Reducing Child Witnesses’ False Reports of Misinformation from Parents

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This study explored whether a source-monitoring training (SMT) procedure, in which children distinguished between events they recently witnessed versus events they only heard described, would help 3- to 8-year-olds to report only experienced events during a target interview. Children \( N = 132 \) who witnessed science demonstrations and subsequently heard their parents describe nonexperienced events received SMT before or after a forensic-style interview. SMT reduced the number of false reports that 7- and 8-year-old children reported in response to direct questions but had no impact on the performance of younger children. Combined with earlier results, these data suggest a transition between 3 and 8 years of age in the strategic use of source-monitoring information to support verbal reports, such that only 7- and 8-year-olds generalize training to a difficult memory task that does not include mention of specific alternative sources. © 2002 Elsevier Science

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Children’s eyewitness reports sometimes include information from sources other than their experience of the to-be-reported events. For example, interviewers may communicate expectations regarding the nature of the target events via direct
questions (e.g., “Did she hurt you?”), leading questions (e.g., “His name was Bill, wasn’t it?”), or comments that establish negative stereotypes about particular individuals (e.g., “It is important that you tell me everything she did so that we can keep you safe”), and these suggestive practices can distort witnesses’ reports. Even when interviewers avoid suggestive influences, children’s reports sometimes intermingle memories of the to-be-reported events with information from other sources (e.g., memories of hearing others talk about the events) (for reviews of this literature, see Goodman et al., 1999; Poole & Lamb, 1998; Poole & Lindsay, 1998).

We developed a procedure that leads to high rates of false reports by 3- to 8-year-old children (Poole & Lindsay, 1995, 2001). In our procedure, children interact with an unfamiliar man named “Mr. Science” who shows them four science demonstrations. Immediately thereafter, children receive a nonsuggestive interview. Approximately 3 months later, children’s parents read them a story that describes two of the experienced science demonstrations, two nonexperienced science demonstrations, and one of two instances of nonexperienced touching. Each child is then questioned about the interaction with Mr. Science using an interview protocol that begins with questions conforming to “best-practice” guidelines (Poole & Lamb, 1998), followed by direct questions and prompts to narrate events. In this procedure, false reports—including false reports of touching—are frequent, even in the free recall phase of the interview and even among 8-year-old children. For example, the 114 children in our 2001 study (Poole & Lindsay, 2001) related a total of 58 nonexperienced but suggested events in free recall, including 17 reports of nonexperienced touching. Furthermore, the 8-year-old children reported as many suggested events as did the younger children. False reports of suggested events were even more common when children were asked direct questions, especially among the younger children. Path analyses of these data indicated that acquiescence, free recall, and source monitoring all contributed independently to mediating age-related changes in suggestibility in response to direct questions.

The central objectives of the current research were twofold: to replicate the suggestibility findings of our previous study and to develop an effective method for reducing false reports in the Mr. Science/parental misinformation paradigm. To be practical for real-world forensic investigators, such a method must be easy to learn and inexpensive to implement. To be effective, the method must lower false reports without reducing accurate reports. Ideally, the method should work well with children of a variety of ages, especially preschoolers.

In addition to its obvious applied relevance, research coupling manipulations designed to increase false reports with manipulations designed to ameliorate those suggestive influences can also shed light on theoretical issues. For example, if a particular theoretical mechanism contributes to false reports, then interventions designed to change the operation of that mechanism at test should alter the rate of false reports. Accordingly, Gee, Gregory, and Pipe (1999) and Saywitz and Moan-Hardie (1994) reported training interventions that significantly reduced children’s susceptibility to suggestive interviewers (e.g., by helping them to understand that they could respond “I don’t know”), and those results provide
strong evidence that social demand mechanisms contribute to false acquiescence (see also Lindsay, Gonzales, & Eso, 1995; Zaragoza, 1991). In the current study, the intervention was designed to reduce the ill effects of prior exposure to misinformation encountered outside the formal interviewing process.

In the phased interview protocol for our Mr. Science procedure, open-ended free recall prompts are followed by direct questions regarding particular events. In our 2001 study, reports of suggestions in response to open-ended prompts were equally frequent across age groups, whereas false reports in response to direct questions decreased dramatically with age. We attribute the lack of an age effect in free recall of suggestions to the opposing effects of two developmental phenomena: Older children are more likely than younger ones to retrieve information from the story in response to open-ended cues (due to developmental improvements in encoding and free recall retrieval skills), but they also more often spontaneously “gate out” such information from their reports (due to developmental advances in differentiating between memories from different sources). In contrast, the direct and source-monitoring questions effectively cued the recall of information from the story for children of all ages, such that avoiding false reports of that information required children to gate it out on the basis of its source (which the older children were better able to do).

Prior research indicates that people sometimes confuse memories from different sources (e.g., Johnson, Hashtroudi, & Lindsay, 1993), and that young children are particularly susceptible to such source-monitoring confusions (e.g., Foley & Ratner, 1998; Markham, Howie, & Hlavacek, 1999; Roberts & Blades, 1998; Taylor, Esbensen, & Bennett, 1994; for a recent review, see Lindsay, in press). Developmental trends in source-monitoring performance vary across tasks because multiple processes with varying developmental trajectories contribute to making source judgments. A necessary condition for accurate performance is retention of source-specifying information, and therefore long delays are likely to degrade the performance of younger children more than that of older children. Even when source information is available, children must realize that discriminating between sources is task relevant, and to maximize performance they must systematically evaluate source-relevant information. Developmental trends in retention and strategic use of memory information thus explain why age differences are generally larger when source monitoring is difficult than when it is easy (for a review, see Lindsay, in press) and smaller when source monitoring involves more automatic rather than strategic processes. For example, young children can make correct decisions about which of two conflicting sources to believe without being able to report which source influenced their decisions, suggesting that they encode and use source information before they can reflect on and report about the sources of their knowledge (Robinson, 2000). Moreover, age differences in source monitoring are often larger when tested with explicit verbal measures than when tested with indirect or behavioral measures (Roberts & Blades, 1995). Finally, in eyewitness paradigms, children infiltrate suggested information into their reports less frequently with open-ended than with specific questions.
(Roberts, 2000), further demonstrating how performance shifts as a function of test procedures.

Consistent with these observations, in our 1995 and 2001 studies (Poole & Lindsay, 1995, 2001), children were told not to guess or make things up, but those instructions did not enable them to avoid falsely reporting parental misinformation. The interviews also included a final source-monitoring phase in which children were reminded of the story their parents had read to them, told that the story might have described events that they did not experience with Mr. Science, and explicitly asked to indicate whether they had really experienced or merely heard about the various events. These source-monitoring instructions were ineffective for the 3- and 4-year-old children in our 1995 study. In our subsequent study, 7- and 8-year-old children benefited substantially from the source-monitoring instructions, such that they often retracted prior false reports of suggested events while rarely retracting prior accurate reports. The 5- and 6-year-olds in our 2001 study benefited somewhat from our source-monitoring questions but, once again, the 3- and 4-year-olds did not.

