

# Parental reminiscing style and children's suggestibility about an alleged transgression



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## ABSTRACT

We examined the links between parental elaborativeness and children's suggestibility about a salient event, testing the hypothesis that, in an accuracy-focused context, children of elaborative parents are more resistant to false suggestions than children of less elaborative parents. Our hypothesis was supported: in a sample of 68 4–7 year-old children and caregivers, parent elaborativeness, along with children's working memory, additively predicted resistance to false suggestions from an unfamiliar interviewer about peripheral details of an alleged transgression. Children were forthcoming about the transgression when it actually occurred and highly resistant to suggestions that the transgression took place when it did not. Results have implications for understanding how parents socialize children to resist suggestions in accuracy-focused contexts through everyday reminiscing practices. Implications for theories of narrative and memory development, and for applied contexts such as the legal system, are discussed.

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## 1. Introduction

Caregivers play a critical role in shaping children's emerging mnemonic abilities. They teach children what is important to remember, rehearse memories with their children, and help their children structure memory reports in coherent and logical manners. How caregivers engage in these practices has been well-studied within a literature focused on parent-child reminiscing about past experiences (Fivush & Fromhoff, 1988; see Fivush, Haden, & Reese, 2006, for a review).

Findings have revealed consistent patterns in the ways that parents engage children in conversations about the past, patterns that, in turn, influence children's memory and reporting of prior experiences. Most notably, parents who use an elaborative conversation style, in which they ask high frequencies of novel WH- questions, follow up on their child's responses with requests for further details, provide feedback, particularly positive feedback, and fill in information when their child is unable to provide it, have children who provide greater detail about past events relative to parents who do not engage children using an elaborative style (e.g. Boland, Haden, & Ornstein, 2003; Harley & Reese, 1999; Hudson, 1990; McCabe & Peterson, 1991; Peterson, Jesso, & McCabe, 1999; Reese, Haden, & Fivush, 1993; Reese & Newcombe, 2007; see Fivush et al., 2006, for a review). Children who engage in more elaborative conversations with their caregivers about events also have more elaborate, and more cohesive memories of the events discussed (Clarke-Stewart & Beck, 1999; Leichtman,

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Pillemer, Wang, Koreishi, & Han, 2000; McGuigan & Salmon, 2004). Additionally, maternal conversation style has been linked to children's memory abilities even when children are asked about events that they have never discussed with their mother, suggesting that elaborative conversation style impacts overall memory ability rather than just strengthening the memory for the event discussed (e.g. Leichtman et al., 2000). In other words, children of elaborative mothers have general autobiographical memory benefits. What is noticeably understudied, however, is how parent-child reminiscing socializes children to respond in the face of *false* information about a past experience.

There has been some research examining the relations between parental reminiscing style and children's memory accuracy, though this research has almost exclusively focused on children's spontaneous provision of correct and/or incorrect information. Leichtman et al. (2000), for instance, interviewed preschoolers about a jointly experienced event in their classroom. Immediately afterward, children discussed the event with their mothers, who were not present during the event. Three weeks later, children were questioned by an interviewer who was ignorant to the event's details. While the researchers did not specifically examine inaccuracies, they did discount inaccurate responses so that the memory score only reflected accurate responding. Results revealed that, when mothers discussed the preschool event in a more elaborative style, their children later remembered a greater number of accurate details.

McGuigan and Salmon (2004) engaged children in a staged event individually. Experimenters elaboratively discussed the event with children before, during, or after the event, or not at all. Elaborative style was therefore indexed dichotomously (present or absent) rather than on a continuum (high to low). Discussing a non-shared past event elaboratively at any time point (before, during, or after the event) decreased the number of inaccurate statements children provided relative to the number provided by children who did not discuss the event.

Our goal, in the present study, was to expand this body of research by focusing on the links between parent-child reminiscing and children's inaccuracies resulting from suggestive questioning, specifically about a personally experienced, salient event involving a potential transgression. From a theoretical standpoint, understanding how parents influence children's ability to resist suggestive questions will give a more complete picture of children's developing memory skills. This knowledge will also be important for applied audiences, such as parents, educators, clinicians, and legal practitioners, all of whom have long been interested in encouraging children to report accurately and fully without falling prey to false information.

### 1.1. Reminiscing style, suggestiveness, and suggestibility

While little research to date has explored the relations between parental reminiscing style and children's memory accuracy, particularly in response to suggestive questions, there are several reasons to suspect such relations exist, though the direction of the relations is unclear. More elaborative parental reminiscing certainly encourages children to provide a greater amount of information about past experiences. However, this encouragement may not help children resist suggestion, and there are theoretical reasons to predict that parental elaborativeness could *increase* children's resistance to suggestive questions or the opposite, that parental elaborativeness could *decrease* children's resistance to suggestive questions.

Regarding elaborativeness increasing children's resistance to suggestions, for one, early work on "trace strength" interpretations of suggestibility effects posited that stronger memories for true events reduce suggestibility because the original representation can be directly compared to false suggestions (e.g. Brainerd & Reyna, 1988). Indeed, at least part of young children's heightened suggestibility is believed to be due to their generally weaker memory traces relative to older children's and adults' traces (Brainerd & Reyna, 1988; Ceci, Toglia, & Ross, 1988; Howe, 1991). When children are given opportunities to rehearse event details and enhance their original memory trace, suggestibility decreases (Howe, 1995; Pezdek & Roe, 1995; Warren, Hulse-Trotter, & Tubbs, 1991). Insofar as elaborative parents are rehearsing events more with their children, assuming these rehearsals are accurate, and are teaching their children more generally to rehearse experiences when recounting them, children of elaborative parents may have stronger memory traces that they can use to refute false suggestions. Further, by giving children the opportunity to rehearse their memories, elaborative parents may be enhancing children's confidence in their accurate memories, which may in turn help them better discriminate between true and false information (Ghetti, Lyons, Lazzarin, & Cornoldi, 2008; Ghetti, Qin, & Goodman, 2002; Roebbers, 2002; Roebbers & Howie, 2003; Roebbers, von der Linden, & Howie, 2007).

