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Boosting Children's Memory by Training Mothers in the Use of an Elaborative Conversational Style as an Event Unfolds

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An experimental methodology was adapted to examine children's language skills and mothers' conversational styles during a specified event as they are linked to the children's event memory. Thirty-nine preschoolers (mean age = 46.82 months) were pretested and grouped as having high or low language skills. Children in each group were then randomly assigned to either maternal-style training or no training conditions. Trained mothers were instructed to use 4 specific conversational techniques to enhance children's understanding of unfolding events: *Wh-* questions, associations, follow-ins, and positive evaluations. When observed engaging with their children in a specially constructed camping activity, trained mothers did indeed use these elements of style more than untrained mothers. Moreover, assessments of the children's memory after 1-day- and 3-week-delay intervals indicated substantial effects of both maternal training and children's language skills on remembering.

Between 2 and 5 years of age, children make two significant developmental transitions related to their use of language (e.g., Bloom, 1991; Nelson, 1996). They gain competence in talking about objects, people, and activities in the here and now, and they begin to tell stories based on their memories of past experiences. It is important to note that the emergence of both of these types of skills occurs in the context of adult–child conversational interactions. Unfortunately, however, very little is

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known about how skills for talking about the present are related to abilities for recounting the past. And yet, the ability to talk about and comprehend ongoing events is clearly relevant to understanding children's developing abilities to remember their experiences.

This study was designed to examine mothers' conversational styles during a specified event and children's language skills as they are linked to the children's event memory. We view the research presented here as intersecting with two partially overlapping literatures, one concerned with mother–child joint reminiscing about a range of past events (e.g., Engel, 1986; Hudson, 1990; McCabe & Peterson, 1991; Reese, Haden, & Fivush, 1993) and the other dealing with children's recall of the details of salient experiences (e.g., visiting the doctor) for which there is a record of what occurred (e.g., Ornstein, Shapiro, Clubb, Follmer, & Baker-Ward, 1997). This study also connects with current proposals put forth by Katherine Nelson and others (e.g., Fivush & Haden, 1997; Nelson, 1996) regarding the essential role of language in the development of memory for personally experienced events.

Previous research focusing on mother–child reminiscing indicates that the nature of mothers' talk with their children about past experiences has an immediate and long-term impact on children's remembering (Haden, Haine, & Fivush, 1997; McCabe & Peterson, 1991; Reese et al., 1993). Indeed, two differing conversational styles for talking about the past have been identified in research involving primary caregiver mothers (e.g., Fivush & Fromhoff, 1988; McCabe & Peterson, 1991). In contrast to mothers demonstrating a low elaborative style, mothers with a high elaborative style elicit long, embellished discussions of past events by frequently asking *Wh-* questions, encouraging talk about aspects of the events in which their children seem interested, and positively evaluating children's responses. Mothers who are highly elaborative also provide more and more details about previously experienced events, even when children do not do so.

More important, there are concurrent and longitudinal differences between children of mothers who use either a high or low elaborative style in the amount of information they are able to recall about past events (e.g., Fivush & Fromhoff, 1988; McCabe & Peterson, 1991). For example, maternal elaborativeness during early conversations about the past with 40-month-olds is associated positively with children's recall of past experiences in later conversations at 58 and 70 months of age (Reese et al., 1993). And, in other research, the more elaborative the mothers were when their children were 2 years of age, the better were their children's independent skills for remembering events with an examiner, as much as a year and a half later (Hudson, 1993; McCabe & Peterson, 1991; Peterson & McCabe, 1994). As such, mothers who are highly elaborative in talking about the past may facilitate their children's developing abilities to report on past experiences in a detailed manner. Moreover, it has been argued that as these linguistic skills are learned, children actually come to reorganize and think about personal experiences in more elaborate ways (Fivush, Haden, & Reese, 1996).

In addition to the impact of conversations about the past on children's event memory, language-based interactions as events unfold can have a profound influence on how young children come to comprehend and represent those experiences in memory (Fivush, Pipe, Murachver, & Reese, 1997; Haden, 2003; Nelson, 1996; Ornstein & Haden, 2001). Because remembering begins with understanding, it is important to consider how a child makes sense of an event as it takes place. Although understanding can be driven by endogenous forms of knowledge brought to the situation by the child, including prior knowledge and expectation, exogenous influences, such as parent–child interchanges during a novel experience, can also affect understanding, increasing encoding and subsequent remembering (Haden, Ornstein, Eckerman, & Didow, 2001). Mother–child talk during ongoing events has not been explored as thoroughly as reminiscing about past activities, but it seems likely that conversations as an event unfolds serve to focus attention on salient aspects of an event and provide information that may affect a child's interpretation of the experience. Indeed, conversational interactions that occur during events may facilitate children's understanding of an experience and serve to organize the resulting representation, in turn, affecting its accessibility for retrieval over long delay intervals.

Consistent with this point of view, Tessler and Nelson (1994) found that 3-year-old children who were observed as they visited a museum with their mothers later recalled only the objects that had been jointly talked about by both the mother and the child during the experience. And 2 weeks after they went on a picture-taking walk with their mothers through an unfamiliar neighborhood, 4-year-olds only recalled aspects of the experience that had been jointly discussed during the walk; interestingly, they did not report things that only they or their mothers had mentioned. Tessler and Nelson also observed that mothers who frequently associated aspects of the walk with their children's previous experiences had children who later recalled more of the pictures they had taken and remembered more about the walk than did their peers whose mothers did not adopt this conversational style.

Similarly, Haden et al. (2001) recently conducted a longitudinal investigation illustrating a substantial effect of joint mother–child conversational interaction on children's remembering. In this study, 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 shop. Analyses of the children's 1-day and 3-week recall of these events indicated that at all age points, features of the activities that were jointly handled and jointly discussed by the mother and child were better remembered than features that were either jointly handled and talked about only by the mother, or jointly handled and not discussed. In addition, features of the event (e.g., a spatula in the camping activity) about which questions had been asked by the mothers during the event that had been responded to by the children (e.g., the mother asks, "What is the spatula

used for?" and the child responds, "For flipping") were better recalled than features about which mothers' questions did not result in the children's responses (Ornstein, Haden, Coffman, Cissell, & Greco, 2001).

Thus, a growing body of evidence reinforces the view that mother–child interaction as an event unfolds can serve to focus children's attention on its salient features and enhance understanding of the experience. For example, by asking *Wh*-questions about component features of an ongoing event, a mother may direct her child's attention to aspects of the situation that are particularly interesting or important. And if this questioning is followed by the child's verbal elaboration, a more enriched memory representation may be established. Further, in the course of narrating events in the here and now, some parents may make explicit the meaningful links between aspects of the ongoing activity and their children's prior experiences. They may also follow-in on children's interests by using things that capture their attention as the basis for further discussion. As a result, mothers and children who are experiencing an event together may come to construct the experience in a way that makes it more accessible in the future.

