

THE SUGGESTIBILITY OF CHILDREN'S MEMORY

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INTRODUCTION

In the 1980s, there was an enormous change in society's sensitivity to and recognition of the problems of violence and abuse that were suffered by children. Spurred by an increased awareness of the pervasiveness of child sexual abuse, state after state revised its criminal procedures to enable prosecutors to deal more effectively with victims and defendants. This led to important changes in the legal system, not only in the United States but also in other countries in the western world. These changes included allowing children to provide uncorroborated testimony in cases concerning sexual abuse—a crime that by its very nature often does not involve an eyewitness other than the perpetrator and the victim—and the elimination of the competency requirement for child witnesses. (For a description of these changes, see Bottoms & Goodman 1996; Davies et al 1995; Goodman et al 1992b; McGough 1994.) With a relaxation of standards, there has come an increase in the number of children who provide statements in legal cases. At the beginning of this decade, we estimated that over 13,000 children testified each year in sexual abuse cases (Ceci & Bruck 1993), and many thousands more gave depositions and unsworn statements to judges, law enforcement officials, and social workers. Additionally, a large number of civil and family court cases entailed allegations of sexual impropriety involving a child. Hence, the question of whether children's reports are reliable has taken on added significance in recent years.

Although we have previously stated that most of the cases that end up in the legal system probably involve true claims of sexual abuse, a number of sensational cases during the 1980s and 1990s raised fundamental concerns about the reliability of children's statements. In these cases (for some descriptions see Ceci & Bruck 1995; Nathan & Snedeker 1995), young children claimed that their parents or other adults had sexually abused them. The claims were often fantastic, involving reports of ritualistic abuse, pornography, multiple perpetrators, and multiple victims. There was little medical evidence of sexual abuse in these cases, nor were there any adult eyewitnesses. Nonetheless, children's often fantastic and uncorroborated claims (e.g. of being forced to eat live babies) were believed by mental health professionals, by police officers, by prosecutors, and by parents. In the ensuing legal proceedings, the major issue before the jury was whether to believe the children. Prosecutors argued that children do not lie about sexual abuse, that the child witnesses' reports were authentic, and that their bizarre and chilling accounts of events—which were well beyond the realm of most preschoolers' knowledge and experience—substantiated the fact that the children had actually been brutally victimized. The defense tried to argue that the children's reports were the product of repeated suggestive interviews by parents, law enforcement officials, social workers, and therapists. However, because there was no direct scientific evidence to support the defense's arguments, and in light of the common belief of that time that children do not lie about sexual abuse, many of these cases eventuated in convictions.

Today, 10 to 15 years later, social scientists have developed a sociological and psychological understanding of the possible factors that might influence children's testimonies in such cases. This research has been primarily driven by the issues raised in these legal cases, issues that experts were heretofore not able to address. Specifically, in the decade of the 1990s there has been an exponential increase in research on the accuracy of young children's memories. Although some studies document strengths of young children's memories, increasing numbers of studies highlight their weaknesses, demonstrating how children's memories and reports can be molded by suggestions implanted by adult interviewers.

In this chapter, we review the research on children's suggestibility with a particular focus on studies that have been conducted in the decade of the 1990s. Our focus is on the contextual factors that influence the accuracy of children's statements. Although our focus throughout this review is predominantly on those techniques that have deleterious effects on children's memory, we also review research that demonstrates children's mnemonic strengths. This

emphasis on weaknesses is not because young children are lacking mnemonic strength, but rather to illustrate what can happen if interviewers employ various suggestive techniques with young children. Another reason for our focus on weaknesses rather than strengths is that while children's memory strength is intuitively obvious to many social scientists and nonexperts, their weaknesses are not. At least, not the ones we review here.

Earlier Studies of Children's Suggestibility Before the 1980s most studies of suggestibility involved asking children a misleading question (i.e. a question that contains a false supposition) about some experienced or observed event (a story, a school demonstration). A consistent finding of this literature was that younger children were more suggestible than older children (see Ceci & Bruck 1993, for a review). However, for the following reasons, this literature was of little value in assessing issues of reliability or suggestibility of children who make allegations of sexual abuse or other potentially criminal acts. First, the age of the children studied was problematic. Despite the fact that a disproportionate number of sexually abused children are preschoolers [39% of all victims are age seven and under, according to the latest national data (US Department of Health and Human Services 1998)], and a disproportionate number of court cases involve preschool witnesses (see Ceci & Bruck 1995), only a handful of suggestibility studies included preschool children (e.g. Dale et al 1978; Lipmann & Wendriner 1906; Marin et al 1979). It was unclear whether the available studies that used older children could be extrapolated downward. Second, the children in the older studies were questioned about neutral events that had little personal salience (e.g. the color of a man's beard). It was unclear whether child victims of highly personal events would behave similarly. And third, the questioning of the children in the earlier studies seemed to bear little, if any, similarity to the conditions under which children are questioned in actual cases.