The benefits of source-monitoring instructions for the older children in our 2001 study are encouraging. Unfortunately, however, those instructions are not readily transportable to real-world forensic situations. There was a known source of contamination in our study, and the source-monitoring instructions identified that source and asked children to differentiate between reports based on that source and reports based on memories of interacting with Mr. Science. In real-world cases, in contrast, potential sources of contamination are typically unknown. Moreover, even if a particular source of potential contamination is suspected, legal concerns might prevent interviewers from explicitly identifying that source to the children.

The current study tested the efficacy of a source-monitoring training procedure (SMT) incorporated into the rapport-building phase of the interview. As in our 2001 study, 3- to 8-year-old children interacted individually with Mr. Science, received an immediate best-practice interview, and approximately 3 months later heard their parents read a story that included misinformation. Shortly after exposure to the story, a new interviewer met with the children. For children assigned to the SMT condition, after some warm-up questions, the interviewer performed three “preparation” tasks, each consisting of an action and a verbal description of a nonperformed action (e.g., the interviewer wiped off the tape recorder and said that she usually pushed the button to reset the counter). Afterward, the interviewer asked the children to report the preparation acts using free recall and, if necessary, specific questions, and she provided immediate feedback. The interviewer then asked open-ended questions about the children’s experience with Mr. Science, followed by direct questions about specific events and, finally, source-monitoring questions about those events. Unlike our prior study, source-monitoring instructions did not mention the story but rather asked children to differentiate between things they had merely heard about and things they remembered experiencing. Children assigned to the control condition received SMT and a second set of
source-monitoring questions only after responding to open-ended, direct, and source-monitoring questions regarding their interactions with Mr. Science. We predicted that SMT would lower false reports of parental misinformation without lowering accurate reports, at least for the oldest (7- and 8-year-old) children.

METHOD

Participants

We recruited 133 families by distributing letters at day care centers and posting advertisements in local newspapers. Only 1 child (a 3-year-old) declined participation, leaving a final sample of 132 children from 10 small towns in central Michigan: 22 3-year-olds, 30 4-year-olds, 17 5-year-olds, 18 6-year-olds, 19 7-year-olds, and 26 8-year-olds. Families received $15 for each of two sessions.

Because children were assigned to one of two conditions, unlike in our prior study (Poole & Lindsay, 2001), analyses were based on three age groups (3–4, 5–6, and 7–8 years) to maintain adequate sample sizes. There were more girls (53%) than boys (47%), but there was not a significant discrepancy among age groups in the percentage of girls, \( p = .57 \). The families represented diverse levels of parent education and family income (e.g., 47% of the sample reported incomes less than $40,000 per year), and parents from the three age groups reported comparable family incomes, \( p = .98 \).

Procedure

Session 1: Exposure to the Target Events and the Baseline Interview

Following procedures from Poole and Lindsay (2001), each child interacted one-on-one with Mr. Science for 16 min. Sessions began with Mr. Science setting a timer, followed by four demonstrations from a list of eight, subdivided into two sets and counterbalanced across children (e.g., lifting a can by pulling on ropes attached to one- and two-pulley systems, spinning plastic tops and reaching for them with and without prism glasses). For each activity, Mr. Science first demonstrated and then encouraged the child to explore the materials.

Immediately after the science demonstrations, one of several female interviewers asked the child three questions about family and the child’s favorite activities. The interviewer then introduced the topic, instructed the child not to guess or make anything up, and proceeded through five open-ended questions/invitations that asked the child to report what had happened in the science room, including questions about what the child saw and heard. During this initial interview, parents received a contact information card that contained the following instructions: “Listen to [child’s name] talk about Mr. Science, but do not correct, prompt, or remind.”

Session 2: The Misinformation Manipulation

We mailed storybooks to families 3 months after Session 1. The parents of each family agreed to read the story (“A Visit to Mr. Science”) to their child three times.
before Session 2 and to record the dates on which they read the story in spaces printed on the back of the book. Parents whose children could read were told to hold the book and read as they normally would to a younger child. Although we informed parents that it was desirable to read the story on consecutive days, we also explained that they could catch up from a missed day by reading twice in one day (e.g., morning and evening).

The story, which used the child’s own name throughout, described four science demonstrations: two that the child had experienced and two that were nonexperienced. Thus, there were four science demonstration categories for each child: two experienced-only demonstrations, two experienced–heard demonstrations (experienced demonstrations that were also reported in the story), two heard-only demonstrations (demonstrations mentioned only in the story), and two control demonstrations (neither experienced nor heard). The narrative for each demonstration described the materials and activity, as in the following example from a story sent to a child named Caitlin:

Next Mr. Science put some strange things on the table. There was a long black rubber hose and some plastic funnels. “We are going to build our own telephone,” he said. He put one funnel on one end of the hose and another funnel on the other end of the hose. Then Caitlin put a funnel over her ear and Mr. Science asked questions into their telephone. Mr. Science and Caitlin took turns listening and talking into the telephone. Mr. Science said that our voices travel through the funnels and hose, and this makes our voices louder.

To ensure that differences between reports of experienced and suggested events were not due to differences in the way these events were described in the story, specific demonstrations were counterbalanced across conditions. Each story also described one of two nonexperienced instances of mildly unpleasant bodily touch: that Mr. Science put something yucky in the child’s mouth (when a wet wipe got close to the child’s mouth during final clean-up) or that Mr. Science hurt the child’s tummy (when he pushed a little too hard while applying a reward sticker). In fact, the interaction with Mr. Science did not include anything corresponding to these suggestions. We refer to nonexperienced touch events described in the story as touch–heard events, with touch–control events referring to touch events that were neither experienced nor described in the story. Instructions accompanying the story informed parents that the story described some events that their child had experienced and some that other children had experienced. The parents were reminded not to correct their child or to reiterate their child’s earlier comments about experiences with Mr. Science.

Session 2: The Postsuggestion Interview

Assistant who did not know which demonstrations or stories individual children had encountered conducted postsuggestion interviews in the children’s homes. Half of the children received an SMT procedure before the target interview (27 3- and 4-year-olds, 17 5- and 6-year-olds, and 22 7- and 8-year-olds), and half received an SMT after the target interview (25 3- and 4-year-olds, 18 5- and 6-year-olds, and 23 7- and 8-year-olds).
The SMT procedure. For the SMT procedure, the interviewer told the child that there were a few things she needed to get ready before she asked some questions. She then proceeded through three counterbalanced preparation activities, each involving a performed action followed by a described action. (a) “First I am going to wipe off the tape recorder so that it’s clean. [Interviewer wipes the recorder.] Sometimes I push the blue button on the top to set the counter. When I push the button, it makes a click sound and the little numbers on the counter move around.” (b) “Now I am going to sharpen my pencil. [Interviewer sharpens pencil.] Sometimes I push the eraser to make sure that it is on tightly. The eraser is soft and rubbery, and sometimes it gets loose unless I push it hard.” (c) “Now I am going to make myself look nice by combing my hair. [Interviewer combs her hair.] Sometimes I spray a little hair spray on my hair. I like my hair to stay in place all day, and the spray keeps it from sticking up on top.”