The nature of mother–child interaction as an event unfolds is thus thought to influence encoding and remembering, but experimental manipulation is clearly necessary to make causal statements about these potential linkages. Although there have been no reports to date of experiments in which the nature of mothers' talk to their children as events unfold is influenced by instruction, Peterson, Jesso, and McCabe (1999) were successful in manipulating mothers' conversational style when talking with their children about prior experiences. Peterson et al. reported that children of mothers who received the intervention produced longer memory reports that contained more details about past events than children of mothers who had not received reminiscing training. Given their success, we designed this study to examine whether similar effects on children's memory reports could be obtained by training mothers to engage in elaborative discussions as a specially prepared event was unfolding.

The particular conversational techniques mothers were asked to learn involved the use of language to focus their children's attention and to increase understanding of events in ways that previous work indicates should influence encoding and, in turn, enhance remembering. More specifically, mothers who received training were encouraged to ask *Wh-* questions to elicit their children's linguistic participation in the activity, to relate that which was being experienced to what their children already knew, and to follow-in on and praise their children's verbal and nonverbal contributions to the interaction. We wanted to increase the frequency with which mothers used these techniques because the intervention was based on the idea that the use of many open-ended questions and elaborative comments during events is more effective in increasing encoding and remembering than asking fewer of such questions. Interestingly, researchers focusing on mother–child reminiscing (e.g., McCabe & Peterson, 1991; Reese et al., 1993) have made similar

claims that the sheer number of requests for memory information is an important aspect of individual maternal style. If mothers could comply with our instructions, then we expected that their children would better remember the event than children of the control group mothers.

Another unique feature of this study is a consideration of children's linguistic abilities to participate in conversations as events unfolded. Although little systematic work has been done in this regard, correlations between various measures of children's language abilities and mother–child talk about the past have been found in some previous studies (e.g., Farrant & Reese, 2000; Welch-Ross, 1997) but not in others (Reese & Brown, 2000; Reese & Fivush, 1993). Set against this inconclusive background, however, is Bauer and Wewerka's (1995) intriguing demonstration of a linkage between 13- to 20-month-olds' language abilities at the time they were exposed to a set of three- and four-step events (e.g., making a gong by putting on a crossbar, hanging up a bell, and ringing the bell) and their verbal memory for these events following a delay interval. Although a poor predictor of nonverbal memory performance, the estimated size of the children's productive vocabulary when exposed to these events was strongly related to their verbal expressions of memory for the target experiences up to a year later. It therefore seems possible that children with a greater facility with language at the time of an event may be better able to encode and remember the experience than children with lower language skills. Children with high language abilities may be especially able to comprehend information provided to them by others in the course of an ongoing activity and to incorporate this elaboration of the experience into their memory representation of the event.

To explore these ideas, in this study we divided preschoolers into high language and low language groups on the basis of their scores on a standardized language measure, and then we assigned them randomly to either the maternal training or no training condition. In this way, we could examine the independent and combined effects of children's language skills and maternal conversational-style training on children's memory. For example, when asked to remember the details of a specially prepared activity that the families experienced in their homes, it might be expected that the best memory performance would be observed for children with high language skills whose mothers actively engaged them in elaborated discussions during the event, as the trained mothers were asked to do.

METHOD

Participants

The sample consisted of 39 mothers and their children (22 female, 17 male) who were recruited from preschools in the Chicago, Illinois, metropolitan area. On av-

erage, the children were 46.82 months at the first assessment point, an age that was chosen on the basis of previous work that involved children who were 30, 36, and 42 months of age (Haden et al., 2001). In this earlier study, links were demonstrated between mother–child conversations as events unfolded and children's subsequent memory. But, it was also found that the children's open-ended recall levels—even at 42 months—were low. As a consequence, we targeted slightly older children for this investigation, thinking that with the higher levels of recall that would be expected, we would be in a better position to explore experimentally the impact of maternal conversational style.

All of the children were from middle-class families; 31 were White, 3 were Asian or Pacific Islander, 2 were African American, 2 were Hispanic, and 1 mother did not specify her child's ethnic background. Seventy-two percent of the children's mothers held a college degree. An additional 13 children (for a total initial sample of 52 children) were pretested for their language skills but did not participate in subsequent portions of the study due to scheduling difficulties (8) or family moves (5).

Procedure

The study consisted of three parts: children's language and memory skills pretests, maternal training and mother–child event engagement, and children's event memory assessments.

Language and memory skills pretests. After obtaining informed consent, initial language skill pretesting was conducted at the children's preschools by one of two female researchers. Productive and receptive language skills were measured using the Preschool Language Scale–3 (PLS–3; Zimmerman, Steiner, & Pond, 1992). The children's standard total language score was calculated as the sum of their performance on the Expressive Communication and Auditory Comprehension subscales that make up the PLS–3.

Prior to the training portion of the study, a median split on the PLS–3 total language score for all 52 children screened (M = 107.27, SD = 14.7, median = 109) was used to group children as high language or low language. Then, children in each of these two language groups were matched for gender and maternal education and randomly assigned to either the maternal training or no training conditions. However, when contacted for the postscreening phases of the study, 13 of the 52 originally recruited families indicated that they were unable to participate. For the final sample of 39, Table 1 summarizes the children's total language scores, age at time of testing, and maternal education by child language group and maternal training condition. It should be noted that the composition of the language and training groups changed because of the loss of the 13 children. Nonetheless, the children whose families chose to drop out of the study were similar in most re-

TABLE 1
Initial Total Language Scores, Age, and Maternal Education
by Language Group and Training Condition

	High Language		*Low Language*	
	Training[a]	*No Training*[b]	*Training*[c]	*No Training*[d]
M (SD) Total language score from PLS–3	129.50 (6.13)	120.21 (9.86)	102.10 (7.89)	95.20 (9.85)
Range of language scores from PLS–3	118–142	110–136	91–110	81–109
M (SD) Age at initial testing (in months)	44.20 (4.37)	42.30 (4.52)	42.30 (4.69)	42.33 (4.18)
M (SD) Mother's years of education	15.70 (1.89)	16.20 (1.69)	15.30 (1.77)	15.11 (1.83)

Note. PLS–3 = Preschool Language Scale–3.
[a]$n = 10$. [b]$n = 10$. [c]$n = 10$. [d]n = 9.

spects to those who participated fully in the project. More specifically, even though the 6 children who were lost from the high language group were significantly younger ($M = 41.07$ months) than those who remained in the study ($M = 48.74$ months), no other pretest differences were found for the children who did and did not remain in the study.

The children were visited in their homes on average 5.48 months ($M = 164.41$ days, range: 75–239 days) after the initial language pretesting. The home visit began with a memory interview that was intended to yield a baseline measure of the children's skills for remembering past events. The interviewer probed the children's memory for two novel events (e.g., a trip to an amusement park, an excursion to the mountains) that had been nominated by their mothers. When questioning the children about these events, the examiner first asked open-ended questions (e.g., "What do you remember about the amusement park?") and then moved on to two yes/no questions about aspects of the event that had been suggested by the mothers (e.g., "Did you have cotton candy?"). After each yes/no question, the children were again prompted with a general probe (e.g., "What else can you remember about that?") so as to give them the chance to recall additional information about the event.

