

AN ABSTRACT OF THE THESIS OF

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in Psychology presented on April 10, 2003

Title: Developmental Differences in Children's Immediate and Delayed Memory for Emotionally Negative and Neutral Events

Abstract approved: 

This study examined the effects of role of age, temperament, emotion, and interview prompt on children's memory recall. Thirty-four preschool children and 34 elementary school children were interviewed about a story immediately and one week after watching a film containing an emotionally neutral or an emotionally negative ending. Initially younger children reported more features than older children, but not after one week. More details were reported at the initial interview than the one-week interview for children of both age groups. Overall, children provided more accurate and complete responses to general open-ended prompts than non-leading and leading/misleading prompts. However, younger children reported more features and details to non-leading and leading/misleading prompts than the older children. Children who viewed the emotionally negative film were able to provide more features and details to open-ended prompts than those who viewed the emotionally neutral film. Children who viewed the emotionally neutral film provided more features and details than those children who viewed the emotionally negative film when using leading/misleading prompts. All children were able to recognize the protagonist's mood at the beginning of the story, although younger children who viewed the neutral story had difficulty identifying the mood at the end of the story, whereas, all of the other children did not. Individual differences were not significant.

DEVELOPMENTAL DIFFERENCES IN  
CHILDREN'S IMMEDIATE AND DELAYED MEMORY  
FOR EMOTIONALLY NEGATIVE AND NEUTRAL EVENTS

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A Thesis

Presented to

the Department of Psychology and Special Education

EMPORIA STATE UNIVERSITY

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In Partial Fulfillment

of the Requirement for the Degree

Master of Science

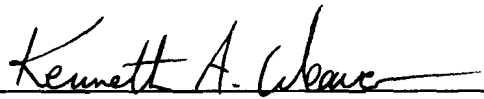
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by

Corey L. Palmer

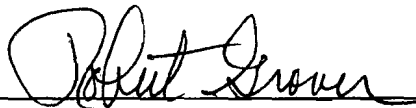
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Approved for the Department of  
Psychology and Special Education



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Approved for the Graduate Council

## ACKNOWLEDGMENTS

My sincerest appreciation is due to my committee members Dr. Holmes and Dr. Iyer for their thoughtful comments and helpful suggestions. I am grateful for the time and participation they have given as being part of the thesis committee.

Dr. Weaver has boundless enthusiasm and dedication for his students. I am inspired and motivated to excel by his encouragement, not only on this project but for all of my academic endeavors. I also thank the ESU faculty and staff beyond the Psychology and Special Education department who have expressed interest in my project and have offered continuous encouragement and advice.

I thank the children and their families who participated in this study. Despite all the frustrations, working with them was the best part of my thesis project. I am also in debt to Vanessa Dragoo, the illustrator, and Technology & Computing Services staff Tony Marthaler and Tim Bruns who put together my film despite other numerous projects they were busy with. Connie Baumgardner always had time to listen to problems and offer ways to help and I am truly grateful.

I appreciate the Child Study Team who has served countless hours training, interviewing, and entering data. I am grateful for past members who have taught me experimental design, endurance and the eventual reward, and most importantly, friendship.

A special thank you goes to friends and family who had more confidence in my abilities than I had in myself. Their never-ending support and encouragement ensured my perseverance. I am especially grateful to my mother, Jane Palmer, who was never farther than a phone call away.

Most gratefully, I acknowledge Dr. Lauren Shapiro, my thesis chair and mentor. I know no other faculty member who devotes as much time and effort in their students' work as she does. Her expectations demand success, and Dr. Shapiro is always there providing guidance and support along the way often sacrificing time with her family. Without her, this project would not have been possible.

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## CHAPTER 1

### INTRODUCTION

Event memories, both pleasant and unpleasant, serve as the foundation for people's identity, interpersonal relationships, and everyday functioning. Past experiences shape people's perception and interpretation of current situations and influence their emotional reactions to current experiences. People who are victims or witnesses of traumatic events may recall the experience vividly or not at all. The negative emotions associated with these situations may affect interpersonal interactions and people's performance of daily tasks to the degree that they may develop psychological disorders. For example, some individuals suffering from Post Traumatic Stress Disorder may have flashbacks of the negative event that intrude on regular thought processes and sleep. These involuntary memories can be so distressing that people 're-live' the event, feeling the original emotions and causing chronic anxiety. In contrast, other victims of trauma are unable to retrieve either some or the entire event voluntarily. As part of the healing process, clinicians help all trauma patients to both process and cope with these memories. To be more effective, it is important that psychologists understand how various factors affect event recall.

In the last three decades, investigators have examined child and adult eyewitnesses' recall of traumatic events. The current study employed the eyewitness paradigm to examine how age, emotionality of events, and temperament affect children's ability to store and retrieve event information over time. Past research has shown that children in middle childhood are more competent in terms of accuracy and completeness than those in early childhood at remembering information about events (e.g., Glenn,

1980; Roberts & Blades, 1996). It is less clear, however, whether preschool and elementary school children process traumatic events differently than common events. The emotional valence of events (i.e., whether they elicit positive or negative responses) is also considered to be an important influence on recall (e.g., Christianson, 1992; Stein, Wade, & Liwag, 1997). Overall, experts on eyewitness testimony believe that high levels of stress, such as those that occur with violence or trauma, will hinder memory accuracy (e.g., Ceci & Bruck, 1993; Kassin, Ellsworth, & Smith, 1989; Soza, Bahrnick, & Parker, 1999) and many clinicians would agree. The research results, unfortunately, are mixed. Some studies report that recall was quite good (e.g., Bohannon, 1988; Yuille & Cutshall, 1989), whereas others have shown that traumatic events are not as well recalled as everyday events (e.g., Clifford & Holin, 1981; Neisser & Harsch, 1992). Finally, recent evidence shows that personality styles may interfere with a child's storage of information, thereby preventing accurate recall (e.g., Cooney & Holmes, 1998).

It is important for clinicians to understand how different factors affect the accuracy of children's memory and the circumstances under which distortion may occur. In this section, information about memory processes will be followed by a review of the literature investigating the role of age, event emotionality, and time delay on memory, and the relationship between temperament and memory.

### *Event Schemas*

One way that children organize and interpret activities in their everyday life is through cognitive schemas (i.e., mental representations). According to schema theory, information processing and comprehension involves the construction of a schema from general knowledge and the integration of new information as new events are experienced

(Bartlett, 1932). Event schemas, which develop during early childhood, serve to organize children's knowledge about what typically happens in a given activity. Because event schemas are the result of concrete experiences with events (Fivush & Slackman, 1986; Nelson, 1986), children as young as 3 years are able to provide reports about familiar events, but have difficulty discussing unfamiliar events (Hudson & Nelson, 1986). Interestingly, their knowledge reports resemble those of adults in that they are goal-directed and consist of temporally organized actions for a typical incident (Nelson, 1986). Children's knowledge reports resemble other accounts of the same event and the information is consistent over time. Except for minor variations due to the audience and the type of questions used to elicit the information, reports by the same person for a particular event will be similar to other individuals who shared the experience.

Event schemas are also used to guide recall of past experiences (Nelson, 1986). When relating a personal episode, general aspects are still present but the structure of the narrative also reflects what was unique (Nelson, 1986). Unlike reports based on the child's knowledge, personal experiences are not consistent across reports by different individuals because children's perception of their emotional reaction to an event varies. Development in children's ability to relate past events was shown in Hudson and Shapiro's (1991) research. Children ages 6 to 11 years were better at talking about their personal experiences than were younger children. However, recall continues to be limited by children's familiarity with the event and by the complexity of the specific incident, even in middle childhood.

### *Story Understanding and Recall*

In addition to actual experiences, stories serve as another source that children use to form event schemas. Conversely, to understand stories children need to use both event schemas and story schemas. A story schema refers to mental representation of the common elements in the story structure, such as a formal beginning, setting, problem-resolution sequence, and formal ending (Mandler & Goodman, 1982; Stein & Glenn, 1979). It guides the listener in organizing story information into salient parts, thereby facilitating recall. That is, story schemas are used to understand and to classify story components by allowing children to anticipate the next story element even though the content changes from story to story (Bower, 1976; Nezworski, Stein, & Trabasso, 1982; Shapiro & Hudson, 1991; Stein & Glenn, 1979). Although researchers may disagree somewhat on the generic structure of stories, most believe that story sequences include the story protagonist having a motive for action, pursuing a related plan of action, followed by certain results, and ending with reference to emotional reactions to the consequence (Glenn, 1980; Nezworski et al., 1982; Shapiro & Hudson, 1991). Other researchers emphasize the importance of the goal-directed sequence so that the listeners can understand and interpret the story in terms of a hierarchy of the protagonist's purpose, followed by introduction of an obstacle and attempts to attain his/her goal (Rumelhart, 1975). All story researchers agree, however, that the hallmark of a good story is the presence of a problem-resolution structure (Shapiro & Hudson, 1991).

Children as young as four- and five-years-old are capable of recalling central aspects of stories (Greenhoot, 2000; Nezworski et al., 1982; Roberts & Blades, 1996). Children in middle childhood generally recall a larger portion of the story content than

those in early childhood (e.g., Glenn, 1980). When children in Glenn's (1980) study were told a series of stories, third graders recalled more episodes and more statements than did first graders. Third graders also were more capable of drawing causal inferences about the relationship between actions in stories than did first graders. Recent evidence shows that kindergarteners' story recall is mediated by their knowledge and understanding of the story protagonist's goals, intentions, and reputation (Greenhoot, 2000).

### *Developmental Differences in Recall*

Despite early acquisition of event and story knowledge, research has found developmental differences in children's recall of witnessed and experienced events. Superiority in the cognitive and linguistic abilities of elementary school children over preschool children is one reason (Bruck, Ceci, & Hembrooke, 1998; Gordon & Follmer, 1994). As children grow older, they become more aware of memory processes and themselves as learners, and they develop an elaborated knowledge and vocabulary base to use in comprehension and recall of new information (Saarnio, 1993).

The way recall is elicited also contributes to developmental differences in recall. Studies examining children's ability to remember information about events, such as medical examinations, rely on a variety of questions, including free recall/open-ended questions, non-leading questions, leading questions, and misleading/suggestive questions. Free recall/open-ended questions are designed to allow children to tell the story in their own terms and include whatever they find important about the story (e.g., "Tell me everything you can remember about what happened?"). Non-leading questions are more specific than open-ended and give a cue to potentially elicit more information (e.g., "Tell

me what the doctor did.”). Leading questions give correct information that the child can either confirm or deny (e.g., “Did the nurse touch you down there?”). Misleading/suggestive questions give incorrect information that the child can either confirm or deny (e.g., “Your mother stayed with you the whole time, didn’t she?”). In general, free recall elicits accurate, but less complete memory reports by children in early childhood compared to those in middle childhood (e.g., Goodman & Quas, 1997; Ornstein, Shapiro, Clubb, Follmer, & Baker-Ward, 1997). For example, Ornstein et al. (1997) found that even three-year-old children were able to encode and report features of a pediatric checkup and that memorial performance increased with age from five to seven years. Children have also been shown to be accurate when answering non-leading questions (e.g., Cassel & Bjorkland, 1995; Cohen & Harnick 1980; Warren & Lane 1995).

