Narrative Elaboration: Test of a New Procedure for Interviewing Children

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Because young children provide incomplete accounts of the past and tend to acquiesce to leading questions, procedures are needed to help them describe past events fully, without contaminating memory. This study tests the efficacy of "narrative elaboration," an innovative procedure designed to expand children's spontaneous reports of past events, reducing the need for leading questions. One hundred thirty-two children from 2 age groups (7-8 years and 10-11 years) were assigned randomly to 1 of 3 preparation conditions: (a) narrative elaboration intervention, (b) instruction-based intervention, and (c) control group. After participating in a staged activity and subsequent preparation sessions, children were interviewed about the activity. Children in the narrative elaboration condition demonstrated a 53% improvement in spontaneous recall over the control group, without compromising accuracy. Younger children using the narrative elaboration procedure performed at the level of older children in the control group. Discussion centers on implications for interviewing child witnesses and preparing them for courtroom examination.

In cases of alleged sexual or physical abuse, children are often the only sources of vital information. There is rarely physical evidence or an adult witness to verify a child's report. Without such corroborating evidence, professionals must rely on the recounts of children to formulate appropriate interventions. However, professionals require reliable, uncontaminated information on which to base decisions. Children can provide accurate and meaningful information, but their reports are also incomplete and vulnerable to the effects of suggestive questions.

If a child could narrate a past event fully, with less need for leading questions, the amount of reliable information would be expanded and the risk of contamination would be reduced. A procedure that expands children's retelling would allow follow-up questions to focus on clarifying information from children, not adult supposition. Such a procedure could decrease the number of false allegations pursued as a result of contaminated interviews. Ultimately, this could mean fewer children returned to dangerous situations and fewer innocent adults falsely accused of abuse. The procedure of narrative elaboration was developed to address this need—to assist children's retelling of events without compromising accuracy. The present study tests its efficacy in the laboratory.

Relevant Research

Narrative elaboration is designed to help children overcome developmental limitations in memory and communication well documented in the experimental literature. In laboratory studies, children's responses to open-ended requests, such as, "What happened?" (free recall) are more accurate than their responses to specific questions (e.g., Goodman & Reed, 1986). Unfortunately, these relatively spontaneous descriptions (e.g., "We played") are notably incomplete (Nelson, 1986). Hence, spontaneous event recall, despite its accuracy, is often insufficient for evaluating suspicions of abuse. Children provide additional information in response to follow-up questions, much of which is accurate; but questions, if misleading, distort children's reports.

Older children and adults use more complex and successful retrieval strategies than younger children to retrieve information independently (e.g., Ornstein, Naus, & Liberty, 1975). Younger children are dependent on external cues (in the form of adult questions) to search their memories in an efficient, systematic, and organized fashion (Fivush, 1993; Pillemer & White, 1989). Young children's ability to narrate autobiographical events is impeded by limited event knowledge (understanding of the causal and temporal relations among events) and impoverished generic memory structures, often referred to as scripts, that guide attention, retrieval, and retention.
processes. Eventually, children develop self-cuing strategies as they learn which questions to ask themselves in order to include the "who," "when," "what," and "where" independently.

Not only do children possess less developed scripts and strategies to guide independent retrieval, they also possess less developed communication skills to estimate the listener's prior knowledge on the topic and to orient the listener to time, place, and perspective (e.g., Dickson, 1981). They have difficulty anticipating the listener's needs to provide missing context cues and to elaborate on the unfamiliar spontaneously. Moreover, children have limited knowledge of the legal system itself (e.g., Saywitz, 1989). This could hamper their ability to judge forensic relevance, to perceive the purpose of the interview, or to infer the interviewer's expectations. These limitations leave children unaware of the kinds of information and level of detail expected of a witness in a forensic interview (Saywitz, Nathanson, Snyder, & Lamphear, 1993).

Narrative elaboration was developed with these childhood limitations in mind. It is both a procedure for preparing children to be questioned and a format for interviewing them (see Appendix). To address insufficiencies in strategies and scripts, we teach children a strategy for retrieving details by organizing the elements of an event into categories thought to be psychologically salient constructs that guide event recall (Mandler & Johnson, 1977). The categories (participants, setting, actions, conversation/affective states, consequences) are derived from script theories of children's event knowledge (Stein & Glenn, 1978). Each category is represented by a line drawing on a card (see Figure 1). These external cues remind children to report as much detail as possible from each category. Children practice using the cards on mock recall tasks. Later, when questioned about the event under investigation, children are initially asked for an uninterrupted description ("What happened?"). Afterwards, each card is presented and the child is asked, "Does this card remind you to tell something else?" providing opportunities for unbiased elaboration.