Following these memory interviews, the PLS–3 was readministered. This reassessment permitted a check of potential changes in the children's language skills over the period between the initial language pretesting and the first home visit–training portion of the study.

Maternal training and mother–child event engagement. The last portion of the first home visit involved observations of the children engaging in a spe-

cially constructed novel camping event with their mothers. Based on procedures adapted from Haden et al. (2001), the "camping" activity began with each mother and child loading up backpacks with various play food items (e.g., hotdogs, buns) to take on their trip. They then "hiked" to a pond where there was a rod and net used to catch some fish. After fishing, they continued to a campsite where there was a sleeping bag, in addition to a grill, cookware, and utensils that could be used for preparing and eating the food. This event thus involved a set of components or features, listed in the Appendix, that were provided to each family. The children and their mothers were audio and video recorded as they engaged in the camping activity that lasted for approximately 20 min.

The key manipulation in this study involved the instructions given to the mothers prior to the camping event. It is important to point out that neither the trained nor the untrained mothers knew that the event they would engage in with their children was a camping activity until just before the experience. Mothers in the no training group were simply instructed immediately prior to the activity to talk with their children as they naturally would when experiencing an event with them. In contrast, mothers in the training group received a pamphlet approximately 1 week in advance of the camping activity. The pamphlet outlined four conversational techniques that mothers were asked to use while engaging in an event with their children. This pamphlet was derived from the script of a 15-min videotape presentation that was designed to illustrate these techniques. Mothers were asked to review this pamphlet twice prior to the initial home visit. And, in fact, at the start of this first visit, all mothers indicated they had complied with this instruction, and all could name and describe the techniques highlighted in the pamphlet. Then, just before they engaged in the event with their children, the mothers in the training group viewed the specially prepared videotape. The video included clips of a separate sample of mothers who were shown demonstrating each of the targeted conversational techniques as they and their children played together with a toy medical kit or a toolbox with tools.

More specifically, the pamphlet and videotape emphasized four basic techniques associated with an elaborative conversational style:

1. *Wh-* questions that ask the child to provide information, such as when, where, why, what, who, or how (e.g., "Why would a workman wear that kind of hat?").
2. *Associations* that involve making connections between what is happening in the here and now of the event and what a child might already know or have experience with (e.g., child picks up a stethoscope and the mother asks, "Has anyone ever used one of these on you?").
3. *Follow-ins* that encourage discussion of aspects of an event that the child is talking about or is showing interest in (e.g., child says, "Look what I

found" to which the mother responds, "Ahh, there you go. What's that called? Do you know?").
4. *Positive evaluations* that directly praise the child's verbal and nonverbal behaviors (e.g., "Good job using that hammer").

After they had viewed the videotape, the mothers in the training group were asked to try to incorporate these four conversational techniques into their natural conversational style as they engaged in the camping event with their children.

Event memory assessments. All children were interviewed about the camping event by an examiner following delay intervals of 1 day (M = 1.03 days, range: 1–2 days) and 3 weeks (M = 21.50 days, range: 18–25 days). A female researcher used a standardized memory interview that was adapted from Haden et al. (2001). The hierarchically organized interview began with general open-ended questions (e.g., "What did you do on that camping adventure you had with your mom?"), was followed by more specific open-ended questions (e.g., "What kind of food did you pack up?), and finally by yes/no type probes (e.g., "Was there a sleeping bag?"). The specific and yes/no probes requested information from the children that had not been supplied in response to the more general questions. In addition, to provide some estimate of the accuracy of the children's responding, several yes/no questions were asked concerning thematically related, event-consistent features that had not been presented to the dyads during the camping activity (e.g., "Was there a tent?" when no tent had been provided).

Coding

Engagement in the camping event. To determine the effectiveness of the training procedure, the videotaped records of the mothers' comments during the camping event were scored according to a set of mutually exclusive coding categories. Mothers' *Wh-* questions were requests for the provision of information about the event in general (e.g., "What should we do now?") or a specific component feature of the activity (e.g., "What is this?"). Associations included any maternal comment or question that invited the child to link an aspect of this situation to his or her prior knowledge or past experiences (e.g., "Where else have you seen a grill like this?"; "Grandma has a sleeping bag at her house for you to sleep in"). Follow-ins included any maternal comment or question that followed directly from the children's nonverbal or verbal behaviors during the event (e.g., child says that he wants to carry the backpack the mother is holding. Mother responds, "What color is this backpack?"). Positive evaluations confirmed the child's previous utterances or behaviors, or positively evaluated the event or aspects of the event (e.g., "You did a good job catching that fish!"; "We are having fun camping!").

Several other coding categories captured aspects of the mothers' verbal behavior that had not been emphasized in the training and were not associated with an elaborative style. It seemed possible that the training procedure might have led mothers to be more talkative with their children overall, with the trained mothers perhaps also using more nonelaborative techniques, such as repetitions, yes/no questions, and contextual statements, than mothers who had not received training. Repetitions repeated either the exact content or the gist of the mother's previous utterances (e.g., mother says, "Should we use this net to catch fish?" and then repeats, "Can we use it to catch fish? [pause] Do you think we can use this to catch the fish?"). Yes/no questions simply asked the child to respond "yes" or "no" to what the mother had suggested (e.g., "Do you want to carry the backpack?") and included tag questions (e.g., "You have a green backpack, don't you?") and questions that aimed at eliciting an either–or choice from the child (e.g., "Do you want to eat a hamburger or a hotdog?"). Statements provided new information about the event but did not explicitly request a response from the child (e.g., "Let's pack the lantern").

Reliability in coding the mothers' verbal behaviors during the activity in this fashion was quite good. Interrater agreement was established by having two observers separately code from the videotapes 25% of the camping events. Percentage agreement between each coder overall ranged from 80.2% to 95.7%, averaging 96.4% for open-ended questions, 86.5% for associations, 86.6% for follow-ins, 95.7% for evaluations, 89.8% for repetitions, 97.1% for yes/no questions, and 96.7% for statements.

Memory for events. The first coding system we describe here was used in scoring the children's memory for the mother-nominated events. The second coding system was used for the memory interviews concerning the camping event. The slight differences in the coding systems reflect the fact that only for the camping event was there a record of what actually occurred at the time of the experience.

