

Elaborative Talk During and After an Event: Conversational Style Influences Children's Memory Reports

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An experimental design was utilized to examine the effects of elaborative talk during and/or after an event on children's event memory reports. Sixty preschoolers were assigned randomly to one of four conditions that varied according to a researcher's use of high- or low- elaborative during- and/or post-event talk about a camping event. In a memory conversation 1 day after the event, children who were engaged in high-elaborative during-event talk and those whose memory conversation featured high-elaborative post-event talk reported more information than children in low-elaborative during- or post-event talk groups. Moreover, 3 weeks later, when a standard memory interview was conducted with all children, high-elaborative during-event talk influenced the children's memory reports.

A substantial amount of research demonstrates convincingly the instrumental role that parent-child conversational interactions about

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previously experienced events play in children's autobiographical memory and its development (Fivush, Haden, & Reese, 2006; Nelson & Fivush, 2004). These conversations provide opportunities for children to search memory for the details of past events and to gain practice in using language to provide reports of their experiences. Supplementing this body of work on parent-child reminiscing about past events are recent investigations of the influence of parent-child conversations as events unfold on subsequent memory performance (e.g., Haden, Ornstein, Eckerman, & Didow, 2001). Conversations during ongoing events can impact a child's comprehension of what is being experienced and thereby contribute to subsequent encoding and storage of information in memory. These two types of conversations—after events have been experienced and while they are unfolding—clearly affect many of the processes involved in remembering. Moreover, a consideration of talk *during* and *after* events represents an approach to the study of the development of memory that bridges between two research traditions: the information processing perspective that emphasizes the processes associated with the flow of information within the memory system, and the sociocultural perspective that focuses on the social interactions that may serve to bring about developmental change (Ornstein & Haden, 2001).

An abundant literature concerning mother-child talk about previously experienced events suggests clearly both immediate and long-term differences between children of mothers who use a high-elaborative as compared with a low-elaborative conversational style when talking about the past (e.g., Haden, Ornstein, Rudek, & Cameron, 2009; Harley & Reese, 1999; Peterson, Jesso, & McCabe, 1999; Reese, Haden, & Fivush, 1993). In contrast to mothers demonstrating a low-elaborative style, those with a high-elaborative style ask many open-ended *Wh*- questions, encourage talk about aspects of events in which their children seem interested (i.e., follow-ins), continually add new information, even when their children do not, and frequently offer confirmations and praise of responses made by their children (Fivush & Fromhoff, 1988; Haden, 1998; McCabe & Peterson, 1991; Reese et al., 1993). Longitudinal and experimental findings support the conclusion that children who are engaged by adults in highly elaborative reminiscing report more information in conversations with their mothers (McCabe & Peterson, 1991; Peterson et al., 1999; Reese & Newcombe, 2007) and with researchers (Conroy & Salmon, 2006; Farrant & Reese, 2000; Haden, Haine, & Fivush, 1997; Hudson, 1993; Leichtman, Pillemer, Wang, Koreishi, & Han, 2000; Reese & Newcombe, 2007) than children who participate in low-elaborative reminiscing.

To illustrate, Reese et al. (1993) demonstrated that maternal elaboration during conversations about the past with 40-month-olds is associated positively with the children's memory reports in conversations with their

mothers 1.5 and 2.5 years later. Moreover, Peterson et al. (1999) were successful in manipulating mothers' conversational style when talking with their preschoolers about the past, finding that 1 year later, the children of mothers who received the experimental intervention produced longer, more detailed memory reports than children of mothers who had not received reminiscing instruction. In addition, Reese and Newcombe (2007) recently showed that fully 15 months after an intervention, mothers who received elaborative reminiscing instruction continued to be more elaborative than their uninstructed counterparts and that this instruction had a substantial influence on their children's performance. Indeed, the children of instructed mothers produced more, and more accurate, information in conversations with their mothers than did the children of uninstructed mothers, and some children of mothers who received the intervention also provided more memory information when talking with a researcher. Taken together, the literature concerned with elaborative reminiscing styles demonstrates that the marked individual differences in conversational style that have been found in parent-child conversations about past events have a long-term impact on the development of children's skills for remembering. Not only may children come to report their memories in a more elaborated fashion, but by participating in early elaborative conversations about the past, children may actually come to represent their personal experiences in richly elaborated ways (Fivush, Haden, & Reese, 1996).

An additional line of investigation suggests that conversations that occur before or during an event—particularly a novel or ambiguous experience—may appreciably guide young children's initial encoding and establishment of a representation in memory that, in turn, can be maintained and elaborated through subsequent reminiscing. Whereas the few studies of "preparatory" talk before events suggest its limited effectiveness for children's remembering (Hudson, 2002; McGuigan & Salmon, 2005), a growing body of work focusing on talk during events reinforces the view that elaborative talk as events unfold can dramatically impact children's later memory for the experiences (Boland, Haden, & Ornstein, 2003; Haden et al., 2001; McGuigan & Salmon, 2006; Tessler & Nelson, 1994). Consider, for example, evidence provided by Tessler and Nelson (1994) who observed 3-year-old children as they visited a museum with their mothers and found that the only objects that were later reported were those that had been jointly talked about by both the mother and child during the experience. Similarly, Haden et al. (2001) conducted a longitudinal investigation in which young children took part in three specially constructed activities with their mothers: at 30 months, a camping trip; at 36 months, a bird watching adventure; and at 42 months, the opening of an ice cream store. Features of the activities (e.g., the fish in the camping event) that were jointly handled

and jointly discussed by the mother and child were more often reported than those that were jointly handled but talked about only by the mother, which were more often reported than those jointly handled but not discussed. What is more, this pattern was observed both 1 day and 3 weeks after the events, with a decline in memory reporting over the delay interval apparent only for features that had been jointly handled but talked about only by the mothers during the event.