For each preparation, the interviewer first asked an open-ended question, “What did I do just now to get _____ ready?” When children answered with the performed event, they were reinforced (“That’s right, I really did ____. You know that because you saw me ____.”). If they answered with an event that was only described, then they were corrected (“Think hard. Remember when I said that sometimes I _____? But you didn’t really see me _____, did you? No, you didn’t, so ‘no’ is the right answer”). Whenever children did not mention either the performed or described event, they were prompted about it with a direct question (“Did _____?”) and reinforced or corrected for their response.

Interview protocol for the SMT condition. The interview format mimicked the “phased” structure recommended for forensic interviews (i.e., rapport building followed by open-ended questions and then direct questions [Poole & Lamb, 1998]), with source-monitoring questions at the end of the interview to determine whether children could restrict reports to experienced events when interviewers specifically prompted them to do so.

For children in the SMT condition, after the training phase the interviewer began by indicating that she was going to ask the child “some different questions—questions about things you have seen and done.” She then explained that the child was to tell “only about things that you remember happening to you—things that you remember seeing or feeling yourself.” The child was also told not to report things that he or she had only heard other people talk about: “Just like you told me about seeing me wipe the tape recorder but not about hearing me talk about pressing the blue button. That’s what I mean when I ask you to tell me what really happened. Only tell me about things that you remember seeing or feeling yourself.” The interview began with two rapport questions regarding events of the day, after which the interviewer introduced the topic and began the open-ended portion of the interview:

All right. We are going to talk about something different now. A while ago, you went to visit Mr. Science. Mr. Science played some games with you, and then you answered some questions into a tape recorder, just like this one. Do you remember playing with Mr. Science? Good. I want you to tell me everything that happened when you were playing
with Mr. Science. I wasn’t in the room, so I don’t know what happened. Start with the first thing that happened and tell me everything you can, even things you don’t think are very important. But don’t guess or make anything up. Just tell me what you saw or heard or did the time you played in the science room with Mr. Science.

Open-ended questioning continued with the remaining four open-ended prompts, as in Session 1.

Next, the interviewer gave the child permission to say “no” when asked direct questions:

Now I have some other questions to ask about the time you visited Mr. Science. If I ask you about something that Mr. Science didn’t do that time you visited him, I want you to say “no.” But if you remember something that I ask about, then I want you to tell me about it.

The interviewer then proceeded through 10 direct question pairs, 1 pair for each of the eight science demonstrations and for the two details about bodily touch. Each child therefore answered question pairs about experienced-only demonstrations (2), experienced–heard demonstrations (2), heard-only demonstrations (2), control demonstrations (2), a touch–heard event, and a touch–control (neither experienced nor heard) event. Each question pair began with a yes/no question (e.g., “Did Mr. Science have a machine with ropes to pull?”), followed by one prompt for a “yes” response (e.g., “Tell me about the machine”) or another for a “no” response (e.g., “Can you tell me about the machine?”). The order of question pairs was randomized for each child, with the restriction that one question from each science demonstration condition and one touch event appeared in the first and second block of five questions. Each block of five questions therefore contained two questions that were accurately answered with a “yes” response and three questions that were accurately answered with a “no” response.

The final portion of the interview was a source-monitoring procedure in which the child was asked to indicate whether events he or she had previously reported with a “yes” response to direct questions had actually happened with Mr. Science. Children in the SMT condition were given the following instructions:

I’m going to ask you just a few more questions about the things you told me. Sometimes we know about something because we remember it happening; we really remember seeing and hearing it happen—like you remember seeing me wipe the tape recorder. But sometimes we know about things only because someone told us about them—like you remember me telling you about someone pushing the counter button on the tape recorder. You remember that I told you about pushing the counter button, but you didn’t really see me push the button. I’m interested in what you really remember happening with Mr. Science, things that you remember seeing or feeling when you were with Mr. Science. For example, someone told me that “Mr. Science flew across the room!” Do you remember Mr. Science flying across the room? [Interviewer waited for a “no” answer and prompted for it if necessary.] I didn’t see Mr. Science, but people don’t usually fly across a room, so you were right to say “no” if you didn’t remember that. But if I ask about something you really remember doing with Mr. Science, then I want you to say “yes.” Let’s do some more.

The interviewer then asked about events to which the child had responded “yes” during direct questioning (e.g., “Did Mr. Science really put something yucky in your mouth?”).
Interview protocol for the control condition. Interviewers asked children assigned to the control condition the same sequence of questions but without reference to an SMT procedure. They began with the introductory remarks that children in the SMT condition heard at the beginning of their sessions, followed by the two rapport-building questions. Interviewers then delivered the same introduction to open-ended questions heard by children in the SMT condition, explicitly instructing them to tell only “what you saw or heard or did the time you played in the science room with Mr. Science.” After open-ended questions, interviewers delivered instructions for direct questions, which were also identical to instructions in the SMT condition. Interviewers proceeded with instructions for the source-monitoring questions, which paralleled those used in the SMT condition except that references to the SMT preparation activities were deleted.

After completing the target interviews, interviewers presented the SMT procedure and delivered instructions for source-monitoring questions (modified to acknowledge that questions would be repeated, e.g., “I need to check my notes one more time to make sure that I wrote down the right answers”). Finally, interviewers repeated each source-monitoring question that had previously received a “yes” response.

RESULTS

Data Preparation and Preliminary Analyses

Preliminary analyses showed that, within each age group (3–4, 5–6, and 7–8 years), children assigned to the SMT and control conditions were comparable in terms of age in months, the interval between exposure to the target events and the second interview (from 2.6 to 4.2 months, $M = 3.5$ months), and the number of times parents reported reading the book (from 2 to 4 times, $M = 2.98$), $p > .45$. An alpha level of .05 was used for these and all subsequent analyses. All follow-up tests are simple main effects tests.

To score narrative answers, two coders independently recorded which of the 10 target events were mentioned in each response to open-ended and direct questions. Intercoder reliability was 94%; disagreements were primarily oversights that were resolved by having a third coder review the transcripts.

Children’s answers to yes/no questions consisted of “yes,” “no,” and “I don’t know/I don’t remember” responses. Only 2 of 792 responses to SMT questions were “I don’t know,” and these were scored as incorrect. For direct and source-monitoring questions, only “yes” responses were clearly accurate answers to experienced events and clearly inaccurate answers to nonexperienced events. Therefore, “I don’t know” answers were scored as “no.” These answers were infrequent, averaging only 1.5% of responses to direct and source-monitoring questions, and frequencies did not vary significantly by age group (3–4, 5–6, and 7–8 years), $p > .50$.