Mother-nominated events. For the mother-nominated events, the children's recall in response to the examiner's open-ended questions was coded for the number of event elaborations. Following Reese et al.'s (1993) definition, an *event elaboration* was defined as any clause containing new information about the event in question. For example, "We rode in the red jeep" was coded as one event elaboration, and "I was in the fishy class, but Jake was in the big snake class" was coded as two event elaborations. "We lost both our mommies" was coded as one event elaboration, and "First I falled down, but mommy didn't" was coded as two. To provide an average score across the two events discussed, a mean frequency of event elaborations per event was computed (see Reese et al., 1993). Interrater agreement, based on 25% of the videotaped records of this task, ranged from 84.8% to 96.1% for event elaborations, averaging 93.8% overall.

The camping event. Video recordings of the children's 1-day and 3-week memory for the camping event were scored using a system adapted from previous research (Haden et al., 2001). The children's open-ended recall of the experiences was coded for the number of instances in which a component feature of the event was named (e.g., the child answers, "hotdogs," when asked, "What kind of food did we take on the camping trip?"; see the Appendix for a listing of the features). Clauses that contained elaborative details about the features, beyond simply naming, or that described the event in general, were scored in terms of the number of event elaborations offered by the children. For example, when recalling the backpack, a child stated "Mine was red and Mommy's was green," and this was scored as two event elaborations. "We packed up all the food" was scored as one event elaboration. A child's description of the sleeping bag, "Me and mommy, we shared it" was scored as one event elaboration, and the description of the cup, "There was nothing inside and it was just pretend" was scored as two.

Errors in the children's open-ended recall were scored separately as intrusions, again with clause serving as the coding unit. For example, when asked, "What did you do on the camping trip?" one child responded, "It was in my room with Ella. Ella came over." Because we know that only the mother and child had participated in the event , and that the event took place in the family's living room, this response was scored as two intrusions. In addition, the children's answers to yes/no questions about present features of the camping activity were scored as either correct "yes" responses or incorrect "no" responses. For yes/no questions about never-presented, event-consistent features (e.g., "Was there a tent?"), the children's responses were scored as either correct "no" or incorrect "yes" responses. The children also provided a small number of "I don't know" responses to both types of yes/no questions. It should be noted that because of the hierarchical nature of the memory interview, beginning with open-ended questions and only moving to yes/no probes when additional information was not forthcoming, the number of yes/no questions posed varied across children. Thus, for example, the greater a child's open-ended recall, the fewer yes/no questions asked by the interviewer. For this reason, analyses of the children's responses to yes/no questions about present and never present features were based on proportions. To illustrate, the total number of "yes" or "no" responses to present feature yes/no questions was divided by the total number of such questions that were asked.

Reliability in coding the children's memory responses in this way was also rather good. Two raters independently scored 25% of both the 1-day and 3-week memory interviews about the camping activity. Percentage agreement between each coder in scoring the memory interviews about the camping event ranged from 82.3% to 97.1% overall, averaging 87.9% for the 1-day interview and 86.9% for the 3-week interview. Agreement in scoring responses to yes/no questions about features and event-consistent features averaged 97.3% for the 1-day interview and 98.9% for the 3-week interview.

RESULTS

Preliminary Analyses

As indicated previously, Table 1 displays the children's total language scores, age at time of testing, and the levels of maternal education for the children in the high and low language groups whose mothers had and had not been trained. Our preliminary analyses of these data via 2 (children's language skill: high, low) × 2 (maternal training condition: training, no training) analyses of variance (ANOVAs) indicated that children of trained mothers ($M = 115.80$, $SD = 15.64$) did not differ from the children of mothers in the no training group ($M = 112.91$, $SD = 18.10$) in their total language scores measured in the initial PLS–3 assessment, $F(1, 35) = .83$, $p = .41$. By definition, the children in the high language group ($M = 124.85$, $SD = 9.31$) attained a significantly higher total language score on the initial PLS–3 screening than the low language group ($M = 98.84$, $SD = 9.31$), $F(1, 35) = 91.57$, $p < .001$. However, there was no interaction between maternal training and child language skill for the children's total language score, $F(1, 35) = .20$, $p = .66$. In addition, the children of trained and untrained mothers did not differ in terms of age at the time of initial testing (training $M = 43.25$ months, $SD = 3.38$; no training $M = 42.32$ months, $SD = 3.61$) or their mothers' years of education (training $M = 15.50$, $SD = 1.79$; no training $M = 15.68$, $SD = 1.80$), Fs(1, 35) ≤ .57, ps ≥ .45. The language groups also did not differ in the children's age at initial testing (high language $M = 43.25$, $SD = 3.46$; low language $M = 42.32$, $SD = 3.51$), or in terms of years of maternal education (high language $M = 15.95$, $SD = 1.69$; low language $M = 15.21$, $SD = 1.88$), Fs(1, 35) ≤ 1.68, ps ≥ .20. Moreover, the Child Language Skills × Maternal Training Condition interaction effects for the analyses involving age at the time of initial testing and mothers' years of education were not significant, Fs(1, 35) ≤ 1.52, ps ≥ .28.

It is also worth noting that we replicated this pattern with the language total score obtained during the reassessment of skills conducted in the children's homes 5.48 months after the initial testing, suggesting that there were no preexisting differences in the sample other than between the language groups. Specifically, the results of repeated measures ANOVAs with the time of the language assessment (initial–preschool, second–home) as the within-subjects factor, and days between the two assessments as a covariate, revealed that the children in the high language group continued to have a significantly higher total language score ($M = 126.30$, $SD = 8.41$) at the assessment than the children in the low language group ($M = 102.21$, $SD = 11.70$), $F(1, 34) = 85.92$, $p < .001$. Moreover, there were no interactive effects of time of the language assessment with language group or training condition, Fs(1, 34) ≤ 2.60, ps ≥ .11. Overall, the language scores obtained in the home assessment ($M = 114.56$, $SD = 15.78$) were not significantly different from the language scores obtained at the initial preschool assessment ($M = 112.18$, $SD =$

16.06), $F(1, 34) = .73$, $p = .70$. Moreover, the retest stability of the PLS–3 for this sample was very high, as illustrated by the partial correlation between the initial and reassessment total scores, controlling for the number of days between the two assessments, $r(36) = .90$, $p < .001$.

As a means of determining if the children were different in their skills for remembering personally experienced events prior to maternal training, we examined their memory performance in the initial interviews about the two mother-nominated novel events. The children recalled an average of 12.22 event elaborations when reporting on these events. Their performance, moreover, varied neither as a function of language level (high language $M = 13.50$, $SD = 5.96$; low language $M = 11.05$, $SD = 4.09$), $F(1, 35) = 1.62$, $p = .22$, nor as a training condition (training $M = 13.58$, $SD = 4.19$; no training $M = 10.97$, $SD = 6.10$), $F(1, 35) = 1.20$, $p = .28$. In addition, the interaction between these two variables was not significant, $F(1, 35) = .48$, $p = .49$.