Because more information is encoded than is retrieved spontaneously, it is important that interviewers use more than one method for obtaining an accurate representation of recall and comprehension (Ornstein et al., 1997; Stein & Glenn, 1979). Most interviewers, therefore, employ leading and misleading questions as a means for obtaining additional information. The reasoning behind this strategy is that young children may have encoded the relevant content of an event, but they do not have the same detailed concept of a narrative that older children have (Liwag & Stein, 1995). Therefore, young children should benefit from cues and retrieval instructions to elicit detail not otherwise offered. Unfortunately, this idea is not supported by the research findings. Studies show that elementary school children are superior to preschool children in free recall, but reports by children at different ages are equally inaccurate when leading and misleading questions are used (Ceci & Bruck, 1993; Yarmey, 1984). For example,

Goodman and Quas (1997) asked children ages three to four years, five to six years, and seven to 10 years to recall information that occurred in a distressing medical exam (VCUG, voiding cystourethrogram fluoroscopy). The youngest group provided a higher number of incorrect answers than did both older groups when asked leading and misleading questions.

Another reason for inaccuracy in recall stems from the time delay between the event and retrieval during an interview (Ornstein et al., 1997). In a classic experiment Ebbinghaus found that initial recall was higher than delayed recall. Ebbinghaus's retention paradigm demonstrated that increasing the length of time between the encoding and retrieval stages produced parallel increases in forgetting (Schacter, 1996). Not surprisingly, elementary school aged children do have better encoding and retrieval strategies than do preschool children. Yet, age comparisons of forgetting rates (i.e., how much information is lost over time) consistently fail to produce any evidence of developmental differences (Brainerd, 1997). Some research has found reconstructive errors are more likely to occur as the delay interval between initial encoding and retrieval increases due to information becoming lost or inaccessible over time (e.g., Greenhoot, 2000). For example, Cassel and Bjorklund (1995) observed a decrease in the amount of information children ages six and eight years recalled about a videotaped bicycle theft from their initial to one-month delay interviews. Because the first interview occurred shortly after the event, it served as a proxy for encoding and allowed investigators to determine the rate of forgetting after one week and after one month. Cassel and Bjorklund reported that forgetting was greater for the one month than one week delayed recall, especially for items elicited initially with non-leading questions. Baker-Ward,



Gordon, Ornstein, Larus, and Clubb (1993) assessed recall for pediatric examinations initially and again at one week, three weeks, or six weeks later. They found a decrease in the amount of information children ages three and five years reported after a one-week delay, although seven-year-old children's recall did not significantly decrease until after three weeks.

Studies have used events that varied in their emotionality, including neutral events like pediatric examinations (e.g., Ornstein et al., 1997), positive events like birthday parties (Shapiro, Blackford, Brooks, & Chen, 1997), and negative events like VCUG examinations (Goodman & Quas, 1997). Researchers have examined testimony from two sources, either based on children's experiences with an event or on events portrayed in stories or films (e.g., Cassel & Bjorklund, 1995; Fallin & Banerjee, 1997; Ornstein et al.). For the latter type of stimuli, one issue that arises is whether child witnesses are cognizant of the protagonist's emotional reaction to the event. Children as young as two and three years old are able to discuss with parents their emotions and how other children may be feeling (Lagattuta & Wellman, 2002; Liwag & Stein, 1995; Stein, Trabasso, & Liwag, 1994). Research has shown that toddlers typically label their own current feelings; however, between the ages of two and five years, children develop more sophisticated skills for talking, reasoning about, and explaining emotional experiences (Stein & Jewett, 1986). More specifically, during the preschool years, children's emotion vocabulary expands, and their conversations reveal an increasing awareness of emotions as internal, subjective experiences that are distinct from the behaviors, expressions, and events that coincide with them (Wellman, Harris, Banerjee, & Sinclair, 1995). Fallin and Banerjee (1997) asked children to discuss the emotions of characters in a story with an

interviewer. They found children ages five to six years old were able to identify how someone might feel in a given situation and describe mixed emotions, whereas children three to four years old were only able to describe emotion based on facial expression.

According to Lagattuta and Wellman (2002), a more demanding force exists to regulate intensity, direction, and duration of negative emotions than with positive emotions because they are problematic, disruptive, and involve some type of complication or goal failure. Stein, Wade, and Liwag (1997) stated, "It is during understanding that events take on meaning, significance, and emotional valence, all of which shape subsequent recall." (p. 15). Talking about one's own negative emotion and other people's feelings may provide a special forum for achieving enhanced insights about emotions in regard to their causes, consequences, and connections to other mental states. This idea was supported by investigations examining children's ability to construct personal reports based on events that evoked various emotions. Hudson, Gebelt, Haviland, and Bentivegna (1992) asked four-year-olds to tell different stories about experiences that made them happy, mad, and scared. By analyzing narrative content, they discovered children have different cognitive informational structures for these emotional events. That is, the type of emotion contained in the event influenced the story coherence such that mad and scared stories were goal directed, whereas happy stories were told from the perspective of "being in the moment." Children's ability to relate to a protagonist's situation in a story was studied by Stein and Trabasso (1989). They told kindergarteners to imagine themselves in hypothetical situations, one with a successful outcome and one with a failure outcome. Children were asked to recount the stories and how they would feel under the given circumstances. Stein and Trabasso

(1989) reported that children recalled both positive and negative emotions appropriately. However, because the interest of Stein and her colleagues (e.g., Liwag & Stein, 1995; Stein & Jewett, 1986; Stein, Trabasso, & Liwag, 1994; Stein, Wade, & Trabasso, 1997) lay in children's understanding of emotional events, information on how well children recall original stories was not analyzed.

Given the need to understand how children process emotionally negative events from both an experimental and clinical perspective, it is distressing that few researchers have compared events with different emotional valences as the stimuli for recall. The best way to resolve the debate in the literature as to whether or not children's recall for traumatic events differs from that of ordinary events would be to contrast them directly. This comparison may not have been done in past experimental studies because creating equal stimuli differing only in emotion valence is a difficult task and subjecting children to traumatizing stimuli has ethical implications (Christianson, 1992).

### *The Role of Temperament on Recall*

Another source for individual differences in memory may be temperament or behavioral styles. Thomas and Chess (1977) define temperament as an "expression of behavior." Based on their research on infants, they found nine characteristics defining temperament: Activity Level, Rhythmicity, Adaptability, Approach/Withdrawal, Threshold, Intensity, Distractibility, Persistence, and Mood (see Table 1 for definitions). Several instruments have been developed to measure temperament based on the Thomas and Chess research (e.g., Martin, 1988; McDevitt & Carey, 1995).

According to Robeson (1997), many of these behavioral and emotional aspects of temperament are stable from birth to age nine. However, findings from a longitudinal

Table 1

*Temperament Characteristics as defined by McDevitt and Carey (1995)*

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*Activity Level:* the amount of physical movement during daily routine

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

*Approach:* responses to new persons, places, events

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

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

*Mood:* general amount of pleasant and unpleasant feelings

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

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

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

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study by Guerin and Gottfried (1994) indicate that at least some of these temperament characteristics change during the preschool years. In particular, they found lower activity levels, greater persistence, and increasing reactivity from ages three to five years, this pattern continued throughout middle childhood. Lower activity levels and greater persistence will potentially allow children to focus more on a task at hand. If a child cannot sit still and follow a project to completion, the likelihood of the child recalling information about the project diminishes.

Temperament has been shown to play an important role in how people respond to environmental changes (Kagen, 1994; Martin, 1988) and has been found to affect children's ability to perform various cognitive activities as well (Cooney & Holmes, 1998). Greenhoot, Ornstein, Gordon, and Baker-Ward (1999) revealed a relationship between the temperament of children ages three and five years (measured by the Temperament Assessment Battery for Children, TABC; Martin, 1988) and their ability to encode and retrieve information about a pediatric examination. Their results showed a negative relation between Persistence and both recall in response to general questions (e.g., "What happened?") and leading questions (e.g., "Did the doctor check your heart?") as well as total recall of the event. In contrast, Manageability (a composite score of Adaptability, Ease of Management, and the inverse of Emotional Intensity, which was a combination of Intensity and Mood) was positively related to the number of confabulations (i.e., inaccurate information spontaneously produced) in the initial interview.

Baker-Ward et al. (1993) indicated a negative relationship between children ages three, five, and seven years old who were highly stressed about an aversive medical

procedure they experienced and their ability to recall this event after a six-week delay. Their findings suggest that children who are highly emotional and less adaptable about new circumstances may not encode what happens to them accurately. The immediate and delay recall was positively correlated with Adaptability and with Approach/Withdrawal. In addition, medical professionals involved in the study rated children who had low scores on Adaptability also as having high levels of fear.

Chen (2002) also found that children of certain temperaments reacted differently to the type of questions used to elicit recall. She interviewed children in early and middle children after they watched a video about a bike theft immediately and after a seven week delay. She found that children who are easy-going accurately recalled more central features about the crime than did difficult children as defined by Manageability. Non-persistent children had higher inaccurate recall about peripheral details (e.g., physical characteristics of the victim) than did persistent children.

### *Present Investigation*

The capabilities of children to remember an experience accurately have been in question for some time. Current research indicates young children are able to understand and conceptualize events to create schematic memory at approximately the same age as they can understand and identify emotions of themselves and others. However, children's recall has not been studied previously for emotional stories. This aspect of memory not only has profound implications for eyewitness testimony, but also for clinicians who work with traumatized children.

Individualized characteristics of age and temperament also have some effect on attention, encoding, and retrieval. However, the proficiency of children's emotionally

negative event memory over memory for emotionally neutral events is yet to be determined. A comparison of how developmental differences and temperament could give insight as to why children respond differently in similar situations.

### *Hypotheses*

The present study was designed to examine the role of age, emotionality, and temperament on recall accuracy over time. Age differences were examined by assessing recall in two age groups, preschool and elementary school, for stories portrayed on video. Hypothesis 1 predicted that elementary school children would produce more complete and elaborate memory reports than would preschool children. The effect of forgetting over time was studied by comparing recall initially to recall after one week. Hypothesis 2 predicted that children would remember fewer features and details over time. To investigate the effects of emotional valence on recall, children's memory for an emotionally neutral film versus an emotionally negative film was assessed. Hypothesis 3 predicted that children who viewed the negative version would have more complete and elaborate recall than children who viewed the neutral version because the emotional content in emotionally negative outcome would be more impressed in the children than the neutral content would be. Hypothesis 4 predicted that developmental differences favoring older children would be found for the neutral version, but not the negative version. The rationale was that children at both ages would process the plot for the negative version at a deep level, but younger children were expected to have difficulty processing the plot for the neutral version. In order to test that children recognized the manipulation of emotional valence, measures that examined the emotional impact of the film on the child's mood, identification of the protagonist's mood, and the child's ability

to empathize with the story character were given. Hypothesis 5a predicted that children would better identify the protagonist's mood in the emotionally negative version than in the neutral version. This is consistent with the notion that emotionally negative information would be processed at a deep level and that the manifestation of sadness (e.g., tears) is easy to detect. Hypothesis 5b predicted that older children would be more empathetic to the protagonist than younger children due to their greater event and story understanding. Finally, the role of children's temperament on recall was investigated. Hypothesis 6 predicted that easy-going and persistent children would recall more features and details than difficult and nonpersistent children. That is, those children who adjust well in new situations, are able to focus on the task at hand with relative ease, are not upset easily, and are positive in mood would be able to recall more information than those children who would be unable to adjust, not able to focus on tasks, upset easily, and are negative in mood.