To analyze performance during Session 1, the children were credited for each target event they described. No child described a nonexperienced event, indicat-
ing that we selected events for the suggestibility manipulation that children were unlikely to mention spontaneously. An Age by Condition analysis of variance (ANOVA) showed that the older children reported a higher proportion of experienced events than did the younger children \((M_5 = .33, .60, \text{and} .83 \text{ for} 3–4, 5–6, \text{and} 7–8 \text{ years, respectively})\), \(F(2, 126) = 41.88, MSE = .07, p < .001\). Unexpectedly, there was also a significant condition effect: Children assigned to the SMT condition were somewhat more verbal prior to the suggestibility manipulation \((M = .64)\) than were children assigned to the control condition \((M = .54)\), \(F(1, 126) = 4.43, MSE = .07, p < .05\), and this difference did not interact significantly with age, \(p = .52\).

There are three reasons why it is not likely that initial differences between the two conditions would bias results in favor of children assigned to the SMT condition. First, in our prior study, children who were more talkative and those who showed higher levels of initial recall were more suggestible than their less talkative peers (Poole & Lindsay, 2001; also see Ratner, Foley, & Gimpert, 2000). Second, the magnitude of this initial condition difference was small, particularly for the 7- and 8-year-old children who were most likely to benefit from SMT. (Older children assigned to the control condition reported 80% of the experienced events on average, compared to 85% for children assigned to the SMT condition.) Finally, analyses we report later documented that children assigned to the two conditions reported comparable numbers of experienced events during free recall testing in Session 2.

The data on children’s responses after exposure to misinformation addressed the following five major questions. How accurate were the children in answering SMT questions? Did the story reinforce memories of experienced events and increase false reports of suggested events? Did SMT reduce reports of suggested events? When children were asked explicit source-monitoring questions, did SMT encourage them to retract their earlier reports of suggested events? Did performance on SMT questions predict the accuracy of children’s reports about target events? We report analyses focusing on each of these questions in turn.

How Accurate Were the Children in Answering SMT Questions?

Children were scored as accurate or inaccurate on responses to SMT questions about three performed and three described events. Table 1 reports the mean proportion accurate by question type (performed vs described events), age group, and trial \((1–3)\). For children in the SMT condition, these data came from training given near the beginning of Session 2; for those in the control condition, these data came from training given near the end of Session 2. Accuracy scores \((0 \text{ or} 1)\) for observed and described events were entered into separate Age by Trial by Condition ANOVAs. Main effects of condition and interactions involving condition did not reach significance for either performed \((ps > .38)\) or described events \((ps > .07)\). For described events, children assigned to the SMT condition performed slightly more poorly \((M \text{ accuracy} = .77)\) than children assigned to the control condition \((M \text{ accuracy} = .86)\).
Note that 1 3-year-old child erred on all three questions regarding performed events, but the remaining children were completely accurate. In contrast, the children showed more variability with regard to reports of actions that had only been described. The number of accurate “no” responses to questions about described events increased significantly from the youngest to the oldest group, $F(2, 126) = 4.47, MSE = .22, p < .05$. The number of accurate “no” responses to described events also increased across trials, $F(2, 252) = 7.20, MSE = .11, p < .01$, but the rate of improvement was comparable across age groups, $p = .80$.

Children’s behavior during the SMT procedure showed that even those in the youngest group attended during the procedure. Moreover, improvement across trials indicates that the procedure conveyed the requirement to say “no” when appropriate to distinguish between performed and described events. Despite feedback after each answer, however, even on the third trial some children in each age group continued to report that the interviewer performed actions that were merely described only minutes earlier (i.e., 21% of 3- and 4-year-olds, 12% of 5- and 6-year-olds, and 7% of 7- and 8-year-olds), nonparametric linear trend($1, N = 132) = 4.33, p < .05.$

### Did the Story Reinforce Memories of Experienced Events and Increase False Reports of Suggested Events?

We assessed the effectiveness of the story-reading manipulation by entering the number of events reported in response to open-ended questions, the number of “yes” responses to direct questions, and the number of narrative responses to direct questions into Event Type by Age ANOVAs for children in the control condition only (see Tables 2–4 for means and standard deviations). The magnitude of the story-reading manipulation was isolated by conducting the following condition comparisons: experienced-only versus experienced–heard, heard versus control, and touch–heard versus touch–control.

Across ages, the children reported experienced–heard events more often than events that were only experienced, as indicated by the proportion of events reported in response to open-ended questions, $F(1, 63) = 21.83, MSE = .13, p < .001$; the proportion of “yes” responses to direct questions, $F(1, 63) = 12.51, MSE =

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and the proportion of narrative responses to direct question prompts, 
\( F(1, 63) = 7.52, \text{MSE} = .06, p < .01 \). The Event Type \( \times \) Age interaction was significant only for direct questions, \( p < .05 \): The two oldest age groups reported a high proportion of experienced events even when the events were not reinforced by the story, whereas the younger children required the story to elevate their “yes” responses to the level of the older children.

Similarly, heard-only events were reported more often than control events for all three dependent measures (open-ended questions: \( F(1, 63) = 17.96, \text{MSE} = .05, p < .001 \); direct questions: \( F(1, 63) = 69.09, \text{MSE} = .11, p < .001 \); prompts: \( F(1, 63) = 51.30, \text{MSE} = .08, p < .001 \)). The Event Type \( \times \) Age interaction was significant only for narrative responses to direct question prompts, \( p < .01 \): The story elevated narrative responses above the level for control events at all ages, but this effect was more dramatic for the oldest group of children owing to their low rate of narrating novel events.

Regarding touch–heard versus touch–control events, the story did not significantly elevate the proportion of touch events described in response to open-ended questions, \( p = .14 \). There were, however, significant effects of the story on false reports of touch in responses to direct questions, \( F(1, 63) = 39.45, \text{MSE} = .14, p < .001 \), and to prompts, \( F(1, 63) = 34.27, \text{MSE} = .17, p < .001 \), and these effects were comparable across age groups, \( ps > .16 \). In sum, the story-reading manipulation elevated false reports for all age groups, although the children rarely reported nonexperienced touching in response to open-ended questions.

Did SMT Reduce Reports of Suggested Events?

To determine whether SMT reduced reports of suggested events, we conducted separate Age (3–4, 5–6, or 7–8 years) by Condition (SMT vs control) by Event Type ANOVAs to contrast pairs of experienced (i.e., experienced-only vs experienced–heard), suggested (heard-only vs touch–heard), and novel (control vs touch–control) event types. We first report the children’s responses to open-ended questions, followed by answers to direct yes/no questions and narrative responses produced after interviewers prompted the children to describe events.