Other work has shown that elements of an elaborative conversational style are reflected in the “joint” linguistic interactions that occur between parents and children during events. One illustration of such joint engagement comes from contingency analyses showing substantial linkages between a mother *Wh*-question–child response interaction pattern (e.g., the mother asks, “What is the spatula used for?” and the child responds, “For flipping.”) and the children’s subsequent memory reports of component features and elaborative details of events (Hedrick, San Souci, Haden, & Ornstein, 2009; Ornstein, Haden, Coffman, Cissell, & Greco, 2001; Ornstein, Haden, & Hedrick, 2004). Further suggesting that specific types of verbal exchanges during events may be particularly important for remembering is evidence that young children’s memory reports of a picture-taking walk with their mothers was best if their mothers’ conversation during the outing involved relating experiences on the walk to things that their children already knew (i.e., associative talk; Tessler & Nelson, 1994). In addition, in an experimental study (Boland et al., 2003), the children of mothers who were instructed to use four elaborative conversational techniques to enhance their children’s understanding of unfolding events produced longer and more detailed reports of a camping event after 1-day and 3-week delays than the children of mothers who did not receive the explicit instruction.

Although there is now clear documentation of the impact of conversational interactions as events unfold and of subsequent joint reminiscing, information concerning the relative contribution of talk during and after events is limited to one published study. In it, McGuigan and Salmon (2004) experimentally manipulated the level of elaborative talk that a researcher used with 3- and 5-year-old children either during or after a novel zoo event. Elaborative talk during the event facilitated the older children’s subsequent recall of the experience (McGuigan & Salmon, 2004, 2006). Elaborative talk after the event that involved reminiscing with a conversational partner who experienced the event with the child had an even greater effect on correct recall than talk during the event, and this benefit was seen with both age groups. The current study was designed with similar intentions—to investigate the effects of the timing of talk on remembering. Even so, the employed methods addressed specifically the question of whether the

effects of conversation during and after an experience might be additive, such that each of these opportunities to talk about events uniquely contributes to children's subsequent remembering.

In the present investigation, a factorial experimental design was utilized to examine the independent and combined effects of participation in elaborative conversational exchanges *during* and/or *after* an event on children's ability to remember a novel experience. In contrast to McGuigan and Salmon's (2004) investigation in which children experienced elaborative talk at one point in time, in this study the role of elaborative conversational exchanges was manipulated at both encoding and an initial opportunity to retrieve and report memory for the experience. As in the McGuigan and Salmon (2004, 2006) studies, researchers, and not mothers, served as the children's conversational partners in this investigation, affording a high level of experimental control that is clearly necessary to make causal statements about the potential linkages between conversation and remembering. Moreover, consistent with the McGuigan and Salmon study, conversations focused on a single event; in this case, a camping activity. The mean age of the children in the current sample was 4 years, 1 month, which approximates the average age of children in the Boland et al. (2003) study of the impact of maternal conversational style during events on children's memory. Based on the broader literature, it is an age by which high levels of verbal recall with an unfamiliar conversational partner could be expected (e.g., Fivush, Haden, & Adam, 1995).

The children were assigned randomly to one of four groups: (1) high-elaborative during- and post-event talk, (2) high-elaborative during-event talk and low-elaborative post-event talk, (3) low-elaborative during-event talk and high-elaborative post-event talk, or (4) low-elaborative during- and post-event talk. The children's language skills were also assessed because children with more advanced verbal abilities may be better able to encode experiences, as well as to participate in conversations during and after events (see Bauer & Wewerka, 1995; Boland et al., 2003; and Fivush et al., 2006, for related arguments). Memory for the camping event was assessed by a researcher who also implemented the second part of the experimental manipulation—high-elaborative or low-elaborative post-event talk—in a memory conversation 1 day after the experience. Memory was also assessed in a standard memory interview with all children approximately 3 weeks after the event. Given the previously highlighted research findings, the highest levels of recall were predicted to be shown by children in the high-elaborative during- and post-event talk group, whereas it was expected that children in the low-elaborative during- and post-event talk group would evidence the lowest levels of reported memory when interviewed 3 weeks after the event.

METHOD

Participants

Sixty children (34 girls and 26 boys) were recruited from Montessori 3- to 6-year-old classrooms in Illinois, North Carolina, and Virginia. Children who participated in the study ranged in age from 35 to 68 months ($M=4$ years, 1 month), and 90% of the sample was European American.

