How Suggestible Are Preschool Children? Cognitive and Social Factors

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ABSTRACT

Objectives: In this series of studies, the authors sought to determine some of the cognitive and social boundary conditions that can undermine the accuracy of young children's reporting. Care was taken to include events and interviewing variables that more accurately reflect the experiences of children in real-world investigations of alleged sexual abuse. Videotaped interviews with preschool children were presented to experts to determine how adept they are at distinguishing between true and false accounts. **Method:** All the studies were designed to investigate the susceptibility to suggestion in young preschool children The difference between studies was the form of that suggestion and the nature of the event to which the children were exposed. All studies measured recall accuracy, false assent rate, and the change in these outcomes over time and/or successive interviews. **Results:** Very young preschool children (aged 3 and 4 years) were significantly more vulnerable to suggestions than were older preschool children (aged 5 and 6 years). The number of interviews and the length of the interval over which they were presented resulted in the greatest level of suggestibility. **Conclusions:** While some types of events (negative, genital, salient) were more difficult to implant in children's statements, some children appeared to internalize the false suggestions and resisted debriefing. These children's false statements were quite convincing to professionals, who were unable to distinguish between true and false accounts. *J. Am. Acad. Child Adolesc. Psychiatry,* 1997, 36(7):948–958. **Key Words:** false memory, preschool children, suggestibility, source misattribution.

Sexual abuse of children is a serious societal problem. In 1991 there was an incident rate of just under 1% of all children younger than the age of 18. Although this may appear to be a small number, in actuality it translates into nearly a half million reported allegations, 129,697 of which were substantiated cases of sexual abuse (National Center on Child Abuse and Neglect, 1993). In the latest survey data, this number had nearly doubled (National Center on Child Abuse and Neglect, 1996). This number may be an underestimation of the prevalence of child sexual abuse because many cases go unreported (Ceci and Bruck, 1993a).

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Because of the large number of sexual abuse allegations, there has been a large increase in the number of children involved in the juvenile and criminal justice systems. It seems that preschool children are not only disproportionately more likely to be abused, but also more likely to have their case come to trial (Ceci and Bruck, 1993b). In this article we will describe some recent research on factors that may influence the accuracy of a child's report. Of particular interest in our research are the effects of suggestibility and stereotypes on a child's testimony, particularly when they are presented repeatedly over long intervals.

Before describing our research on suggestibility and source misattributions, it is important to distinguish between the interviewing procedures of researchers on the one hand and those of forensic, law enforcement, and mental health professionals on the other. In traditional laboratory experiments, children are usually interviewed once, within minutes or hours of witnessing an event; interviewers know the "ground truth," and no attempt is made to mislead the child. In actual court

cases, however, children are interviewed many times by many different people (e.g., attorneys, psychologists, social workers, police, etc.) over the course of weeks, months, and even years after the event. The average child in the courtroom has been interviewed formally 3.5 to 11 times before his or her court appearance (Gray, 1993; McGough, 1993). (While reliable data are unavailable on the number of informal interviews by parents, therapists, and friends, it is undoubtedly greater than the number of formal ones.) In response to this difference, our research has incorporated these real-world factors.

The Creation of a False Belief. Not all children who take the witness stand tell the truth. Though some may be motivated to lie, others may genuinely believe they are telling the truth, despite making errors. When a child believes a false event to have occurred, what has happened? There are two possibilities, one having to do with suggestions and the other with source misattributions: (1) the child's original memory has been changed by information provided either before, during, or after the event such that the initial memory trace has been erased or overwritten; or (2) the child has confused the source of the information, recognizing an event as "familiar" while failing to remember whether the source of the familiarity is internal (e.g., imagined) or external (e.g., actually observed).

What would cause a child to harbor a false belief? Numerous volumes have been written on this very topic, and it is beyond the scope of this article to review them. Extensive reviews have been provided by Ceci and Bruck (1993a, 1995), Stein et al. (1996), Zaragoza (1995), and Fivush and Hudson (1990). In this article we shall focus on the work done at the Cornell laboratory as it is representative of the work being done across the United States and Canada and has been designed to mimic the procedures that bring many children into contact with the juvenile and criminal justice systems.

In a recent set of experiments (Ceci et al., 1994a,b), we have identified three factors that appear to contribute to children's false reports: (1) being suggestively interviewed about an event repeatedly over a long interval (usually several months), (2) telling the child that some authority source (e.g., a parent) said the event was true, or (3) being asked to create mental images of a fictitious event repeatedly. In what follows, we will explain why these three activities are detrimental to a child's report accuracy.