## CHAPTER 2

### METHOD

#### *Participants*

Sixty-four children (ages 4 to 5 years and 7 to 8 years old) participated in this study. Fifteen children were dropped and replaced for various reasons. One preschooler did not complete both interviews within the specified time frame and was consequently replaced. Two preschoolers were replaced because they coincidentally produced a story that is similar to the other condition (e.g., children who viewed the neutral film described a story in which the dog runs away). The experimenter did not follow the appropriate procedure for two elementary school children and one preschooler. Nine preschoolers were dropped because they were unable to provide information in the first interview. Letters to parents explaining the purposes of this research and asking for permission were distributed to local preschools, day care centers, and elementary schools (see Appendix A). Parents who granted permission by returning their forms were contacted so an appointment with an interviewer could be scheduled. Congruent with the demographics of the area, the children were from predominately upper middle and middle class households (8.6% upper class, 35.7% upper middle class, 35.7% middle class, 10% lower middle class, and 1.4% lower class) as indicated by the Hollingshead Four Factor Index of Social Position (Miller, 1991). The majority of the children were Caucasian (77.1% Caucasian, 10% Hispanic, 1.4% African American, 1.4% Asian American, and 1.4% Native American).

## *Materials*

*Stimulus.* A VHS videotape portraying one of two types of illustrated stories—neutral and negative—served as the stimulus for recall in this study. The video, which was approximately two minutes in length, consisted of a series of 10 black and white illustrations with voice narration. Table 2 contains the list of 10 slides per version, 5 of the slides are the same in both versions.

In both stories, a child was playing with her/his dog at nearby park. In order for children to relate to the protagonist, two versions of each type of story were developed to allow girls to view a female protagonist and boys to view a male protagonist. Both the emotional and neutral version contained a problem-resolution action sequence, which has been considered to be the hallmark of a good story. In the neutral version, the dog overturned a picnic lunch and the hungry child had to get a hot dog from a nearby vendor. In the negative version, the dog ran away and the child attempted to find the dog through flyers. A pilot study was conducted to test whether the emotionally negative version generated empathy and feelings of sadness in the children.

*Memory interviews.* The memory interview was hierarchically organized to elicit as much information as possible from the participant (see Appendix B). First, a general open-ended question (OE1 “What happened in the story?”) was asked followed by temporally cued open-ended questions (TOE1 “What was the first thing that happened in the story?” and “What happened next?”). Elaboration questions were used to obtain additional details about targeted information (e.g., “Tell me more about...”). The interviewer then asked children non-leading questions (OE3 “What did the child tell the mother?”) for any feature not previously mentioned. Finally, both positive leading

Table 2

*Description of Action Slides*

<i>Neutral</i>	<i>Negative</i>
1. *Child and dog are sitting on stairs in front of house.	1. *Child and dog are sitting on stairs in front of house.
2. *Child and dog are walking on a sidewalk to the park.	2. *Child and dog are walking on a sidewalk to the park.
3. *Child and dog are playing ball in foreground and other children are playing in the background.	3. *Child and dog are playing ball in foreground and other children are playing in the background.
4. *Child and dog are sitting on a blanket with food. Child is eating a sandwich. A hot dog vender and another dog are in the background.	4. *Child and dog are sitting on a blanket with food. Child is eating a sandwich. A hot dog vender and another dog are in the background.
5. *Child's dog is looking at hot dog vender and other dog.	5. *Child's dog is looking at hot dog vender and other dog.
6. Child's dog is jumping up and the basket and overturned. Food and plates have been scattered.	6. The two dogs are facing each other.
7. Child is packing basket while dog looks sad.	7. Child is running towards the two dogs.
	8. Child is standing alone on the sidewalk with the picnic basket and the dog's leash.

Table 2 continued.

- |   |  |
|---|--|
| 8. Child is taking hot dog from vender as dog sits at child's feet. | 9. Child and mother are hugging.   |
| 9. Child and dog are walking away on the sidewalk.                  | 10. Child is standing with a hammer and a flyer with a picture of the dog and "LOST DOG." Mother sits in background. |
| 10. Child is talking to mother while holding dog and picnic basket. |  |

\*These pictures are the same for both versions.

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(containing accurate information) and misleading (containing inaccurate information) questions were asked for any remaining feature still not provided. The order of positive leading and misleading questions were counterbalanced. Also, the misleading questions for the negative version served as the positive leading questions for the neutral version and vice versa.

*Emotional interview.* The emotional interview consisted of five questions that were used to ascertain the participant's mood before and after the film and to determine if the participant understood and identified with the protagonist's emotions (Appendix C). Prior to the film, children were shown a 10.5 x 26.3 cm sheet containing happy, neutral, and sad faces and told what each face represented. The order of response choices was counterbalanced to avoid bias. Then children were asked to point to the picture that describes their current feelings. After the memory interview, children then asked to point to the picture that displays a) how the protagonist in the story felt at the beginning of the story, b) how the protagonist felt at end of the story, c) how they felt after learning about what happened to the protagonist, and d) how they felt currently.

*Behavior Style Questionnaire (BSQ; McDevitt & Carey, 1995).* The Behavior Style Questionnaire (Appendix D) was used to assess children's temperament. The scale was comprised of 110 questions that measure temperamental characteristics of 3- to 7-year-old children. Each of the items asked the caregiver to rate the child's behavior on a six-point frequency of almost never to almost always. Once tabulated, the item scores produced a category score for nine areas including activity level, rhythmicity, approach-withdrawal, adaptability, intensity, mood, attention span and persistence, distractibility, and sensory threshold. The test publisher, Behavioral-Developmental Initiatives (1996),

reported test-retest reliability as .81 and alpha reliability as .70. According to Carey and McDevitt (1995), most researchers using the BSQ agreed on moderate levels of validity.

### *Procedure*

As required by the Emporia Unified School District, an application was completed requesting permission to distribute the permission letters to parents of children in elementary school. In addition, administration heads of the preschools and day care providers were approached for support and distribution of the research information and permission forms. Once approved, letters were distributed to students in the schools and day care centers. Children were asked to return signed forms to the teacher/day care provider or to have parents mail them directly to the researcher.

Returned permission forms served as the informed consent document. Individual interview times were scheduled with those parents who indicated their child was allowed to participate. Before the experiment began, the researcher obtained verbal permission from the child to participate in the study. Except in one case<sup>1</sup>, each child was left alone to view the filmed story under the pretense that the interviewer needs to finish some work in the next room. The first interview was conducted immediately after the film ended and the second interview occurred approximately one week later (-2/+3 days). The interviews were videotape recorded and the same experimenter conducted both interviews.<sup>2</sup> While the children participated in the experiment, parents completed demographic information (Appendix E) and the Behavioral Style Questionnaire (BSQ; McDevitt & Carey, 1995).

## Scoring

*Memory scores.* Accurate memory represented the information portrayed in the film, whereas inaccurate memory consisted of information not portrayed in the film. Accurate and inaccurate memories were measured two ways. First, the number of features accurately recalled out of 10 features was tallied. Second, responses were coded for how elaborate an answer the child provided. Children who provided a partial response received 1 point (e.g., child said, “there was a dog”), a full response received 2 points (e.g., child said, “the girl and her dog were together”), or an elaborated response received 3 points (e.g., child said, “Sara and her dog were there”) for each feature. To promote interrater reliability, a coding manual (Appendix F) was developed specifying what information consisted of a partial response, a full response, and an elaborated response. Answers were also scored according to the level at which the participant provided the information. Children gave information at one of three levels of prompts (i.e., OE1/TOE1, OE2/OE3, or leading/misleading questions, LQ/MLQ). Incorrect responses were coded the same way.

*Emotional responses.* Responses were assessed to determine if the story influenced the participant and whether the participant understood and empathized with the story’s protagonist. Emotional impact was scored by examining how the child felt after the story compared to how the child felt at the beginning of the session—positive (improvement in mood), negative (decline in mood), no impact (no change). The child’s ability to assess the protagonist’s emotion at the beginning of the story and at the end of the story was coded as accurate or inaccurate. The child’s ability to empathize was measured by comparing how they rated the protagonist’s mood at the end of the story

with how they rated their own mood after learning what happened in the story. If they matched, then they received a “1” for empathy, if they did not they received a “0” for no empathy (or unclear).

*Temperament.* The Behavior Style Questionnaire (BSQ; McDevitt & Carey, 1995) allowed a caregiver to rate the child according to different categories. Scores for categories determined impressions of the child’s temperament. Scores were calculated by the multiplying the number of items rated by the weighted factor score and finding the numerical average for each category. Manageability was devised by summing scores from adaptability, distractibility, emotional intensity, and mood. Unlike the TABC, the BSQ uses high scores to represent negative traits. Easy-going children would be those who adjust well in new situations, are able to focus on the task at hand with relative ease, are not upset easily, and are positive in mood, whereas difficult children would be unable to adjust, not able to focus on tasks, upset easily, and are negative in mood.



## CHAPTER 3

## RESULTS

*Number of Features Recalled Accurately*

A 2 x 2 x 2 x 3 mixed model Analysis of Variance (ANOVA) was conducted.<sup>3</sup>

The between subjects factors were age (preschool vs. elementary school) and version (neutral vs. emotional), whereas the within subjects factors consisted of time (immediate vs. one-week) and type of prompt (open-ended vs. non-leading vs. leading/misleading). The analysis examined the total number of features recalled accurately.

A significant main effect of prompt was interpreted within the significant Age x Prompt,  $F(2, 120) = 10.52, p < .01$ . As shown in Figure 1, elementary school children ( $M = 6.77, SD = 1.91$ ) reported more features than did preschool children ( $M = 5.45, SD = 1.90$ ) in response to the general, open-ended prompt, whereas preschool children ( $M = 1.72, SD = 1.30$ ) provided more features than did elementary school children ( $M = 0.93, SD = 1.14$ ) for the non-leading and leading/misleading prompts. For both age groups, in general, open-ended prompts elicited more features than non-leading prompts. However, there was no difference in the number of features elicited for non-leading and leading/misleading prompts. These findings did not support Hypothesis 1, which predicted that elementary school children would remember more features than preschool children. Although there were not any significant differences in the number of features recalled, the elementary school children's ability to discuss the event was more fluid than the preschool group.

Time effects were examined within the significant Time x Age interaction,  $F(1, 60) = 4.48, p < .05$ . As shown in Figure 2, the preschool children ( $M = 3.07, SD = 1.54$ )

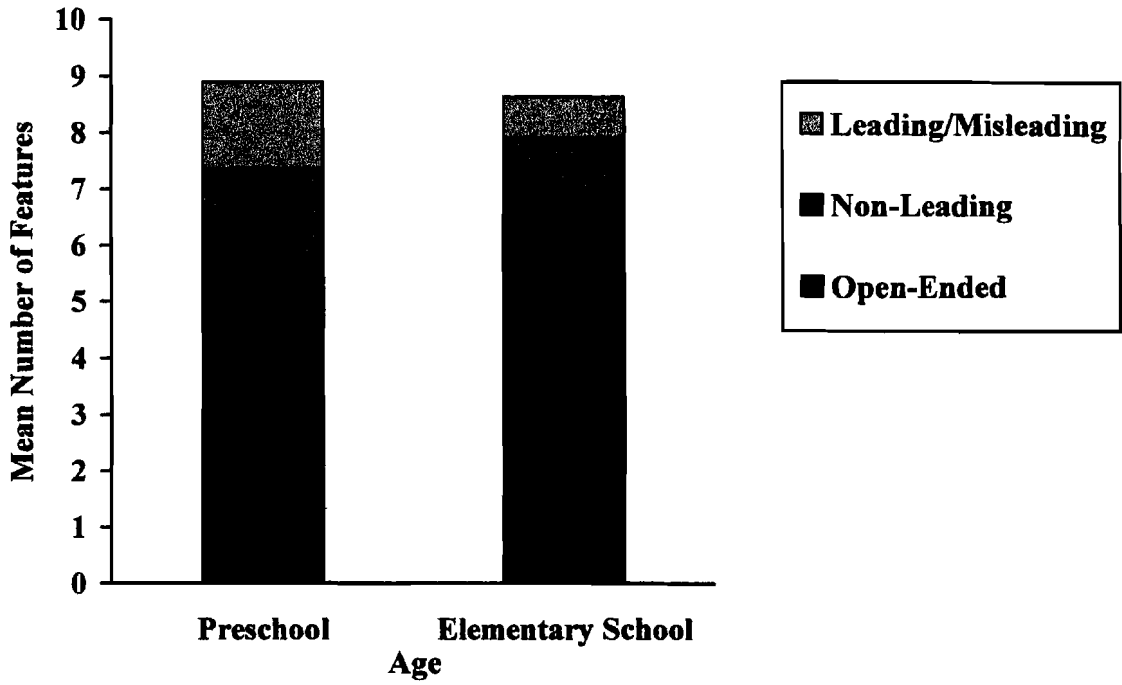


Figure 1. Mean number of total features by prompt and age.