In actual forensic investigations, because children are rarely questioned about benign events and under such neutral conditions, it became clear to scientists that there would have to be major revisions to existing paradigms to provide pertinent information to the court about whether a child's testimony could be the product of interviewing methods.

There have been three important changes in the direction of the newer research. First, preschool children are frequently included in many of the newer studies. Second, studies increasingly are designed to examine children's suggestibility about events that are personally salient, that involve bodily touching, and/or insinuations of sexual abuse. Third, the concept of suggestive techniques has been expanded from the traditional view of asking misleading questions or planting misinformation to using a larger range of interviewing devices that were adapted from actual forensic and therapeutic interviews where children made allegations of sexual abuse.

A recurring theme of these newer studies is the attempt to question children about the main actions that occurred during the experienced event rather than only about the peripheral details, such as the color of an actor's beard. The ultimate challenge has been to ask questions in an ethically permissible manner about whether potentially sexual actions occurred during these events.

Children's Responses to Misleading Questions about Salient Events Some researchers have designed studies to examine children's responses to misleading questions about bodily touching and other events suggestive of sexual abuse. These studies represent significant departures from the traditional studies of children's suggestibility that were described above.

In one study that is typical of this new genre, researchers examined children's report accuracy after they had been participants, as opposed to mere bystanders, in an event that was reminiscent of some types of sexual abuse (Rudy & Goodman 1991). Pairs of four-year-old and seven-year-old children were left in a trailer with a stranger. One child played a game with the stranger, who dressed the child in a clown's costume and lifted and photographed him/her. As this child participated in the activity, the paired child was instructed to observe this event as a bystander. Ten days later, children were interviewed, first with open-ended questions, and then with 58 questions that were either direct or misleading. Although it might be expected that children who actually participated in the event would be more than accurate than those who were mere bystanders, there were few differences. Seven-year-olds were more accurate than four-year-olds, as predicted, for all types of questions except misleading questions that implied abuse (e.g. "He took off your clothes, didn't he?"). In fact, these researchers found only a single false report of abuse-related questions: A four-year-old bystander falsely claimed that he and the participant had been spanked. The major conclusion that has been drawn from this study and others with similar designs (see Goodman et al 1991a, b; Saywitz et al 1991) is that although there may be age differences in suggestibility for noncentral features of an

event, there are no age differences when children are asked misleading questions about central salient events; in fact children are mainly accurate when asked about such details.

Although these studies represented an advance in the understanding of the nature of children's suggestibility, there were limitations to the generalizability of the results. Specifically, studies such as those conducted by Goodman and her colleagues reflect children's responses to single misleading questions when they are asked in a disconnected fashion. That is, a neutral interviewer asks the child a list of unrelated questions. If the child provides a negative response to the question, then the next question is asked. This approach is quite unlike many investigative interviews. Generally, the types of situations that have caused the most concern are those where the child denies that he has been abused when first asked by a concerned adult. It is only with repeated questions and interviews centered on the theme of abuse, conducted by an interviewer who often believes the child was abused, that a child comes to make an allegation. In some interviews, children are asked to talk about abuse through the use of anatomically detailed dolls, puppets, or role playing. Sometimes when children do not disclose abuse, they are asked to "pretend." Because of the mismatch of this situation to the earlier laboratory studies, another paradigm, one that goes beyond simply asking children misleading questions, has been developed. This approach is described in the next section.

Children's Responses in Suggestive Interviews INTERVIEWER BIAS To capture a central feature of many formal and informal interviews, we have emphasized the importance of interviewer bias (Ceci & Bruck 1995). Interviewer bias characterizes those interviewers who hold a priori beliefs about the occurrence of certain events and, as a result, mold the interview to maximize disclosures from the interviewee that are consistent with the interviewer's prior beliefs. One hallmark of interviewer bias is the single-minded attempt to gather only confirmatory evidence and to avoid all avenues that may produce disconfirmatory evidence (e.g. testing incompatible hypotheses). Thus, biased interviewers do not ask questions that might provide alternate explanations for the allegations (e.g. "Did your mommy tell you to say this or did you see it with your own eyes?"). Nor do biased interviewers ask about events that are inconsistent with their hypothesis (e.g. "Who else beside your teacher touched your private parts? Did your brother touch them, too?"). And biased interviewers do not challenge the authenticity of the child's report when it is consistent with their hypothesis (e.g. "It's important to tell me only about those things that really happened. Did this really happen?"). When children provide inconsistent or bizarre evidence, it is either ignored or else interpreted within the framework of the biased interviewer's initial hypothesis (e.g. "His claim that he karate-chopped the chains off his wrists was his attempt to regain control over his victimization.").