Because the interviewer conducting the memory assessments was aware of the training condition to which each family was assigned, we carried out an additional set of analyses to determine if this knowledge had an impact on the way in which the interviews were conducted. The interviewer knew the training condition because she interviewed the children of the mothers in the training condition about the mother-nominated events while their mothers watched the training videotape. To check for potential bias in the memory interviews, we conducted an analysis of the number of open-ended questions the interviewer posed to elicit the children's remembering of the mother-nominated and camping events. Note that the number of yes/no questions posed was not included in this analysis because the number of such questions varied only in the interviews about the camping event, as a function of how much the children recalled in response to the open-ended questions.

Results of a 2 (children's language skills) × 2 (maternal training condition) ANOVA performed on the number of questions asked by the researcher during the mother-nominated events indicated that there were no differences in probing as a function of training group ($M = 8.60$, $SD = 2.58$ for children of trained mothers; $M = 9.80$, $SD = 3.75$for children of untrained mothers) or language group ($M = 9.70$, $SD = 2.79$ for children with high language skills; $M = 8.60$, $SD = 3.58$ for children with low language skills), Fs$(1, 35) \leq 1.47$, $\geq .23$. In addition, a 2 (children's language skills) × 2 (maternal training condition) × 2 (delay interval: 1-day, 3-week) ANOVA conducted for the frequency of interviewer open-ended questions about the camping event revealed no differences in the number of probes offered to the children of mothers who had been trained ($M = 78.42$, $SD = 19.02$) versus the children of mothers who had not been trained ($M = 76.57$, $SD = 16.48$), $F(1, 35) = 1.91$, $p = .66$. The number of open-ended questions asked of children with high language skills ($M = 77.85$, $SD = 18.29$) did not differ from the number of these questions asked of children with low language skills ($M = 77.18$, $SD = 17.45$), $F(1, 35) = .49$, $p = .49$. All other effects in this analysis—including those involving the delay fac-

tor—were also nonsignificant, Fs(1, 35) ≤ 1.10, ps ≥ .30. Thus, it appears that although the researcher was not completely unaware (i.e., she knew the training condition but did not know the children's language group assignment), this fact did not affect her interviewing of the children.

Following these preliminary analyses, we examined the effects of maternal training and children's language skills. These analyses were initially carried out with sex of the child as a between-subject factor, but because there were no effects of gender, nor any interactions of gender with language level or training condition, we combined the data for girls and boys in the analyses that follow. In addition, we conducted correlational analyses to explore the associations between children's age at the time of the first home visit and all maternal-event engagement variables, and between age and all child memory variables. Because these correlations were found to be statistically nonsignificant, we do not consider age further in our report of the findings. Lastly, no significant correlations were observed between maternal education and any other variable in this study; therefore, it was not included as a covariate in the main analyses.

Training Maternal Conversational Style

One critical question of interest concerned whether it was possible to train mothers to use several specific conversational techniques when talking with their children about an event as it was unfolding. It was also important to determine if the impact of the training on maternal style might vary as a function of the language skills the children brought to the interaction. To explore these possibilities, we conducted four 2 (children's language skill) × 2 (maternal training condition) ANOVAs, one for each of the techniques highlighted by the training: *Wh-* questions, associations, follow-ins, and evaluations. The upper portion of Table 2 displays the means and standard deviations for each of these four variables, as a function of the children's language group and maternal training condition.

As is apparent in Table 2, mothers who had participated in the training procedure produced more of all four of the targeted conversational techniques during the camping event than did mothers who were not trained. Significant main effects of training condition were found for *Wh-* questions, $F(1, 35) = 16.86$, $p < .001$; associations, $F(1, 35) = 30.40$, $p < .001$; follow-ins, $F(1, 35) = 8.52$, $p < .01$; and evaluations, $F(1, 35) = 8.09$, $p < .01$. In addition, mothers of children in the high language group used more associations to link the camping activity to the child's knowledge or past experiences than did mothers of children in the low language group, $F(1, 35) = 8.72$, $p < .01$. There were no differences as a function of the children's language skills, however, in mothers' overall use of *Wh-* questions, $F(1, 35) = 2.73$, $p = .11$, evaluations; $F(1, 35) = 2.22$, $p = .15$; or follow-ins, $F(1, 35) = .001$, $p = .99$. Moreover, the effects of training did not vary according to the language skills of the children; no significant Language Skill × Training Condition interactions were

TABLE 2
Mean Number of Conversational Techniques Used by Mothers

Conversational Techniques	*Maternal Training Condition*		*Total*
	Training	*No Training*	
	Trained Techniques		
Wh-questions			
High Language	53.60 (32.01)	20.50 (12.31)	37.05 (29.12)
Low Language	35.90 (14.65)	17.44 (10.34)	27.16 (15.64)
Total	44.75 (25.93)	19.05 (11.22)	
Associations			
High Language	36.10 (11.14)	11.70 (13.31)	25.45 (18.67)
Low Language	20.70 (11.59)	6.33 (6.02)	13.89 (11.73)
Total	28.40 (13.59)	9.16 (10.59)	
Follow-Ins			
High Language	18.40 (7.73)	13.20 (6.34)	15.80 (7.38)
Low Language	20.20 (8.28)	11.33 (7.58)	16.00 (8.98)
Total	19.30 (7.85)	12.32 (6.82)	
Positive Evaluations			
High Language	26.00 (15.30)	13.40 (6.59)	19.70 (13.16)
Low Language	18.40 (13.79)	10.00 (7.37)	14.42 (11.73)
Total	22.20 (14.70)	11.80 (6.99)	
	Untrained Techniques		
Repetitions			
High Language	15.78 (10.52)	10.20 (7.45)	12.84 (9.23)
Low Language	15.10 (11.13)	16.78 (11.17)	15.89 (10.87)
Total	15.42 (10.55)	13.32 (9.72)	
Yes/No Questions			
High Language	44.10 (19.37)	49.40 (23.15)	46.75 (20.95)
Low Language	43.10 (18.91)	50.44 (25.98)	46.58 (22.21)
Total	43.60 (18.64)	49.89 (23.84)	
Statements			
High Language	71.50 (41.28)	73.90 (29.38)	72.70 (39.90)
Low Language	69.90 (27.10)	83.11 (47.57)	76.18 (37.67)
Total	70.70 (33.99)	78.26 (38.31)	

Note. Standard deviations are in parentheses.

obtained, Fs$(1, 35) < 2.04$, ps $> .16$. Thus, when compared with untrained mothers, trained mothers used more of the techniques in which they had been trained as they engaged in the camping activity with their children, and this was true regardless of the language skills of the children.

To determine the specificity of the effects of training, we carried out additional analyses of the mothers' use of the "untrained" techniques (i.e., repetitions, yes/no questions, and statements) during the camping event. As shown in the lower portion of Table 2, trained and untrained mothers used these "untrained" conversational devices to similar extents. Three separate 2 × 2 ANOVAs were conducted, one for each of the untrained techniques. The results revealed that trained and untrained mothers did not differ from each other in their use of repetitions, yes/no questions, or statements, Fs(1, 35) ≤ 1.14, ps ≥ .29. In addition, mothers did not use these types of conversational devices more with children in the low language versus the high language groups, Fs(1, 35) ≤ .10, ps ≥ .75. As such, the effects of the training appeared restricted to the particular techniques trained—*Wh-* questions, associations, follow-ins, and evaluations—and did not generalize to other elements of style.