Procedure

With parental written informed consent, children were seen individually in a quiet area in their schools for three separate sessions. These sessions included language assessments, event engagement involving high- or low-elaborative during-event talk, a memory conversation involving high- or low-elaborative post-event talk, and a standard memory interview. All sessions were audio and video recorded. The second session occurred approximately 1 day after the first ($M=1.48$ days, range 1 to 7 days), whereas the third session was targeted to occur 3 weeks later ($M=23.10$ days, range 18 to 30 days). The selection of these delay intervals parallels the timing of memory report assessments used in previous research (e.g., Boland et al., 2003; Haden et al., 2001).

Language assessments. The children's receptive and expressive language skills were assessed during the first and second sessions, respectively. Receptive skills were tested using the Peabody Picture Vocabulary Test – Third Edition (PPVT-III; Dunn & Dunn, 1997), and expressive skills were assessed with the Expressive Vocabulary Test (EVT; Williams, 1997). The same researcher who took part in the camping event with the children administered both language tests.

Event engagement. After the receptive language assessment in the first session, each child took part in a specially constructed novel camping event with a female researcher (the first author). Based on procedures adapted from Haden et al. (2001), the camping event began with the researcher and child "gearing up" for the adventure by packing backpacks with various food items (e.g., hot dogs, potato chips) and camping equipment (e.g., canteen, lantern) to take on the trip. Next, they traveled along a walking path to a fishing pond, where they could catch fish using a fishing pole and net. After fishing, they continued on to a campsite complete with a grill and picnic setting (e.g., utensils, cookware, blanket) that the dyad could use to cook and eat their play food. The camping event involved, therefore, a set

of components or features—27 in total—that the researcher and child could manipulate and discuss.

Balancing for school and gender, the children were assigned randomly to one of two experimental conditions that varied with respect to the conversational style the researcher used when participating in the camping event with each child. High- and low-elaborative during-event talk scripts were constructed that dictated the conversational style the researcher used to comment about 16 of the 27 features of the camping event. The scripted features were selected based upon an item analysis of the camping event features recalled by a separate sample of 36-month-old children who had been interviewed by a researcher 1 day and 3 weeks after participating in the camping event with their mothers (see Ornstein et al., 2004, for details). Half of the features selected for the scripts were recalled by more than 50% of the children in the previous study: backpacks, path, fish, pond, fishing rod, net, marshmallows, and grill. The other half of the features selected for the scripts were recalled by less than 10% of the prior sample: map, lantern, chicken, cheese, canteens, mustard, tongs, and picnic blanket.

Across the two event engagement conditions, all of the children either provided labels for these features spontaneously or in response to a request by the researcher, or if they could not name the feature, the proper label was provided to them. Also, during the event, the researcher's high- or low-elaborative scripted commentary about the designated features began when each child first demonstrated interest (verbally or behaviorally), indicating attention, and the commentary continued until all elements of the script for that feature were introduced into the conversation. In all conditions, if the child did not initiate engagement with a scripted feature, the researcher did so by requesting a feature label and then making all relevant comments about that feature as dictated by the script. In cases when a child's spontaneous comment preempted the question or statement scripted for a particular feature (i.e., children's spontaneous elaborative talk, as discussed below), the researcher confirmed the child's verbalization, and moved on to the next comment in the script.

As illustrated in the top, left-hand column of Table 1, with children in the high-elaborative during-event talk condition ($n = 30$) the researcher emphasized three techniques associated with an elaborative conversational style when commenting about the 16 scripted features of the camping event. Specifically, the researcher asked *Wh*- questions that requested that the child provide information; made associations between the camping activity and what the child might already know or have previously experienced; and offered positive evaluations that directly praised the child's behaviors and verbalizations. In contrast, as shown in the top, right-hand column of Table 1, with children in the low-elaborative during-event talk condition

TABLE 1
Examples of During- and Post-Event Conversation Exchanges by Experimental Condition

<i>High-elaborative during-event talk condition</i>	<i>Low-elaborative during-event talk condition</i>
Child: "Look what I found!" <i>Picks up fishing pole.</i> Researcher: "Good job! What is that?" Child: "I don't know." Researcher: "That is a fishing rod. What can you do with this fishing rod?" Child: "Catch a fish." Researcher: "Excellent idea. The end of the line has a magnet to put in the fish's mouth." <i>Picks up net.</i> "What is that?" Child: "A net." Researcher: "What should we do with this net?" Child: "Put the fish in it!"	Child: "Look what I found!" <i>Picks up fishing pole.</i> Researcher: "What is that?" Child: "It's a fishing pole." Researcher: "That is neat." Child: "I'm going to catch a fish." Researcher: "I like fishing." <i>Picks up net.</i> "What is this?" Child: "That's a net." Researcher: "I think I'll carry this."
<i>High-elaborative post-event talk condition</i>	<i>Low-elaborative post-event talk condition</i>
Researcher: "There were backpacks for you to use. How many backpacks were there?" Child: "Two." Researcher: "You're right! What did you do with the backpacks?" Child: "Put food in them."	Researcher: "Did you have backpacks?" Child: "Yes." Researcher: "Neat. Tell me more." Child: "That's it."

(*n* = 30) the researcher used repetitive comments that did not add new information to the conversation, asked basic yes/no questions (e.g., "Do you want to carry this?"), and offered very general evaluative comments (e.g., "cool," "neat").