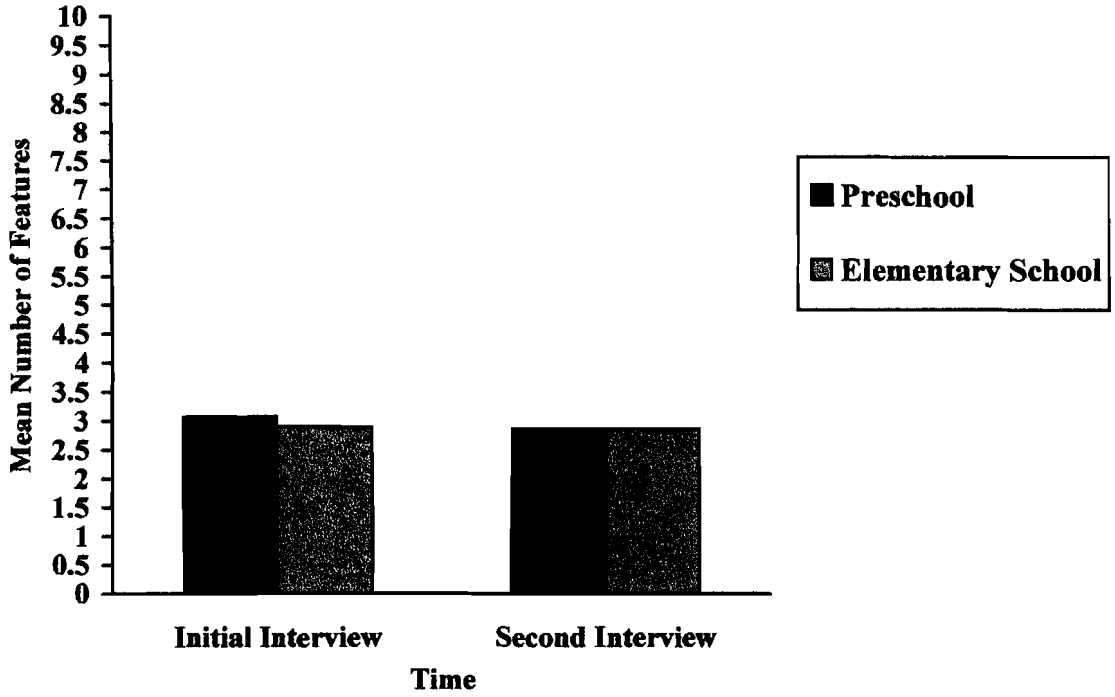
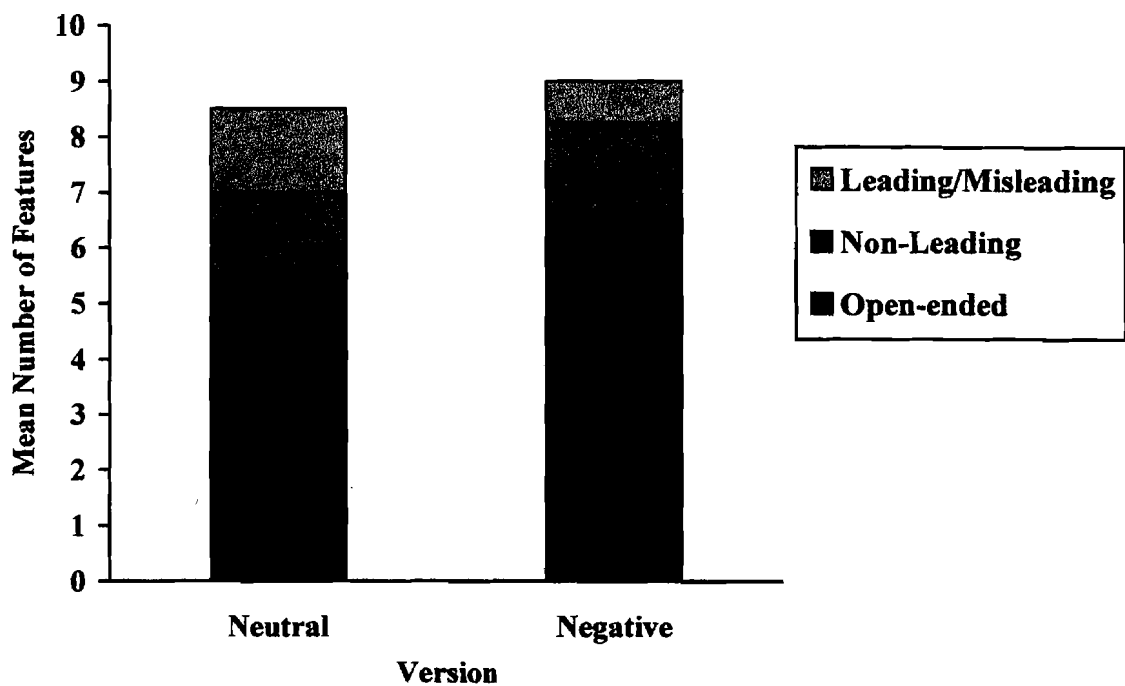


Figure 2. Mean number of features by age and time.

reported more features than the elementary school children ( $M = 2.89$ ,  $SD = 1.16$ ) did initially, but not after one week. However, time differences showing fewer features recalled over time was only found for the younger children ( $M = 2.85$ ,  $SD = 1.44$ ). This finding partially supported Hypothesis 2 that predicted fewer features would be remembered over time.

There was also a significant Prompt x Version interaction,  $F(2, 120) = 6.24$ ,  $p < .01$ . As shown in Figure 3, children who viewed the emotionally negative film ( $M = 6.67$ ,  $SD = 2.05$ ) reported more features when general, open-ended prompts were given than the emotionally neutral film ( $M = 5.55$ ,  $SD = 1.35$ ). Although there was no difference in the number of features reported in response to non-leading questions, children who viewed the emotionally neutral film ( $M = 1.50$ ,  $SD = 1.42$ ) provided more features than those who viewed the emotionally negative film ( $M = 0.75$ ,  $SD = 0.85$ ) when leading/misleading prompts were used. In examining the pattern of reported features, children who viewed the neutral film required more specific prompts in order to provide additional features. In contrast, children who viewed the negative film were able to report the most features using the most general prompt with few additional features elicited through specific prompts. These findings supported Hypothesis 3 predicting that the children who viewed the emotionally negative version would recall more features and details than the children who viewed the neutral version. However, because an Age x Version interaction was not found, there was no support for Hypothesis 4 predicting elementary school children who watched the neutral version would recall more than preschool children.



*Figure 3.* Mean number of total features by prompt and version.

### *Amount of Detail Reported*

A 2 x 2 x 2 x 3 mixed model Analysis of Variance (ANOVA) was conducted using age and version as the between subjects factors and time and prompt as the within subjects factors. The first analysis examined the total amount of detail provided accurately in each report (i.e., total number of elaboration points).

Effects of age and of prompt were interpreted within the significant Age x Prompt,  $F(2, 120) = 14.25, p < .01$ . As shown in Figure 4, developmental differences were found for each type of prompt demonstrating that preschool children ( $M = 4.24, SD = 2.79$ ) needed more specific types of prompts to elicit detailed responses than did elementary school children ( $M = 2.53, SD = 2.79$ ). Regardless of age, the same pattern emerged when the three types of prompts were compared: the most details were provided initially using general, open-ended prompts ( $M = 15.21, SD = 5.03$ ), with fewer details given subsequently. These findings supported Hypothesis 1 that predicted elementary school children would recall more features and detail than younger children.

There was a main effect of time,  $F(1, 60) = 11.29, p < .01$ , showing that children reported more details initially ( $M = 7.45, SD = 3.64$ ) than after one week ( $M = 7.19, SD = 3.95$ ). This finding supported Hypothesis 2 that predicted more features and details would be recalled at the first interview than at the second interview.

Prompt and version effects were also interpreted within the significant Prompt x Version interaction,  $F(2, 120) = 7.41, p < .01$ . As shown in Figure 5, children who viewed the emotionally negative film ( $M = 16.73, SD = 5.79$ ) were able to provide more details than those who viewed the emotionally neutral film ( $M = 13.67, SD = 4.84$ ) when general, open-ended prompts were given. In contrast, children who viewed the

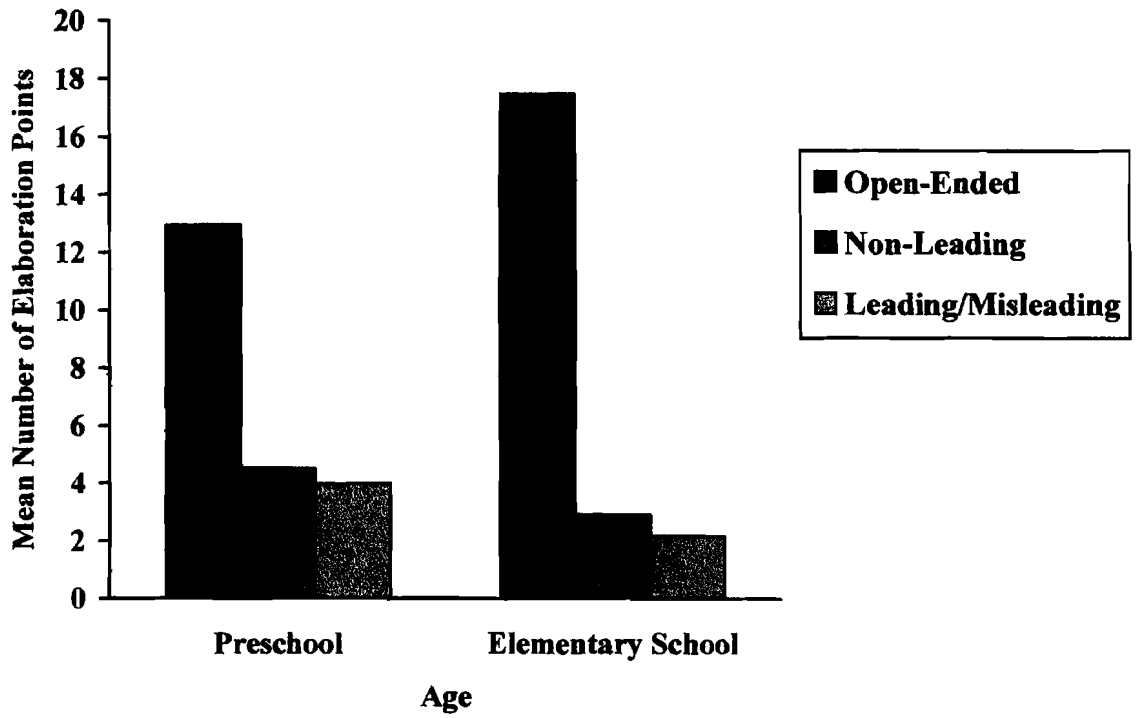


Figure 4. Mean number of elaboration points by prompt and age.