**Elements of Narrative Elaboration**

Narrative elaboration incorporates six experimental procedures that have enhanced the memory performance of school-age children in the laboratory: (a) memory strategy instruction, (b) organizational guidance according to category cues, (c) external memory aids (e.g., pictorial cues), (d) rationale for strategy usefulness, (e) practice with feedback, and (f) reminders to use new strategies on subsequent trials.

**Strategy instruction.** Studies have shown that young children can be taught to use retrieval strategies to improve recall, although they would not use such strategies spontaneously (Flavell, 1970; Paris, Newman, & McVey, 1982). Specifically, strategies that enhance children's knowledge of scripts for stories, often referred to as *story grammars*, aid children's comprehension and production of stories (Singer & Donlan, 1982). Children show better recall, comprehension, and retelling of well-formed stories in comparison with stories that violate expected structures and script knowledge (Stein & Nezworski, 1978). Children with more story grammar knowledge recall more information overall and make fewer errors on story recall than children with less knowledge (Fitzgerald & Spiegel, 1983; Pearson & Camperell, 1981). The present study tests whether such categories aid recall of live events.

**Visual cues.** In general, studies find that verbal reports underestimate children's knowledge. Supplemental visual cues allow children to demonstrate additional knowledge (Nelson, 1986). To guide children's retrieval efforts, we developed pictorial depictions of the Stein and Glenn (1978) story grammar categories. Kobasiwaga (1974, 1977) demonstrated that category cues depicted in pictorial form (picture of zoo) aid children's recall of categorizable lists (animals). In addition, pictures representing story grammar categories have been used to help children systematically list all aspects of a story related to each category (Westby, 1985), but children still need to be reminded to use each category independently (Fitzgerald & Spiegel, 1983).

**Strategy utility, practice, feedback, and reminders.** Narrative elaboration provides children with a rationale for strategy usefulness, practice with feedback, and reminders to use the newly learned technique on subsequent opportunities. Increased awareness of the value of the strategy for improving performance has been related to better recall (e.g., Lodico, Ghatala, Levin, Pressley, & Bell, 1983; Ringel & Springer, 1980) and to selecting more effective retrieval strategies (Ghatala, Levin, Pressley, & Lodico, 1985; Lodico et al., 1983; Pressley, Ross, Levin, & Ghatala, 1984). Further, there is evidence that knowledge concerning the value of the strategy helps maintain strategy use after initial training and extends to its use to new tasks (Lodico et al., 1983; Pressley et al., 1988).

In addition, studies have shown that children benefit from practice with new strategies, when they are given explicit feedback on their progress or are prompted to use the strategy just before the memory test (Pressley et al., 1984). Even older children up to 12 years of age have benefited (Pressley & Dennis-Rounds, 1980). To maximize completeness and minimize gen-

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**Figure 1.** Sample of reminder cards used to prepare children for questioning.
eralization problems, children practice using the visual cues on mock recall tasks with feedback; they receive reminders immediately before questioning (Pressley, Forrest-Pressley, & Elliott-Faust, 1988).

Design

The present study examined children's memory for a staged classroom event involving an argument among adults that implicated the children. Within each of two age groups (7–8 and 10–11), children were assigned randomly to one of the three treatment conditions: (a) narrative elaboration intervention, (b) instruction-based intervention, and (c) control group, as described later. Completeness, accuracy, and quality of memory for the staged event were compared across treatment conditions and age groups.

Two age groups and three treatment conditions were necessary to assess whether instructions alone improve recall for older children who use many retrieval strategies spontaneously or whether the entire intervention is necessary for both age groups to benefit. Past studies have suggested that children's recall can benefit from instructions (Wellman, Fabricus, & Wan, 1987; Wellman, Ritter, & Flavell, 1975; Yussen, 1974). The age range sampled was chosen to avoid ceiling and floor effects. Laboratory studies of recall for word lists and pictures suggest that 7- to 8-year-old children begin to show a level of metacognitive awareness sufficient to use retrieval strategies with some efficiency and flexibility. Still, complex heuristics resulting in exhaustive memory searches are rarely seen until the end of grade school and may not be mastered until adolescence (Salatas & Flavell, 1976). Hence, children in the sampled age range would have sufficient baseline skills to learn the new strategies and still have room to demonstrate improvement.

Hypotheses

The present study tests whether narrative elaboration training is associated with a greater number of correct propositions reported in spontaneous recall in comparison to reports from children who did not receive this training. We predicted that this would be accomplished without generating unintended errors and without adversely influencing children's responses to subsequent follow-up questions. An interaction between age and treatment condition was predicted because instructions alone might be sufficient for older children to demonstrate better recall than the control group, whereas younger children might require the complete intervention package to show improvement over the control group's performance.

With regard to the quality of recall, two additional predictions were made. Taking into account that young children's narratives are primarily descriptions of actions (Fivush & Hamond, 1990), we predicted that the intervention would sensitize children to report information from other categories as well, if such information had been encoded. On the basis of past studies suggesting that children's narratives often lack detail and that children are more accurate in response to questions about central events than about peripheral details (Goodman, Rudy, Bottoms, & Aman, 1990; Saywitz, Goodman, Nicholas, & Moan, 1991), we predicted that the intervention would increase the number of peripheral details reported in comparison to recall for main ideas.