A related question concerns the extent to which the trained mothers might just be talking more in general than the untrained mothers. In this regard, it should be noted that the mothers in the training condition did talk more overall, as indexed by their "total talk" score—the sum of their use of all of the techniques (trained and untrained)—(M = 208.80, SD = 79.88), in comparison with the untrained mothers (M = 159.32, SD = 63.87), $F(1, 35) = 4.62$, $p < .05$. However, this difference is due to the impact of the training on the targeted conversational techniques. As suggested by the analyses presented previously, the mothers in the two groups do not differ significantly in their total use of untrained techniques, calculated as the sum of yes/no questions, statements, and repetitions: mean for trained mothers = 139.45, SD = 59.80; mean for untrained mothers = 147.05, SD = 65.51; $F(1, 35) = .15$, $p = .69$. Rather, the difference in overall talkativeness is attributable solely to the difference between the groups in their total use of the trained techniques, calculated as the sum of *Wh-* questions, associations, follow-ins, and positive evaluations: mean for trained mothers = 179.00, SD = 73.22; mean for untrained mothers = 129.58; SD = 50.21; $F(1, 35) = 6.15$, $p < .05$. Based on these results, then, it does indeed seem that we were successful in training mothers to use with greater frequency the specific techniques we hypothesized would increase children's encoding and remembering of the event.

Children's Memory

A second set of questions concerned the extent to which the children's memory reports about the camping activity would vary as a function of their language skills and whether or not their mothers had been trained. Overall, the children recalled approximately 8 or 26.67% of the 30 features of the camping event in response to general open-ended questions. Moreover, even though open-ended feature recall was somewhat low, the children also recalled quite a bit of additional information beyond simple feature naming. Indeed, they reported on average 40

event elaborations. Correlational analyses of the children's memory performance in response to open-ended questions revealed that their feature recall was highly correlated with their recall of event elaborations at both the 1-day-, $r(39) = .75$, $p < .001$, and 3-week-, $r(39) = .55$, $p < .001$, delay intervals. Moreover, from the 1-day- to the 3-week-delay interval, the children were quite consistent in their level of feature recall, $r(39) = .58$, $p < .001$ and their recall of event elaborations, $r(39) = .86$, $p < .001$. It is also worth noting that the children made few errors in remembering the events; intrusions in open-ended recall were very rare (about 2.39, on average), as were incorrect responses to yes/no questions (on average, 1.75).

To evaluate the children's memory performance, we conducted five 2 (children's language skill) × 2 (maternal training condition) × 2 (delay interval) ANOVAs, with delay as a within-subjects factor—three concerning the children's open-ended recall (i.e., the total number of features recalled, the total number of event elaborations recalled, the total number of intrusions of inaccurate information in open-ended recall) and two concerning their responses to yes/no questions (i.e., the proportion of accurate "yes" responses to yes/no questions concerning features of the event, and the proportion of accurate "no" responses to yes/no questions about event-consistent features). Although the time in days between the event and the 3-week interview ranged from 18 to 25 days, preliminary analyses indicated that the measures of the children's memory skills taken at this delay interval were not correlated with the time in days since the event, rs(39) < .24, ps > .14. In considering these analyses, it should also be noted that 2 children—one in the low language training group and the other in the high language training group—were unresponsive to the examiner's questions at the 1-day interview but participated quite willingly in the memory assessment conducted 3 weeks after the camping event. To keep these children in the analyses, we substituted the appropriate cell means for the missing performance measures. Nonetheless, the results of the analyses reported here are comparable to others we conducted that did not include the 2 children with missing data.

Open-ended recall. Table 3 summarizes the children's recall performance in response to the interviewer's open-ended questions by children's language skills and maternal training condition.

Inspection of the table suggests differences in the number of features recalled by children of mothers who had been trained versus those who had not been trained (training $M = 8.69$, $SD = 3.21$; no training $M = 6.92$, $SD = 3.21$), and by children with high versus low language skills (high language $M = 8.72$, $SD = 3.15$; low language $M = 6.90$, $SD = 3.26$). However, these differences were not significant at the conventional levels: for maternal training condition, $F(1, 35) = 3.20$, $p = .08$; for children's language skill, $F(1, 35) = 3.37$, $p = .07$. The data also indicate greater re-

TABLE 3
Mean Number of Features, Event Elaborations, and Intrusions in Children's Memory Responses to Open-Ended Questions at the 1-Day and 3-Week Interviews

Recall	*Training Condition*		*Total*
	Training	*No Training*	
	1-Day Memory Interview		
Features			
High Language	10.78 (4.08)	8.00 (4.00)	9.39 (4.18)
Low Language	7.78 (4.61)	6.55 (3.32)	7.19 (3.99)
Total	9.27 (4.50)	7.31 (3.67)	
Event Elaborations			
High Language	55.22 (10.74)	42.30 (16.81)	48.76 (15.24)
Low Language	39.84 (17.11)	33.81 (9.90)	36.98 (14.13)
Total	47.53 (15.99)	38.28 (14.28)	
Intrusions			
High Language	1.40 (2.36)	2.30 (2.62)	1.85 (2.47)
Low Language	1.00 (1.49)	3.00 (3.20)	1.94 (2.59)
Total	1.20 (1.93)	2.63 (2.85)	
	3-Week Memory Interview		
Features			
High Language	8.88 (2.73)	7.20 (3.05)	8.04 (2.94)
Low Language	7.33 (3.68)	5.80 (3.10)	6.61 (3.41)
Total	8.11 (3.25)	6.54 (3.06)	
Event Elaborations			
High Language	50.89 (11.49)	41.30 (14.95)	46.09 (13.88)
Low Language	35.66 (14.26)	29.48 (13.37)	32.73 (13.82)
Total	43.27 (14.83)	35.70 (15.09)	
Intrusions			
High Language	2.20 (1.99)	1.50 (1.51)	1.85 (1.75)
Low Language	3.70 (3.68)	4.30 (3.53)	4.00 (3.52)
Total	2.95 (2.98)	2.84 (2.96)	

Note. Standard deviations are in parentheses.

call of features at the 1-day ($M = 8.32$, $SD = 4.18$) assessment than after a 3-week delay ($M = 7.34$, $SD = 3.22$), but again the effect only approached statistical significance, $F(1, 35) = 2.81$, $p = .10$. All interactions related to the children's recall of features were nonsignificant, Fs$(1, 35) \leq .34$, ps $\geq .56$.