Suggestibility. Before beginning a general discussion of the effects of suggestibility, it is important to define the term. Narrowly defined, suggestibility refers to "the extent to which individuals come to accept and subsequently incorporate post-event information into their memory recollections" (Gudjonsson, 1986, p. 195). This definition implies that suggestions are incorporated unconsciously into the memory system, as a result of suggestions made after an event is witnessed (i.e., postevent). Ceci and Bruck (1993b) have argued for a broader definition of suggestibility, however, one that entails not only unconscious processing of suggestions but conscious processing of information provided before, during, and after the event, and social (e.g., bribes and threats) as well as cognitive (i.e., memory) factors. According to these authors, "suggestibility concerns the degree to which children's encoding, storage, retrieval, and reporting of events can be influenced by a range of social and psychological factors" (Ceci and Bruck, 1993b, p. 404).

Individual Differences. No formula can predict how different internal and external factors will affect an individual child. Some children may be more influenced by social cues such as bribes and threats by significant others, while others may be resilient to these factors. Other children may be particularly susceptible to cognitive cues such as suggestive and leading questions. The vast differences between children in their vulnerability to a host of cognitive and social factors has only recently begun to receive the attention of experimentalists (Goodman and Quas, 1996; Ornstein et al., 1996). Although we have known for some time that individual differences are pronounced, with some young children actually being more resistant to suggestions than some older ones, we have little understanding of the reasons for such differences.

Source-Misattribution Error. Researchers have repeatedly shown that children can have trouble distinguishing between actual and imagined events, that is, actions they actually performed and actions they just imagined performing (Foley et al., 1989; Johnson and Foley, 1985). Young children can confuse their memories when the same actor is involved in the actions. Markham (1991) found that 6-year-old children had trouble distinguishing between actions they imagined performing and actions they actually did perform. Lindsay et al. (1991) found that 8-year-olds also had difficulty distinguishing between actions they saw another

perform and actions they imagined that same person perform. They did not have trouble, however, distinguishing between an observed and an imagined action when different actors were involved in each, thus leading Lindsay and Johnson (1989) to conclude: "In a series of experiments, source-monitoring errors were found to be more frequent when potential memory sources were similar to one another in terms of their perceptual properties, modality of presentation, semantic content, or cognitive operations (orienting task)" (p. 350).

When a child experiences an event, he or she may simultaneously see it, think about it, hear it, possibly read about it, and thus store information from all of these sources. If children are not able to differentiate between different sources of their knowledge, they will be more susceptible to misattribution error and suggestions.

Current Laboratory and Field Research

As noted above, recent research has attempted to incorporate factors known to be relevant in forensic contexts, such as repeated suggestions over long intervals. Because it is ethically impermissible to experiment with actual sexual abuse, researchers have turned their attention to naturally occurring analogs of abuse. Thus, it is increasingly common for these factors to be embedded in naturalistic situations where there is a high level of stress, a loss of control, the possibility of embarrassment, and active participation. Finally, current research has expanded the focus to include the role of the interviewer as well as the child. This constellation of factors and context is illustrated in the following synopses of seven recently completed experiments.

Study 1: Effects of Induced Stereotypes and Repeated Suggestions

The purpose of this study was to determine whether pairing the induction of stereotypes in a child's mind with repeated misleading suggestions would affect both the accuracy and credibility of the child's testimony.

To accomplish this, a mythical character named "Sam Stone" visited nursery schools for 2 minutes. Children were randomly assigned to one of four groups, each composed of 40 to 50 preschool children (see Leichtman and Ceci, 1995, for details).

After Sam Stone's 2-minute visit to their classroom, control group children were interviewed four times over the next 10 weeks, using nonsuggestive techniques about Sam Stone's visit ("Tell me what happened"). During the fifth and final interview, these children were first asked for a free narrative ("Tell me everything that happened the day Sam Stone visited your classroom"), then they were probed about two nonevents involving a book and a teddy bear (e.g., "Did Sam Stone rip a book?" "Did he spill anything on a teddy bear?").

These control group children did very well, correctly recalling most of what actually transpired during Sam Stone's visit and refraining from answering the misleading probe questions incorrectly (Fig. 1). Only 10% of the youngest children (3- to 4-year-olds) assented to these events, and only 5% continued to assent when asked whether they actually *saw* him do these things as opposed to hearing about it. None of the older preschool children (5- to 6-year-olds) said they had seen Sam Stone do anything to the book or the teddy bear.