Method

Participants

One hundred thirty-two children from middle-class families in southern California participated. Two age groups comprised this sample: 7- to 8-year-olds (n = 65; M = 90.60 months, SD = 4.46 months) and 10- to 11-year-olds (n = 67; M = 129.95 months, SD = 6.85 months). There were 67 boys and 65 girls. Written informed consent was obtained from a parent or legal guardian. Children's assent was also obtained verbally and in writing. Ethnicity data were available for 60% of the sample. Missing data were randomly distributed across levels of treatment condition, age, and gender. The remaining sample was 81% Caucasian, 6% Hispanic, 5% Asian, 3% Black, and 5% other.

Staged Event

A classroom event was designed to encompass many of the elements of events about which children may testify or be interviewed. It was complex, with four distinct episodes, rich in detail and action, which would later demand recall of a high caliber. It involved the children emotionally during a staged disruption, providing an emotionally charged distraction that could confuse the children later during demands on them to reconstruct what happened. To the extent that the exercise simulated demands typically made on child witnesses, it is ecologically valid. It is bound to fail short because of the necessity to spare children from bodily or psychological harm.

Two professional actors were hired to play student teachers who taught a history lesson, a craft activity, a song, and a folk dance about Mexico for 30 min. Midway through the craft activity, a confederate teacher entered, accusing the teacher of taking his craft materials without asking. She had already distributed the "borrowed" markers to the children who were automatically implicated in the disagreement and its resolution. Children's reactions demonstrated their emotional involvement. Some hid the materials under their desks while the adults argued. When the disagreement was resolved by modeling appropriate problem-solving skills, resulting in a plan to share the markers, some children clapped.

Procedure

The children's teacher introduced the student teachers to the class, explaining that the lesson would be videotaped. This was done to ensure that their memories would be compared with what actually happened, not what was supposed to have happened. Children were told that the purpose was to make a videotape to be used to teach other children in other schools. To further enhance ecological validity, children were not told in advance that their memory would be tested.

Two weeks after the classroom event, research assistants returned for a 45-min individual session with each child in a quiet place on their school campus. Children from each age group were randomly assigned to one of three research assistants. First, 5 min were spent in rapport development. To ensure that all participants possessed the baseline verbal and narrative skills necessary to participate, research assistants next administered the Peabody Picture Vocabulary Test—Revised (PPVT-R) and tested free recall for a Stein and Glenn (1978) story, Judy's Birthday. The individual session continued with the training (or

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1 For the purpose of the present study, "spontaneous recall" refers to the child's free recall plus any additional propositions reported in the cued recall task in response to the pictorial cues.
control) portion of the session, depending on condition assignment, which lasted approximately 30 min for all children.

Two days later, children met individually with the same research assistant. After a brief review of the previous session, each child was interviewed about the classroom event. Children were told that the interviewer was not present and had no knowledge of what had occurred to control children’s perceptions of the interviewer’s knowledge and expectations. At the conclusion of the interview, children were compensated for their effort, thanked for their participation, and returned to class. After the conclusion of the data collection phase, a research assistant returned to inform the class that one purpose of the experiment was to study children’s memory skills.

**Treatment Preparation Sessions**

**Narrative elaboration intervention (Group A).** This intervention consisted of six components—(a) Rationale for strategy utility: An explanation of the value of using new ways to remember better; (b) instructions to be complete and accurate: “When you tell what happened to you, tell as much as you can about what really happened, even the little things, without guessing or making anything up”; (c) Strategy: Introduction of a strategy for organizing narratives into five categories and reporting a specified level of detail from each category; (d) Visual Cues: Introduction of generic visual cues to remind self of each category; (e) Practice, Modeling, and Feedback: Practice using the new strategy and the visual cues on mock recall tasks with feedback on accuracy and with modeling of more detailed and relevant responses; and (f) Reimposition: Review of Items b through d.

To demonstrate strategy utility, children began with a procedure devised by Pressey and his colleagues to illustrate that there are better and worse ways to accomplish a drawing task (e.g., use a stencil) with an analogy to the way that strategies improve memory (Pressey et al., 1984). Next children were provided with accuracy and completeness instructions as presented in Item b. Then, they were taught that they can improve their recall by organizing the event information into five parts (categories) using reminder cards. Each part (category) was represented by a single line drawing on a separate card referred to as “reminder signs.” The drawings were generic in character to be useful in different situations and to avoid bias. Extensive pilot testing was conducted to revise the drawings so that none were used in a literal fashion, resulting in slight differences in the pictures for the two age groups.

Each card was introduced in a similar manner to the participant card in the following example: Children were told the subsequent statements.