Memory conversation. The second session 1 day after the event began with a memory conversation about the camping event and ended with the administration of the EVT. The children from each during-event talk group were assigned randomly to engage with the researcher in a memory conversation that involved either high-elaborative or low-elaborative post-event talk. One of seven female researchers, all unaware of the child's event engagement condition, implemented this second experimental manipulation. Whereas all children heard the same initial probe—"Tell me what you did

on your camping adventure”—the post-event talk conditions varied in how the researcher followed up on the children’s responses to this first probe. Specifically, as illustrated in the bottom, left-hand column of Table 1, children in the high-elaborative post-event talk condition ($n = 30$) were asked to recall the camping event by a researcher who made use of techniques associated with an elaborative reminiscing style. Following the initial general open-ended probe, the researcher confirmed and positively evaluated the children’s responses, provided scripted new details about the event, and requested new information by asking additional follow-up *Wh-* questions. In the low-elaborative post-event talk condition ($n = 30$), as illustrated in the bottom, right-hand column of Table 1, the researcher instead confirmed what memory information the children provided, but in follow-up asked yes/no questions, and repeated the same general request for more information (e.g., “Cool, tell me more.”) without providing any additional details about the event.

Standard memory interview. All children were interviewed about the camping event by one of seven female interviewers who were unaware of the children’s experimental group membership, following an approximately 3-week delay. The same standard memory interview was used with each child that involved a hierarchically organized set of questions adapted from Haden et al. (2001). The interview began with general open-ended questions (e.g., “What did you do on the camping adventure?”) and was followed by more specific open-ended questions (e.g., “What did you do when you packed up to go camping?”), and finally, by yes/no type probes (e.g., “Did you have backpacks?”). The specific and yes/no probes requested information from the children that had not been provided in response to the general open-ended questions.

Coding

Fidelity check. Stylistic fidelity in carrying out the scripts for event engagement was determined based on a randomly selected subset of 40% of the camping events (12 per event condition). A researcher who was not involved in data collection viewed the videotaped records and checked them against the scripts. Adherence to the scripts ranged from 92% to 100%, indicating that the researcher made at least 48 of the 52 scripted comments.

Children’s spontaneous production of scripted, during-event talk. The videotaped records of the camping event were used to tally the number of children’s spontaneous verbalizations as the event unfolded that matched information requested or provided in the researcher’s script. This allowed for a determination of the extent to which children preempted the research-

cher's use of the script and produced themselves the information about the scripted features during the event (e.g., "There are fish!"; "I want the blue backpack."). Coding the children's comments allowed for consideration of how the children's verbal participation in the event might have contributed to their subsequent event reports.

Children's memory for the camping event. The children's memory reports were scored from video recordings of the memory conversations and memory interviews conducted at delay intervals of 1-day and 3-weeks, respectively, using a system adapted from previous research (Haden et al., 2001). Specifically, the children's responses to open-ended questions posed by the researchers were coded for the number of component features named, constituting a measure of "feature" naming (e.g., "I had a backpack, a canteen, and a lantern," would be scored as three features recalled). The number of clauses that contained elaborative details about the features offered in response to open-ended questions was also scored to form the measure "feature elaborations" (e.g., "My backpack was red, and [the researcher's] was green."). Reliability was established by two coders who independently scored 25% of the memory conversations and 25% of the memory interviews about the camping event. Percentage agreement in scoring the memory conversations ranged from 87.3% to 96.2%, averaging 93.3%. Agreement scoring the memory interviews ranged from 82.2% to 95.5%, averaging 92.1%.

RESULTS

Preliminary Analyses

Preliminary screening of the frequency distributions and descriptive statistics led to the identification of outlier scores (two or more full standard deviations above or below the group mean) for measures of six children's reports in the memory conversation (three children had outlying scores for features named, and three different children obtained outlying scores for feature elaborations) and two children's reports of feature elaborations in the memory interview. Data were missing for one child who did not complete the memory conversation and two children who did not complete the memory interview. The outlying scores were each adjusted to the next highest score, and these changed scores were used in all of the presented analyses. The missing data points were substituted with group means, in what is generally viewed as a conservative approach for handling missing values (Tabachnick & Fidell, 2000). These changes and substitution of scores did not alter the pattern of significant results that were obtained in preliminary

analyses in which the outlying scores were not adjusted and the missing scores were not estimated.

All preliminary and main analyses were conducted initially with gender of child as a between-subjects factor, but with only one significant main effect found (for boys spontaneously producing more scripted talk during the event than girls), and no interactive effects, gender was not included in the main analysis report. A composite measure of the children's PPVT and EVT scores was created by averaging the standardized scores, primarily because the scores were intercorrelated ($r = .43$, $p < .01$). Moreover, although the correlations between the EVT scores and the memory measures were more modest ($r_s = .21$ – $.35$) than those between the PPVT scores and the memory measures ($r_s = .32$ – $.49$), all but one correlation (between EVT and 1-day feature elaborations, $r = .21$) was statistically significant.