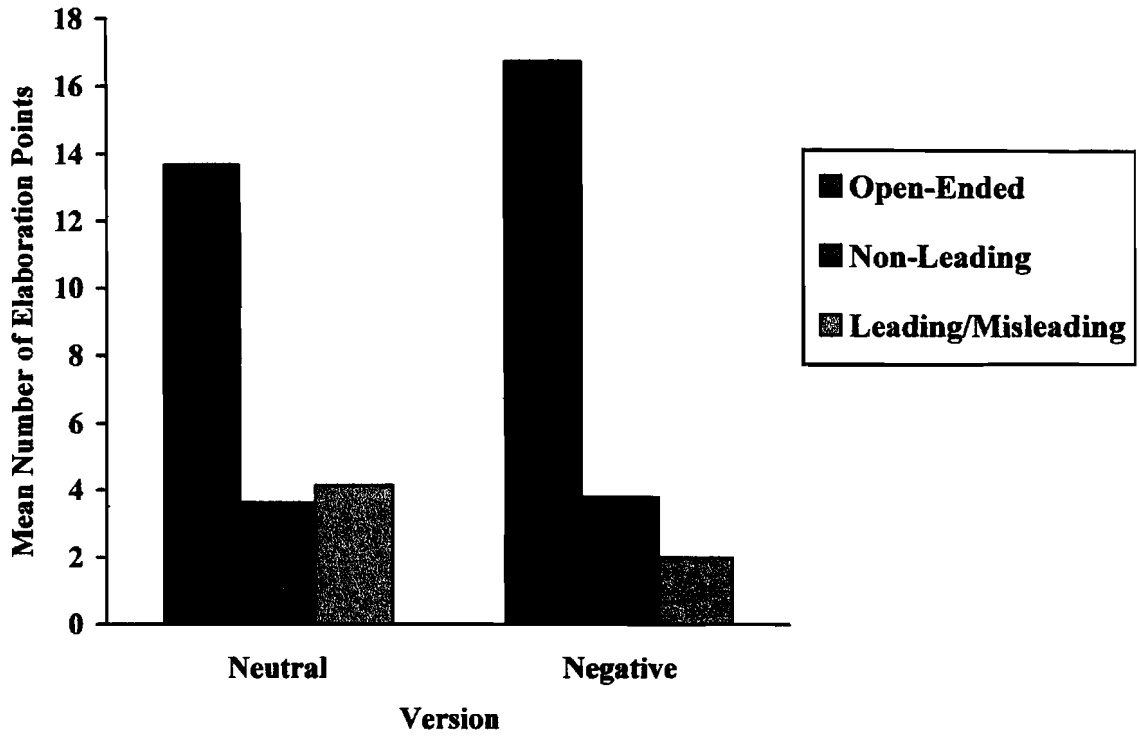


Figure 5. Mean number of elaboration points by prompt and version.



emotionally neutral film ( $M = 4.13, SD = 3.06$ ) provided more details than those who viewed the emotionally negative film ( $M = 2.00, SD = 2.11$ ) when leading/misleading prompts were used, but there were no differences in the amount of detail provided in response to non-leading prompts. The pattern of reporting details followed that of reporting features. Children who viewed the negative film ( $M = 16.73, SD = 5.79$ ) provided the most details in response to general prompts, but fewer additional details as the prompts became more specific. In contrast, non-leading and specific prompts were equal in their ability to elicit additional details from children who viewed the neutral film. These findings also support Hypothesis 3 that predicted that children who viewed the negative version would recall more features and detail than the children who viewed the neutral version. Again, the absence of Age x Version indicated no support was found for Hypothesis 4 predicting elementary school children who viewed the negative version would recall more features and detail than the preschool children who viewed the same version.

### *Emotional Responses*

Two 2 x 2 (Age x Version) Multivariate ANOVAs were conducted to examine the four emotional variables (impact, recognition of protagonist's mood initially and at the end, empathy). The first analysis examined the initial report for these four variables. A main effect of Age was only found for recognition of the protagonist's mood at the end of the story (1 indicates accurate, 0 indicates inaccurate),  $F(1, 59) = 9.59, p < .01$ , showing that preschool children were less capable than elementary children of identifying it accurately with accurate being scored as 1, and inaccurate or unclear scoring 0 ( $M = .77, SD = 0.43$  vs.  $M = 1.0, SD = 0.00$ ).

The second analysis examined the delayed report for these four variables.

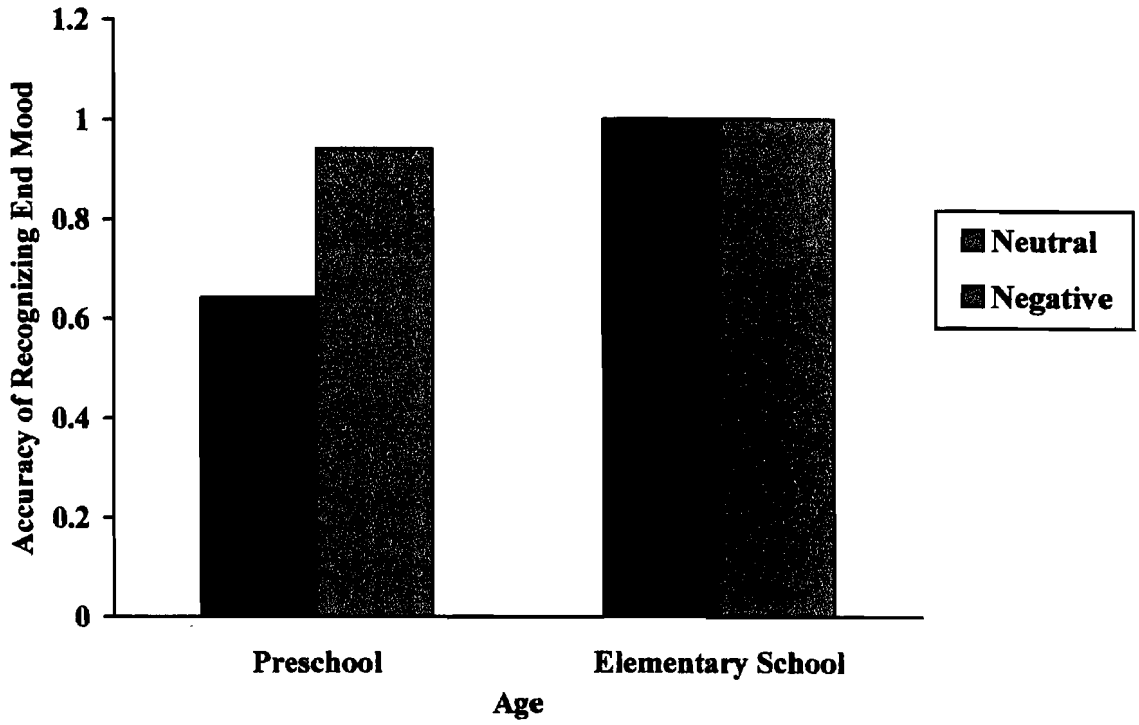
Version effects and Age effects for recognition of protagonist's mood at the end of the film were interpreted within the significant Version x Age interaction,  $F(1, 59) = 4.68, p < .05$ . As shown in Figure 6, the younger children had difficulty accurately recognizing the character's mood in the neutral film ( $M = 0.64, SD = 0.50$ ) than in the negative film ( $M = 1.00, SD = 0.00$ ). This version difference was absent for the older children.

Developmental differences favoring the older children demonstrated greater accuracy in identifying the protagonist's mood in the neutral version, but not in the negative version. These findings supported Hypothesis 5a that predicted children would be able to identify the protagonist's mood in the negative version better than in the neutral version.

However, Hypothesis 5b that predicted elementary school children would be better able to empathize with the protagonist than the preschool children was not supported.

### *Temperament*

Finally, in order to determine the effects of individual characteristics, two Pearson correlations were conducted, one for correct features and one for incorrect features, examining the relationship between temperament with total features (Manageability,  $r = 0.04$ ; Persistence,  $r = 0.05$ ) and with features elicited with leading/misleading prompts (Manageability,  $r = 0.09$ ; Persistence,  $r = -0.11$ ). Neither of the correlations was significant. Thus, no support for Hypothesis 6 was found.



*Figure 6.* Accuracy of recognizing protagonist's end mood by version and age at one week.

## CHAPTER 4

### DISCUSSION

The purpose of the present study was to investigate differences in children's recall of an emotionally negative event versus an emotionally neutral event and how various factors may influence report completeness and elaboration. Specifically, this study sought to explore how children's age and temperament characteristics affected their ability to recall events of different emotionality accurately over time. The findings support a) Hypothesis 1 predicting older children recall more elaborated information than younger children, b) Hypothesis 2 predicting children recall more complete and elaborated information immediately following the film than after a one-week delay, c) Hypothesis 3 predicting children viewing the emotionally negative film recall more complete and elaborated information than children viewing the neutral film and d) Hypothesis 5a predicting children are better able to identify the protagonist's mood in the negative film than in the neutral film.

#### *The Role of Emotion on Recall*

In the present study, children's reports were more complete and elaborate when the event recalled was emotionally negative rather than emotionally neutral. The type of prompt used to elicit retrieval differentially affected the number of features and amount of details reported. Lagattuta and Wellman (2002) have suggested that a more demanding force exists to regulate intensity, direction, and duration of negative emotions than with positive emotions because they are problematic, disruptive, and involve some type of complication or goal failure. Although both films contained problem-resolution structures, children may have processed the emotionally negative story more deeply in an

effort to understand the protagonist's dilemma. This finding is congruent with research showing that traumatic events are recalled well because people reminisce about these types of experiences (e.g., Christianson, 1992). Thus, children in the present study may have reminisced about the negative story more than the neutral story. Alternatively, it is possible that the emotionally negative story was more consistent with children's story schema than the emotionally neutral story. That is, the tale of a child losing his/her dog in the park may fit with one's story schema better than the tale of a dog knocking over a child's picnic lunch.

### *Developmental Differences*

Both preschool and elementary school children were able to give accurate, complete, and elaborate memory reports initially and after one week. Surprisingly, there was a developmental difference favoring younger children over older children for the completeness of reports, but only for the initial assessment. Immediate reports by preschool children contained 92% of the identified features in the films, whereas those by elementary school children consisted of 87% total features. After one week, both age groups reported 86% total features showing greater forgetting rates for the younger than for the older children. Interestingly, this is the first time that developmental differences in forgetting rates have been found (Brainerd, 1997). Ornstein et al. (1997) explains that older children do not start to forget until one week after the event, whereas younger children show forgetting immediately. This was not the case in the current study as the younger children's initial performance exceeded that of the older children. Children's ability to recall details although quite good, as exemplified by their average elaboration score of 2.54 per feature, also showed forgetting over time. These findings are congruent

with past research and indicate that the general story remains complete especially for the older children, but details are generally lost over time (e.g., Baker-Ward et al., 1993; Cassel & Bjorklund, 1995).

Developmental differences in the completeness and elaboration of the report also emerged due to the type of prompt used to elicit recall. Children at both ages responded predominantly to general, open ended prompts, although older children did report more information than younger children. The finding that preschool children required more specific prompts than did elementary school children to elicit complete and elaborate recall was also congruent with past research (Liwag & Stein, 1995; Ornstein et al., 1997; Stein & Glenn, 1979).