Related, elaborative style may decrease suggestibility by modeling and encouraging cohesion in children's reports. That is, elaborative parents not only encourage children to talk more about past events, but also create a conversational flow that builds on the information children provide by jointly filling in additional details rather than changing topics at each conversational turn (Haden, Haine, & Fivush, 1997; Fivush et al., 2006). Such conversational flow leads to greater cohesion in children's memory reports, which itself has been shown to predict greater accuracy and reduced suggestibility, at least when children are being questioned about neutral or positive prior experiences (Kulkofsky & Klemfuss, 2008; Kulkofsky, Wang, & Ceci, 2008). Thus, insofar as elaborative parents teach children to rehearse memories of the past and to organize these memories in a cohesive structure, children of elaborative parents should be *more* resistant to suggestibility.

However, as mentioned, it is also possible that parental elaborativeness makes children *less* resistant to suggestive influences. Such reasons stem more from the social function of reminiscing rather than its potential cognitive effects on memory encoding, storage, and retrieval. Specifically, when discussing past events with children, parents convey information about the purpose, or function, of memory sharing, which is often to engage a social partner and build interpersonal relationships (e.g. Kulkofsky & Koh, 2009; Kulkofsky, Wang, & Koh, 2009; Nelson, 1993; Reese & Brown, 2000). When trying to engage a social partner, conveying accurate information may not be as crucial as telling a good story. In this context "good" sto-

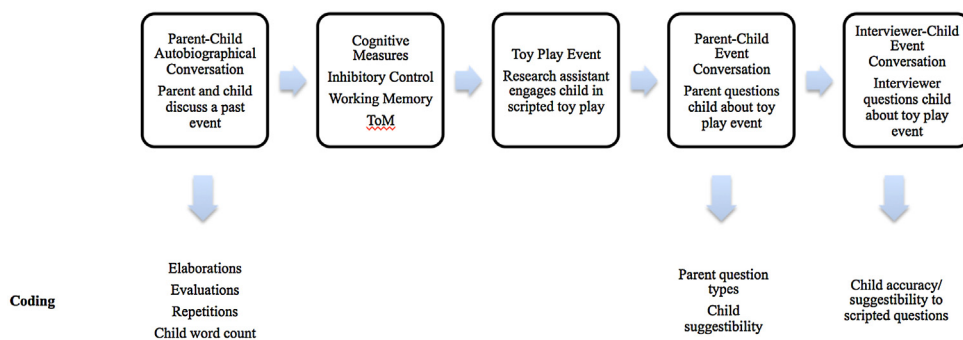


Fig. 1. Procedure and coding overview.

ries may include exaggerated or fantastical elements (e.g. Dudukovic, Marsh, & Tversky, 2004). In addition, when memory sharing to build personal relationships, resisting false information implied by a partner may not be needed and in fact, may be counter-productive to the relationship. Incorporating details provided by the conversational partner, regardless of the accuracy of those details, may facilitate the social nature of joint reminiscing. Elaborative parent-child reminiscing is an ideal forum for the social nature of memory sharing: Children are taught and encouraged to create cohesive, lengthy narratives, but not necessarily accurate narratives. In fact, lengthier narratives are often less accurate than terse narratives because the speaker may be using a lower criterion when filtering the quality of remembered information (e.g. Clarke-Stewart, Malloy, & Allhusen, 2004; Kulkofsky et al., 2008).

Low-elaborative parents, in contrast, tend to question children in a test-like manner and repeat questions when children fail to respond accurately. They are also less likely to supplement the information provided by children with their own perspective, potentially minimizing the likelihood of implying erroneous details occurred (Principe, DiPuppo, & Gammel, 2013). Such may encourage children to monitor for accurate information, leading to greater resistance to suggestive questions (Koriat & Goldsmith, 1994, 1996; Koriat, Goldsmith, Schneider, & Nakash-Dura, 2001). If children of elaborative parents have lengthier narratives and are socialized to believe that reminiscing should have high social interest, they may not monitor accuracy and avoid suggestion to the same extent as children of low-elaborative parents, who instead would tend to provide shorter, but also more concrete and accurate responses.

We know of only one published study that has directly examined the relations between parental reminiscing style and child suggestibility (Principe et al., 2013). Preschoolers viewed a staged magic show in their classrooms. Then their parents, who had been provided with misleading information about the show, questioned the children regarding what happened. Parents who provided more elaborations when discussing the show with their children asked more suggestive questions; their children, in turn, were more suggestible, both with their parent and with an unfamiliar interviewer. These results lend tentative support to the view that parental elaborativeness leads to increased errors, at least when children are questioned about a fun and playful event. However, because the to-be-remembered event itself involved alleged magic, was exciting, and involved a failed trick (a rabbit that failed to appear from a hat) and speculation about the rabbit's whereabouts, children's suggestibility could reflect social reminiscing goals such as entertaining or engaging their conversational partner rather than providing factual information. Similarly, children's responses could also reflect inferences or speculation (e.g. about the location of the rabbit) rather than acquiescence. In fact, elaborative parents may have been more likely to encourage speculation when discussing the event as a means of fostering conversation.

To evaluate more directly whether parental elaborativeness predicts increased suggestibility, research is needed in which the to-be-remembered event is salient and one for which the encoding and recall contexts encourage accurate reporting. This type of context may cause children of elaborative parents to utilize their strong memory for the past event and shift away from social functions of reminiscing. An alleged transgression offers such an event (Lyon et al., 2014). Research is also needed that assesses parental reminiscing style separately from the to-be-remembered event used to assess children's suggestibility. Such a distinction would enable clearer interpretations of whether parents' reminiscing style influences children's suggestibility more generally rather than influencing children's reporting of one particular event.

## 1.2. Present study

In the present study, 4–7 year olds engaged in an initial conversation with their parent about a shared experience that occurred in the past 3 months. This conversation was used to obtain an independent assessment of parental elaborativeness. Next, children played with a confederate during which, for a subset of children, two toys broke ostensibly while children were holding them. Shortly afterward, the children engaged in an interview with their parent about what happened with the confederate. The interview contained some misleading information supplied to parents about the play event. Finally, children completed a forensic interview with a research assistant that contained suggestive questions (Fig. 1).

We hypothesized, first, that parents who asked more elaborative questions while reminiscing about the shared autobiographical event would ask more suggestive questions about the toy interactions, but it was unclear whether this pattern

would hold when we controlled for repetitiveness by considering the proportion of parental elaborations to total parental utterances. Second, we hypothesized that compared to children of less elaborative parents, children of more elaborative parents would be *less* suggestible, particularly with the unfamiliar interviewer, because children of elaborative parents have lengthier and more cohesive memories of past events. And in the transgression context used in the present study, we anticipated that they would be motivated to increase their accuracy monitoring, about a range of details regarding the event, including those directly about the transgression and the broader context within which it occurred (Lyon et al., 2014). We also tested the effects of child age and cognitive variables to determine whether parental elaborativeness predicted reduced suggestibility above the contributions of these variables.