This is the people card. When you talk about things that have happened, you will need to remember the people who were there (identity), what they looked like (physical appearance), and how the were dressed (clothing). You can use this sign to help you remember.

Then, during three mock recall tasks, children practiced each card individually and then the entire set. Practice tasks involved recall of one autobiographical event (“What have we done together so far in our session?”) and two brief videotaped vignettes provided by the Children’s Television Workshop (CTW). Each time, the children were asked to tell what happened, then the card was presented and the children asked if there was anything else the card reminded them to tell. The researcher elaborated on the child’s response, demonstrating additional kinds of information that could be reported if remembered (e.g., hair, skin, eye color, body size, age, glasses). To discourage task-inefficient responses and protect accuracy, children were cautioned repeatedly not to guess or push themselves to recall details about which they were unsure.

In the beginning of the second session, before the memory test, children were reminded of the instructions to be complete and accurate and to use the reminder signs.

**Instruction-based intervention (Group B).** These children participated in the same drawing task and received the same rationale for using strategies to remember events “better.” They received the same instructions to be complete and accurate and were told to practice by recalling the same autobiographical event used with Group A. They watched and recalled the same videos as Group A but without feedback, modeling, or visual cues. Specifically, they were not taught to organize their narratives into story grammar categories and were not exposed to the reminder signs. They did, however, spend similar amounts of time with the same research assistants involved in similar activities and with similar materials as Group A. In the beginning of the second session, they reviewed the instructions.

**Control session (Group C).** As with the other two groups, the control group participated in the same drawing task but was given no rationale for strategy usage. They watched two videos provided by CTW, as did the other two groups, and practiced recalling them. These two videos, one on various animal species and behaviors, another on assembling a go-cart, were chosen because they contained elements that were easily categorized. Children answered questions that required categorical knowledge. Thus, all groups engaged in tasks of similar interest, challenge, and skill. These children spent the same amount of time with the same researchers, involved in similar activities and materials as the other two groups. At the beginning of the second session, they reviewed what they learned in the first session.

**Interview**

Children were interviewed individually for approximately 15 min in a quiet room on the school campus, a familiar environment. All children received the same interview instructions and questions. The interview involved three tasks: (a) free recall, in which children were asked to give a narrative account of what had happened; (b) cued recall, in which children were given the opportunity to elaborate on their narrative using the visual cues as each card was presented individually to all participants; and (c) probe recall, in which children were asked a series of 28 short-answer questions about the classroom event, resembling those asked in forensic evaluations (e.g., Who was there? What did they look like? What was his name?). Comparable numbers of questions were devoted to main ideas, intermediate ideas, and peripheral details.

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2 For the younger age group, the introduction of the cards was preceded by introduction of a stop sign. All children demonstrated an understanding of the meaning of a sign (i.e., it tells you what to do—stop). An analogy was drawn to the reminder signs that tell you how to remember better. Drawings used with the younger age group were encompassed by an octagon to facilitate the connection.

3 A preliminary study was conducted with 72 six- and nine-year-olds to refine the methodology before the present study (Saywitz & Lamphere, 1989).

4 “Now you will have a chance to tell me about something that really happened to you and your class. Do you remember a couple of weeks ago when some people came into your classroom to make a video? Because I was not there to see it, I want you to tell me what you remember about it. You can use these cards if you like.” Children were prompted once with “anything else?” at the conclusion of free recall unless they indicated they were done (e.g., “that’s all”). After the children completed their narratives, the interviewer presented each card individually to the child and asked, “Does this card remind you to tell anything else?” After this cued recall task, children were told, “Now, I am going to ask you some questions about what happened that day in the classroom. Don’t make up anything. Just tell me as much as you can remember.”

5 The questions are available on request from Karen J. Saywitz.
Coding

We developed a checklist for coding children's free recall data by conducting a propositional analysis of the script of the staged event. Propositional analysis has become the method of choice for analyzing the elements of meaning present in sentences and discourse (Kintsch & Van Dijk, 1978). It is considered a sensitive and robust indicator of comprehension and memory for detailed information. It is well established that the number of propositions in any stretch of discourse is correlated more highly with comprehension and memory for the event retold than the number of words or sentences (Snyder & Downey, 1991). Using this method, Lynn Snyder created an extensive list of propositions constituting the staged event. She achieved an intercoder agreement of 93% with a second coder trained in this system who undertook the same task. Redundant propositions were eliminated, resulting in a checklist of 450 items.

The correspondence between the level of representation generated by a propositional analysis and human information processing has been well documented in the literature (Snyder & Downey, 1991). To enhance ecological validity, we tested the correspondence between the propositions on our checklist and the propositions recalled by individuals after watching a videotape of the event. This verification was examined by having 14 graduate students in the Department of Communicative Disorders at California State University, Long Beach, view the event being staged with a class of children. The students were then asked to take 20 min to write what they had seen. The mean agreement between the higher level propositions identified by the graduate students and the higher level propositions generated by the Lynn Snyder analysis was 94%.

