the scoring process for the suggestive interview only.

A.) For open-ended responses (see general interview scoring)

B.) For NLQ response use the following chart:

OE-1 and TOE-1	**NLQ**	**Correct**	**Error**
Feature is present and CORRECT	"No" and gives incorrect detail	OE-1	1 point
	"No" and gives correct response	OE-1	0 point
	"No" only	OE-1	0 point
	IDK or no answer	OE-1	1 point
	"Yes" with correct elaboration	1 point	2 points
	"Yes" with incorrect elaboration	0 point	3 points
	"Yes" only	0 point	2 points
Feature is present and INCORRECT	"No" and gives corrected response	3 points	0 point
	"No" and gives correct elaboration	1 point	OE-1
	"No" and gives incorrect elaboration	0 point	OE-1
	"No" only	0 point	OE-1
	IDK or no answer	0 point	OE-1
	"Yes" with correct elaboration	1 point	OE-1
	"Yes" with incorrect elaboration	0 point	OE-1
	"Yes" only	0 point	OE-1
OE-1 and TOE-1	**NLQ**	**Correct**	**Error**
Feature is ABSENT	"No" and gives correct response/elaboration	3 points	0 point
	"No" and gives incorrect elaboration	2 points	1 point
	"No" only	2 points	0 point
	IDK or no answer	0 point	0 point
	"Yes" with correct elaboration	1 point	2 points
	"Yes" with incorrect elaboration	0 point	3 points
	"Yes" only	0 point	2 points

Correct and Incorrect Responses by Features

FEATURE **BIKE**

3. **Owner**

Complete: Girl or her bike or girl's bike 2 points

ERROR

Complete: Boy or Dad or anyone else. 2 points

4. **Color of the Bike**

Elaboration: Black bike with Trek written on it 3 points
Complete: Black 2 points
Partial: Dark or blackish blue or purple 1 point

ERROR

Elaboration: Incorrect color and incorrect detail 3 points
Complete: Red or another other color not listed above 2 points
Partial: Incorrect detail 1 point

5. **Model of The Bike**

Elaboration: Mountain bike with water bottle holder or 15 speed 3 points
Complete: Mountain bike, or straight handlebars or other correct features 2 points
Partial: 15 speed, or for both girls and boys 1 point

ERROR

Elaboration: 10 speed and an incorrect feature 3 points
Complete: 10 speed or curved handlebars or for boys or girls 2 points
Partial: Incorrect features of the bike 1 point

FEATURE **ACTIONS**

6. **What Was The Girl Doing Prior to The Boy's Arrival**

6a. **Sitting**

Elaboration: Sitting on a bench or at a table 3 points
Complete: Sitting 2 points
Partial: In a picnic area or the bike was next to her 1 point

ERROR

Elaboration: Incorrect detail 3 points
Complete: Swinging, or any other answer not listed 2 points
Partial: Incorrect answer and incorrect detail 1 point

8. **Boy First Saw The Bike**

Elaboration: Touched it and tells where (seat, breaks) or looked at tires 3 points
Complete: Touched it, grabbed it, wheeled away, tried to take it away, or played with the handlebars or brakes 2 points

ERROR

Elaboration: Wrong actions, i.e. kicked the bikes, and wrong dialogue 3 points
Complete: Walked up to the bike or kicked the bike 2 points

9. What Were They Arguing About

Elaboration: Use of Bike and dialogue on why she said no — 3 points
Complete: The use of the bike or an implication of wanting to take it — 2 points

ERROR

Elaboration: Incorrect answer and incorrect dialogue — 3 points
Complete: She wanted the boy to sit somewhere else or argued about something else — 2 points
Partial: Incorrect dialogue — 1 point

10. Did The Boy Touch The Girl

Elaboration: Punched her in the left arm or with right hand — 3 points
Complete: Punched her in the arm — 2 points
Partial: Punched, slugged, touched, or hit her — 1 point

ERROR

Elaboration: Hit her anywhere else other than the arm and wrong dialogue — 3 points
Complete: Hit her anywhere else other than the arm, pushed her. — 2 point

11. Girl's Response When Boy First Tried to Take Bike

11a. Struggled

Elaboration: Struggled and some form of dialogue — 3 points
Complete: Struggled, wrestled, grabbed bike away, tried to take the bike — 2 points
Partial: Stood in front of it, pulling on bike, took it back — 1 point

ERROR

Elaboration: Incorrect answer and incorrect dialogue — 3 points
Complete: Anything that does not include a struggle — 2 points
Partial: Incorrect dialogue — 1 point

11b. Moved Bike

Elaboration: Moved the bike to the right side of the bench — 3 points
Complete: Moved bike to the other side of her (bench) — 2 points
Partial: Moved bike — 1 point

ERROR

Elaboration: Incorrect answer and incorrect dialogue — 3 points
Complete: Anything that does not include moving the bike — 2 points
Partial: incorrect dialogue — 1 point

12. Boy's Response When She Wouldn't Let Him Use The Bike

12a. Slit Throat

Elaboration: Slit throat while walking away — 3 points
Complete: Slit throat, by verbal response or action — 2 points

ERROR

Complete: Anything that does not include that specific action — 2 points

12b. Took Bike

Elaboration: Rode off …to the right side of the screen or gives dialogue or sneaks up from behind — 3 points

Complete: Crabbed bike and rode away or stole or took bike 2 points
Partial: Used bike or borrowed bike or dialogue or sneaked up 1 point
ERROR
Elaboration: Incorrect answer and incorrect dialogue 3 points
Complete: Gave the bike back or other incorrect information 2 points
Partial: Incorrect dialogue 1 point