A second group of preschool children was given a stereotype about Sam Stone before he came into their classroom. For a month before his visit, these children were told once a week of something clumsy Sam had done. After the same 2-minute visit, these children were interviewed (nonsuggestively) four times over the subsequent 10 weeks about Sam's visit; the fifth interview was the final one. Of these children, 42% of younger ones said Sam Stone did these things, and 19% claimed they *saw* him do them (Fig. 2). But only 11% of these

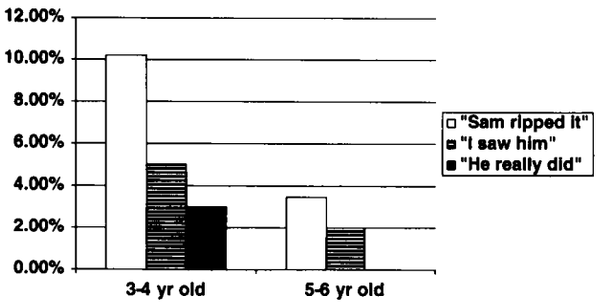

Fig. 1 No suggestion; no stereotype.

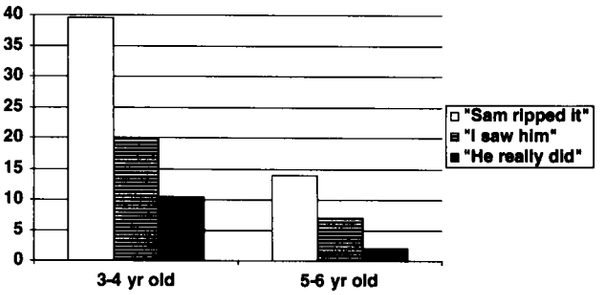

Fig. 2 No suggestion; + stereotype.

3- to 4-year-olds maintained their false claims when gently challenged ("Tell me what he really did, OK?"). Again, the older preschool children were more resistant, with error rates about half of the younger children's.

A third group was not given a stereotype about Sam Stone's being clumsy, but this group was interviewed four times over 10 weeks in a highly suggestive manner ("Do you remember that time Sam Stone visited your classroom and ripped that book? Did he do it on purpose or was it an accident?" "When Sam Stone spilled ice cream on the teddy bear, was he being silly or angry?"). During the fifth and final interview, 52% of the younger children and 38% of the older children claimed that Sam Stone either ripped the book or hurt the teddy bear (Fig. 3). Even when gently challenged, 10% of the youngest preschool children continued to insist that they actually had observed him doing this. The false claim rate for the older children was 8%.

The final group of children was given a stereotype about Sam Stone's clumsiness before he visited their classroom *plus* they were interviewed in a highly suggestive manner during the 10 weeks. During the final interview, 72% of the younger children stated that Sam had done things to the book and teddy bear. This figure dropped to 44% when they were asked whether they had *seen* Sam do these things (Fig. 4). Even after being challenged, 20% of the younger preschool children and 11% of the older ones maintained that they saw Sam do these things.

To assess whether the children's claims might be viewed as convincing to experts, 1,000 researchers and clinicians (psychiatrists and psychologists) were shown videotapes of the final interviews and asked to judge which of the events had actually transpired as well as to rate each child's credibility. Overall, most of the professionals were inaccurate. Despite their confidence in their judgments, experts could not reliably determine the accuracy of a child's testimony. The overall credibility ratings were significantly lower than chance, indicating that experts applied invalid indices (e.g., child avoids eye contact) but in a reliable manner. As a rule, the least accurate children were considered to be the most accurate by experts. This shows how difficult it is, even for trained professionals, to separate fact from fiction when the children have been repeatedly interviewed in a suggestive manner, especially when the interviews have been accompanied with congruent stereotypes.

Study 2: Effects of Interviewer Bias on a Child's Report

In the previous study we saw how children's report accuracy was diminished when interviewers misled them with erroneous suggestions and stereotypes. But what happens if the interviewers themselves are misled; will this also compromise children's accuracy? Will interviewers use incorrect information to form erroneous hypotheses about what a child experienced and pursue the child in a single-minded and suggestive manner?

In this study, Ceci et al. (in press) examined the effects of an interviewer's bias on the accuracy of a child's report. Usually, interviewers are not blind to relevant information about a case and they proceed to test only those hypotheses that are consistent with their hunch. Thus, they do not test every conceivable hypothesis. The purpose of this experiment was to examine whether the failure of an interviewer to test a rival hypothesis could result in a reporting error.

To accomplish this aim, preschool children were exposed to a gamelike event and then interviewed about it 1 month later. The interviewer, an experienced social worker, was given information about events that *might* have occurred. While some of the information supplied

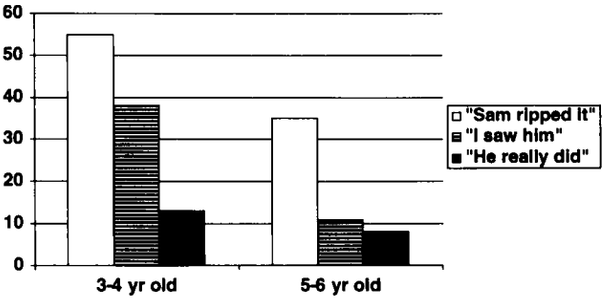

Fig. 3 + Suggestion; no stereotype.