For both free and cued recall, memory of each item on the checklist was coded as correct, incorrect, or omitted from child's report. If a child reported a statement that was not captured by the checklist but was verifiable, it was scored as well. Unverifiable information was rare. Cued recall scores were composed of new information not reported previously in free recall. Answers to probed recall questions were coded as correct, incorrect, or don't know. Two raters who were not informed of cell assignment and the hypotheses of the study each coded 25% of the children's protocols, attaining 99% interrater reliability. One of the raters coded the remaining protocols.

Results

The data were analyzed to address three primary questions. First, does narrative elaboration training increase the number of correct propositions reported in spontaneous recall by 7- to 8-year-old and by 10- to 11-year-old children? Second, if so, does improvement in free recall come at the expense of increased errors, either in free recall or on nontarget follow-up questions? Third, what is the effect of narrative elaboration intervention on quality of recall; specifically, is the additional information generated forensically relevant and sufficiently detailed?

Preliminary Analyses

To demonstrate that memory differences between treatment groups were a function of the intervention and not a priori group differences on related cognitive abilities, we conducted preliminary analyses to demonstrate that groups were comparable on verbal skill (as measured by scores on the PPVT-R), and narrative skill (as measured by recall scores for a Stein and Glenn story) before intervention. Two 3 × 2 × 2 (Treatment Condition × Age × Gender) analyses of variance (ANOVAs) were conducted on PPVT-R scores and story recall scores. There were no significant main effects or interactions involving treatment condition (all Fs < 1.84). In addition, there were no significant differences in memory performance as a function of tester identity. One-way ANOVAs were conducted across the three research assistants on number correct and number incorrect on free recall, cued recall, and probed recall scores (all Fs < 1.65). Thus, tester identity was not entered into the main analyses discussed later. There were no differences between treatment groups in the distribution of ethnicity. From these preliminary analyses, we concluded that there was a high likelihood that if memory differences between treatment groups emerged they would be a function of our intervention.

Interviewers followed a standardized interview protocol. Preliminary analyses demonstrated that treatment groups did not differ in the number of times children were prompted during free recall, in number of reminder cards presented, or in number of probed questions asked.

Does Narrative Elaboration Intervention Facilitate Recall?

We hypothesized that the experimental intervention would be associated with greater spontaneous recall of correct information for children all ages. Secondarily, we predicted an interaction between age and treatment condition. We also examined gender effects because they emerged in a previous study using a similar paradigm (Saywitz & Moan-Hardie, 1994). To examine the effects of intervention, age, and gender on memory, 3 × 2 × 2 (Treatment Condition × Age × Gender) multivariate analyses of variance (MANOVAs) were conducted with three dependent measures, free recall, cued recall, and probed recall, unless otherwise specified.

When the number correct on free, cued, and probed recall was entered into the MANOVA, there were significant main effects of treatment condition, F(6, 236) = 3.87, p < .001; age, F(3, 118) = 22.26, p < .0001; and gender, F(3, 118) = 3.72, p < .01. Wilks's lambda was used to estimate F values. Interactions were not significant (all Fs < 1.34).

Free recall. Univariate tests on free recall scores revealed significant main effects of treatment condition, F(2, 120) = 5.89, p < .005; and age, F(1, 120) = 30.45, p < .0001. Table 1 presents the means and standard deviations for the number of propositions reported in free, cued, and probed recall tasks by treatment condition and age group. Post hoc Bonferroni tests indicated that the narrative elaboration group (M_r = 16.23, SD_r = 8.33)6 reported more correct propositions in free recall than either of the other two treatment groups who did not differ from each other (M_a = 10.96, SD_a = 7.27; and M_c = 12.29, SD_c = 8.72). Older children (M = 16.64, SD = 9.10) reported more correct propositions in free recall than younger children (M = 9.72, SD = 5.90). Gender effects and interactions were not significant (all Fs < 2.06).

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6 Subscripts indicate treatment condition: a = narrative elaboration intervention; b = instruction-based intervention; and c = control group.
Table 1

Mean Number of Correct Items Recalled in Free, Cued, and Probed Recall by Age Group and Treatment Condition

<table>
<thead>
<tr>
<th>Treatment condition and age group</th>
<th>Recall, no. of items, M, and SD</th>
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<tbody>
<tr>
<td></td>
<td>7-8 (n = 23)</td>
</tr>
<tr>
<td></td>
<td>Narrative elaboration</td>
</tr>
<tr>
<td>No. of errors</td>
<td>M</td>
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<td>Cued recall</td>
<td>M</td>
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<td>No. of errors</td>
<td>M</td>
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<tr>
<td>Probed recall</td>
<td>M</td>
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<td>No. of errors</td>
<td>M</td>
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Cued recall. Univariate tests on cued correct recall scores revealed a significant effect of training, F(2, 120) = 6.12, p < .003. Bonferroni tests indicated that the narrative elaboration group reported significantly more correct propositions in response to the visual cues (M = 5.33, SD = 7.30) than either of the other two groups who did not differ from each other (Mb = 1.45, SDb = 2.87; Mc = 1.77, SDc = 2.84; only new information not reported previously in free recall was counted). Age, gender, and interaction effects were not significant (all Fs < 2.28).