## 2. Method

### 2.1. Participants

Participants included 68 4–7-year-old children and a parent. These children were a subset of children ( $n = 188$ ) who took part in a study of children's reporting of salient experiences (see Rush et al., 2015). This age range was selected because it spans the bridge between the preschool and early school years during which important decreases in susceptibility to suggestion (Bruck & Ceci, 1999) and internalization of parental reminiscing style (Reese et al., 1993) occur. We capped the age range at 7 years of age because pilot testing indicated that children older than 7 years were skeptical about the toy breakage procedure and correctly guessed that the toys were rigged to break. The 68 dyads from the larger study were included in the present report because they completed all relevant measures. They had been added mid-way through the larger study, hence the smaller sample size included here. The final 68 child participants were comparable to the larger sample in age and gender ( $M = 5.87$  years, 56% female). Approximately fifty-seven percent were Caucasian, 13% were Hispanic or Latino, and 29% reported multiple ethnicities. Parents were almost exclusively mothers (93%). In the majority of participating families, both mothers and fathers had at least a Bachelor's degree (64% and 57%, respectively). The median household income for the sample was \$60,001–\$100,000 a year.

### 2.2. Procedure

#### 2.2.1. Autobiographical conversation

After parents provided written consent and children provided assent, parents and children were brought into a quiet testing room and asked to nominate a jointly-experienced, one-time event from the past 3 months and discuss the event as they normally would for up to 5 min. The experimenter left the room, and the conversation was videotaped for later transcription. The experimenter returned to the room after 5 min to explain the next portion of the protocol. At this point, parents left the room and completed a demographic questionnaire.

#### 2.2.2. Cognitive measures

Children completed working memory, inhibitory control, and Theory of Mind (ToM) tasks, each of which has been linked to the accuracy and veracity of memory reports (Carlson, Moses, & Hix, 1998; Clarke-Stewart et al., 2004; Jaschinski & Wentura, 2002; Ruffman, Rustin, Garnham, & Parkin, 2001; Talwar & Lee, 2008). Working memory was assessed via a subtest of the Wechsler Intelligence Scale for Children, third edition (WISC-III; Wechsler, 1991). The test yields both raw and age-normed scores for forward and backward digit span. We used raw scores given that age is included as a variable in all relevant analyses. Inhibitory control was assessed via the Day-Night Task (Gerstadt, Hong, & Diamond, 1994). The Day-Night Task yields a single inhibitory control score ranging from 0 to 16, with higher scores indicating better inhibitory control. Finally, second-order ToM was assessed via an adapted version of the birthday puppy story task (Rush, Stolzenberg, Quas, & Lyon, 2015; Sullivan, Zaitchik, & Tager-Flusberg, 1994). Children listen to the story and then answer two critical item questions. Correct responses to the first item indicated second-order ignorance understanding and correct responses to the second item indicated second-order false belief understanding.

#### 2.2.3. Scripted toy play event

Following administration of the working memory, inhibitory control, and ToM measures, the primary interviewer excused herself, and a second research assistant (RA) entered and engaged children in scripted play with toys located in boxes on a bookcase. Specifically, eight boxes, each with a photo of a toy contained within, were displayed on the bookcase. The RA removed 6 of the 8 boxes, one at a time, labeled the toy and demonstrated specific, scripted actions with each before encouraging the child to play with the toy for approximately 30 s. The toy was then placed back in the box and returned to the shelf with the photograph of the toy still clearly visible.

Children were randomly assigned to one of two toy interaction conditions. For half the children, that is, those in the **Break Condition**, two toys (a car and a Rubik's cube) were rigged to break in the child's hand. The RA reacted negatively to the toy breakage, for instance, by stating, "Oh, no! You pulled the car backwards and it broke. This is not good. We'd better put the car back so nobody knows it's broken." In addition, at the end of the toy play interaction, the RA asked children not to tell

their parent or anyone else about the toy breakage or they might both get in trouble. The remaining children were in the **No-Break Condition**, whereby children still played with the six toys, but all functioned normally.

#### 2.2.4. Parent-child interview

While the child was interacting with the RA, the experimenter explained to parents that they would be asked to question their child about the interaction when the child returned. Parents were given a list of possible toy interactions that described all eight toys. The list explicitly mentioned that the car and Rubik's cube sometimes break, and described the types of actions that could be completed with the two toys with which no child interacted (the cow and the camera). As a part of the larger study, half of the parents were also randomly assigned to a Suggestion Condition, meaning they were given an additional verbal instruction that explained that children might be reluctant to discuss negative aspects of the toy interactions and that it was important for parents to find out about negative elements. The Suggestion Condition instructions were not included in written text.

After parents were given a few minutes to review the printed instructions, they were given 5 min in which to question their child about the toy interactions. At the end of their interview, parents in the Suggestion Condition were given additional, scripted suggestive questions to ask their child. Parents in the control condition concluded their interview. The interview was videotaped and later transcribed for coding.

#### 2.2.5. Interviewer-child interview

The interviewer returned to the room and the parent left. The interviewer then questioned children about the toy interactions using a structured interviewing protocol. She first built rapport with the child using recommended rapport-building procedures (Roberts, Lamb, & Sternberg, 2004). Per the larger study, children were randomly assigned to either a Putative Confession or Control Interview Instruction Condition. In the Putative Confession condition, children were told at the start that the study confederate told the interviewer that he wants the child to tell the truth and were then asked to recall everything. In the control condition children were simply prompted to tell everything they could remember. Next, all children were questioned with neutral prompts (e.g. "What happened next?") until the child indicated that (s)he could provide no further information. The interviewer then asked cued-recall questions (e.g. "You said you played with the [toy]. Tell me everything you did with the [toy]").