Developmental differences were also found in children's ability to identify the protagonist's mood at the end of the story, but only for the emotionally neutral story. It was not surprising that children at both ages were cognizant of the protagonist's emotional response to losing his/her dog given that at an early age children learn to understand and identify other people's emotions (Fallin & Banerjee, 1997; Lagattuta & Wellman, 2002; Liwag & Stein, 1995; Stein et al., 1994; Stein & Jewett, 1986; Stein & Trabasso, 1989; Wellman et al., 1995). Their ability to understand how the protagonist felt in the emotionally negative version may have helped them to remember many aspects of the story. In contrast, the younger children seemed to have difficulty identifying the protagonist's overall reaction to the day in the park for the neutral version, instead of focusing on the frustration the character may have experienced when the picnic lunch was destroyed. That is, the younger children may have misinterpreted how protagonist actually felt at the end of the story based on their personal consequences for the

occurrence of mishaps. It is possible that they believe that the only way of coping with spilled food is to become angry, even though the actual story showed that the character did not react that way. These explanations fit with the finding that children reported more information about the negative than the neutral story.

Although researchers who investigated individual characteristics found that temperament influenced recall (e.g., Baker-Ward et al., 1993; Chen, 2002; Greenhoot et al., 1999), the current study did not. One explanation may be that in this study a very short film was used. Therefore, certain characteristics that may not be conducive to recall, such as persistence and distractibility, were not an issue. That is, it would have been more difficult for a child who cannot endure tasks or one who is easily distracted to sit through a longer film.

### *Conclusions*

Although it is recognized that the stories used here are simpler than events experienced in life these findings still have important implications for clinicians who work with child victims of trauma. First, it is clear that emotion does play a role in memory, one of enhancing recall of both features and details. Second, the essential aspects of a simple event will be recalled well over short delays, such as a week, although details are expected to fade. Finally, the type of prompt needed to obtain accurate information varied with age. Open-ended prompts resulted in children providing many features about the event, particularly the older children, whereas younger children required specific prompts to obtain complete reports. However, it is not recommended that clinicians predominantly use specific prompts over open-ended prompts when talking to young children. The interviewers in this study were trained to employ the

hierarchical model in which non-leading and leading/misleading questions were only asked about features that had not been volunteered in response to general questions. In addition, it is important to test more than one hypothesis when attempting to gain information about the traumatic event. Given that the clinician does not have an objective record of what happened, it is essential that the child be asked different questions about a particular feature. For example, when considering whether or not abuse has taken place, the clinician could ask, “Did the man touch your arm?” and “Did the man touch your private parts?” In this way, the clinician would be replicating the interview structure used in this study that corresponds to leading and misleading questions.

Although this investigation attempted to equate the two stories by having interesting plots, this effort may have confounded the findings. Some children who watched the emotionally neutral film interpreted the dog knocking over the picnic lunch as leading to the protagonist becoming sad or mad. Yet, the narration of the story indicated that the protagonist was not upset with the dog and had enjoyed the day. In addition, the protagonist was illustrated smiling while walking with the dog and when speaking with the mother. Another problem was that the ‘lost dog’ plot was so consistent with children’s story schema that some children actually ‘invented’ it on their own (i.e., even though they saw the neutral version) and had to be replaced. Unfortunately, these problems were not detected in the pilot study.

Future research may want to replicate these findings using children of different ages to examine whether other developmental differences exist in children’s recall of emotional events. In addition, rather than using witnesses, future studies should compare



children's recall for their experiences of emotionally negative events and emotionally neutral events. For example, many children undergo the emotionally negative and very uncomfortable VCUG medical procedure. This event could be compared to children's recall of a pediatric examination, which is basically a neutral event (except at age 5 when inoculations are administered). Finally, the use of happy, neutral, and sad face illustrations proved to be especially useful in identification of character's emotions for the younger children. Future researchers may wish to utilize these pictures as a way to standardize the assessment of children's identification of the protagonist's mood.

In conclusion, this study was unique because it directly compared two types of emotionally neutral and negative events. The present investigation examined story recall in preschool and elementary school children, as well as assessing how they perceived the protagonist's mood. It further supported the finding that developmental differences exist in recall but they can be accommodated by using more specific prompts. In addition, children were able to recall the main features of an event, although details may fade over time.

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## APPENDIX A

## LETTER TO PARENTS

Child Study Team  
Emporia State University  
Department of Psychology and Special Education  
1200 Commercial St./CB 4031  
Emporia, KS 66801  
(620) 341- 5810  
[shapirol@emporia.edu](mailto:shapirol@emporia.edu)

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 research over the next year examining memory for events. We would like to invite children ages 4-8 years old to participate in a study that will help us learn what children remember about stories.

Children will watch a film showing a child doing different activities in a park. Immediately after viewing the film, and again one week later, children will be interviewed using general questions, such as "Tell me what happened," and specific questions such as, "What did the girl's neighbor look like?"

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.* KEEP an unsigned letter and have your children RETURN a signed form to their teachers by **Friday**. You may also mail your permission form to the above address. We will make a record of all responses. If you state YES, one of the Child Study Team members will contact you and schedule your children's interviews at Emporia State University (ESU), Visser Hall Room 315, at times that are convenient for both you and your children. We expect each interview to take about 20 to 30 minutes. Parents are asked not to talk to their children about the film but instead to inform them simply that we want to talk to people about various activities they do. To guarantee confidentiality, written records of each participating family will be identified only by number.

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 you no more than 20-25 minutes to complete. We think that differences among children in these areas may help us to understand the types of responses children give in the interviews. 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 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.

This 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 email or call Dr. Shapiro at the above number or Corey Palmer at (620) 342-4296. We will respond as soon as possible.

Thank you very much for your consideration.

Sincerely,

Corey Palmer  
Graduate Student

Lauren Shapiro, PhD  
Associate Professor

---

**PERMISSION FORM**

I have read the information concerning the procedures and purposes of this study on memory. I also agree to fill out questionnaires that assess my background and 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

\_\_\_\_\_

Gender

\_\_\_\_\_

Parent's or Guardian's Signature

\_\_\_\_\_

Date

Child's school \_\_\_\_\_

Teacher \_\_\_\_\_

Parent/Guardian to contact \_\_\_\_\_

Best days/Times \_\_\_\_\_

Day Phone \_\_\_\_\_

Eve. Phone \_\_\_\_\_

If you have a child(ren) who is or will be eligible for this study within a year, please list the following information below.

Name	Birthdate	Age	Gender

*Please return permission forms to your child's school by **Friday**. Thank you.*

## APPENDIX B

Event Memory Interview  
(Emotionally Negative, Negative-Positive Version)

Instructions to children for both memory interviews: [Turn on camcorder]

**“I am going to put on this camera to help me remember everything you say. (child’s first name), everyone who works with me gets a special number and yours is (subject number), but you don’t have to remember that.”**

First Interview only, say:

**“You just saw a story about a little girl/boy. My job is important because I want to find out how much children remember about stories.**

**I don’t know what happened in the story because I didn’t watch it. So I want you to tell me everything you REALLY, REALLY remember about what happened to the girl/boy. 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 your answer, just tell me, “I don’t know.” I’m going to write down everything you say so try not to talk too fast. Okay, are you ready?”**

Follow-up interview only, say:

**“Last time you were here, we talked about the story about the little girl/boy. Well, today I want to see how much you can remember about what happened in the story. Remember, I didn’t see the story so I don’t know what happened. I will be asking you lots of questions about what happened. 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 your answer, just tell me, “I don’t know.” Okay, are you ready?”**

Instructions:

Be certain to start with General Questions, check which features were already mentioned and cross them out on the list, then ask the Cued Recall Questions.

General Questions:

GQ #1: Write down the features on the sheet as they are mentioned. It is better to list each item so that you can see the list clearly. After the child finishes the list, elaborate on each feature that is mentioned (e.g., Tell me more about \_\_\_\_).

1. **“Tell me what happened in the story.”** OE1

Let the child list all the features by asking:

**“What else happened?”**

When list seems completed, ask:

**“Was there anything else that happened?”**

Then go back through the list.

For each feature mentioned, but not elaborated, ask:

**“You said \_\_\_\_\_. Tell me more about \_\_\_\_\_.”** ELAB

*EX: Tell me more about the dog.*

GQ#2: Write down the features on the sheet as they are mentioned. For this question, be sure to follow up with elaboration question RIGHT AFTER NEW info is obtained rather than at the end of the list.

2. **“Good job. You told me a lot of things I needed to know. Now I want you to think about what happened with the girl/boy 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.”**

**“What was the first thing that happened?”** TOE1

If the child says IDK (I don’t know), I don’t remember, or I already told you, then you may respond:

- a.) **“Think about all the things you told me about. Which one happened first?”** OR  
 b.) **“You told me a lot of things. Think about which one was the first thing.”**

**“What happened next (after that)?”** [repeat as often as necessary.]

Remember to follow up IMMEDIATELY on any NEW features

**“You said \_\_\_\_\_. Tell me more about \_\_\_\_\_.”** ELAB

*EX: Tell me more about the dog.*

[When the child seems finished, ask]

**“Is that the last thing that happened?”**

**“Okay, Good job. I have some more questions for you. I just need a minute to check my notes.”**

Instructions: When the child has told you all that she/he can, compare the information provided in the General questions with the checklist. If you realize that you forgot to ask for elaboration or something is unclear, then ask now, BEFORE you go to the Cued Recall Questions.

On the answer sheet, mark an X next to each Cued Recall Question if the child has already provided at the OE1 level—DO NOT ask these questions, even if he/she has provided an incorrect answer (e.g., zoo instead of park).

Cued Recall Questions:

**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 answer, just tell me, "I don't know."**

- If the child does not respond or answers "I don't know" to the OE3 question, ask both the PL and NL questions that follow.
- On the answer sheet, write down answers to OE3 in the space provided. If you need to ask the follow-up questions, write down Y for yes, N for no, and IDK for I don't know or I don't remember next to each one.
- If the child responds with a correct answer but not the targeted answer, continue asking "What else..." "Who else..." etc. until child responds with "I don't know" or "I don't remember."
- Special Issues:  
 \*GET VERBAL RESPONSES: If the child just nods or shakes his/her head, tell him/her **"It is really important that you tell me your answers in words."**

\*DON'T GUESS: If the child is responding with "I think" or "Maybe" then remind him/her, **"It is really important that you only tell me what you really really remember about what happened in the movie."** Don't let kids infer information, have them only report what they saw. Be sure that to ask them if they remember \_\_\_\_\_ happened or not, by saying, **"Do you remember \_\_\_\_\_?"**

\*SPONTANEOUS RESPONSES: If the child is asked the first closed ended question and gives a spontaneous response before you can ask the second closed ended question, then say: "So, ..." then state the question.

ELABORATION: For each new feature mentioned, but not elaborated, ask:

**You said \_\_\_\_\_. Tell me more about \_\_\_\_\_. ELAB**

*EX: Tell me more about the dog.*

'YES' CLARIFICATION for LQs: If the child says "YES" to both the closed ended questions, REPEAT both options and then ask the child to choose ONE: **"Which one was it?"**

**"I need to know more about the story."**

**1. "Where did the girl/boy go?" OE3**

If the child responds I don't know or doesn't respond ask both a & b:

NLQ a. Did she/he go to the zoo?

PLQ b. Did she/he go to the park?

Be sure to get clarification if child responds YES to both a & b.

**2. Who did the girl/boy go there with? OE3**

If the child responds I don't know or doesn't respond ask both a & b:

NLQ a. Did she/he go with her/his mom?

PLQ b. Did she/he go with her/his dog?

Be sure to get clarification if child responds YES to both a & b.

### 3. "What did she/he bring with her/him?" OE3

If child answers picnic blanket and/or ball, ask "What else did she/he bring with her/him?"

If the child responds I don't know or doesn't respond ask both a & b:

NLQ a. Did she/he bring an umbrella and towel?

PLQ b. Did she/he bring a picnic lunch and leash?

Be sure to get clarification if child responds YES to both a & b.