Probed recall. Univariate tests on probed correct recall scores failed to demonstrate an effect of training. Analyses revealed significant effects of age, F(1, 120) = 28.95, p < .0001; with older children (M = 18.34, SD = 2.61) responding to more questions correctly than younger children (M = 15.98, SD = 2.80). There was also a significant effect of gender, F(1, 120) = 9.03, p < .003, with girls (M = 17.89, SD = 3.00) responding to more questions correctly than boys (M = 16.49, SD = 2.75), although the absolute difference was small. There were no significant interactions (all Fs < 1.20).

In summary, as predicted, children with narrative elaboration training provided more units of correct information in spontaneous recall, M = 21.76, than children who received only instructions to be accurate and complete, M = 12.41, or no intervention at all, M = 14.06. This was accomplished without reducing correct responses to follow-up questions. The data did not support the hypothesis that instructions to be accurate and complete aid recall in this paradigm.

Does Narrative Elaboration Generate Unintended Error?

To assess the full effects of the intervention and its potential utility in the clinical and forensic setting, we entered the number of errors on free, cued, and probed recall into the MANOVA. Significant main effects of age, F(3, 118) = 11.82, p < .0001; and gender, F(3, 118) = 4.02, p < .01, emerged. There were no significant treatment effects or interactions (all Fs < 1.41). Thus, there was no evidence that the intervention caused unintended errors in recall (see Table 1).

Univariate tests on free recall error scores showed no significant effects or interactions (all Fs < 1.26). Univariate tests on cued recall error scores revealed a significant main effect of age, F(1, 120) = 5.14, p < .05, with younger children making more errors, M = .25, SD = .66, than older children, M = .03, SD = .17. Univariate tests on probed recall error scores revealed significant main effects of age, F(1, 120) = 26.33, p < .0001; and gender, F(1, 120) = 12.18, p < .001. Younger children responded to more questions incorrectly (M = 6.14, SD = 2.60) than older children (M = 3.90, SD = 2.55). Boys (M = 5.69; SD = 2.94) responded to more questions incorrectly in probed recall than girls (M = 4.29, SD = 2.46). Again, the absolute difference was small.

In summary, the narrative elaboration method increased completeness of children's spontaneous narrative reports without adverse consequences. The intervention affected only that aspect of the children's memory performance targeted by the experimental procedure. It had no measurable adverse effects.
on follow-up questions in the probed recall task. Children in the narrative elaboration group demonstrated 53% improvement in completeness of accurate spontaneous narrative reports over the control group.

**Age Effects**

Traditional age-related differences in memory performance were reduced markedly by the narrative elaboration method. Younger children who received intervention performed comparably with older children in the control group. When the number of correct propositions reported in free recall was entered into Tukey pairwise comparisons of cell means, the difference between younger children in the narrative elaboration condition \( (M = 13) \) and older children in the control group \( (M = 16) \) was not significant at the \( p < .05 \) level. In fact, when the number correct in spontaneous recall \( (i.e., \) sum of correct free recall and correct new propositions in cued recall) was entered into the pairwise comparisons, age-related differences were eliminated altogether. The average total number of correct propositions recalled by younger children in the narrative elaboration group \( (M = 19) \) exceeded that of the older children in the control group \( (M = 17.50) \), although this difference was not statistically significant.

**How Does Narrative Elaboration Affect Quality of Recall?**

**Categorical analyses.** Given that children’s narratives primarily comprise statements about actions, we predicted that there would be little room for improvement in the recall of actions but a greater opportunity for improved reporting in other categories, if such information had been encoded. We identified each of the 450 items on the checklist with one of the five story grammar categories. The number of correctly reported propositions from each category was entered into a 3 (Training) \( \times \) 2 (Age) \( \times \) 2 (Gender) MANOVA. There were main effects of treatment condition, \( F(10, 232) = 3.17, p < .001 \); and age, \( F(5, 116) = 7.01, p < .0001 \). Gender effects and interactions were not significant (all \( F < 1.55 \)). Univariate tests showed significant effects of treatment condition on three categories: participants, \( F(2, 120) = 5.68, p < .005 \); and age, \( F(1, 120) = 4.88, p < .01 \). Figure 2 presents the mean number of propositions recalled correctly from each category in free and cued recall by treatment condition.