Children's total language scores, spontaneous production of scripted during-event talk, and age at the time of event engagement are presented in Table 2 as means (and standard deviations) for each experimental condition. Preliminary analyses of these data via a 2 (During-Event Talk: High Elaborative, Low Elaborative) \times 2 (Post-Event Talk: High Elaborative, Low Elaborative) multivariate analysis of variance (MANOVA) indicated that the experimental groups did not differ in terms of the children's total language score, $F_s(1, 56) = 0.48$ – 1.5 , $ps > .05$, or age, $F_s(1, 56) = 0.07$ – $.26$, $ps > .05$. Across conditions, the children produced, on average, 3.9

TABLE 2
Children's Age and Language Variables by Experimental Condition

	<i>During-event talk</i>		<i>M</i>
	<i>High-elaborative</i>	<i>Low-elaborative</i>	
Age			
High-Elaborative Post-Event Talk	48.47 (6.85)	50.00 (4.27)	49.03 (6.57)
Low-Elaborative Post-Event Talk	49.60 (6.45)	49.73 (7.21)	49.67 (6.72)
<i>M</i>	49.03 (6.57)	49.87 (5.83)	
Total Language Score			
High-Elaborative Post-Event Talk	118.06 (10.94)	113.03 (10.39)	115.55 (10.79)
Low-Elaborative Post-Event Talk	113.60 (10.21)	112.20 (8.99)	112.90 (9.48)
<i>M</i>	115.83 (10.64)	112.61 (9.56)	
Children's Spontaneous Production of Scripted During-Event Talk			
High-Elaborative Post-Event Talk	4.40 (1.88)	4.20 (2.73)	4.30 (2.30)
Low-Elaborative Post-Event Talk	3.86 (2.26)	3.13 (2.47)	3.50 (2.35)
<i>M</i>	4.13 (2.06)	3.81 (2.69)	

Note. Standard deviations in parentheses.

comments that matched details included in the during-event talk script, a number representing 7.5% of the 52 scripted comments. The children's spontaneous production of these comments, however, was not significantly different among the experimental groups, $F_s(1, 56) = 0.52-2.38, p_s > .05$. An additional analysis of variance (ANOVA) that considered whether the length of the delay interval for the final interview varied by experimental group revealed no significant differences among the groups, $F_s(1, 56) = 0.01-1.50, p_s > .05$.

Preliminary analyses further considered associations among the measures of the children's language skill, age, and talk during the event and the children's event reports. As illustrated by these correlations on display in Table 3, age was not associated with any of the other measures and thus was not considered further. As also shown in Table 3, the children's total language scores were not associated with the children's spontaneous production of scripted during-event talk. In contrast, as illustrated in the table, the children's total language score was correlated significantly with their memory reports. As also shown, the children's spontaneous production of comments in the researcher's during-event talk script was associated with the children's later reporting of feature names and feature elaborations in the memory conversation but not in the memory interview. Finally, preliminary correlational analyses were conducted to ensure that the variability in the

TABLE 3
Correlations Among Child Age, Language Score, Spontaneous Event Talk, and Event Memory Reports

<i>Child variable</i>	1	2	3	4	5	6	7
1. Age	—						
2. Total Language Score	.22	—					
3. Children's Spontaneous Production of Scripted During-Event Talk	.08	.16	—				
4. Feature Naming in Memory Conversation at the 1-Day Delay	.15	.41**	.39**	—			
5. Feature Elaborations in Memory Conversation at the 1-Day Delay	.13	.32**	.30*	.67**	—		
6. Feature Naming in the Memory Interview at the 3-Week Delay	.17	.45**	.08	.52**	.36**	—	
7. Feature Elaborations in the Memory Interview at the 3-Week Delay	.07	.50**	.20	.58**	.39*	.60**	—

* $p < .05$; ** $p < .01$.

length of the delay before the final interview did not impact the children's memory reports. In this regard, length of delay was not correlated with the children's reporting of features or feature elaborations in the memory interview, $r_s = .00$ and $-.04$, respectively, $p_s \geq .74$.

Given these patterns, it was judged appropriate to include the children's standardized total language score as a covariate in all main analyses. The children's spontaneous talk during the camping event was included as a second covariate in the analyses of the memory conversations, so that it was possible to consider the effects on memory of the conversational style used by the researcher over and above the effects of the children's during-event talk.

Children's Memory Reports During the Memory Conversation

The key research question concerned the impact of high-elaborative during- and post-event talk on the children's memory for the experience. To begin to address this question, the analyses focused first on the children's reporting of features and feature elaborations in the memory conversations that occurred 1 day after the event. Table 4 displays the means and standard deviations for each of the memory measures by experimental group. Overall, the children named 5.01 or 18.5% of the 27 features of the camping event in the memory conversation. In addition, across conditions, children reported approximately 11.89 feature elaborations during the memory conversation. To test differences in the memory reports as a function of experimental condition, a 2 (During-Event Talk) \times 2 (Post-Event Talk) full factorial multivariate analysis of covariance (MANCOVA) was performed with both the children's standardized total language score and their spontaneous

TABLE 4
Mean Number of Features and Feature Elaborations Reported by Children During the Memory Conversation 1 Day After the Event

Reported memory	During-event talk		<i>M</i>
	High-elaborative	Low-elaborative	
Feature Naming			
High-Elaborative Post-Event Talk	7.06 (2.65)	5.26 (2.15)	6.16 (2.54)
Low-Elaborative Post-Event Talk	4.60 (3.90)	3.13 (2.61)	3.86 (3.34)
<i>M</i>	5.83 (3.51)	4.20 (2.59)	
Feature Elaborations			
High-Elaborative Post-Event Talk	21.80 (4.91)	16.93 (6.61)	19.37 (6.23)
Low-Elaborative Post-Event Talk	5.73 (7.14)	3.11 (1.44)	4.42 (5.23)
<i>M</i>	13.76 (10.15)	10.02 (8.45)	

Note. Standard deviations in parentheses.

production of high-elaborative comments during the event as covariates, and feature naming and feature elaborations as the dependent variables.