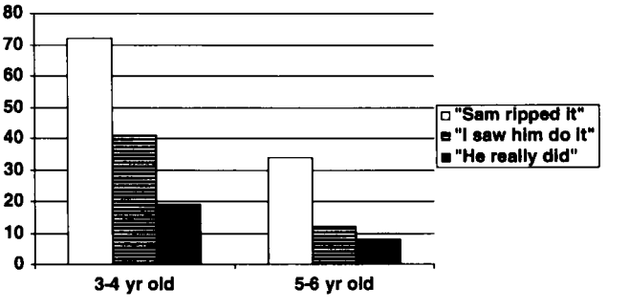

Fig. 4 + Suggestion; + stereotype.

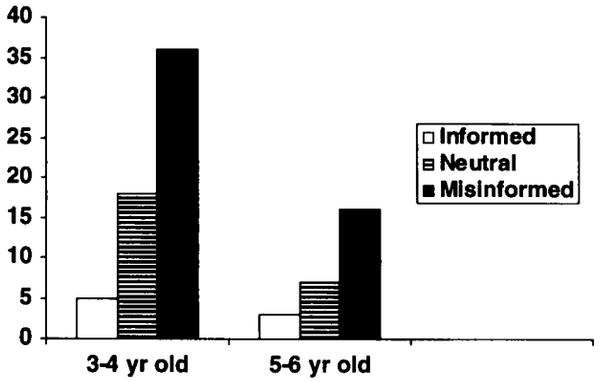

Fig. 5 One-month interview.

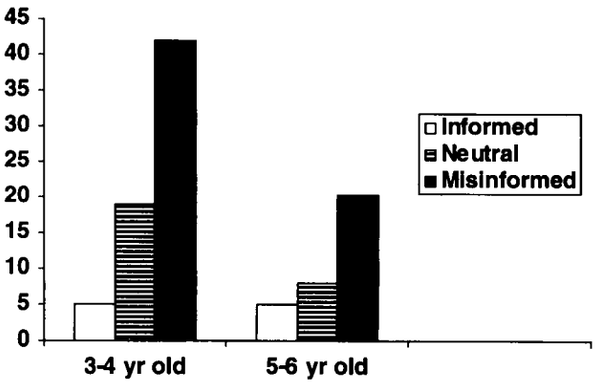

Fig. 6 Three-month interview.

to the interviewer was accurate (e.g., she was told that there was a good chance that the child had put a marble in another child's ear), some of the information given to her was inaccurate (e.g., she was told that there was a good chance that another child licked this child's elbow).

When the interviewer was correctly informed about the events, she got the children to recall 93% of the events correctly. The only errors made were "errors of omission," occasionally leaving out correct information. None of the children made false accusations when interviewers were correctly informed.

However, as can be seen in Figure 5, when the interviewer was misinformed about what might have happened, 34% of the 3- and 4-year-olds and 18% of the 5- and 6-year-olds assented to inaccurate leading questions about the events the interviewer believed to be true ("Didn't Tara lick your elbow?"). In this condition, the errors were "errors of commission," providing false answers.

Two months later, another interviewer was supplied with the social worker's notes from the first interview to see whether these would result in the second interviewer forming both accurate and inaccurate hypotheses. The second interviewer not only got the children to continue to assent to false events that she assumed had occurred (Fig. 6), but the children did so with increased confidence levels and perceptual embellishments. These findings, if replicated and extended, would seem to have relevance for front-line interviewers who are charged with interviewing children after the receipt of an allegation. If the report given to interviewers leads them to hypothesize incorrectly, then these results suggest that their false hypotheses may lead young preschool children to make false assents. The interviewers rarely posed and tested alternative hypotheses.

Study 3: Effects of Repeated Interviewing on a Child's Free Narrative

The two prior studies showed that persistent suggestions over long periods can have baleful consequences on preschool children's report accuracy. The purpose of this study was to determine whether repeatedly interviewing a child without suggestive techniques also posed risks. Of particular interest was whether a child's recollections were influenced by techniques that encouraged the formation of mental imagery.