### 4. What did the girl/boy do while she/he was there? OE3

You may accept play ball, have lunch, and/or lose Patches as correct responses, go to question set not answered by asking, "What else did the girl/boy do while she/he was there?" Otherwise, go on to #5.

If the child responds I don't know or doesn't respond ask both a & b:

NLQ a. Did she/he play on the swings?

PLQ b. Did she/he play ball with her/his dog?

Be sure to get clarification if child responds YES to both a & b.

NLQ a. Did she/he talk to her/his friends?

PLQ b. Did she/he eat her/his lunch?

Be sure to get clarification if child responds YES to both a & b.

### 5. Besides the girl/boy and the dog, who else was there? OE3

If the child answers other kids, her/his friends, or Patches ask, "Who else was there?"

If the child responds I don't know or doesn't respond ask both a & b:

NLQ a. Was there a person dancing on the sidewalk?

PLQ b. Was there a person selling hot dogs on the sidewalk?

Be sure to get clarification if child responds YES to both a & b.

### 6. What happened to the dog? OE3

If the child answers it went to the park and/or played ball, ask "What else happened to the dog?" Accept the dog ran away and follow up with "How come the dog ran off with the other dog?"

If the child responds I don't know or doesn't respond ask both a & b:

NLQ a. Did the dog knock over the picnic lunch?

If the child answers yes, then ask **“How come the dog knocked over the picnic lunch?”**

PLQ b. **Did the dog run off with another dog?**

If the child answers yes, then ask **“How come the dog ran off with the other dog?”**

Be sure to get clarification if child responds YES to both a & b.

**7. Where did the girl/boy go at the end? OE3**

If the child responds I don't know or doesn't respond ask both a & b:

NLQ a. **Did she/he go to school?**

PLQ b. **Did she/he go home?**

Be sure to get clarification if child responds YES to both a & b.

**8. What did the girl/boy tell her/his mother? OE3**

If the child responds I don't know or doesn't respond ask both a & b:

NLQ a. **Did she/he say Patches knocked over the picnic lunch?**

PLQ b. **Did she/he say Patches ran away and she/he wanted to find the dog?**

Be sure to get clarification if child responds YES to both a & b.

**9. What did the girl/boy and her/his mother talk about? OE3**

If the child responds I don't know or doesn't respond ask both a & b:

NLQ a. **Did she/he ask her/his mother if she/he could go back to the park tomorrow?**

PLQ b. **Did they decide to make signs saying “Lost Dog?”**

Be sure to get clarification if child responds YES to both a & b.

**You did a great job. Thank you for helping me with that. Now, we have one more thing we are going to do. Go to Emotional Impact Interview.**



## APPENDIX C

## Emotional Impact Interview

HNS Emotional Impact Interview # \_\_\_\_\_

Subject No. \_\_\_\_\_ Exptr \_\_\_\_\_

Child's first name \_\_\_\_\_

Date \_\_\_\_\_ Video # \_\_\_\_\_

**BEFORE THE FILM**

**“Before we begin, let’s find out more about you. These pictures are going to help me to understand how you feel right now. Let me show you them before you tell me. This is a happy face, you would pick this face if you feel happy. This is an ‘okay’ face, you would pick this face if you do not feel happy or sad. This is a sad face, you would pick this face if you feel sad. Are you ready? Point to the picture of how you feel right now.”** *[Write down response after child arrives.]*

**AFTER THE MEMORY INTERVIEW**

**1. “I am going to use my pictures again. Let’s see if you remember what each picture means.”**

(point to the happy face and say) **“What does this mean?”** (tell them, “happy” if they don’t know, then point to the neutral face and say) **“What does this mean?”** (tell them “okay” if they don’t know, then point to the sad face and say) **“What does this mean?”** (tell them “sad” if they don’t know).

**“Good job. Now point to the picture of how you think the girl/boy felt at the beginning of the story before s/he went to the park.”**



**2. “Point to the picture of how you think the girl/boy felt when s/he went home at the end of the story.”**



**3. “Point to the picture of how you felt after hearing what happened to the girl/boy in the story.”**



**4. “Point to the picture of how you feel now.”**



**APPENDIX D**

**Behavior Style Questionnaire**

# **Behavioral Style Questionnaire**

**for 3-to-7 year-old children**

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

**Child's Name** \_\_\_\_\_ **Gender** \_\_\_\_\_

**Child's Date of Birth** \_\_\_\_\_ **Present Age** \_\_\_\_\_  
Month / Day / Year

**Rater's Name** \_\_\_\_\_

**Rater's Relationship to Child** \_\_\_\_\_

**Date of Rating** \_\_\_\_\_  
Month / Day / Year

## **Instructions**

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

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

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

ALMOST NEVER

ALMOST ALWAYS

1	1	2	3	4	5
2	1	2	3	4	5
3	1	2	3	4	5
4	1	2	3	4	5
5	1	2	3	4	5
6	1	2	3	4	5
7	1	2	3	4	5
8	1	2	3	4	5
9	1	2	3	4	5
10	1	2	3	4	5
11	1	2	3	4	5
12	1	2	3	4	5
13	1	2	3	4	5
14	1	2	3	4	5
15	1	2	3	4	5
16	1	2	3	4	5
17	1	2	3	4	5
18	1	2	3	4	5
19	1	2	3	4	5
20	1	2	3	4	5
21	1	2	3	4	5
22	1	2	3	4	5
23	1	2	3	4	5
24	1	2	3	4	5
25	1	2	3	4	5
26	1	2	3	4	5
27	1	2	3	4	5
28	1	2	3	4	5
29	1	2	3	4	5
30	1	2	3	4	5
31	1	2	3	4	5
32	1	2	3	4	5
33	1	2	3	4	5
34	1	2	3	4	5
35	1	2	3	4	5
36	1	2	3	4	5
37	1	2	3	4	5
38	1	2	3	4	5

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

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

ALMOST NEVER

ALM  
ALW

The child protests when denied a request by the parent. ....	78	①	②	③	④	⑤
The child ignores loud noises when reading or looking at pictures in a book. ....	79	①	②	③	④	⑤
The child dislikes a food that he/she had previously seemed to accept. ....	80	①	②	③	④	⑤
The child stops what he/she is doing and looks up when the parent enters the room. ....	81	①	②	③	④	⑤
The child cries for more than a few minutes when hurt. ....	82	①	②	③	④	⑤
The child watches a long (1 hour or more) TV program without getting up to do something else. ....	83	①	②	③	④	⑤
The child spontaneously wakes up at the usual time on the weekends and holidays. ....	84	①	②	③	④	⑤
The child responds to sounds or noises unrelated to his/her activity. ....	85	①	②	③	④	⑤
The child avoids new guests or visitors. ....	86	①	②	③	④	⑤
The child fidgets when a story is being read to him/her. ....	87	①	②	③	④	⑤
The child becomes upset or cries over minor falls or bumps. ....	88	①	②	③	④	⑤
The child interrupts an activity to listen to conversation around him/her. ....	89	①	②	③	④	⑤
The child is unwilling to leave a play activity that he/she has not completed. ....	90	①	②	③	④	⑤
The child is able to fall asleep when there is conversation in a nearby room. ....	91	①	②	③	④	⑤
The child becomes highly excited when presented with new toy or game. ....	92	①	②	③	④	⑤
The child pays attention from start to finish when the parent tries to explain something to him/her. ....	93	①	②	③	④	⑤
The child speaks so quickly that it is sometimes difficult to understand him/her. ....	94	①	②	③	④	⑤
The child wants to leave the table during meals to answer the doorbell or phone. ....	95	①	②	③	④	⑤
The child complains of events in school or with playmates that day. ....	96	①	②	③	④	⑤
The child frowns when asked to do a chore by the parent. ....	97	①	②	③	④	⑤
The child tends to hold back in new situations. ....	98	①	②	③	④	⑤
The child laughs hard while watching television cartoons or comedies. ....	99	①	②	③	④	⑤
The child has "off" days when he/she is moody or cranky. ....	100	①	②	③	④	⑤

GENERAL IMPRESSIONS OF CHILD'S TEMPERAMENT

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

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

## APPENDIX E

## Parental Background Information

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

Please provide the following information.

Child's name: \_\_\_\_\_ Gender: \_\_\_\_\_ Date of birth: \_\_\_\_\_

Ethnic Background:  Caucasian  African American  Hispanic  Asian  
 Native American  Other

Number of hours per day child watches educational TV \_\_\_\_\_

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 the highest level)*

- completed graduate degree  
 college graduate  
 some college, no degree  
 high school diploma or vocational school graduate  
 partial high school (more than 9<sup>th</sup> grade)  
 junior high school (completed 7<sup>th</sup> through 9<sup>th</sup> grade)  
 less than 7 years of school

Father's Occupation: \_\_\_\_\_  
*(please specify the job title, not where you work)*

Years of education *(indicate the highest level)*

- completed graduate degree  
 college graduate  
 some college, no degree  
 high school diploma or vocational school graduate  
 partial high school (more than 9<sup>th</sup> grade)  
 junior high school (completed 7<sup>th</sup> through 9<sup>th</sup> grade)  
 less than 7 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 – 70,999  more than \$71,000

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

## APPENDIX F

## Coding Manual

**Event Memory Coding Scheme—Emotionally Negative****1. Location of scene**

## Correct

Elaborate credit—Were at the house AND then went to park OR were sitting on the steps and decided to go to the park

Full credit—Went/walked to park

Partial credit—Went to picnic OR there was grass and trees

## Incorrect

Full credit—Went to the zoo

Partial credit—Inference based on dialogue

**2. The participants**

## Correct

Elaborate credit—Sara/Sam with dog OR child with Patches.

Full credit—Girl/boy and dog were ‘together’

Partial credit—A dog was there (not clear dog belonged to child, but not referring to other dog)

## Incorrect

Elaborate credit—Child went to the park with his/her mother (father, sister, etc.) AND other details (provides color of dog or calls dog by incorrect name OR provides color of child’s clothes)

Full credit—Another person (friend, parent) was with her.

Partial credit—Provides color of dog OR calls dog by incorrect name (e.g., Patrick) OR provides color of child’s clothes.