After asking the recall questions, the interviewer asked a series of yes/no questions about the toy interactions, including those about whether children played with each toy and whether anything bad happened with any of the toys. Finally, the interviewer asked about specific actions and breakage with each of the toys. These latter questions included suggestive questions, defined as those containing a false supposition and implying an expected response, in line with previous literature on children's suggestibility (Bruck & Ceci, 1999; Goodman & Reed, 1986; Lamb et al., 2007). There were six suggestive questions about false elements of the interaction (e.g. There were three Slinkys, right? see Appendix) that all children were asked. Children who still had not disclosed breakage were further asked two additional highly suggestive questions about toy breakage: 1) "When you played with the car it broke, right?", 2) "When you played with the cube it broke, right?" (These were falsely suggestive only for children for whom no toys broke). The interview was videotaped for later transcription.

#### 2.2.6. Debriefing

After the interview, children were thoroughly debriefed and errors were corrected. Parents of children who kept true breakage a secret during the parent-child interview were given a separate parental debriefing that explained secrecy as a normative part of children's development.

### 2.3. Coding

For all variables, a random sample of at least 20% of the full sample was coded by two independent coders who were blind to the study hypotheses and to children's breakage condition assignment. Disagreements were discussed until a final set of codes was agreed upon. The reliability samples matched the larger sample in terms of child age and experimental conditions.

#### 2.3.1. Autobiographical parent-child conversation

Parent-child conversations were coded for elements of parental elaborative style following procedures common to prior relevant research (e.g. Leichtman et al., 2000; Principe et al., 2013). All on-topic parent utterances were first coded for utterance type (87% agreement):

**Open-ended questions:** These questions, which were typically WH format (e.g. including the prompt who, what, when, where, why, or how), asked children to recall an element of the interaction, e.g. "What did you get to bring home?" and "Why were you a little bit sad?"

**Yes/no questions:** These asked children to confirm or deny an element of the interaction, e.g. "Did it fall off the table?"

**Context statements:** These were fact or evaluative statements that did not require a response, e.g. "And she spun around too many times."



**Table 1**

Univariate analyses of variance (ANOVAs) with experimental conditions predicting demographic variables and Parent Elaborativeness.

	Break Condition				Suggestion Condition				PC Condition			
	df	F	$\eta_p^2$	p	df	F	$\eta_p^2$	p	df	F	$\eta_p^2$	p
Child Age	68	0.23	0.004	0.636	68	0.03	0.001	0.854	68	0.20	0.003	0.654
Child Ethnicity	68	0.10	0.002	0.748	68	1.38	0.022	0.245	68	2.49	0.040	0.120
Family Income	65	0.01	0.000	0.936	65	0.23	0.004	0.635	65	1.69	0.029	0.199
Maternal Education	66	0.08	0.001	0.775	66	0.001	0.000	0.974	66	4.48	0.072	0.039
Parent Elaborativeness	68	0.05	0.001	0.832	68	0.27	0.004	0.605	68	0.46	0.008	0.501

**Evaluation questions:** These requested the child's feedback about the interaction, e.g. "And what did you think about that?" We coded these questions separate from memory questions given that they did not specifically assess the child's memory for the event, but rather asked for the child's evaluation of the event.

**Evaluation statements:** These were statements that provided feedback about the child's response, e.g. "That's right". While all types of feedback were included in this category, in line with [Leichtman et al. \(2000\)](#), it is important to note that these evaluations were almost exclusively positive or neutral feedback. In a random sample of 25% of the transcripts 96% of evaluations were positive, e.g. "that's right, yeah" or neutral, e.g. "okay".

Utterances were then categorized as either elaborative or repetitive. The first time an utterance was used it was coded as **elaborative**. This category also included evaluative information. If the parent repeated a previous utterance made by either the parent or the child, without adding additional evaluative information, it was coded as **repetitive**. Percent agreement for elaborations + evaluations and repetitions was 91%.

Elaborations + evaluations and repetitions were of primary interest in the present study. A proportion score was created by dividing elaborations + evaluations by the total number of elaborations + evaluations + repetitions, hereafter referred to as *elaborativeness*. Elaborativeness was the primary variable of interest as it indexed elaborations + evaluations relative to total on-topic utterances and thus controlled for use of repetitions.

In addition to coding parent utterances in the parent-child conversation, the total word count of children's responses was calculated using Microsoft Word.

### 2.3.2. Parent-child toy play interaction interview

The parent-child interview about the unshared toy play interaction was coded for the types of questions parents asked, including specifically, the number of suggestive questions asked (94% agreement) and the number of times children gave incorrect responses to those questions (98% agreement). To get a suggestibility score for children, the number of incorrect responses to parent suggestions was divided by the total number of suggestive questions parents asked.

### 2.3.3. Interviewer-child toy play interaction interview

The interviewer-child interview was coded for children's responses to the yes/no questions about toy play (98% agreement). Separate scores were created to reflect children's accuracy to the 6 suggestive questions about event elements, accuracy to the 2 suggestive questions about breakage, and accuracy to non-suggestive questions. Children's statements in free recall were coded for accuracy regarding the person performing each action referenced, the action referenced, and the toy referenced, if any. Percent agreement ranged from 90% for the action performed to 98% for the toy referenced.

## 3. Results

### 3.1. Preliminary analyses

A series of ANOVAs with the larger study's experimental manipulations: Break Condition (break, no break), Suggestion Condition (suggestion, control), Putative Confession Condition (putative confession, control) entered as the independent variables revealed no differences between the break and no break conditions or suggestion and control conditions in age, child ethnicity, family income, parental education, or parental elaborativeness ([Table 1](#)). There was an unexpected significant difference in maternal education between the putative confession and control conditions such that children randomly assigned to the putative confession condition had mothers with higher levels of education ( $M = 5.16$ ,  $SD = 0.95$ ) than did children in the control condition ( $M = 4.44$ ,  $SD = 1.26$ ). Therefore, maternal education was included as a control variable in analyses with the putative confession variable. Child age, child ethnicity, family income, and parental elaborativeness did not vary by Putative Confession Condition ([Table 1](#)). Thus, for the most part, the conditions were well balanced in terms of child age, demographics, and parental elaborativeness.

Next we tested for the potential effects of the Suggestion Condition and Putative Confession Condition on the variables of interest. Participants were assigned to these conditions as part of a larger study, but these manipulations were not of primary interest in the present study. For a more in-depth description of the data resulting from these manipulations see ([Rush et al., 2015](#)).

**Table 2**

Descriptives of age, working memory, inhibitory control, Theory of Mind (ToM), Elaborativeness, Elaborations + Evaluations, and Repetitions by Break Condition.