Perhaps asking a child each week over extended periods of time to think about or imagine fictitious scenarios will have the effect of increasing familiarity with fictitious events to the point where the child cannot discriminate between events that are fictitious and those that are real. Such an expectation is consistent with source-monitoring theory; each time an event is probed, the child may generate an image and check it against a stored representation to decide whether it is familiar. With subsequent attempts, the image may seem increasingly familiar, not because it was actually experienced but merely because the child had previously created images that are now familiar.

Young children are disproportionately prone to source amnesia, meaning that they may be especially likely to forget the basis of the event's familiarity, falsely attributing it to actual experience when it is due to imaging.

Ceci et al. (1994a) studied the effects of repeatedly interviewing children about the same event, each time asking the child to "think real hard" about both real and

fictitious events. One hundred twenty-four preschool children (3 to 6 years old) were asked each week for 10 to 12 consecutive weeks to think about different events, some which did happen and some which did not. They were asked to "think real hard before answering" whether they remembered the event happening. The procedure is alluringly simple: "Think real hard. Did you ever get your hand caught in a mousetrap and go to the hospital to get it off?"

In the initial interview, twice as many 3- and 4-year-old children assented to false events compared with 5- and 6-year-old children (44% versus 25%). So, even without repeated enjoinders to "think real hard," some children already were assenting to false events. After 10 weeks of repeating this exercise, more than one fourth of both the younger and older children claimed that they had experienced the majority of the false events and often provided elaborate narratives describing their experiences. Although they had correctly identified the fictitious events as untrue in the earliest interviews, 58% of all the children assented to at least one of the false events during the final interview (Fig. 7).

The most surprising result was not that the children remembered the false events as true, but rather their ability to provide a detailed and coherent narrative about these false events. So compelling did the children's narratives appear that we suspected that some of the children had come to truly believe they had experienced the fictitious events. Neither parents nor researchers were able to convince 27% of the children that the events never happened. (For example, one child who tenaciously clung to his story that his hand had been caught in a mousetrap and taken to the hospital to get it removed, argued against his mother's debriefing: "But it did happen! You were not in the room when it happened. It was at our old house." His mother was unsuccessful in convincing him that they never had a mousetrap in their old house, and at any rate he had been 6 months old when they moved from it.)

The videotapes of some of these interviews were shown to experts in the area of children's testimony. These professionals were no better than chance at predicting which of the children were accurate. Because it appears that a subset of the children had come to truly believe these events occurred, they express the appropriate affective cues and show none of the signs of lying or deception.

Study 4: Effects of Repeated Visualization on a Child's Free Narrative

In a follow-up to the above study, Ceci et al. (1994b) were interested in the effect of repeatedly asking a child to visualize fictitious events. They asked children not only to "think real hard" about the false events, but also to create a visual picture in their head. They also varied the type of suggestive event (i.e., positive or negative). Finally, these researchers were interested in whether the children would cling to their false statements if they were told by a new interviewer that the old interviewer was trying to trick them and that some of the events never happened.

Forty-eight preschool children were interviewed once a week for 11 weeks. Over time, these children increasingly assented to the false events, but the rates of false assent differed for the different types of events (Fig. 8). Neutral events ("Do you remember seeing X in a red

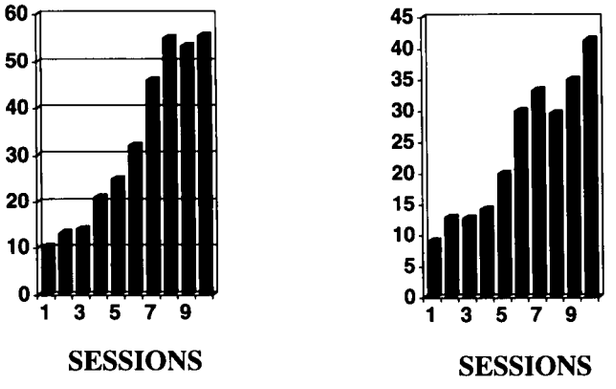

Fig. 7 False assents over 11 sessions: *left panel*, 3- to 4-year-olds; *right panel*, 5- to 6-year-olds.

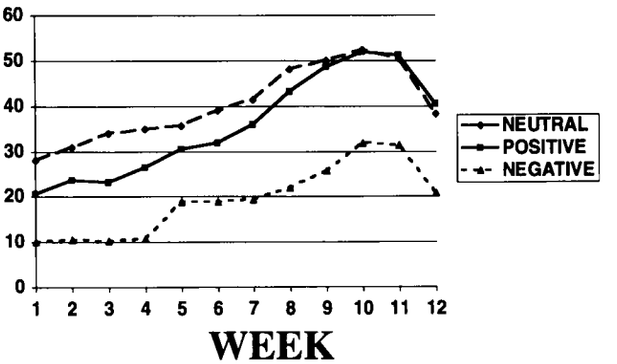

Fig. 8 False assents to positive and negative vignettes.

bus?"), and to a lesser degree positive events ("Do you remember making paper boats at X's birthday party?"), were easier to bias than were negative events ("Do you remember falling off your bike and getting three stitches in your face at the hospital?"). However, although negative events were the most resistant to suggestion, they nevertheless significantly increased over the 11 weekly sessions.