A number of studies highlight the effects of interviewer bias on the accuracy of children's reports (reviewed in Ceci & Bruck 1995). In some studies, children are engaged in a staged event. Later, naive interviewers, who did not witness the event, are either given accurate or false information about the events and then told to question the children. Interviewers who are given false information are unaware of this deliberate deception, which is carried out to "bias" their hypotheses. In other studies, children are asked to recall a staged event by an experimenter who intentionally conveys a bias that is either consistent or inconsistent with the staged event. In both types of studies, when questioned by interviewers with false beliefs, children often make inaccurate reports that are consistent with the biased interviewers' scripts.

For example, Thompson et al (1997) conducted a study in which five- and six-year-olds viewed a staged event that could be construed as either abusive or innocent. Some children interacted with a confederate named Chester as he cleaned some dolls and other toys in a playroom. Other children interacted with Chester as he handled the dolls roughly and in a mildly abusive manner. The children were then questioned by two different interviewers about this event. The interviewers were consistently either (a) "accusatory" in tone (suggesting that the janitor had been inappropriately playing with the toys instead of working); (b) "exculpatory" in tone (suggesting that the janitor was just cleaning the toys and not playing); or (c) "neutral" and nonsuggestive in tone. In the first two types of interviews, the questions changed from mildly to strongly suggestive as the interview progressed. At the end of each interview, the children were then asked questions about the event. Immediately after the interview and two weeks later, the children were asked by their parents to recount what the janitor had done.

When questioned by a neutral interviewer or by an interviewer whose interpretation was consistent with the activity viewed by the child, children's accounts were both factually correct and consistent with the janitor's script. However, when the interviewer was biased in a direction that contradicted the activity viewed by the child, those children's stories conformed to the suggestions or beliefs of the interviewer. Also, children's answers to interpretive questions (e.g. "Was he doing his job or just being bad?") were in agreement with the interviewer's point of view, as

opposed to what actually happened. When asked neutral questions by their parents, the children's answers remained consistent with the interviewers' biases.

This study and earlier ones reviewed by Ceci & Bruck (1995) provide important evidence that interviewers' beliefs about an event can influence the accuracy of children's answers. The data highlight the dangers of having only one hypothesis about an event, particularly an event involving an ambiguous act such as touching.

According to our model, interviewer bias influences the entire architecture of interviews, and it is revealed through a number of different component features that are suggestive. We briefly describe some of these below.

SPECIFIC VERSUS OPEN-ENDED QUESTIONS To obtain confirmation of their suspicions, biased interviewers often do not ask children open-ended questions such as "What happened?," but instead resort to a barrage of specific questions, many of which are repeated, and many of which are "leading." This strategy is problematic because children's responses to open-ended questions are more accurate than their responses to specific questions. This finding has been consistently reported since the beginning of the century (e.g. see Ceci & Bruck 1995) and is highlighted in a recent study by Peterson & Bell (1996) who interviewed children after an emergency room visit for a traumatic injury. Children were first asked open-ended questions ("Tell me what happened."), and then more specific questions (e.g. "Where did you hurt yourself?" or "Did you hurt your knee?"). The children were most likely to accurately report the important details in free recall (91% accuracy); errors increased when children were asked specific questions (45% accuracy).

Forced choice questions (e.g. "Was it black or white?") also compromise the reliability of children's reports because children commonly do not provide "I don't know" responses (e.g. see Walker et al 1996) even when the question is nonsensical (Hughes & Grieve 1980). One of the reasons that children so willingly provide answers to specific yes/no or to forced-choice questions even though they may not know the answer is that young children are cooperative: They perceive their adult interviewer as truthful, not deceptive. To comply with a respected adult, children sometimes attempt to make their answers consistent with what they see as the intent of the questioner rather than consistent with their knowledge of the event [see Ceci & Bruck (1993) for a review].

REPEATING SPECIFIC QUESTIONS Not only does accuracy decrease when children are asked specific questions, but there is increased risk of inaccurate reports when young children are repeatedly asked the same specific questions, either within the same interview or across different interviews (e.g. Poole & White 1991). Young children tend to change their answers, perhaps to provide the interviewer with the information that the child perceives he wants.

The results of a study by Poole & White best illustrates this phenomenon. These investigators examined the effects of repeated questioning within and across sessions. Four-, six-, and eight-year-olds witnessed an ambiguous event. Half the children were interviewed immediately after the event as well as one week later. The remaining children were interviewed only one week after the event. Within each session, all questions were asked three times. Repeated open-ended questions (e.g. "What did the man look like?") had little effect, positive or negative, on children's responses. However, on repeated yes/no questions (e.g. "Did the man hurt Melanie?"), the younger children were most likely to change their responses, both within and across sessions. Also, when children were asked a specific question about a detail for which they had no information (i.e. "What did the man do for a living?"), many answered with sheer speculations. Furthermore, with repeated questions, they used fewer qualifiers, omitting phrases such as "it might have been," and consequently they sounded increasingly confident about their statements. In other words, children will often cooperate by guessing, but after several repetitions, their uncertainty is no longer apparent.