The trends observed in the children's recall of features were seen more dramatically in their production of additional details about the camping event. Indeed, the children of trained mothers recalled more event elaborations ($M = 45.42$, $SD =$

14.76) than did the children of untrained mothers (M = 36.98, SD = 14.18), $F(1, 35) = 4.21$, $p < .05$, and the children with high language skills (M = 47.43, SD = 13.96) recalled more elaborative details about the event than did children with low language skills (M = 34.86, SD = 13.34), $F(1, 35) = 9.05$, $p < .01$. Moreover, the amount of descriptive information provided about the events decreased over the delay interval, with children recalling fewer event elaborations at the 3-week delay interview (M = 39.58, SD = 15.25) than at the 1-day delay (M = 43.02, SD = 15.69), $F(1, 35) = 6.45$, $p < .05$. All interactions related to the children's recall of event elaborations were nonsignificant, Fs(1, 35) ≤ .37, ps ≥ .55. Overall, then, the general pattern of results indicates that children's recall of information about the camping event in response to open-ended questions posed by the researcher was affected by both the children's language skills and whether or not their mothers had received elaborative-style training.

Although the children made few intrusions, as shown in Table 3, it seemed possible that there could be differences in their provision of inaccurate information in response to open-ended questions, as a function of language skills, maternal training group, and delay interval. However, the results of an ANOVA revealed only one significant effect related to children's open-ended errors, namely, an interaction between children's language skill and delay interval, $F(1, 35) = 4.18$, $p = .05$. Follow-up tests revealed that the children with low versus high language skills differed in the number of intrusions they made after the 3-week interval, $F(1, 37) = 5.98$, $p < .05$, but not at the 1-day assessment, $F(1, 37) = .01$, $p = .90$. Essentially, the children with low language skills intruded more incorrect information in their open-ended recall after the 3-week delay than they had at 1-day delay, $F(1, 19) = 4.93$, $p < .05$, whereas the number of intrusions for the children in the high language group remained stable over time (remaining M = 1.85, SD = .12 over the 3-week delay), $F(1, 18) = 2.70$, $p = .17$.

Yes/no responding. On average, the children were asked approximately 18.11 yes/no questions about features and 6.77 yes/no questions about event-consistent features that were not presented. As displayed in Table 4, which shows the children's responses to these questions at the two memory interviews, the children of trained mothers were particularly good at responding correctly to yes/no probes about activities that had and had not been part of the camping event. At both delay intervals, the children in the high language group whose mothers had been trained performed at better-than-chance levels (.50) when responding "yes" to yes/no questions about features, ts(9) ≥ 3.46, ps .01, and "no" to yes/no questions about event-consistent features, ts(9) ≥ 8.19, ps < .001. And although children with low language skills and trained mothers were not performing above chance in their responses to yes/no feature questions at the 1-day delay, $t(9) = .74$, $p = .48$, they were at the 3-week delay when responding to these types of questions, $t(9) = 5.27$, $p < .001$, and at both delay intervals when responding "no" to event-consistent-feature

TABLE 4
Percentage of Accurate Responses to Yes/No Questions

Percentage of Correct Responses	*Training Condition*		*Total*
	Training	*No Training*	
	1-Day Memory Interview		
Responses to yes/no feature questions			
High language	.83 (.11)	.82 (.15)	.83 (.13)
Low language	.57 (.28)	.81 (.22)	.68 (.28)
Total	.70 (.25)	.82 (.18)	
Responses to event-consistent feature yes/no questions			
High language	.91 (.12)	.80 (.36)	.86 (.27)
Low language	.88 (.26)	.48 (.29)	.69 (.33)
Total	.89 (.20)	.65 (.35)	
	3-Week Memory Interview		
Responses to yes/no feature questions			
High language	.76 (.24)	.80 (.28)	.78 (.25)
Low language	.82 (.19)	.75 (.16)	.79 (.18)
Total	.79 (.21)	.78 (.22)	
Responses to event-consistent feature yes/no questions			
High language	.87 (.14)	.74 (.37)	.80 (.28)
Low language	.71 (.31)	.42 (.30)	.57 (.34)
Total	.79 (.25)	.58 (.37)	

Note. Standard deviations are in parentheses.

yes/no questions: at the 1-day, $t(9) = 4.60$, $p < .001$, and 3-week delay $t(9) = 2.13$, $p = .06$. Children of untrained mothers in both language groups also did well when responding to yes/no questions about presented features, ts(8–9) ≥ 3.49, ps ≤ .01. In addition, children in the high language–no maternal training condition tended to be above chance in their correct responding to event-consistent-feature yes/no questions at the 1-day, $t(9) = 2.63$, $p < .05$, and 3-week delays, $t(9) = 2.04$, $p = .07$. But, children in the low language–no maternal training condition were consistently below chance at both delay intervals in their responding to questions about features that were not presented to them during the camping event, ts(8) ≤ –.85, ps ≥ .42.

The ANOVAs conducted on these data yielded no main effects of maternal training condition, children's language skills, or delay interval on the children's correct responding to the yes/no feature questions, Fs(1, 35) ≤ 1.29, ps ≥ .26. A significant Language Skill × Delay, $F(1, 35) = 4.58$, $p < .05$, and a marginally significant Training Condition × Delay, $F(1, 35) = 3.34$, $p = .08$, were obtained, however, along with a significant three-way interaction of child language skill, training con-

dition, and delay, $F(1, 35) = 7.61$, $p < .01$. Follow-up analyses indicated that children in the low language training group showed significantly lower levels of correct responding to yes/no questions at the 1-day-delay interview, $F(1, 35) = 4.09$, $p = .05$ but were responding to these types of questions correctly at the 3-week-delay interval as often as the children in the other three groups, $F(1, 35) = .58$, $p = .45$.

Interestingly, in contrast to the children's responses to the feature questions, both maternal training and children's language skills influenced the children's abilities to respond correctly to event-consistent-feature questions. As also shown in Table 4, children of trained mothers ($M = .84$, $SD = .21$) were more accurate than children of untrained mothers ($M = .62$, $SD = .35$) in their "no" responses to yes/no questions about features that were not present during the event, $F(1, 35) = 7.30$, $p < .01$. Similarly, children with high language skills ($M = .83$, $SD = .27$) were also more often correct in their responses to questions about never-presented features than children with low language skills ($M = .63$, $SD = .32$), $F(1, 35) = 5.73$, $p < .05$. Overall, the children answered more yes/no questions about never-presented features correctly at the 1-day assessment ($M = .77$, $SD = .31$) than they did at the 3-week assessment ($M = .69$, $SD = .32$), $F(1, 35) = 11.40$, $p < .01$. No two-way, Fs$(1, 35) \leq 1.65$, ps $\geq .20$, or three-way, $F(1, 35) = 1.22$, $p = .28$, interactive effects of these factors for children's correct responding to event-consistent features were observed. Thus, in sum, the analyses of children's yes/no responding indicated again that children's memory reports were strongly tied to their language skills and to whether or not their mothers had been trained to use an elaborative style at the time the event was encoded.