As can be seen, during the terminal session when the new interviewer informed the children that the previous interviewer had confused children and they had made mistakes, many of the children did relent on their claims. False assents decreased significantly, though importantly they did not return to baseline levels at the first session. This is consistent with the interpretation that children truly believed some of the events had occurred.

Ceci et al. (1994b) also asked clinicians to view the videotaped interviews with the children and distinguish between the accurate and inaccurate testimonies. Videotapes of 10 children from study 1 were shown to professionals who were asked to use a 7-point rating procedure, with 1 indicating extreme confidence that the event did not occur and 7 indicating extreme confidence that it did occur (Leichtman and Ceci, 1995). Professionals were no better than chance at distinguishing between the children's accurate and inaccurate narratives: There were as many professionals who were reliably worse than chance at detecting which events were real as there were professionals above chance (overall $p = .60$, for two-tailed test, $\alpha = .025$ each tail). A static Bernoulli sampling process specifies the likelihood of correctly judging a real claim (p) and the likelihood of achieving precisely x correct in N independent trials $= (N/x)\, px\, qN - x$, where the probabilities for $x = 0$ to 10 correct guesses, $N = 10$ trials, and $p = .5$ and $q = .5$. (A two-tailed test was preferred in view of our interest in the number of raters who performed above as well as below chance.) This result accords with Horner and colleagues' (1993) finding using a different methodology. In their study, clinical psychologists' and social workers' predictions of the accuracy of children's sexual abuse reports were disturbingly unreliable, spanning the full range of estimated probabilities (from 0 to 1.0) of the child's having been abused.

Thus, these professionals were no better than chance at distinguishing between accurate and inaccurate reports. Even clinical and research psychologists who specialize in interviewing children performed at chance.

Study 5: Influencing a Child's Report of a Pediatric Visit

Critics of the first three studies might argue that children would act differently and be more resilient to interviewers' false suggestion if the events in question were more salient, perhaps ones that involve their own body and participation (Rudy and Goodman, 1991). To examine such claims, Bruck et al. (1995) studied preschool children's ability to remember the events of a pediatric visit after repeated postevent suggestions over a 1-year interval.

In the first phase of the experiment, 5-year-old children visited their pediatrician and received their annual checkup. After this routine checkup, a female research assistant entered the room and discussed a poster on the wall with the child. The pediatrician then proceeded to give the child an oral polo vaccine and a DPT inoculation. After this, the child was given either neutral or pain-denying feedback by another research assistant. Children in the neutral group were told the shot was over ("It's over now. You can get ready to go home."), and the pain-denying group were told, "You were so brave that the shot hardly hurt you." Then, regardless of feedback condition, the research assistant gave the child a treat and read a story to him or her.

A week later, the children were visited by a different assistant and asked how much the shot had hurt and how much they had cried. They were given a developmentally appropriate scale to make their ratings, with a happy face anchoring one pole and a frowning face anchoring the other.

The results showed that the children's answers were not influenced by their assigned feedback condition. Therefore, from this phase of the experiment, we concluded that children cannot be readily influenced about events involving their own bodies.

In the second phase of the experiment, the children were reinterviewed four more times during the following year, using suggestive questions consistent with their feedback condition. During each of these interviews, the children in the pain-denying condition were given consistent feedback (e.g., "Remember when you got your shot at Dr. Emmet's office? You hardly cried!"), and the children assigned to the neutral condition were simply asked, "Remember when you got your shot at Dr. Emmet's office?"

At the final interview, the children were again asked to rate how much the shot had hurt and how much

they had cried. Large suggestibility effects were observed, with children in the pain-denying condition reporting significantly less crying and pain than the children in the neutral condition.

The children in the pain-denying condition had also been misled about who performed certain tasks—the doctor, the nurse, or the research assistant. Of those children given misleading information, 67% assented that the doctor had shown them the poster, had given them the treat, or had read them a story. Only 27% of those in the control group made the same mistakes. Of the children who were falsely told that the research assistant had given them the oral vaccine and the shot, 50% (versus 16% of the control group) assented to at least one of these suggestions. Thirty-eight percent of these children who were given misinformation about the research assistant also said nonevents happened which, while not suggested, were congruent with false suggestions. For example, children in the pain-denying condition were falsely told that the female research assistant had been the person who inoculated them (it had always been a male pediatrician), and one third of these children later claimed that the female assistant had checked their eyes, ears, and throat. Thus, the misled children not only assented to false information that had been supplied by the interviewer (less pain, female inoculation), but also added fictitious events that were consistent with the script if the doctor had been a female.