Variable	No Break Condition		Break Condition	
	N	M(SD)	N	M(SD)
Age	28	5.79(1.23)	40	5.93(1.00)
Working Memory	28	6.86(1.76)	40	6.90(1.98)
Inhibitory Control	28	13.93(2.97)	40	13.28(3.19)
ToM	27	1.15(0.86)	39	1.23(0.74)
Elaborativeness	28	9.49(5.44)	40	9.77(5.42)
Elaborations + Evaluations	28	35.79(19.01)	40	38.40(22.75)
Repetitions	28	3.82(3.21)	40	3.80(3.35)

Chi-square analyses revealed that children were evenly distributed to the Suggestion Conditions,  $\chi^2(1, N=68)=0.48$ ,  $p=0.623$ , and Putative Confession Conditions across Breakage Condition,  $\chi^2(1, N=68)=0.04$ ,  $p=1.00$ . Thus, assignment to these conditions was not confounded with assignment to Breakage Condition. We were also interested in whether the Suggestion and Putative Confession Conditions were associated with any of our primary variables of interest. Because maternal education varied by Putative Confession Condition it was included as a covariate in analyses with this variable.

ANOVAs were conducted with the Suggestion and Putative Confession Conditions predicting the number of suggestive questions parents posed to children and children's resistance to suggestive questions posed by the interviewer. Because of low frequencies of incorrect responses to parent false suggestions (explained in more detail in the primary analyses), suggestibility with parents was coded as a binary variable (0 vs.  $\geq 1$  incorrect responses to suggestive questions). Thus condition effects on suggestibility with the parent were tested via a Chi-Square test and a logistic regression.

Neither the Suggestion,  $F(1, 59)=0.62$ ,  $p=0.434$ , nor the Putative Confession Conditions,  $F(1, 57)=0.81$ ,  $p=0.373$ , significantly predicted the number of suggestive questions posed by the parent in free recall. Nor did either condition significantly predict children's resistance to suggestive questions by the interviewer,  $F(1, 64)=1.30$ ,  $p=0.259$ ;  $F(1, 62)=0.04$ ,  $p=0.844$ . Lastly, there were no differences in the likelihood that a child would resist their parent's false suggestions based on assignment to Suggestibility Condition,  $\chi^2(1, N=68)=2.846$ ,  $p=0.144$ , or Putative Confession Condition,  $\chi^2(1, N=68)=1.51$ ,  $p=0.236$ . Only the toy breakage condition was retained in the primary analyses given our theoretical interest in this variable. See Table 2 for descriptive statistics of our primary predictor variables by breakage condition.

Our primary research questions focused on (1) how parental reminiscing style when discussing a shared autobiographical event related to parents' use of suggestive questions when questioning their children about a range of details regarding their toy interaction experience (that is, details specifically of the potential transgression as well as other details about the event), and (2) how parental reminiscing style related to children's resistance to suggestive questions about the toy interactions posed by both their parent and the unfamiliar interviewer. We were also interested in exploring whether parent reminiscing style predicted children's suggestibility above the contributions of Theory of Mind (ToM), working memory, and inhibitory control, given past work showing that these variables are fairly consistently positively related to children's suggestibility (e.g. Clarke-Stewart et al., 2004; Jaschinski & Wentura, 2002; Karpinski & Scullin, 2009; Ruffman et al., 2001; Scullin & Bonner, 2006). Thus, the contributions of these variables to suggestibility are explored and included as covariates where appropriate.

### 3.2. Parent and child performance in the autobiographical conversation and child responses about toy play

The number of conversational turns in the autobiographical parent-child conversation ranged from 7 to 102 ( $M=41.13$ ,  $SD=23.49$ ), with the number of elaborations+evaluations in these turns ranging from 5 to 91 ( $M=37.32$ ,  $SD=21.18$ ) and repetitions ranging from 0 to 14 ( $M=3.81$ ,  $SD=3.27$ ). Elaborations+evaluations were significantly more prevalent than repetitions,  $t(67)=14.433$ ,  $p<0.001$ , 95% CI=28.880, 38.149, but elaborations+evaluations and repetitions were also strongly correlated,  $r=0.67$ ,  $p<0.001$ . Because of these associations, a proportion score of elaborations+evaluations/(elaborations+evaluations+repetitions) was calculated. Stated another way, this proportion accounted for repetitions when determining elaborativeness, given that elaborations+evaluations and repetitions were correlated but that elaborations+evaluations were considerably more prevalent and thus controlling for repetitions should not overly diminish a parent's elaborativeness.

#### 3.2.1. Parent reminiscing style and children's talkativeness in the autobiographical conversation

Elaborations+evaluations were correlated with children's talkativeness, as indexed by children's total word count, in the autobiographical event conversation,  $r=0.46$ ,  $p<0.001$ , and repetitions were marginally correlated with word count  $r=0.23$ ,  $p=0.061$ . However, these correlations may indicate simply that parents who asked more questions had children who said more given that the elaborativeness variable, which controlled for repetitions, was not significantly correlated with children's word count,  $r=0.07$ ,  $p=0.593$ .

### 3.2.2. Parent use of suggestive questions

Parents asked their children an average of 62 ( $SD = 15.41$ ) questions about the toy play interactions. Of these, 25% were open-ended, 29% were closed-ended, and 46% were follow-ups or facilitators, the latter meaning prompts that encouraged children to expand on their previous responses and/or to continue talking. Up to 24% of parents' questions about the toy interaction were suggestive, meaning they were stated in a way that communicated an expected response or assumed details that the child had not already mentioned. We were specifically interested in whether parents with a more elaborative reminiscing style (i.e. those using a higher proportion of elaborations + evaluations) asked a higher number of suggestive questions about the non-shared toy interactions than parents with a less elaborative style, given that previous research has demonstrated that parent use of elaborations is associated with increased suggestive questions (Principe et al., 2013). First, following the approach used by Principe et al. (2013), we examined the relations between parent elaborations + evaluations and suggestions and parent repetitions and suggestions separately. As expected, parents who used more elaborations + evaluations in their reminiscing conversations asked a higher proportion of suggestive questions about the toy interaction,  $r = 0.28$ ,  $p = 0.032$ . The number of repetitions was not associated with suggestive questions. Second, because, as mentioned earlier, raw scores do not take into account repetitiveness, we correlated the *proportion* of parent elaborations + evaluations out of all coded utterances (elaborations + evaluations / (elaborations + evaluations + repetitions)) with the proportion of suggestive questions. No significant associations emerged. Thus, parents' use of elaborations in relation to their overall talkativeness during the reminiscing conversation was not significantly associated with how often they asked suggestive questions in the parent-child interview.