DISCUSSION

In this study, we used an experimental methodology to examine the linkages between maternal conversational style as an event unfolds and children's subsequent remembering of the experience. The findings indicate that with a fairly straightforward procedure it was possible to train mothers to incorporate into their discussions with their children several techniques for enhancing children's understanding and memory. Compared with mothers who were asked to employ their usual interaction style, mothers who received training were observed during the camping activity to use with their children more of the conversational techniques emphasized in the training protocol: *Wh-* questions, associations, follow-ins, and positive evaluations. Moreover, the effects of training on maternal talk were specific to the elements of style targeted. Repetitions, yes/no questions, and statements—techniques that were not highlighted in the training—were used to a similar extent by trained and untrained mothers during the event. It is also important to note that the effects of maternal-style training were consistent across children of high and low

language skills, with mothers using the trained techniques similarly with both language groups.

In addition, we found substantial effects of maternal training and children's language skills on the children's memory for the details of the camping experience. Children of trained mothers recalled more embellished details of the event than did children of untrained mothers, and children with high language skills recalled more event elaborations than did their peers with low language skills. The same pattern of results was suggested for the children's recall of features of the experience, although here the effects did not reach statistical significance. Therefore, the strongest impact of a maternal elaborative style and child language on recall performance occurred not at the level of simple feature naming, but rather in terms of the amount of descriptive information the children were able to report about the event at different delay intervals. Effects of maternal training and child language skills were further noted in the children's responses to yes/no questions, most notably in terms of correct "no" responses to questions about features that were not a part of the camping activity. These findings indicate that children who were exposed to an elaborative style during the camping activity and children with higher language skills were able to construct an enriched representation of the experience from which they could draw upon in later assessments of remembering.

The selection of the specific conversational techniques mothers were trained to use was guided by an emerging theoretical perspective regarding the encoding of events, as well as by previous research in this area. As we see it, encoding begins with attentional deployment, which, in turn, is affected by one's understanding of a situation (Ornstein et al., 1997; Ornstein & Haden, 2001). When children can make sense of what they are experiencing, they are able to attend more fully to the key features of an event and, thus, encode them more completely than would otherwise be the case. Particularly when an event is novel or ambiguous, as was likely for the camping activity, the child may have little endogenous knowledge in the form of prior experience or expectation to enable comprehension. In such a situation, exogenous influences, such as mother–child interactions, may be especially critical in shaping understanding and encoding.

Concerning specific forms of interaction that can facilitate understanding, in research focusing on mother–child conversations about previously experienced events (e.g., Haden, 1998; Harley & Reese, 1999; Peterson et al., 1999), *Wh*-questions have been highlighted as a key component of an elaborative style. *Wh*-questions can call a child's attention to specific aspects of an event and help a parent determine what a child may or may not know. By requesting names, descriptions, actions, explanations, and so forth, mothers can help children to construct an enriched representation of an event that may be more accessible in the future. As was highlighted to the mothers in the training procedure, an elaborative questioning strategy involves providing additional information and *Wh*-

questions, even when the child does not immediately respond (e.g., Reese et al., 1993). In the end, however, it may be the *Wh-* questions that are responded to by the child during an event that are most highly related to children's subsequent remembering of the experience (e.g., Ornstein et al., 2001).

Nevertheless, questions alone may not always guarantee that a child understands an unfamiliar or ambiguous situation. As Tessler and Nelson (1994) have observed, maternal comments that link an unfolding event to prior experiences can also help a child to make sense of what is currently being experienced. Using this technique, an older individual can guide a child to attach his or her own prior knowledge to an experience in a way that facilitates comprehension and the establishment of a coherent representation in memory. In addition, verbal follow-ins that take advantage of the child's interests, and positive evaluations of the child's contributions can serve to encourage joint discussion during an event, and Tessler and Nelson and Haden et al. (2001) have shown that such conversation is strongly linked to later recall. With regard to verbal follow-ins in particular, research on joint attention (e.g., Tomasello & Farrar, 1986) supports the idea that verbalizations directed toward objects that were already the focus of the child's attention should be positively associated with the child's later memory for information about those objects, whereas maternal talk that attempts to redirect the child's attention should be negatively correlated with subsequent remembering.

Children whose mothers used more of these elaborative techniques during the camping event demonstrated greater memory for the experience. As such, this investigation is strongly linked to studies of mother–child talk about past events (e.g., Fivush & Haden, 1997; Reese et al., 1993). Although our emphasis in this project was on the impact of such talk during ongoing activities as opposed to previously experienced events, there is nonetheless a shared commitment here to the view that children's memory is facilitated by maternal conversational style. This study is also related to explorations of the impact of children's language skills on their memory for specific events. To be sure, the results of previous studies have been mixed (e.g., Reese & Brown, 2000; Reese & Fivush, 1993; Welch-Ross, 1997), but our findings suggest that enhanced language skills can be associated with enriched encoding of an event in a manner that facilitates subsequent retrieval and reporting (see also Bauer & Wewerka, 1995, for similar results).

Interestingly, the effects of the maternal training manipulation generally did not vary as a function of the children's linguistic skills, although the trained mothers tended to use more associations between events with children with high language, as opposed to the low language skills. Moreover, even though interactive effects of maternal conversational style and children's language skills on children's memory performance might have been expected, in general, the effects were additive, with each of these variables influencing remembering. Nonetheless, because of their potential importance, we searched for these interactions with more powerful tests—regression analyses in which child language was included as a continuous

predictor variable and maternal training condition as a categorical predictor variable. More specifically, we looked for interactions between these predictor variables in separate analyses conducted for each maternal-style (e.g., mothers' *Wh*-questions, associations, etc.) and child-memory (e.g., event elaborations) dependent variable. Consistent with the ANOVA results, even with this analytic strategy, we were unable to find statistically significant interactive effects for any of the maternal style and child memory variables.

Our success in training mothers to use techniques associated with an elaborative conversational style is consistent with previous work in which mothers were trained to use *Wh*- questions, follow-ins, and evaluations when reminiscing about past experiences with their children (Peterson et al., 1999). Indeed, it would have been possible to attempt to influence maternal conversation both at the time an event is being experienced and during discussions that occur after the event had taken place. This seems an important avenue for future research, as it would allow researchers to gain further leverage on the impact of maternal conversational style on children's remembering. This study, nevertheless, offers an important first step in experimental work illustrating linkages between mother–child talk during events and children's remembering. Based on these findings, continued attention to maternal conversational style and children's language skills seems necessary for designing effective strategies to enhance children's memory for events.

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APPENDIX

Component Features of the Camping Event

map
path with footprints
backpacks
fishing rod
fishing net
fish
pond
hamburgers
hotdogs
hamburger buns
hotdog buns
potato chips
marshmallows
canteens
tomatoes
lettuce leaves
cheese
mustard bottle
chicken drumsticks

tablecloth
cups
plates
napkins
grill
sticks
frying pan
pot
tongs
lantern
sleeping bag