Responses to open-ended questions. Table 2 reports the proportion of events within each event type that the children mentioned in response to open-ended questions in Session 2, after exposure to misinformation from their parents. The analysis of experienced-only versus experienced–heard events revealed that older children reported more experienced events than did younger children, \( F(2, 126) = 20.53, \text{MSE} = .12, p < .001 \), and that children as a group were more likely to report experienced events that had also been mentioned in the story (i.e., experienced–heard) than experienced events that had not been described to them (i.e., experienced-only), \( F(1, 126) = 58.04, \text{MSE} = .12, p < .001 \). Importantly, children in the SMT and control conditions reported comparable numbers of experienced events, \( p = .42 \), and there were no significant interactions involving age, condition assignment, or event type for experienced events, \( ps > .25 \).
Regarding false reports, some children in all age groups reported suggested events during the free recall portion of the interviews. There was a significant Age × Event Type interaction for suggested events, $F(2, 126) = 5.87$, $MSE = .06$, $p < .01$, owing to the fact that the youngest age group reported similar proportions of heard-only and touch–heard events, $p = .82$, whereas the older two age groups were more likely to report science demonstrations (i.e., heard-only events) than events that described touching (i.e., touch–heard events), $ps < .05$. There was not a significant effect of condition assignment, however, and there were no significant interactions involving condition, $ps > .05$. Finally, no child made statements that could be construed as describing a novel (i.e., control or touch–control) event during open-ended questioning.

As in Poole and Lindsay (2001), the children in this study sometimes reported suggested events during free recall, and older children were as likely as younger ones to report suggested science demonstrations in response to open-ended questions. One difference between the two data sets is that in the current study none of the 7- and 8-year-old children reported the suggested touching experience during open-ended questioning, whereas in the previous study 18% did so. Opportunities to observe touch event intrusions in the current study were reduced, however, because only half of the children were assigned to the control condition. In any case, the important points are that children of all ages sometimes reported suggested events in response to open-ended questions and that SMT had no effect on the frequency of such false reports.

*Responses to direct yes/no questions.* Table 3 lists the mean proportion of events reported in response to direct yes/no questions within each event type. Regarding experienced events, an Age (3–4, 5–6, or 7–8 years) by Condition (SMT vs control) by Event Type (experienced-only vs experienced–heard) ANOVA indicated that, as expected, the older children acknowledged a greater

**TABLE 2**
Mean Proportion of Events Reported in Response to Open-Ended Prompts in Session 2 (after Misleading Suggestions from Parents)

<table>
<thead>
<tr>
<th>Age group</th>
<th>Experienced-only</th>
<th>Experienced–Heard</th>
<th>Heard-only</th>
<th>Control</th>
<th>Touch–Heard</th>
<th>Touch–Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control condition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3–4 years</td>
<td>.12 (.22)</td>
<td>.44 (.42)</td>
<td>.10 (.25)</td>
<td>.00 (.00)</td>
<td>.04 (.20)</td>
<td>.00 (.00)</td>
</tr>
<tr>
<td>5–6 years</td>
<td>.36 (.38)</td>
<td>.72 (.31)</td>
<td>.17 (.34)</td>
<td>.00 (.00)</td>
<td>.06 (.24)</td>
<td>.00 (.00)</td>
</tr>
<tr>
<td>7–8 years</td>
<td>.57 (.38)</td>
<td>.78 (.33)</td>
<td>.22 (.33)</td>
<td>.00 (.00)</td>
<td>.00 (.00)</td>
<td>.00 (.00)</td>
</tr>
<tr>
<td>SMT condition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3–4 years</td>
<td>.17 (.31)</td>
<td>.52 (.43)</td>
<td>.15 (.23)</td>
<td>.00 (.00)</td>
<td>.18 (.40)</td>
<td>.00 (.00)</td>
</tr>
<tr>
<td>5–6 years</td>
<td>.29 (.36)</td>
<td>.62 (.42)</td>
<td>.29 (.40)</td>
<td>.00 (.00)</td>
<td>.12 (.33)</td>
<td>.00 (.00)</td>
</tr>
<tr>
<td>7–8 years</td>
<td>.39 (.34)</td>
<td>.79 (.25)</td>
<td>.29 (.37)</td>
<td>.00 (.00)</td>
<td>.00 (.00)</td>
<td>.00 (.00)</td>
</tr>
</tbody>
</table>

*Note.* Standard deviations are in parentheses.
proportion of events that were experienced 3 months earlier than did the younger children, \( F(2, 126) = 7.24, \text{MSE} = .06, p < .01 \). A significant Age × Event Type interaction, however, qualified this result. Compared to younger children, older children reported more events that had been experienced 3 months earlier but that had not been described in the story (i.e., experienced-only events), \( F(2, 126) = 7.39, \text{MSE} = .11, p < .01 \), whereas there was no age trend for experienced events that had also been described in the story (i.e., experienced–heard events, \( p = .42 \)). There was no difference between SMT and control conditions in the proportion of experienced events reported, indicating that SMT did not encourage inaccurate “no” responses, \( p = .31 \).

Regarding suggested events, a significant main effect of age was qualified by an Age × Condition interaction, \( F(2, 126) = 3.51, \text{MSE} = .32, p < .05 \): The youngest two age groups were not influenced by SMT, \( ps > .23 \), but the 7- and 8-year-olds who received SMT reported significantly fewer suggested events, \( F(1, 43) = 5.98, \text{MSE} = .35, p < .05 \). Overall, the children were more likely to report heard-only events (\( M = .61 \)) than touch–heard events (\( M = .47 \)), \( F(1, 126) = 11.95, \text{MSE} = .11, p < .01 \), but this tendency was not influenced significantly by age or condition assignment, \( ps > .53 \).

There was a low rate of erroneous “yes” responses to questions about novel science demonstrations and novel touching experiences. For these categories of control events, main effects of age and event type were qualified by a significant Age × Event Type interaction, \( F(2, 126) = 5.36, \text{MSE} = .04, p < .01 \). Erroneous “yes” responses to novel science demonstrations declined with age, \( F(2, 126) = 6.87, \text{MSE} = .08, p < .01 \), but errors on touch–control events did not, \( p = .77 \). Condition assignment did not influence reports of events that were neither experienced nor described in the story, \( p = .39 \), further documenting that the reduction in false reports of suggested events among children who received
SMT was not due to a general increase in the frequency with which children said “no.”

Because it is generally assumed that information reported during free recall is more elaborated than information reported only in response to direct questions, and elaborated memories should support accurate source decisions, we wondered whether children who received SMT would tend to reject events that they reported during free recall when interviewers asked them to respond to direct questions later in the interview. Because only the 7- and 8-year-olds showed a training effect, for this age group we coded the proportion of false “yes” responses to direct questions about suggested events that were reported during free recall and compared that rate to the proportion of false “yes” responses for nonreported events. Fewer than half of the children reported suggested events during free recall, however, which restricted the sample size for this analysis. Adding data from the 6-year-olds increased power without changing the pattern of means, and therefore we tracked the fate of suggested events across phases of the interview for 6- to 8-year-old children. We entered the proportions of suggested events that received “yes” responses to subsequent direct questions into a 2 (reported during free recall vs not reported during free recall) by 2 (SMT vs control) ANOVA. There was a significant main effect of reporting, owing to the fact that events mentioned during free recall were accepted at a higher rate during direct questioning (M = .86) than were events not reported during free recall (M = .64). However, there was no effect of training condition, p = .12, and no interaction between reporting status and training condition, p = .53. Regardless of training condition, children generally continued to report events as experienced if they had previously reported them in response to open-ended questions.