### 3.2.3. Child suggestibility with a parent

Next we examined children's responses to their parents' suggestive questions. Children gave incorrect responses to only 5% of their parents' suggestive questions. This was due in part to the fact that many of the parents' suggestive questions implied a correct or undocumented response in a suggestive format such as a tag question (e.g. "You have one of those at home, right?"). Approximately 18% of the suggestive questions asked whether children played with the false toys (i.e. those that were not played with). Only 1 question asked across all children in the no-break condition suggested false toy breakage, whereas 24 questions, across children in the break condition, suggested true breakage. These true breakage questions were distributed across 12 of the 32 parents in this condition with complete data available. While, as mentioned, children resisted the majority of their parents' suggestions, on average, just over half of the children (54%) gave an incorrect response to at least *one* of their parent's suggestive questions. None of these errors involved false claims of toy breakage. Responses instead concerned such topics as agreeing that they did not turn the cube forcefully enough to make it work (the cube was actually broken), and agreeing that the toy cow mooed (children did not play with the cow).

Because children responded accurately to a majority of their parents' suggestions and only about half of children ever answered a parent's suggestive question inaccurately, the distribution of the proportion of suggestive questions children answered correctly was heavily skewed. This made it necessary to recode the child response variable as a dummy-coded binary variable representing success or failure at answering all parent suggestions accurately. Because this dummy-coded variable could not account for the number of parent suggestive questions asked, the number of suggestive questions was included as a separate control variable.

Before testing our hypotheses concerning the extent to which parental elaborativeness predicted children's suggestibility, we tested for the effects of other characteristics known to influence children's accuracy in order to control for these factors in the primary models. Specifically, we explored the potential contributions of second order ToM, working memory, and inhibitory control to children's susceptibility to parent suggestions via a binary logistic regression. Age and number of parent suggestive questions were entered on the first step followed by the cognitive variables, predicting whether children gave an incorrect response to at least one of their parent's suggestive questions. Only working memory significantly predicted children's suggestibility with their parent,  $B(SE) = -0.49(0.22)$ ,  $p = 0.026$ ,  $OR = 0.61$ ,  $95\% CI = 0.40-0.94$ , such that unexpectedly, higher working memory was associated with slightly higher rates of suggestibility with a parent. Working memory was thus included in the primary analysis.

Next we tested for the effect of parental reminiscing style on children's resistance to parent suggestions accounting for child age and working memory as well as for the number of suggestive questions asked by the parent. A binary logistic regression was conducted with the main effects of age and number of parent suggestive questions entered on the first step as control variables; breakage condition, working memory, and parental elaborativeness entered on the second step as primary predictors; and all 2-way interactions between the primary predictors entered on the final step, predicting the likelihood of resisting all parent suggestions. The second step was significant,  $\chi^2(3, N = 59) = 11.06$ ,  $p = 0.011$ . Unexpectedly, children with higher working memory scores were significantly less likely to resist their parents' false suggestions,  $B(SE) = -0.56(0.22)$ ,  $p = 0.014$ ,  $OR = 0.57$ ,  $95\% CI = 0.36-0.89$ . No other main effects or interactions were significant.

### 3.2.4. Child responses to non-suggestive interviewer questions

Following the parent-child toy play interview, interviewers questioned children about the toy play interaction using a standardized, structured interview protocol which included free recall prompts followed by yes/no questions, including those specifically about toy play, and the suggestive questions that are the primary focus of the present study. Children provided an average of 14.49 ( $SD = 7.34$ ) accurate statements about the toy interactions during free recall. The average proportion of correct responses children provided to all non-suggestive interviewer yes/no questions was 0.91 ( $SD = 0.10$ ), indicating that



**Table 3**  
Hierarchical Regression Analyses Predicting Children's Resistance to the 6 Interviewer Suggestive Questions about the Toy Interactions.

Predictor	$\Delta R^2$	B	SE	95% CI
Step 1	0.04			
Child's Age		0.23	0.15	[−0.06, 0.53]
Step 2	0.17*			
Child's Age		−0.04	0.17	[−0.39, 0.30]
Elaborativeness		5.80*	2.60	[0.60, 11.00]
Working Memory		0.23*	0.10	[0.02, 0.43]
Break Condition		0.19	0.31	[−0.42, 0.81]
Step 3	0.06			
Child's Age		−0.12	0.18	[−0.47, 0.24]
Elaborativeness		7.69	8.57	[−9.48, 24.87]
Working Memory		−0.21+	1.12	[−2.46, 2.05]
Break Condition		10.37	5.87	[−1.38, 22.12]
Elaborativeness × Working Memory		0.52	1.21	[−1.90, 2.94]
Elaborativeness × Break Condition		−10.17	7.02	[−24.24, 3.90]
Working Memory × Break Condition		−0.12	0.22	[−0.57, 0.32]

Note. + $p < 0.10$  \* $p < 0.05$  \*\* $p < 0.01$ .

overall, children remembered elements of the toy interaction quite accurately. Parental elaborativeness, however, was not significantly associated with children's true free recall statements,  $r = 0.17$ ,  $p = 0.165$ , or proportion of correct responses to non-suggestive questions,  $r = 0.17$ ,  $p = 0.165$ . It was associated only with children's performance across all question types, including misleading suggestions,  $r = 0.29$ ,  $p = 0.015$ .

### 3.2.5. Child suggestibility with the interviewer

A critical novel question addressed in the study concerned whether parental reminiscing style predicted children's suggestibility, not necessarily with their parent, but instead when children were answering questions about a novel, salient event posed by an unfamiliar interviewer. As a reminder, interviewers asked children 6 falsely suggestive questions about general elements of the toy interactions, that is, elements that were not directly related to the alleged toy breakage and hence could be considered peripheral details (Appendix). Children who did not disclose breakage earlier in the interview were further asked 2 additional suggestive questions about toy breakage. The latter two were thus *false* suggestions only for children in the no break condition. Of note, 39 out of 40 children in the toy break condition disclosed true breakage to the interviewer, with all disclosures occurring without suggestive questioning (i.e., during the recall, cued recall, and yes/no questions). No children in the no breakage condition disclosed false breakage without suggestive questions, and only 2 of the 28 children in the no breakage condition disclosed any false breakage in response to the suggestive questions about breakage. Because children were at ceiling for disclosing true breakage early in the interview and at floor for disclosing false breakage at any point during the interview, our primary analyses focused on children's responses to the 6 suggestive questions they were all asked.