Bonferroni post hoc tests suggested that the narrative elaboration group recalled significantly more information about participants than the control group \( (M_e = 1.06, SD = 1.98; M_c = .34, SD = .64) \). The narrative elaboration group recalled significantly more propositions about the setting than the instructions group \( (M_e = 2.04, SD = 2.43; M_i = .78, SD = 1.16) \). Differences between the narrative elaboration group and the control group \( (M_e = 1.46, SD = 1.92) \) did not reach significance; however, the means were in the predicted direction. The narrative elaboration group also recalled more propositions about affective states and conversations than the instructions group \( (M_e = 5.08, SD = 3.78; M_i = 2.94, SD = 3.07) \). Again, differences between the narrative elaboration group and the control group \( (M_e = 3.50, SD = 3.39) \) did not reach significance; however, means were in the predicted direction. Taken as a whole, this pattern favors narrative elaboration over the other training conditions examined on these three types of information. Data were sparse in some cells, especially for children in the instruction and control groups who frequently failed to report any propositions in one or more categories.

The MANOVA also produced a significant effect of age on recall of categorical information. Univariate tests showed significant age effects on each of the schema-based categories: participants, \( F(1, 120) = 13.25, p < .001 \); setting, \( F(1, 120) = 10.55, p < .001 \); actions, \( F(1, 120) = 21.13, p < .0001 \); conversations/affect states, \( F(1, 120) = 12.48, p < .001 \); and consequences, \( F(1, 120) = 8.54, p < .001 \). Effects of gender and interactions were not significant (all \( F < 1.55 \)).

Taken as a whole, these data suggest a consistent pattern. The narrative elaboration procedure tends to be associated with improvements in recall of information about the participants, setting, and affective states/conversations. The procedure does not appear to improve reports of actions or consequences. Failure to improve the number of actions reported was not due to a ceiling effect. The checklist contained 103 potentially memorable actions. The maximum number of actions recalled by a child in free recall was 20, \( M = 6.44 \). Of the categories studied, the action category was the one most readily reported by children with minimal cuing. Because the consequence cue was presented last, fatigue could be responsible for poor recall of this type of information.

**Hierarchical analyses.** We also hypothesized that the intervention would increase the number of peripheral details recalled without necessarily affecting the recall of main ideas. Hence, each of the 450 items on the checklist was categorized as either a main idea, intermediate idea, or peripheral detail, on the basis of the propositional analysis of the classroom event. The number of main ideas, intermediate ideas, and peripheral details recalled correctly in both free and cued recall was entered into a 3 (Training) \( \times \) 2 (Age) \( \times \) 2 (Gender) MANOVA. There were significant effects of treatment condition, \( F(6, 236) = 5.36, p < .0001 \); and age, \( F(3, 118) = 12.14, p < .0001 \). There were no significant effects of gender and no significant interactions (all \( F < 2.40 \)).

Univariate tests on the number of main ideas, intermediate ideas, and details reported correctly in spontaneous recall revealed main effects of treatment condition and age for each level (main ideas: treatment condition, \( F(2, 120) = 9.81, p < .0001 \); and age, \( F(1, 120) = 36.91, p < .0001 \); intermediate ideas: treatment condition, \( F(2, 120) = 4.73, p < .01 \); and age, \( F(1, 120) = 7.50, p < .01 \); details: treatment condition, \( F(2, 120) = 12.92, p < .0001 \); and age, \( F(1, 120) = 5.78, p < .05 \)). At each level, Bonferroni post hoc tests revealed that the narrative elaboration group reported significantly more correct propositions than either of the other two groups who did not significantly differ from each other. These results failed to support our prediction. Memory for all three levels improved. The intervention may have enhanced the children's ability to access the complexity (main ideas from the four distinct episodes) as well as the richness (peripheral details) of the event. Prior studies showing few developmental differences in recall of main ideas typically
use less complex stimuli, perhaps creating a ceiling effect for main ideas that was not present in this paradigm.

**Discussion**

Our results suggest that narrative elaboration can be a promising method to help children produce more complete and detailed descriptions of past events without compromising accuracy. Children who received the experimental intervention demonstrated a 53% improvement over the control group in accurate spontaneous recall. Children accessed information with this novel technique that they did not report spontaneously. This was accomplished without the use of leading questions and without affecting responses to follow-up questions. The extra information dealt with the participants (identity and physical appearance), their emotional states, the statements made, and the setting. The additional information these children produced was enhanced in complexity (main ideas) and in richness (details).

More complete spontaneous reports reduce the need for leading follow-up questions and the consequent risk of contamination. This is most important for younger children who often produce skeletal narratives, requiring follow-up questions for clarification, and who are also least able to resist suggestive questions. In the present study, younger children in the narrative elaboration condition demonstrated recall comparable with older children in the control group.

There were no measurable benefits of instructing children to be complete and accurate, even among older children. This finding highlights the need for empirical investigation of the effectiveness of individual components of clinical interview procedures.