Describing events when prompted. Regardless of children’s answers to direct yes/no questions (e.g., “Did Mr. Science hurt your tummy?”), interviewers nonetheless asked whether they could describe the events (e.g., “Can you tell me what Mr. Science did to your tummy?”). Table 4 reports the proportion of prompts that elicited a narrative response within each event type.

Older children were significantly more likely than younger children to describe events that were experienced, F(2, 126) = 7.70, MSE = .12, p < .01. Furthermore, all age groups were more likely to describe experienced events that had also been reinforced by the story (i.e., experienced–heard events) compared to experienced-only events, F(1, 126) = 28.89, MSE = .05, p < .001. Rates of describing experienced events were not influenced by condition assignment, p = .99, however, and there were no significant interactions involving age, event type, or condition assignment for analyses of experienced events, ps > .24.

Regarding suggested events, the tendency to describe events that were only mentioned in the story was influenced by condition assignment, as indicated by an Age × Condition interaction, F(2, 126) = 4.32, MSE = .32, p < .05. Consistent with earlier patterns of “yes” reports, the youngest two age groups were not significantly influenced by SMT, ps > .32, but 7- and 8-year-old children who received SMT described significantly fewer suggested events, F(1, 126) = 6.35,
MSE = .37, p < .05. There was also a significant Age × Event interaction for the total sample, owing to the fact that the 3- and 4-year-olds narrated a higher proportion of touch–heard than heard-only events, $F(1, 50) = 5.51, MSE = .09, p < .05$, whereas this was not the case for the older two age groups, ps > .10.

As in our previous study, many children attempted to describe events that were neither experienced nor heard, basing their answers on general knowledge and information provided in the questions. There was an age trend in the frequency of narrating novel science demonstrations (i.e., control events), owing to a decline among the 7- and 8-year-olds in this behavior, $F(2, 126) = 3.73, MSE = .17, p < .05$. Also, the children as a whole described fewer touch–control than control events, $F(1, 126) = 8.75, MSE = .05, p < .01$. However, condition assignment did not influence descriptions of control and touch–control events, $p = .56$.

In sum, SMT had no effect on the number of experienced or novel events that the children described. For the oldest group, training reduced both false “yes” responses to questions about suggested events and misleading descriptions of suggested events. Separate analyses for 7- and 8-year-olds confirmed that SMT was effective at both ages. Combining both categories of suggested events (i.e., heard-only and touch–heard), the 7-year-olds provided descriptions 80% of the time in the control condition but only 41% of the time in the SMT condition. Similarly, the 8-year-olds falsely described suggested events 51% of the time in the control condition but only 23% of the time in the SMT condition.

### Did SMT Assist Children in Rejecting Suggested Events When They Were Asked Explicit Source-Monitoring Questions?

After interviewers asked open-ended and direct questions, source-monitoring questions provided children with an opportunity to reject their prior “yes” responses. The source-monitoring procedure used in the Poole and Lindsay

<table>
<thead>
<tr>
<th>Event type</th>
<th>Age group</th>
<th>Experienced-only</th>
<th>Experienced-Heard</th>
<th>Heard-only</th>
<th>Control</th>
<th>Touch-Heard</th>
<th>Touch-Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control condition</td>
<td>3–4 years</td>
<td>.58 (.40)</td>
<td>.76 (.36)</td>
<td>.54 (.38)</td>
<td>.30 (.43)</td>
<td>.68 (.48)</td>
<td>.12 (.33)</td>
</tr>
<tr>
<td></td>
<td>5–6 years</td>
<td>.83 (.30)</td>
<td>.92 (.26)</td>
<td>.56 (.45)</td>
<td>.31 (.35)</td>
<td>.39 (.50)</td>
<td>.17 (.38)</td>
</tr>
<tr>
<td></td>
<td>7–8 years</td>
<td>.89 (.26)</td>
<td>.98 (.10)</td>
<td>.65 (.44)</td>
<td>.04 (.21)</td>
<td>.61 (.50)</td>
<td>.13 (.34)</td>
</tr>
<tr>
<td>SMT condition</td>
<td>3–4 years</td>
<td>.70 (.40)</td>
<td>.83 (.31)</td>
<td>.65 (.41)</td>
<td>.26 (.35)</td>
<td>.78 (.42)</td>
<td>.19 (.40)</td>
</tr>
<tr>
<td></td>
<td>5–6 years</td>
<td>.71 (.25)</td>
<td>.94 (.17)</td>
<td>.65 (.42)</td>
<td>.23 (.40)</td>
<td>.53 (.51)</td>
<td>.12 (.33)</td>
</tr>
<tr>
<td></td>
<td>7–8 years</td>
<td>.79 (.29)</td>
<td>.98 (.11)</td>
<td>.29 (.43)</td>
<td>.09 (.25)</td>
<td>.32 (.48)</td>
<td>.00 (.00)</td>
</tr>
</tbody>
</table>

Notes. Standard deviations are in parentheses.
(2001) study explicitly acknowledged the story and asked children to reconstruct it prior to asking them about each event they had previously reported. This procedure was very effective in helping the older children to reject erroneous “yes” responses without retracting accurate “yes” responses. The purpose of the current study, however, was to explore whether we could produce a comparable reduction in false reports without explicitly mentioning the story, and therefore the source-monitoring data described here report children’s performance when instructions merely warned them to report only what they saw themselves, not what they might have heard someone say.

Table 5 reports the mean proportion of previously accepted events that children continued to accept on the source-monitoring test. Data from the two experienced conditions (experienced-only and experienced–heard) replicated the results from our previous procedure: The children continued to accurately respond “yes” to the majority of experienced events they had previously accepted (96% of experienced-only and 99% of experienced–heard). Furthermore, although the children were slightly more likely to continue to accept experienced events that had also been mentioned in the story, $F(1, 112) = 4.15, MSE = .02, p < .05$, there was no age trend or condition effect for source judgments, $ps > .17$. These data document that efforts to encourage children to say “no” when appropriate did not dramatically reduce the number of accurate “yes” responses.

Age by Condition ANOVAs were conducted on data within each nonexperienced event type to avoid restricting the sample only to children who had previously made at least one “yes” response to questions about both types of suggested or both types of novel events. Unfortunately, as with experienced events the children also continued to accept the majority of the suggested events to which they had previously acceded, responding “yes” to 91% of the heard-only and 95% of the touch–heard events. The lack of age effects shows that it is difficult for children to make source distinctions when specific alternative sources are not mentioned, $ps > .20$. Finally, the lack of condition effects indicates that although SMT reduced errors during direct questioning, it did not help children to reassess their answers once they had erroneously reported suggested events, $ps > .27$. A follow-up analysis of data from the oldest group only confirmed that the non-significant condition effect was not due to obscuring an effect by analyzing this group with younger children. Data for novel events showed the same pattern: Children across ages and conditions continued to report most of the novel science demonstrations that they had erroneously accepted previously, $ps > .52$. Although reports of touch–control events were sparse, it is noteworthy that no child retracted such a report.