Children varied substantially in their resistance to the 6 false suggestions about the toy interaction, answering between 0 and 6 correctly,  $M(SD) = 4.00(1.32)$ . A linear regression was conducted to test the relations between the cognitive variables and children's suggestibility with the interviewer. Age was entered on the first step as a control variable followed by the cognitive variables at the second step. Again, only working memory was associated with children's suggestibility,  $B(SE) = 0.26(0.11)$ ,  $p = 0.021$ , 95% CI = 0.04–0.47 and was thus included in the primary model.

To test our main hypotheses concerning the relations between parental elaborativeness and children's suggestibility with the unfamiliar interviewer, a second linear regression was conducted. Age was entered first, followed by parental elaborativeness, breakage condition, and working memory second, followed by two-way interactions third. The second step was significant, as was the change in  $R^2$ . In support of our primary hypothesis, children of more elaborative parents were significantly more resistant to suggestive questions posed by the unfamiliar interviewer (Table 3). In addition, and also as predicted, higher working memory predicted greater resistance to interviewer suggestions (Table 3).

## 4. Discussion

The present research was the first to test how parental socialization of reminiscing impacts children's suggestibility when they are asked about a range of details regarding a salient, interactive event in an accuracy-focused context. We found that parents who used more elaborations and evaluations when reminiscing also asked more suggestive questions when interviewing their child about a salient event, but that their children were no more susceptible to suggestion from the parent. Most importantly, findings demonstrate that parents with an elaborative reminiscing style, which has been shown to increase the *amount* of information children recall, have children who are also better able to resist false suggestions from an unfamiliar interviewer. And further, this effect was additive to the contributions of working memory to children's abilities to resist an interviewer's false suggestions. This research provides valuable insight into how parents impact children's cognitive and social development in a context that has meaningful real-world implications for educational, legal, and clinical settings.

#### 4.1. Parent use of suggestive questions

Parental reminiscing style predicted how parents questioned their children about the toy interactions. Parents who used more elaborations and evaluations when reminiscing with their children asked a higher proportion of suggestive questions when later trying to elicit information from their children about the toy interactions than parents who used fewer elaborations and evaluations in the initial reminiscing conversation. This finding adds to previous findings indicating that parents who use more elaborations in a playful interview with their child also use more suggestive questions in that interview (Principe et al., 2013). However, here we assessed elaborativeness and parental questioning about the toy play event in separate conversations in order to examine elaborativeness in reminiscing conversations as they are typically assessed and compare this with a separate, and arguably quite different questioning context- that regarding an unshared potential transgression. Limited research on parent-child reminiscing about transgressions suggests that parents may be less elaborative during transgression conversations (e.g. Leyva, Reese, Grolnick, & Price, 2008). Conversations about transgressions may also vary in conversational context and goals (e.g. whether the event was shared or unshared, whether parents focus on conveying moral lessons). Thus, it was important to assess elaborativeness separately from the transgression conversation in order to more directly compare our findings with those of previous studies.

Importantly, when we controlled for parents' use of repetitions in the reminiscing conversation by taking the proportion of elaborations used (elaborations + evaluations)/(elaborations + evaluations + repetitions), the relation between parental reminiscing style and suggestive questioning about the toy breakage event was no longer significant. Thus, it may not be parental use of elaborations per se that predicts the use of suggestive questions, but rather, parents who engage their children in lengthier interviews likely ask a higher proportion of suggestive questions. Lengthy conversations with high proportions of suggestive questions may be indicative of parents making extra effort to elicit complete reports from their children.

#### 4.2. Child suggestibility

Elaborative reminiscing has been shown to improve children's ability to structure events in a meaningful format and encourage children to report as many details about the past as possible (e.g. Boland et al., 2003; Harley & Reese, 1999; Hudson, 1990; McCabe & Peterson, 1991; Peterson et al., 1999; Reese & Newcombe, 2007; Reese et al., 1993). In other words, elaborative reminiscing style seems to teach children how to maintain a mutually-constructed conversation, to communicate to children that lengthy memory reports are desirable, and to provide the tools with which to better recall and report the past. While these functions facilitate children's ability to produce lengthy memory reports, the same functions could lead to heightened suggestibility insofar as children are relying heavily on parents for guidance regarding specific topics and evaluations of their experiences. Alternatively, because those functions enhance memory traces, they could also increase children's resistance to suggestions. The latter appears to be true when children are in an interview that promotes objective reporting, such as when being questioned by an unfamiliar adult about an alleged transgression.

##### 4.2.1. Parent-child interview

Parent elaborativeness was unrelated to children's resistance to their parents' suggestions, but this is largely a result of children responding quite accurately to their parents' suggestive questions, producing little variability to examine between children. Children may have been particularly accurate with their parents for several reasons. First, some of the parents' suggestions were accurate and were apparently designed to clarify previous assertions and insinuations made by the child. When discussing playing with the Rubik's cube, for instance, one child in the break condition said "I tried and it was not moving" and the parent followed up with "the parts of the cube were not moving, right?" Second, children were likely aware that parents were ignorant about what occurred during the toy interactions. Demonstrating ignorance has been associated with children's resistance to suggestion (Welch-Ross, 1999). And third, children's resistance was likely also a function of the content of the suggestions. Children were being questioned about an alleged transgression, a potentially serious, negative event.

##### 4.2.2. Interviewer-child interview

In the interviewer-child interview all but one child in the break condition was forthcoming about true toy breakage early in the interview, obviating the interviewer's need for suggestive questions specifically about breakage. Moreover, all but two children in the no break condition resisted making a false disclosure even after direct suggestions that breakage occurred. Thus, children were highly accurate regarding the most central details of the alleged transgression. This was even despite the fact that parents were lead to believe breakage might have happened and asked children sometimes quite suggestive questions about it. Then, the interviewers followed by again asking children about breakage and "bad things" happening with the toys, not once but multiple times, including via highly suggestive questions. Perhaps if children were interviewed more suggestively and with longer retention intervals, more variability in suggestibility for these central event components would be evident, possibly in relation to parents' elaborativeness. Further, children in the breakage condition who did experience the toy breakage would probably have been motivated to acquiesce to false suggestions that breakage did *not* occur. Future research should utilize this alternative paradigm in order to achieve more variation in children's suggestibility about the central transgression event.