As is apparent in the top portion of Table 4, in the memory conversation 1 day after the event, the children who during the event experienced the researcher's use of a high-elaborative conversational style tended to report more features than children in the low-elaborative during-event talk group. The main effect of during-event talk condition was marginally statistically significant, $F(1,54) = 2.87$, $p < .09$. Moreover, children who were engaged in high-elaborative during-event talk reported in the memory conversations significantly more details about the event features than did children in the low-elaborative during-event talk condition, as reflected by a significant main effect of during-event talk for feature elaborations, $F(1,54) = 4.89$, $p < .05$. As is further summarized in the table, in the memory conversation, the children who were engaged in high-elaborative post-event talk reported nearly twice as many features as the children in the low-elaborative post-event condition, and a significant main effect of post-event talk was obtained, $F(1,54) = 6.50$, $p < .05$. The children in the high-elaborative post-event talk condition also reported in the memory conversation more details about the features of the camping event than did children in the low-elaborative post-event talk group, as reflected by a significant main effect of post-event talk for children's feature elaborations, $F(1,54) = 107.36$, $p < .01$. All interactions related to the children's reports in the memory conversations were nonsignificant, $F_s(1,54) \leq .54$, $p_s \geq .46$.

Children's Memory Reports During the Memory Interview

A second set of analyses of the children's memory focused on their reports provided during the standard memory interview 3 weeks after the event. Overall, the children named 8.00 or nearly 30% of the 27 features of the camping event after the 3-week delay. Moreover, the children reported an average of 21.50 feature elaborations during this interview. When these estimates of memory are compared with those obtained in the memory conversation, it appears as if children's memory for the event is increasing over time. However, this pattern is likely an artifact of the memory interview that included questions about every one of the 27 features present during the event, whereas the memory conversation involved probing about only the 16 scripted features. Differences by group in what the children reported in the memory interviews were examined using MANCOVA, with the children's standardized total language score as the sole covariate.

The children's reporting of memory for features and feature elaborations in response to the interviewer's open-ended questions in the memory interview is presented in Figures 1 and 2, respectively. Inspection of these figures

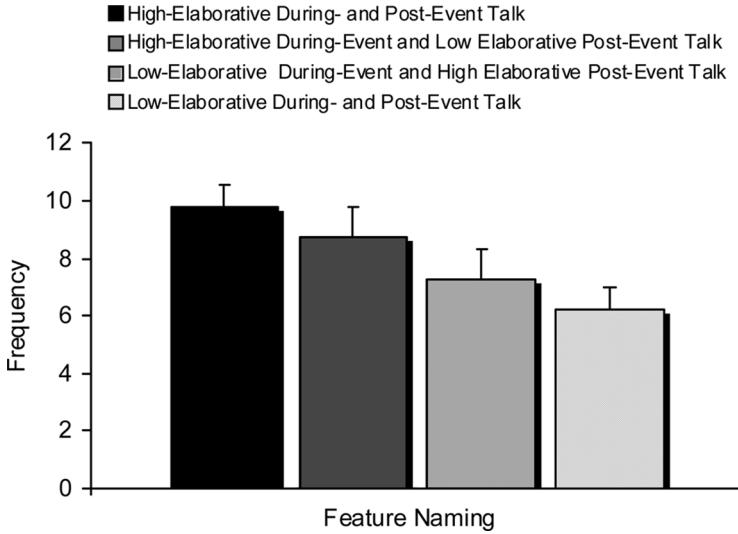


FIGURE 1 Mean feature naming (+SE) by experimental condition during the standard 3-week delay interview.

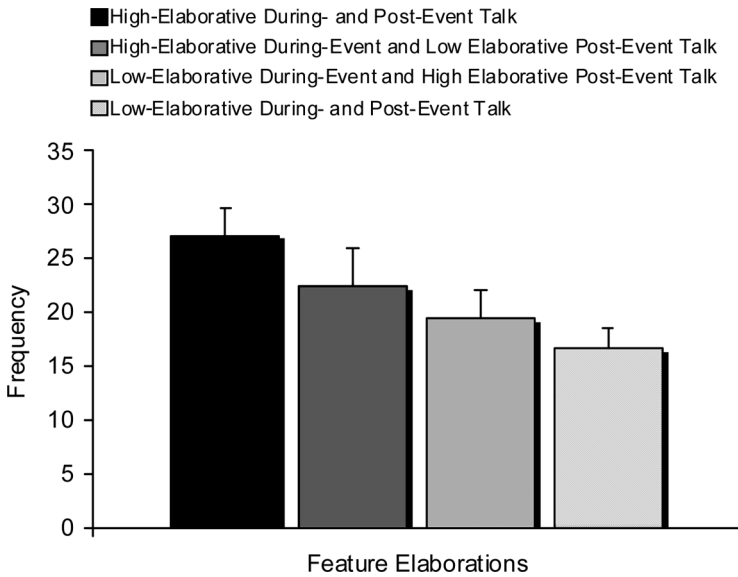


FIGURE 2 Mean feature elaborations (+SE) by experimental condition during the standard 3-week delay interview.