Children in the control condition were given SMT after completing the source-monitoring portion of the interview, after which interviewers returned to any source-monitoring question that had received a “yes” response. As with children in the SMT condition, children in the control condition continued to accept a high proportion of previously accepted events across all event categories (e.g., 91% of experienced-only and heard-only events).
**TABLE 5**

Proportion of Items Accepted during Direct Questions That Were Accepted after Source-Monitoring Instructions

<table>
<thead>
<tr>
<th>Event type</th>
<th>Age group</th>
<th>Experienced-only</th>
<th>Experienced–Heard</th>
<th>Heard-only</th>
<th>Control</th>
<th>Touch–Heard</th>
<th>Touch–Control</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control condition</strong></td>
<td>3–4 years</td>
<td>1.00 (20, .00)</td>
<td>1.00 (25, .00)</td>
<td>.95 (22, .21)</td>
<td>.75 (10, .43)</td>
<td>1.00 (15, .00)</td>
<td>1.00 (3, .00)</td>
</tr>
<tr>
<td></td>
<td>5–6 years</td>
<td>.92 (18, .26)</td>
<td>1.00 (18, .00)</td>
<td>.86 (11, .32)</td>
<td>.75 (4, .50)</td>
<td>1.00 (6, .00)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>7–8 years</td>
<td>1.00 (22, .00)</td>
<td>1.00 (23, .00)</td>
<td>.97 (16, .13)</td>
<td>1.00 (2, .00)</td>
<td>1.00 (12, .00)</td>
<td>1.00 (2, .00)</td>
</tr>
<tr>
<td><strong>SMT condition</strong></td>
<td>3–4 years</td>
<td>.98 (21, .11)</td>
<td>.94 (27, .21)</td>
<td>.86 (21, .36)</td>
<td>.86 (7, .38)</td>
<td>.80 (15, .41)</td>
<td>1.00 (1, .00)</td>
</tr>
<tr>
<td></td>
<td>5–6 years</td>
<td>.91 (17, .26)</td>
<td>1.00 (17, .00)</td>
<td>.89 (13, .30)</td>
<td>1.00 (2, .00)</td>
<td>1.00 (9, .00)</td>
<td>1.00 (3, .00)</td>
</tr>
<tr>
<td></td>
<td>7–8 years</td>
<td>.93 (20, .25)</td>
<td>.98 (22, .11)</td>
<td>.86 (7, .38)</td>
<td>1.00 (2, .00)</td>
<td>1.00 (4, .00)</td>
<td>—</td>
</tr>
</tbody>
</table>

*Note.* The numbers of children who contributed at least one “yes” response to direct questions, followed by the standard deviations, are in parentheses.
In sum, the benefits of SMT were very specific. Older children (7- and 8-year-olds) trained before the target interview reported fewer suggested events during direct questioning but were not more likely than untrained children to retract erroneous “yes” responses when asked specific source-monitoring questions. There was no evidence that training after extensive questioning, as was the case in the control condition, helped children to reassess their prior erroneous “yes” responses.

Did Performance on SMT Questions Predict the Accuracy of Children’s Reports about Target Events?

Overall, 51 children made one or more errors on our SMT task, and 81 correctly answered all three questions about described events. To determine whether SMT performance is an effective competency measure, we categorized children as competent if they were accurate on all three questions about described events. The proportions of children who were deemed competent were .55, .53, .53, .61, .58, and .85 for 3-, 4-, 5-, 6-, 7-, and 8-year-olds, respectively.

We collapsed across children assigned to the SMT and control conditions after a preliminary analysis showed no significance difference between these groups in the magnitude of the correlation between competency and suggestibility (defined as the proportion of questions regarding suggested events to which the children responded “yes”). (For children in the control condition, competency was measured after they had participated in the target interviews.) Across all children, the correlation between competency and suggestibility was $r = -.22, p < .05$, indicating that those deemed competent were somewhat less suggestible than incompetent children. This correlation failed to reach significance, however, after age in months was partialled out, $r = -.17, p = .052$, and neither zero-order or partial correlations were significant when the 7- and 8-year-olds were analyzed separately, $ps = .70$ and .97, respectively. These results join those of many other studies that have shown the difficulty of designing quick screening procedures to predict susceptibility to misleading suggestions (Brady, Poole, Warren, & Jones, 1999). At this time, age predicts suggestibility more reliably than do individual difference variables, even those based on children’s behavior during target interviews (Poole & Lindsay, 2001).

DISCUSSION

Performance in the control condition replicated the central findings of our prior studies using the Mr. Science/parental misinformation paradigm (Poole & Lindsay, 1995, 2001). Children performed well on the immediate interview, prior to exposure to misleading suggestions: Even the youngest children provided some accurate information, and no children spontaneously fabricated any of the nonexperienced events about which they would later hear suggestions. These findings converge with other research demonstrating that young preschoolers can provide accurate eyewitness accounts when interviewed appropriately (e.g., Goodman & Schaaf, 1997; Saywitz & Geiselman, 1998). Exposure to misleading suggestions
from parents dramatically increased false reports by 3- to 8-year-old children, even when interviewers followed current best-practice guidelines. Suggestions sometimes led to false reports in response to open-ended prompts (including false reports of unpleasant bodily touch), and direct questions dramatically increased such false reports. This was not merely a matter of acquiescing to direct questions because children (especially those 5 years of age or older) very rarely falsely acquiesced to direct questions about control events. Furthermore, as in Poole and Lindsay (2001), children across the age range tested often provided narrative details of suggested events in response to prompts following direct questions.

Our source-monitoring training procedure approximately halved the frequency with which 7- and 8-year-old children falsely reported suggested events in response to direct questions (from .61 to .29 for suggested science demonstrations, and from .52 to .23 for suggested bodily touch). Just as important, this benefit was obtained without any significant reduction in accurate reports of experienced events (even for experienced events that had also been mentioned in the story). The SMT procedure is quick and easy, and unlike our earlier source-monitoring tests it does not require interviewers to specify any particular source of contamination. These characteristics make the SMT procedure feasible for real-world forensic interviews. Together with our prior results (Poole & Lindsay, 2001), these findings demonstrate that 7- and 8-year-old children benefit from a variety of instructions designed to draw their attention to source-relevant information, even when instructions require them to generalize from one source-monitoring task to another.