**Ecological Validity**

In this study, special care was taken to enhance the ecological validity of the stimuli by staging a live, emotionally compelling event rather than using stories or pictures. The retention interval was weeks, not days, and the retention test consisted of short-answer questions modeled after actual interviews, thus differing from previous studies. Although the results are promising, we do not know if benefits will be maintained when events to be recalled are traumatic, humiliating, unresolved, highly personal, and are experienced alone and in secret. A series of studies is needed to test the efficacy of this technique in the forensic context—a context that often involves multiple events, interviews, and interviewers over extended periods of time. The interviews in this study were briefer than typical in the forensic setting. It is possible that children would have generated more error if interviews were lengthier. Also, the sample was primarily composed of Caucasian, middle-class children, although preliminary analyses of a subsequent study suggest that a modified procedure can be beneficial to a population including economically disadvantaged children (Dorado, 1996).
Two aspects of the design itself limit our interpretation of the results. First, the interviewers were not uninformed of condition assignment. Interviewer expectancies could have influenced the results. However, the design of the present study is similar to the typical interview setting in which the evaluator or attorney prepares the child for the interview and then conducts the subsequent questioning themselves. For these situations, the design of the present study appears valid. Second, the visual cues were always administered in the same order. It is impossible to disentangle the effects of the specific category from its position of presentation. Additional experiments with randomized order of presentation, and unfamiliar interviewers are needed to address these issues.

Application to Clinical and Forensic Settings

The clinical literature is replete with recommendations for interviewing children. Few have been empirically tested. If future studies confirm that narrative elaboration helps children describe past experiences accurately and in greater detail without leading questions, then worthy cases of abuse could be prosecuted more effectively and false allegations could be disregarded more frequently. Obtaining detailed statements from children earlier in the process could reduce the number of interviews children undergo. Repeated interviews are thought to create stress (Tedesco & Schnell, 1987), inconsistency (Fivush & Shukat, 1995), and contamination (Ceci & Bruck, 1993). If interviews followed a common format, narrative elaboration being but one example (preparation followed by free recall, cued recall, and finally, specific questions), then opportunities for interviewer error, distortion, and inconsistency across statements might decline.

Laboratory tested techniques could prove useful in two other regards. Concerns that preparation is tantamount to contamination undermine children's credibility. The use of techniques demonstrated to be free of adverse effects on memory could bolster children's credibility. In addition, such techniques could facilitate recovery from trauma (Cohen & Mannarino, 1996). Concerns over contamination often delay needed therapy. If used to guide recall in pretrial therapy sessions, such techniques could promote timely clinical intervention.

Even if future studies replicate and extend these encouraging results to situations that more closely resemble the investigative and clinical context, the problem of generalization to the courtroom is likely to remain. Children in this age range often have difficulty transferring new skills to unfamiliar situations without reminders or cues. However, if prepared in advance, child witnesses could be reminded to use the strategies right before an additional interview or courtroom examination. Although it may be unusual for children to use visual cues to aid retrieval in front of a jury, this should be no more problematic than the use of other demonstrative tools, such as the drawings that are frequently used to supplement children's limited language skills. The genuine benefits of a relatively brief procedure demonstrated to enhance children's reliability without infringing on the rights of the accused should outweigh most presumed barriers to implementation.

Our findings demonstrate the value of extrapolating from the laboratories of developmental psychology to create new methods for enhancing children's eyewitness performance in the clinical and forensic venue. The value of developmentally based, empirically tested interview guidelines in cases of suspected child maltreatment is clear. If adults can help children provide more accurate and complete reports of past events without the risk of distortion, society's efforts to discover truth, protect the rights of the accused, and promote the welfare of children will be advanced.

References


Appendix

Format for Narrative Elaboration Interview

I. Preparation for Interview
   Narrative Elaboration Training
   (a) Rationale for value of using new ways to remember better;
   (b) instructions to be complete and accurate;
   (c) introduction of new strategy for organizing recall into five categories and reporting detail in each category;
   (d) introduction of visual cues (reminder cards) to remind children to use each category;
   (e) practice using the strategy and visual cues on mock recall tasks, with feedback on accuracy and modeling of
      more detailed responses; and
   (f) reinstruction of (b) through (d) immediately before interview.

II. Free Recall
   The interview begins with a general open-ended question to elicit narrative description of event. If a narrative is
   forthcoming, the interviewer refrains from interruption until the child indicates completion (“that’s all”). If comple-
   tion is not indicated, interviewers prompt once with “Anything else?”

III. Cued Recall
   Children are given an opportunity to elaborate on what was reported in free recall. Each reminder card is presented
   individually accompanied by the question, “Does this card remind you to tell something else?”

IV. Specific Follow-Up Questions
   Before questions, children are warned not to make up anything and to tell as much as they can remember.