In terms of children's suggestibility regarding other elements of the toy-play event, children were much more likely to falsely acquiesce than they were about breakage per se. This variability in general responding allowed us to test and confirm our primary hypothesis: children of highly elaborative parents were more resistant to false suggestions from an unfamiliar interviewer about some facets of the toy activity. It also highlights the importance of considering children's responding about all elements of to-be-remembered events given that responding patterns vary by the centrality of event details (e.g. Peterson, 2011; Rush, Quas, & Yim, 2011). Previous research suggests that, when a to-be-remembered event has few contextual cues to indicate that accuracy is important, the social function of reminiscing may be emphasized, thus *increasing* children's suggestibility, particularly for children of elaborative parents (see Principe et al., 2013). However, a potential transgression may focus children on monitoring their memories more closely for accuracy, given that negative consequences can ensue. In this case, while all children were highly accurate about the transgression itself, children of elaborative parents were, as well, particularly accurate about details unrelated to the transgression, or peripheral details of the event, likely because they had developed strong narrative and memory skills through conversations with their parents. The skills arguably create strong memory traces that can be relied upon in an accuracy-focused context (Boland et al., 2003; Harley & Reese, 1999; Hudson, 1990; McCabe & Peterson, 1991; Peterson et al., 1999; Reese & Newcombe, 2007; Reese et al., 1993).

Finally, the relation between parent elaborativeness and children's resistance to false suggestions remained significant even when accounting for variations in both child age and working memory ability, the latter of which was also a significant predictor of children's resistance to suggestions. The interaction between elaborativeness and working memory was not significant, however, when the main effects were included in the model, suggesting that it was not the case that children with both highly elaborative parents and high working memory were particularly resistant to false suggestions. Instead, parental elaborativeness and working memory were uniquely beneficial for children. Of note, this finding was in contrast to the negative relation between working memory and resistance to *parent* suggestive questions globally. This finding was unexpected, but may reflect differing expectations and strategies at play when children are interviewed by a parent versus an unfamiliar interviewer (e.g. Goodman, Sharma, Thomas, Considine, 1995; Jackson & Crockenberg, 1998), a possibility in need of further exploration in the future.

As a final note about our primary findings, we were surprised that there were no significant age differences in children's recall with either the parent or the unfamiliar interviewer. It is possible that this was due to the nature of the to-be-recalled event, given that age differences are rare in previous studies using a similar staged event procedure (e.g. Lyon et al., 2014; Rush et al., 2015). It may also be due to the short retention interval in this study. Children were asked to recall the toy play event immediately after it was completed. This brief retention interval may have reduced the variability in children's memory across age.

#### 4.3. Limitations

The success of children's performance regarding disclosure of the transgression highlights the strength of young children's memory and reporting of their experiences. However, it also brings attention to a limitation of the present study. While children in the breakage condition were lead to believe they had performed a transgression, and importantly, a transgression in which an adult was simultaneously implicated, the transgression was minor and it was unclear how children viewed the potential repercussions of disclosing. Research should examine the relations between reminiscing style and children's reporting of a more high-stakes transgression in order to create more variability in children's disclosure of actual breakage. This would better allow examination of the effects of reminiscing style on children's false responding in the face of social pressure. Further, by using approaches utilized in social contamination literature (e.g. Bright-Paul, Jarrold, Wright, & Guillaume, 2012; Garry, French, Kinzett, & Mori, 2008; Shaw, Garven, & Wood, 1997) this research should be able to distinguish how much of children's false responding is socially motivated (i.e. only maintained in the face of the initial misleading questions) or based in memory distortion (i.e. bleeds into non-misleading questions in the second interview). This method would achieve more ecological validity by more directly paralleling, for example, children's legal testimony. Our paradigm also did not sufficiently motivate children who did not participate in toy breakage to falsely disclose breakage. Future research should utilize a paradigm in which the motivation for false disclosure of a potential transgression is higher (e.g. potential reward for disclosure). Using this updated approach may encourage more variation in children's responses thus allowing researchers to examine the relations between parental reminiscing style and children's false disclosures.

We were also unable to separate the effects of different types of feedback parents provided to their children in the autobiographical reminiscing conversation because negative, or corrective feedback was quite rare. Some previous research has suggested that positive and negative feedback should be considered separately and associated with elaborativeness and repetitiveness, respectively (Cleveland, Reese, & Grolnick, 2007). Future research should consider the effects of positive and negative feedback on children's memory performance, particularly their susceptibility to suggestive questioning.

#### 5. Conclusions

This research adds to past research showing that parental socialization of memory sharing teaches children to have lengthier, better structured memory reports by demonstrating that it can also help children accurately report details of a salient event, even despite suggestive questioning. Though children of elaborative parents may be socialized to create more engaging reminiscing conversations, which at times may entail incorporating information from their conversational

partner (for discussion see, for example, Kulkofsky & Klemfuss, 2008; Kulkofsky, 2010; Principe et al., 2013), in a context where accuracy is emphasized these children may be highly resistant to false suggestions. This research has implications within real-world contexts such as the classroom, courtroom, or clinic where adults are concerned with eliciting accurate and complete reporting of children's life experiences.

These findings, by pulling from the separate, but related fields of the sociocultural development of memory and developmental legal psychology, shed light on a novel predictor of children's resistance to false suggestion in fact-focused contexts. This predictor, parental reminiscing style, has already been demonstrated to increase *true* memory and children's abilities to effectively *communicate* that memory (e.g. Bauer & Burch, 2004; Farrant & Reese, 2000; Fivush & Vasudeva, 2002; Flannagan, Baker-Ward, & Graham, 1995; Haden et al., 1997; Harley & Reese, 1999; Hudson, 1990; Leichtman et al., 2000; Low & Durkin, 2001; McCabe & Peterson, 1991; Peterson et al., 1999; Reese et al., 1993; Reese & Newcombe, 2007; Welch-Ross, 1999; see Fivush et al., 2006, for a review). Critically, previous research has also demonstrated that simple training methods *are effective* at increasing parents' elaborative style and consequently, children's memory reports (e.g. Boland et al., 2003; Peterson et al., 1999; Reese & Newcombe, 2007). Thus, this area of inquiry has potential for developing guidelines to prepare children to resist suggestive questioning.

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