suggests differences in the number of features and elaborations reported by the children who had and had not experienced high-elaborative during-event talk, and by children who had and had not experienced high-elaborative post-event talk. When interviewed at the 3-week delay, children in the high-elaborative during-event talk group reported more features and feature elaborations than did children in the low-elaborative during-event talk condition, $F_s(1, 55) = 6.11$ and 4.54 , respectively, $ps < .05$. However, in contrast to the strong effects of post-event talk on the children's reports provided in the memory conversations at the 1-day delay, children in the high- and low-elaborative post-event talk groups did not differ in their report of features or feature elaborations in the standard interview following the 3-week delay, $F_s \leq .96$, $ps \geq .33$. Moreover, no significant interaction effects were detected, $F_s \leq .12$, $ps \geq .73$.

Although a rank ordering of the four groups had been predicted, testing the two main effects and the interaction did not reveal this pattern as clearly as did treating the experiment as a 1×4 design and forming a specific contrast. Therefore, in addition to the MANCOVA results that are reported above, two trend analyses were also conducted to fit polynomial functions to the data. Results of the trend analyses indicate that significant linear functions can describe differences across the groups in children's feature naming, $F(1, 56) = 5.23$, $p < .05$, and feature elaborations, $F(1, 56) = 5.42$, $p < .05$. The results of the focused contrast analyses therefore differ from the tests of interactive effects, perhaps because of the differential power of the two approaches (Maxwell, 1990; Maxwell & Delaney, 2004), and suggest that the effects of the high-elaborative during-event talk were strongest when the children were also engaged in high-elaborative post-event memory conversations.

DISCUSSION

In this study, an experimental methodology was adapted to examine effects of the timing of elaborative talk during and/or after a specified event on young children's memory reports. In memory conversations 1 day after the camping event, children's reports were more detailed if they had been engaged in highly elaborative talk as the event was unfolding, or if the researcher elicited the children's memory using a high-elaborative style. When all of the children were interviewed in a standard fashion 3 weeks after the event, the strongest impact of a high-elaborative style on children's memory reports was found for talk during the event. These results differ from those reported by McGuigan and Salmon (2004) who in another study found larger effects of elaborative talk after, as opposed to during, an event. Nevertheless, the findings fit quite well with other recent work and

an emerging perspective that adult-child elaborative conversation during events facilitates children's understanding and the construction of a rich initial representation that children can draw on in later assessments of remembering (Boland et al., 2003; Haden et al., 2001; Hedrick et al., 2009; Ornstein et al., 2004; Tessler & Nelson, 1994).

The manipulation of talk during and after the camping event involved the researchers' use of specific conversational techniques associated with an elaborative style that have been evidenced in previous studies as influencing children's memory reports (see Fivush et al., 2006, for review). *Wh*-questions have been highlighted as a key component of an elaborative style, involving the calling of attention to specific aspects of an event, while also serving to elicit embellished information from the child. By responding to requests for names, descriptions, actions, explanations, and so forth, and thus engaging in joint discussion with an adult who is demonstrating a high-elaborative style, children are being encouraged to talk about their experiences in ways that may make them more retrievable and reportable in the future. Additionally, other critical elements of an elaborative style that were incorporated into the researchers' scripted comments were associations and confirmations. As Tessler and Nelson (1994) observed, comments that guide a child to link his or her own prior knowledge to an experience can facilitate understanding, and this seems likely to be true in the case of the use of associations as events unfold and after they have occurred (e.g., Boland et al., 2003; Reese et al., 1993). Moreover, verbal follow-ins that take advantage of the child's interests and confirmations and evaluations may be important for prolonged conversational engagement, as well as cheering the child's participation in joint talk (Fivush et al., 2006; Haden et al., 2001; Ornstein et al., 2004; Tessler & Nelson, 1994). Each of these techniques work in concert to create a level of dyadic engagement that may well be critical for optimal conditions under which children are engaged, supported, and active conversational partners.

Robust effects of during-event elaborative talk were found when the children's reports in the memory conversation 1 day after the event were considered. Children who had been engaged in high-elaborative discussion during the camping event reported more embellished details of the event during the memory conversations than children in the low-elaborative during-event talk group. The same pattern of results was suggested for the children's feature naming, although this effect was not statistically reliable. Therefore, as in previous research (Boland et al., 2003; Haden et al., 2001), the strongest impact of elaborative talk during an event was found for children's reports of descriptive information about the experience, not at the level of simple feature naming. After a 1-day delay, in contrast to their counterparts who experienced low-elaborative during-event talk, the children who had

been generally encouraged to engage during the event in joint conversational interactions with a researcher who asked many *Wh-* questions, made associations, and provided positive feedback seemed to have a richer representation of the event upon which to base their memory reports.