On the basis of these findings, we can conclude that under certain circumstances, suggestibility effects can be observed for stressful events involving a child's own body. Although the nature of the inoculation event is quite different from the nature of the event in the "Sam Stone" experiment, the results are similar. As was the case in the Sam Stone study, the two crucial factors leading to heightened report errors were the repetition of misleading suggestions and the long intervals over which the suggestions were made. These two factors often occur in forensic cases when a child is repeatedly interviewed and there is a large time lag between the event and the child's testifying in court (Ceci and Bruck, 1995).

Study 6: Suggestibility Effects of Anatomically Correct Dolls

So far, we have seen that very young preschool children are disproportionately more susceptible to suggestions than older children and that such effects extend to painful, personally experienced bodily events. But what about genital events? Are young preschool children also suggestible about genital touching, or is this off limits? While it is ethically impermissible for experimentalists to induce genital touching, it is possible to explore this question by taking advantage of naturally occurring doctor visits.

Bruck et al. (1995) took advantage of 70 naturally occurring pediatric visits to study the effects of using anatomically correct dolls during a postevent interview. The visits included an examination in which 35 three-year-olds were given a genital examination and 35 others were given a nongenital examination. Unlike the former group, none of the latter group had their underclothing removed or had their genitalia or buttocks touched during their examination. All children were interviewed with their mother present 5 minutes after the examination. Initially, they were asked to explain, without using the doll, where the doctor touched them. Then, the children were given an anatomical doll and asked to show where the doctor touched them.

Before the doll was presented, only 45% of the children receiving a genital examination correctly reported that they had been touched on the buttocks or genitals. On the other hand, only 50% of the children receiving a nongenital examination said that they had *not* been touched on the buttocks or genitals. When the dolls were presented, the children became even less accurate. Only 25% of the children given a genital examination correctly demonstrated on the doll where they had been touched, and 55% of the children who received a nongenital examination incorrectly demonstrated genital insertion and other inappropriate sexual actions. This form of "commission error" was more prevalent among the girls in this group; 75% of the female subjects who did not receive a genital examination demonstrated that the pediatrician touched their buttocks or their genitals.

What are we to make of these findings? Anatomically detailed dolls are often used by professionals who investigate claims of child sexual abuse. A recent survey indicated that 90% of professionals use these dolls at least occasionally (Conte et al., 1991). Although some would argue that use of the dolls enables a child to overcome embarrassment, shyness, and linguistic limitations and helps cue her memory about genital events, others contend that their use is inherently suggestive.

Cognitive-developmental research is replete with evidence that children younger than 28 to 36 months are

unable to engage in symbolic representation. For example, children below this age cannot use a scale model of a house to symbolize its referent; when asked to hide an object in the small scale model, the children are unable to find it in the larger house (see DeLoache and Marzolf, 1995, for details).

There is some research that indicates that older children rarely make such errors with dolls (Saywitz et al., 1991). Bruck and colleagues' (1995) findings are currently being explored with 4-year-old children, and preliminary results appear to indicate that errors are approximately half the magnitude observed with 3-year-olds. Pending evidence to the contrary, these findings raise cautions about the use of dolls *diagnostically* (as opposed to devices to get children to label anatomical parts) with very young preschool children. In keeping with their general symbolic limitations, very young preschool children appear confused about the representational use of all props, including dolls.

Study 7: Validity of Content-Based Criteria Analysis

In all but two of the preceding six studies, videotapes of the children's behaviors and statements were shown to professionals, and they were asked to judge their authenticity. The results of these demonstrations indicated that it is extremely difficult to distinguish between actual and suggested events when children have been pursued with repeated suggestions over long intervals.

Although the modal professional in these demonstrations could not accurately determine which statements were valid, some experts contend that content-based criteria analysis (CBCA) can successfully determine the validity of a child's statement.

Along with an interview technique and a validity checklist, CBCA is one of the three components of statement validity analysis. Specifically, CBCA consists of 18 criteria which assess the general characteristics, the specific content, and the motivation-related content of a statement. The presence or absence of these criteria is a clue to the accuracy of the testimony. Certain psychologists contend that by conducting a structured interview and applying these criteria to the transcript, a researcher can accurately distinguish between real and fabricated accounts by both adults and children. The specific criteria are explained in depth in a number of studies (e.g., Horowitz, 1991; Raskin and Esplin, 1991; Raskin and Yuille, 1989).