13. Boy Called Girl a Name
Elaboration: Stupid jerk 3 points
Complete: Stupid, or jerk 2 points
ERROR
Elaboration: Incorrect answer and incorrect dialogue 3 points
Complete: Any other name 2 points
Partial: incorrect dialogue 1 point

14. Girl's Reaction When The Boy Took The Bike
14a. Girl's Emotional Response
Elaboration: Angry and give dialogue 3 points
Complete: Angry, mad 2 points
Partial: Upset, or gives dialogue 1 point
ERROR
Elaboration: Incorrect answer and incorrect dialogue 3 points
Complete: Sad or anything that does not imply anger 2 points
Partial: Incorrect dialogue 1 point

15. Who Came Up To The Girl
Elaboration: Father and gives dialogue, or indicates father put his hand on shoulder (or around her) or they went to look for the bike 3 points
Complete: father, dad 2 points
Partial: A man 1 point
ERROR
Elaboration: Incorrect answer and incorrect dialogue 3 points
Complete: Any other person than as described above 2 points
Partial: Incorrect dialogue 1 point

FEATURE PHYSICAL CHARACTERISTICS
**** ONLY GIVE ELABORATION POINTS IF IT HELPS CODE THE ANSWERS OR IT ASSISTS THE INVESTIGATOR IN THE INDENDIFICATION OF THE PERPETRATOR.****

17. Boy's Name
Complete: Frankie, Frank 2 points
ERROR
Complete: Any other name 2 points

18. Boy's Hair Color

Elaboration: Dark Brown 3 points
Complete: Brown, black 2 points
Partial: dark 1 point
ERROR
Complete: Blonde or light anything 2 points

19. Boy's Hair Length
Elaboration: Gives length and bangs, or curled around face, wavy 3 points
Complete: Short, shows length to the bottom of the chin, states like mine (and it falls within the parameters) 2 points
ERROR:
Elaboration: Long and in a ponytail 3 points
Complete: Any length implied that falls beneath the chin 2 points

20. Girl's Name
Complete: Sport, kid, didn't say the name 3 points
Partial: Correct denial of Ashley and Frankie or correct denial and IDK 2 points
ERROR:
Complete: Ashley, Frainkie, or any other name 2 points

21. Girl's Hair Color
Elaboration: Blonde and give length, wavy, or bangs 3 points
Complete: Blonde, light blonde, blondish, yellow 2 points
Partial: Light, blondish brown, or gives length 1 point
ERROR:
Elaboration: Incorrect color and incorrect detail 3 points
Complete: Incorrect color 2 points
Partial: Incorrect detail 1 point

22. Which Child Was Taller
Elaboration: Boy and specify by 6-10 inches 3 points
Complete: Boy 2 points
ERROR:
Elaboration: Incorrect gender and incorrect detail 3 points
Complete: Girl 2 points

23. Which Child Was Older
Elaboration: Boy and specify age range for boy 13-15 or girl 8-10 3 points
Complete: Boy 2 points
ERROR
Elaboration: Incorrect gender and incorrect detail 3 points
Complete: Girl 2 points

24. Father's Hair Color
Elaboration: Correct color and receding hairline, mustache, short hair, glasses 3 points
Complete: Black, dark brown, brown 2 points

Partial: Dark or any other correct feature	1 point
ERROR	
Elaboration: Incorrect color and incorrect feature	3 points
Complete: Incorrect color	2 points
Partial: Incorrect feature of dad	1 point

FEATURE CLOTHING

25. Boy's Clothing
25a. Boy's Shirt

Elaboration: Black and with white lettering, wore jeans	3 points
Complete: Black shirt	2 points
Partial: Dark, wore jeans, or white letters on shirt	1 point
ERROR	
Elaboration: Two or more incorrect items	3 points
Complete: Any other color or incorrect items	2 points
Partial: One incorrect item	1 point

25b. Boy's Shoes

Elaboration: Hiking boots and brown	3 points
Complete: Boots, hiking boots	2 points
Partial: Brown shoes	1 point
ERROR	
Elaboration: Incorrect type and color of shoes	3 points
Complete: any other type of shoes	2 points
Partial: Incorrect color of the shoes	1 point

26. Girl's Clothing
26a. Girl's Pants

Elaboration: Wore jeans, and white t-shirt	3 points
Complete: Jeans, blue jeans	2 points
Partial: Pants or slacks or a white t-shirt	1 point
ERROR	
Elaboration: Incorrect type of pants and in incorrect item	3 points
Complete: Wore shorts	2 points
Partial: Wrong color of shirt or an incorrect item	1 point

26b. Girl's Shoes

Elaboration: Sneakers and white	3 points
Complete: Sneakers, Tennis shoes, Tenny Runners	2 points
Partial: White shoes	1 point
ERROR	
Elaboration: Incorrect type and color of shoes	3 points
Complete: Any other type of shoe	2 points
Partial: Incorrect color	1 point

27. Watch

Elaboration: Boy's and big and black	3 points
Complete: Boy's and big or black	2 points
Partial: Boy's or big or black	1 point
ERROR	
Elaboration: Girl's (or dad's) and incorrect color or detail	3 points
Complete: Girls' or dad's and small gold watch	2 points
Partial: girls', dad's, or describes an small or gold	1 point

29. Gender of Perpetrator

Complete: Boy	2 points
ERROR	
Complete: Girl	2 points

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Chiung-Fen Chen

Signature of Author

7-29-2002

Date

The Effects of Age, Interview Style, Time Delay, and Temperament on Children's Suggestibility

Title of Thesis

Signature of Graduate Office Staff Member

8-7-02

Date

Approved