It was disappointing that SMT did not lower older children’s false reports during the initial free recall phase of the interview. The rate of false reports of heard-only events in free recall was fairly low even in the control group (with means ranging from 10% to 22% for the suggested science demonstrations and from 0% to 6% for the suggested bodily touch), raising the possibility that this null effect is merely a floor effect. The level of false reports of suggestions in the control condition was reliably greater than zero, however, indicating that there was indeed room for children in the SMT condition to make fewer false reports. The lack of a training effect may partly reflect the fact that only highly accessible and relevant information is likely to be retrieved in response to free recall prompts. Relatedly, free recall performance draws heavily on memory for relatively abstract, gist-level processes rather than on memory for the perceptual processes that flesh out the contextual information that often supports source judgments (see, e.g., Brainerd, Wright, Reyna, & Payne, in press). If what came to mind in response to open-ended prompts tended to be highly accessible gist-level information about Mr. Science, then that information would likely be experienced as memories of the Mr. Science interaction even by children who were actively and strategically monitoring the sources of their memories.

The source monitoring test in our 2001 study specifically asked children to differentiate between memories of the Mr. Science encounter and memories of the story. In that study, 5- and 6-year-olds retracted about half of their prior false
reports on the source-monitoring test. In the current study, this age group showed no benefit from SMT or source-monitoring questions. This suggests that children in this age group have difficulty using available source information when questions do not draw their attention to a specific alternative source (i.e., the story). Thus, this age group retains at least some source-relevant information in our paradigm and can use it when test instructions emphasize a particular source discrimination. The 7- and 8-year-olds in the current study benefited from SMT and from source-monitoring instructions. Even the skill of the children in this age group is somewhat fragile, however, in that they benefited from SMT only when they were trained prior to the substantive interview. After they were interviewed, even these children behaved as though they were basing answers on their prior responses rather than on memories of the initial experiences.

Paralleling our earlier findings (Poole & Lindsay, 1995, 2001), source-monitoring training and specific source-monitoring questioning did not benefit the 3- and 4-year-old children. Similarly, Lindsay et al. (1995; recall data reported in Lindsay, in press) found that instructions to exclude material from a specified source of contamination lowered false recognition judgments by adults and third graders but not by preschoolers. Why did the 3- and 4-year-old children fail to benefit from the source-monitoring testing procedure in our earlier studies or from the SMT procedure in the current study? Clearly, it is not simply because they said “yes” to all direct questions. On the contrary, in all three studies the youngest children did fairly well in terms of saying “no” when directly asked about control events (i.e., events neither experienced with Mr. Science nor mentioned in the story). Also, data from the SMT phase of the current experiment demonstrated that these children were capable of differentiating between memories of witnessed actions and memories of heard actions in the training task.

It may be that the younger children simply did not retain detailed information about the target experiences across the 3-month interval. Even if relevant information were available, however, it is likely that young children’s ability to operate on source information would be limited. Several studies have shown that preschoolers perform well on explicit source-monitoring tasks when the two sources give rise to memories that are dissimilar (demonstrating good understanding of the task) yet perform poorly compared to older children when conditions make source monitoring more difficult (e.g., Foley & Johnson, 1985; Foley, Johnson, & Raye, 1983; Lindsay, Johnson, & Kwon, 1991; Roberts & Blades, 1998). Younger children may tend to “blurt out” remembered information without regard to its source when the task is difficult, whereas older children more often engage in strategic efforts to query memory as to the source of remembered information. Relatedly, Brainerd and Reyna (1998) specified conditions under which young children’s memory judgments tend to be highly influenced by the extent to which the meaning of test items is consistent with the gist of studied items (as opposed to relying on memories of sensory details). In the Mr. Science paradigm, evocative descriptions of plausible suggestions are embedded in a largely accurate narrative description that is presented repeatedly by a trusted
adult months after the target event and shortly before the interview. These factors would conspire to make source monitoring difficult and to encourage reliance on gist memory.

It may turn out that it is not feasible to develop practical source-monitoring training procedures that substantially enhance young children’s performance under the conditions of our Mr. Science/parental misinformation paradigm (i.e., when the delay between the to-be-reported experience and the interview is long or when children have been repeatedly exposed to plausible suggestions by a trusted authority). Those conditions make source monitoring difficult, even for much older children, and it may be that young preschoolers are simply not equipped to deal with such problems. Schacter, Kagan, and Leichtman (1995) argued that 3- and 4-year-old children’s source-monitoring abilities are limited by immature development of the frontal lobes (which play important roles in executive control of intentional retrieval and memory judgments). Relatedly, there is converging evidence that physical development of specific neurological substrates underlies spurts in ability between the ages of 4 and 8 years in the strategic use of memory (Luciana & Nelson, 1998). Presumably, no short-term training procedure could overcome such limitations. Templeton and Wilcox (2000) argued that 3- to 5-year-old children are prone to confuse memories of an event and memories of postevent information because they have difficulty in simultaneously representing and differentiating between two mental representations of a single event (i.e., the event itself and a subsequent narrative description of that event) for the same reason that they have difficulty with various theory-of-mind tasks (i.e., because they have not yet developed a representational “theory” of mind) (see also Welch-Ross, Diecidue, & Miller, 1997). If evidence emerges to document that young children retain source-relevant information across longer delays, then an exciting possibility for future research would be to develop indirect tests that assess the source of children’s memories without requiring them to report explicitly about source.

To summarize, our results confirm suspicions that general instructions to tell what “really” happened often fail to prompt young children to distinguish between memories of experienced events and memories based on other sources (e.g., Poole & Lamb, 1998). Furthermore, these data, together with the results of our previous studies (Poole & Lindsay, 1995, 2001) and other research on children’s source monitoring, suggest that children progress through three developmental phases with regard to verbal misinformation tasks. In the early phase (3- and 4-year-olds), children often err even on immediate source-monitoring tests and do not benefit from detailed source-monitoring instructions regarding more remote events. In the next (intermediate) phase (5- and 6-year-olds), children perform well on immediate source-monitoring tests provided the sources are sufficiently distinct, and they benefit somewhat from source-monitoring instructions that mention specific alternative sources but fail to respond accurately to general instructions even when prior training emphasizes seen versus heard distinctions. A third (more mature) phase gradually emerges by 7 or 8 years of age. In this
phase, children still do not spontaneously act strategically on source-relevant memory information when given general source-monitoring instructions (i.e., instructions that do not mention specific alternative sources), but they are often successful with detailed source-monitoring instructions and can generalize training procedures (such as our SMT procedure) to understand the intent of general questions. Finally, consistent with other literature indicating that children’s performance on memory tasks varies widely as a function of specifics of the study and test conditions (e.g., Brainerd & Reyna, in press; Lindsay, in press; Luciana & Nelson, 1998; Ornstein & Myers, 1996), the accuracy of children’s source-monitoring judgments in our SMT procedure was not a good predictor of accuracy on questions that required them to judge more temporally remote information. We are hopeful that future research along these lines will simultaneously yield practical training procedures that further reduce false reports, including those by younger children, and cast light on the mechanisms that underlie age-related changes in children’s eyewitness accounts.

REFERENCES


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