To determine whether experts could distinguish between the true and false reports, transcripts were made of the final interviews from study 3 and sent to four leading experts on statement validity analysis (Crotteau, 1994). The transcripts of 20 stories (10 true and 10 fictitious) were assessed on the 18 criteria of CBCA. Since each criterion was scored either 0 (not present), 1 (present), or 2 (strongly present), each of the 20 transcripts could receive a score ranging between 0 and 36.

Although an independent t test showed a significant difference between the means of the true and false stories, the magnitude of the difference was quite small. While the mean for the false stories was 1.79, ranging from 0 to 6 (SD = 1.82), the mean for true stories was only 3.89, ranging from 2 to 7 (SD = 1.65). The mean of the true stories is much lower than one would expect.

It was also unclear which combination of the criteria is the most useful in determining the accuracy of a child's account. Of the 18 criteria, 5 were not found in any of the accounts. Only 6 of the 18 criteria were predictive of whether the story was true or false, and two criteria ("superfluous details" and "admitting lack of memory or knowledge") actually led to reverse predictions (Crotteau, 1994).

More research is needed to determine how CBCA should be used when children have been repeatedly exposed to suggestions over long intervals, since some subset of them may come to harbor false beliefs that are quite unlike the deliberate lies that CBCA was developed to detect. Until more is known, professionals should exercise caution when using CBCA to assess the validity of a preschool child's account.

CONCLUSIONS

The findings from these seven studies would seem to have some relevance for "front-line" professionals charged with the difficult task of obtaining disclosures from preschool children. Below we summarize the main implications.

First, these results, taken together, make clear that it is possible to mislead a subset of the children into believing they experienced fictitious events. There are several indications that this is so, most importantly our inability to debrief 27% to 35% of the children in studies 3 and 4. No matter how hard their parents and we tried, this subset of children refused to accept the explanation that the fictitious events never occurred. Professionals watching these children were essentially at chance in deciding

whether the event really occurred, another indication that the children believed what they were reporting, since it is quite difficult for a 3-year-old to lie consistently and convincingly, especially in the face of countersuggestions. In addition, results from other methodologies not described here are consistent with the view that a subset of children's false assents appear to be memory-based rather the result of social compliance. Finally, techniques designed to detect deliberate lies (CBCA) are not notably successful in distinguishing fictitious from true accounts in these children (study 7).

Second, although there are pronounced age differences in these findings, with the youngest preschool children at greatest risk for errors, even the 3-year-old children are not as hypersuggestible and coachable as some contend (nor, for that matter, are they as resistant to suggestion as some others would have us believe). In those studies that used an untreated control group (studies 2 and 4), even 3-year-olds did quite well when they were not interviewed suggestively, often recalling 90% accurately. *Thus, when the adults who have access to preschool children do not attempt to usurp their memories through repeated suggestions over long intervals, even very young children do very well.* The suggestibility of any particular child is dependent on a host of cognitive and social factors, and future research is needed to narrow the uncertainties related to individual differences.

A likely causal mechanism underlying false assents is "source misattributions." False beliefs appear to arise when children misattribute the basis of an event's perceived familiarity, incorrectly confusing familiarity due to imagining the event with that due to actual perception. If this account is correct, then the question becomes why the youngest children become amnestic for source information faster than older children, hence leading to source misattributions. A number of speculations have been put forward, including the lagged development of brain structures involved in separating and monitoring sources of information (frontal lobes), age-related differences in metacognitive awareness, and less stable and integrated memory traces (Ceci, 1994). Once again, future research is needed to decide among these possibilities (or some other).

One very robust finding was the thrice-replicated demonstration, with different stimulus materials, that professionals can be fooled about the accuracy of a child's report when the child has been exposed to repeated suggestions over long delays. In contrast to professionals' professed confidence, they were no better than chance at distinguishing between true and false accounts in these studies. Of the several thousand psychiatrists, psychologists, social workers, attorneys, and judges who watched the videotapes, many expressed deep surprise to learn that their were so incorrect.

In closing, it is worth noting that the suggestive techniques used in these studies (repeated suggestions, stereotypes, visually guided imagery) did not always have baleful consequences on children's report accuracy. When the child actually experienced the event in question, these techniques led to high levels of correct disclosure. The problem is that they also led to high levels of false assents when the event was experienced. Results of research reported elsewhere suggest that the pursuit of at least one feasible alternative hypothesis while testing a favored hypothesis seems to lessen the reliability risks due to suggestions. Hence, interviewers of young children ought to be encouraged to generate and test alternative hunches at the same time that they attempt to elicit statements consistent with their favored hypothesis.

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