**3. What did child bring?**

## Correct

Elaborate credit—Child brought a picnic/lunch/basket AND one other (leash, ball, blanket)

Full credit—Child brought a picnic/lunch/basket

Partial credit—Child had lunch, a leash, a basket, a ball, OR a blanket

## Incorrect

Elaborate credit—Child brought several things that were not in the movie



Full credit—Child brought a towel and an umbrella OR anything not in the movie

Partial credit—Child had a towel OR an umbrella OR money

#### 4. What did child do?—Playing

##### Correct

Elaborate credit—Child played fetch/ball with the dog AND dialogue (“Go get it, Patches!”) OR commentary (Patches loves to chase the ball)

Full credit—Child and dog played ball

Partial credit—Child played with the dog

##### Incorrect

Elaborate credit—Child played on the swings with friends OR did things obviously not in movie

Full credit—Child played on the swings OR played another game with dog (e.g., Frisbee)

#### 5. What did the child do?—Eating

##### Correct

Elaborate credit—Child ate a sandwich OR child spread out the blanket and ate lunch

Full credit—Child ate picnic/lunch/food

Partial credit—Child sat out a blanket OR had food (took from the basket)

##### Incorrect

Elaborate credit—Child played with friends AND did things obviously not in movie

Full credit—Child talked to his/her friends OR child did not eat lunch

Partial credit—Child ate a hot dog

#### 6. Main Character—other dog

##### Correct

Elaborate credit— The other dog AND hot dog “seller” OR other children OR describes cart

Full credit—The other dog

Partial credit—A hot dog store OR kids playing on the playground

##### Incorrect

Elaborate credit—Additional details about nonexistent person OR several people who were obviously not in the movie

Full credit—A person dancing on the sidewalk OR anyone else obviously not in the movie

Partial credit—No one else was there

## 7. What happened to child/dog?

### Correct

Elaborate credit—Dog ran away with the other dog OR dog ran away with dialogue (“Come back”) OR gave reason why dog ran away (e.g., no leash, wanted to play with dog)

Full credit—Dog ran away

Partial credit—Dog walked over to dog

### Incorrect

Elaborate credit—Dog did something obviously not in the movie AND added details about it

Full credit—Dog knocked over the picnic lunch OR dog did something obviously not in the movie

Partial credit—Dog ate a hot dog

### \*\*REASON

2 = Gave exact reason (i.e., forgot to put the leash back on, saw another dog, excited to see another dog)

1 = Gave plausible reason (e.g., wanted to play with the dog)

0 = Gave no reason or implausible reason (e.g., angry at child)

## 8. Where did child go at the end?

### Correct

Elaborate credit—Child went home AND was sad OR was carrying the basket

Full credit—Child went home

Partial credit—Child saw/told mother, woman

### Incorrect

Elaborate credit—Several locations not in the movie OR details about location that was not in the movie

Full credit—Child went to school OR somewhere else obviously not in the movie

Partial credit—child saw someone else (e.g., father)

## 9. What did child tell mother?--Action that occurred at park (told about problem)

### Correct

Elaborate credit—Child told mother that dog ran away AND dialogue (e.g., he/she forgot to put on dogs’ leash)

Full credit—Child told mother that the dog ran away/got lost

Partial credit—Child told mother about what happened

**Incorrect**

Elaborate credit—Child told mother about something that obviously did not happen in the story AND added details about it.

Full credit—Child told mother that the dog knocked over the picnic basket OR something that obviously did not happen in the movie

Partial credit—Child didn't tell mother anything OR inferences based on dialogue

**10. What did child tell mother?--Aftermath****Correct**

Elaborate credit—Lost dog signs/posters AND dialogue (e.g., mother said she knew exactly what to do.)

Full credit—They made lost dog signs OR posters with the dog's picture on it

Partial credit—Dialogue about finding the dog or references to a poster or sign but not clearly "Lost Dog signs"

**Incorrect**

Elaborate credit—Details about something that obviously did not happen in the movie

Full credit—Child asked if he/she could go to the park tomorrow OR talk about something else that obviously did not happen in the movie

Partial credit—Child complains about dog OR inferences based on dialogue

*Emotionally Negative Story Dialogue*

1. This is the story of a little girl named, Sara/boy named, Sam and her/his dog, Patches. It is a beautiful day so Sara/Sam and Patches are outside of their home thinking about what to do.

2. Sara/Sam decides to go to the park. S/he goes inside and gets a picnic basket and Patches' leash. Now they are on their way to the park.

3. When they get to the park, Sara/Sam takes off Patches' leash. Then they play ball—"Go get it, Patches!" Sara/Sam shouts. Patches loves to chase the ball.

4. Sara/Sam is very hungry, so s/he sits on the picnic blanket and gets out the picnic lunch. On the sidewalk a short distance away, Sara/Sam sees a hotdog vendor selling hotdogs.

5. Patches looks over to the hotdog vendor. Another dog walks up to the vendor hoping for a snack. Patches is really excited to see another dog at the park.

6. Patches runs over to the dog to play with her and the two of them look at each other. Sara/Sam calls, "Come back here Patches!"

7. Sara/Sam tries to catch up with the dogs but they are too fast. They run off together and disappear into the park. Sara/Sam yells after them, “NO, Don’t go. Come back Patches! Come back!”

8. Sara/Sam is very sad and starts to cry. Poor Sara/Sam walks home alone carrying the picnic basket and leash. S/he thinks to her/himself, “Ah Patches, why oh why did I take off your leash! How will I ever find you?”

9. When Sara/Sam gets home, s/he tells her/his mother about what happened. S/he said, “We were having such a good time playing. But when we sat down for lunch, I forgot to put on Patches’ leash. Then Patches saw another dog and the two of them ran off together. What am I going to do? I want Patches to come home!”

10. Sara’s/Sam’s mother told her/him, “Don’t worry. I know exactly what to do. We will make signs that say, “Lost Dog” and someone will find Patches! You’ll see, everything will be okay.” Sara/Sam and Mom are going to hang the signs up all over town.

### **Event Memory Coding Scheme—Emotionally Neutral**

#### **1. Location of scene**

##### **Correct**

Elaborate credit—Were at the house AND then went to park OR were sitting on the steps and decided to go to the park

Full credit—Went/walked to park

Partial credit—Went to picnic OR there was grass and trees

##### **Incorrect**

Full credit—Went to the zoo

Partial credit—Inference based on dialogue

#### **2. The participants**

##### **Correct**

Elaborate credit—Sara/Sam with dog OR child with Patches.

Full credit—Girl/boy and dog were ‘together’

Partial credit—A dog was there (not clear dog belonged to child, but not referring to other dog)

##### **Incorrect**

Elaborate credit—Child went to the park with his/her mother (father, sister, etc.) AND other details (provides color of dog or calls dog by incorrect name OR provides color of child’s clothes)

Full credit—Another person (friend, parent) was with her.

Partial credit—Provides color of dog OR calls dog by incorrect name (e.g., Patrick) OR provides color of child’s clothes.

### 3. What did child bring?

#### Correct

Elaborate credit—Child brought a picnic/lunch/basket AND one other (leash, ball, blanket)

Full credit—Child brought a picnic/lunch/basket

Partial credit—Child had lunch, a leash, a basket, a ball, OR a blanket

#### Incorrect

Elaborate credit—Child brought several things that were not in the movie

Full credit—Child brought a towel and an umbrella OR anything not in the movie

Partial credit—Child had a towel OR an umbrella OR money

### 4. What did child do?—Playing

#### Correct

Elaborate credit—Child played fetch/ball with the dog AND dialogue (“Go get it, Patches!”) OR commentary (Patches loves to chase the ball)

Full credit—Child and dog played ball

Partial credit—Child played with the dog

#### Incorrect

Elaborate credit—Child played on the swings with friends OR did things obviously not in movie

Full credit—Child played on the swings OR played another game with dog (e.g., Frisbee)

### 5. What did child do?—Eating

#### Correct

Elaborate credit—Child ate a sandwich OR child spread out the blanket and ate lunch

Full credit—Child ate picnic/lunch/food

Partial credit—Child sat out a blanket OR had food (took from the basket)

#### Incorrect

Elaborate credit—Child played with friends AND did things obviously not in movie

Full credit—Child talked to his/her friends OR child did not eat lunch

Partial credit—Child ate a hot dog

### 6. Main Character—hot dog vender

#### Correct

Elaborate credit—Hot dog “seller” AND another dog AND/OR other children OR describes cart

Full credit—Indicates person selling hot dogs (e.g., hot dog vendor, hot dog man)

Partial credit—A hot dog store OR kids playing on the playground OR another dog

Incorrect

Elaborate credit—Additional details about nonexistent person OR several people who were obviously not in the movie

Full credit—A person dancing on the sidewalk OR anyone else obviously not in the movie

Partial credit—No one else was there

## 7. What happened to dog/child?

Correct

Elaborate credit—Knocked over lunch AND dog saw another dog OR dialogue (Child said “silly dog”) OR child cleaned up mess OR gave reason why dog knocked over lunch (e.g., got excited, saw another dog, no leash, wanted hot dog) OR got a hot dog.

Full credit—Dog knocked/spilled over lunch

Partial credit—Dog jumped up

Incorrect

Elaborate credit—Dog did something obviously not in the movie AND added details about it

Full credit—Dog ran away OR dog did something obviously not in the movie

Partial credit—Dog ate a hot dog

### \*\*REASON

2 = Gave exact reason (i.e., saw other dog OR was excited to see other dog)

1 = Gave plausible reason (e.g., wanted to play with the dog)

0 = Gave no reason or incorrect reason (e.g., angry at child)

## 8. Where did child go at end?

Correct

Elaborate credit—Child went home AND was with dog OR was carrying the basket OR put the leash back on the dog

Full credit—Child went home

Partial credit—Child saw/told mother, woman

Incorrect

Elaborate credit—Several locations not in the movie OR details about location that was not in the movie

Full credit—Child went to school OR somewhere else obviously not in the movie

Partial credit—child saw someone else (e.g., father)

**9. What did child tell mother?--Action that occurred at park (told about problem and resolution)**

**Correct**

Elaborate credit—Child told mother that dog knocked over lunch AND dialogue (he/she had to get a hot dog)

Full credit—Child told mother something about the dog knocking over/spilling lunch

Partial credit—Child told mother about what happened

**Incorrect**

Elaborate credit—Child told mother about something that obviously did not happen in the story AND added details about it

Full credit—Child told mother that the dog ran away OR something that obviously did not happen in the movie

Partial credit—Child didn't tell mother anything

**10. What did child and mother talk about?--The Aftermath**

**Correct**

Elaborate credit—They had fun at the park AND the child asked if they could go again tomorrow

Full credit—Child asked if s/he could go again tomorrow

Partial credit—Child asked if they could go again

**Incorrect**

Elaborate credit—Details about something that obviously did not happen in the movie

Full credit—They decided to make lost dog signs OR wants to do another activity

Partial credit—Child complains about dog OR inferences based on dialogue

*Emotionally Neutral Story Dialogue*

1. This is the story of a little girl named, Sara/boy named, Sam and her/his dog, Patches. It is a beautiful day so Sara/Sam and Patches are outside of their home thinking about what to do.

2. Sara/Sam decides to go to the park. S/he goes inside and gets a picnic basket and Patches' leash. Now they are on their way to the park.

3. When they get to the park, Sara/Sam takes off Patches' leash. Then they play ball—"Go get it, Patches!" Sara/Sam shouts. Patches loves to chase the ball.

4. Sara/Sam is very hungry, so s/he sits on the picnic blanket and gets out the picnic lunch. On the sidewalk a short distance away, Sara/Sam sees a hotdog vendor selling hotdogs.
  5. Patches looks over to the hotdog vendor. Another dog walks up to the vendor hoping for a snack. Patches is really excited to see another dog at the park.
  6. Patches jumps up and accidentally knocks over all the plates and food. Sara/ Sam looks at the mess and then looks at Patches.
  7. Sara/Sam tries to clean everything up. “Silly dog. It’s okay. Let me think what I can eat for lunch.” Sara/Sam wonders, “My sandwich has dirt all over it.” Sara/Sam looks at the hot dog vender and gets an idea.
  8. Sara/Sam walks over to the hot dog vender and orders a hot dog. “Thank goodness you were here,” says Sara/Sam. “My dog knocked over my lunch and I sure am hungry.”
  9. After lunch, Sara/Sam gathers everything up and puts on Patches’ leash. The two of them walk home together.
  10. When Sara/Sam got home, s/he told her/his mother about what happened. S/he said, “After playing, Patches saw another dog and knocked over my lunch. I had to get a hot dog from the vendor. But really, we both had fun at the park. So Mom, can Patches and I go to the park again tomorrow?”
-



## ENDNOTES

1. The child felt uncomfortable being left alone in the room so the parent sat in the room during the movie.
2. In 3 cases, it was not possible for the same experimenter to interview the child for the second session.
3. Due to the low number of incorrect features reported (average was less than 1), the proposed analysis was not conducted.

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Corey L. Palmer  
Signature of the Author

May 16, 2003  
Date

Developmental Differences in Children's  
Immediate and Delayed Memory for  
Emotionally Negative and Neutral Events  
Title of Thesis

Dawn Cooper  
Signature of Graduate Office Staff Member

May 16, 2003  
Date

*original*