Children's reports in the memory conversations were also enhanced when they were engaged in high-elaborative post-event talk. Such concurrent associations between a high-elaborative style and children's memory responding are common in studies of mother-child reminiscing about past events (e.g., Fivush & Fromhoff, 1988; Haden, 1998; Haden et al., 2009; Hudson, 1990; Reese et al., 1993) and those involving researcher-initiated memory interviews (e.g., Cain, 2004; McGuigan & Salmon, 2004). Here the children's reports of feature naming and feature elaborations were enhanced when talking about the camping event with an adult who was not present for the experience but who used an elaborative style to elicit the report. In essence, if asked *Wh-* questions with rich informational cues, coupled with confirmations and evaluations, children are quite able to report the event following a short delay interval, and this was true even if they were not exposed to elaborative talk during the experience.

Perhaps most important, following a 3-week delay, when all children were interviewed via a standard interview protocol, the MANCOVA results point to strong effects of elaborative talk during the event. Moreover, the trend analysis suggested further that children who experience multiple exposures to elaborative discussions reported the most features and feature elaborations. As such, the effects of elaborative talk during and after events may be additive, with children who have multiple exposures to high-elaborative talk during and after an event having richer memory reports that may reflect richer representations of the experience. Nonetheless, it must be indicated that there are limits to our understanding of the ways in which joint conversations that occur prior to, during, and after an event may differentially impact remembering.

These limits can be seen by contrasting the findings reported here with those obtained by McGuigan and Salmon (2004), who observed that elaborative talk during an experience was not as effective in enhancing preschoolers' memory reports as was elaborative talk after a "pretend zoo" event. However, in McGuigan and Salmon's study, it was *only* the children in the high-elaborative post-event talk group who were given the opportunity to engage in post-talk event about the experience in the days immediately following the event. Thus, in contrast to the current study, none of the children seen by McGuigan and Salmon who were engaged in high-elaborative talk during the event were given a partial re-exposure to the event through a memory conversation with the researcher days after the event. Yet, this post-event conversation—particularly when it involved

high-elaborative talk—may be critical for the consolidation of memory representation and may augment the influence of high-elaborative conversation during an event in facilitating remembering. It seems important to consider in future research the possibility suggested by this comparison across studies—specifically, that elaborative talk soon after an event may amplify the effects of elaborate talk during an event.

Another component of the study that deserves mention is the examination of children's linguistic abilities to participate in conversations during and after events. Previous research shows that children's overall facility with language is correlated with their capacity to recall information, particularly when the cognitive demand of the task is high—as is the case for young children (Farrant & Reese, 2000; Newcombe & Reese, 2004; Welch-Ross, 1997), or when memory is assessed by an adult who was not present for the experience (e.g., Boland et al., 2003; Haden et al., 2001). Along these lines, the results of this study did illustrate strong associations between the children's language scores based on the standardized assessment battery and all memory measures. However, the children's spontaneous production of information during the event that was contained in the high-elaborative script, which offers another indicator of the children's expressive skills, was not in and of itself strongly associated with the memory reports. This result can be viewed as consistent with evidence that what a young child talks about on his or her own during a novel event is less predictive of what will be retained than that which is discussed in joint conversational interactions with an adult partner as an event unfolds (Haden et al., 2001; Ornstein et al., 2001; Ornstein et al., 2004; Tessler & Nelson, 1994). Indeed, the argument to be made here is not that an adults' use of an elaborative style causes specific child memory report outcomes in a direct fashion, but rather that characteristics of the child and the interaction—especially its “jointness”—are what have unique predictive power (see Ornstein et al., 2004, for a related discussion).

As illustrated by this study and other new experimental work, the field is now in a position to make causal statements about the influence of elaborative conversation on remembering. Still, more work is needed that compares the effects of elaborative talk as events unfold with memory conversations that occur in the days, weeks, and even months after an event has taken place. There is also much to know about the unique role that talk during and after events plays for memory when it is assessed at varying delay intervals. Moreover, we might expect that the effects of elaborative talk like those found in this study would be stronger if children were talking with a parent or another familiar adult who had or had not been instructed to engage in elaborative conversational interactions. At the same time that this question involving interventions with parents is ripe for investigation, we also need to know more through naturalistic and experimental work

concerning the particular role of joint talk versus other forms of engagement (child-only, mother-only) for remembering.

In sum, the current project serves to expand upon previous investigations regarding the influence of elaborative conversational exchanges both during an event and after on children's event memory. The causal links between children's participation in elaborative conversational exchanges and their abilities to remember specific event details are clear. Future research can further elucidate when these exchanges are most usefully employed to enhance children's remembering.

ACKNOWLEDGMENTS

Support for the research reported here was provided by grant HD37114 from the National Institutes of Health. Additional research support was provided by a dissertation fellowship to the first author. Much appreciation is extended to the many undergraduate and graduate assistants who contributed to data collection and coding, including Nora Benjamin, Justine Hayes, Amanda Jones, Karen Kolmodin, Allison Mugno, Sarah Vitzthum, and Allyson Walters. Thanks are due to Scott Maxwell for very helpful statistical consultation. In addition, we are grateful to the children who participated in the study with the cooperation of their parents, and the teachers and administrators at their preschools.

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