REPEATING MISINFORMATION Some interviewers convey their bias through leading questions and information about the alleged target events. When these techniques are repeated across multiple interviews, children's reports may become unreliable. For example, in one study (Bruck et al 1995a), five-year old children received an inoculation from a pediatrician. One year later, they were interviewed four times about salient details of that visit. Children who were repeatedly interviewed in a neutral, nonleading manner provided accurate reports about the original medical visit. In contrast, children who were repeatedly given misinformation about some of the salient details incorporated the misleading suggestions into their reports (e.g. falsely claiming that a female research assistant inoculated them rather than the male pediatrician), they also reported nonsuggested but inaccurate events (e.g. falsely reporting that the female research assistant had checked their ears and nose).

Other studies (e.g. Bruck et al 1997a;, Ceci et al 1994a) show that when children are repeatedly and suggestively interviewed about false events, assent rates rise for each interview. For example, children are more likely to assent to a false event in a third interview than in a second interview.

When children provide new information in repeated suggestive interviews (that involve the repetition of misinformation or misleading questions), it raises the issue of whether the new reports are accurate memories that were not remembered in previous interviews or whether the new reports are false and the result of previous suggestive interviews. The scientific evidence provides support for the second hypothesis, especially when there is a delay between some alleged event and the interviews. This is because children's memory of the original event (e.g. what happened at day-care) fades with time, allowing the misinformation (e.g. "The teacher did bad things to kids.") to become more easily planted. For example, in the pediatrician study just described, the children were given suggestions immediately after they had received their inoculation about how much the inoculation had hurt (e.g. some children were told that it did not hurt very much when in fact it did). This suggestive interview had no effect on children's reports taken one week after the inoculation, presumably because the episode was still fresh in their mind. However, one year later, when the same children were given similar suggestions (e.g. "You were so brave that day; it seemed like the shot hardly hurt you."), these children now routinely underestimated their level of pain and crying as a result of suggestions about how brave and courageous they had been.

Another set of recent studies provides important new evidence to dispute the common claim that children need to be reinterviewed because it helps them to remember new and important details. These studies show that reports that emerge in a child's first interview with a neutral interviewer are the most accurate. When children are later interviewed about the same event and report new details not mentioned in the first interview, these have a high probability of being inaccurate (Bruck et al 1997a;, Salmon & Pipe 1997).

EMOTIONAL ATMOSPHERICS Interviewers can also use subtle verbal and nonverbal cues to communicate bias. At times, these cues can set the emotional tone of the interview, and they can also convey implicit or explicit threats, bribes, and rewards for the desired answer. Children are attuned to these emotional tones and act accordingly. For example, children were asked to recall the details of a visit to a university laboratory that had occurred four years previously (Goodman et al 1989). At the four-year followup interview, researchers deliberately created an atmosphere of accusation by telling the children that they were to be questioned about an important event and saying, "Are you afraid to tell? You'll feel better once you've told." Few children remembered the original event from four years earlier, but their performance on suggestive questions was mixed; some children falsely reported that they had been hugged or kissed, or that they had their picture taken in the bathroom, or that they had been given a bath. Thus, children may give incorrect information to misleading questions about events for which they have no memory if the interviewer creates an emotional tone of accusation.

STEREOTYPE INDUCTION Stereotype induction is another component of a suggestive interview. For example, if a child is repeatedly told that a person "does bad things," then the child may begin to incorporate this belief into his or her reports. In one study, Leichtman & Ceci (1995) provided animated descriptions of their "clumsy" friend Sam Stone to preschool children. On a number of occasions, these children were told of Sam's exploits, which included accidentally breaking Barbie dolls or ripping sweaters. Later, the children met Sam Stone, who came to their classroom for a short, accident-free visit. The next day, the teacher showed the children a torn book and a soiled teddy bear. Several weeks later, a number of three- and four-year-old children reported that Sam Stone had been responsible, with some even claiming that they had seen him do this. Children who had not received the stereotype induction rarely made this type of error (see Lepore & SESCO 1994 for similar findings).

ANATOMICALLY DETAILED DOLLS Techniques that have been especially designed for interviewing children about sexual abuse may be potentially suggestive. For example, anatomically detailed dolls are commonly used by professionals when interviewing children about suspected sexual abuse. It is thought that the use of the dolls overcomes language, memory, and motivational (e.g. embarrassment) problems. However, the existing data indicate that the dolls do not facilitate accurate reporting (e.g. Goodman & Aman 1990). It also appears that the use of dolls increases errors for younger children (three and four-year-olds) when they are asked to use the dolls to act out an experienced medical procedure (Goodman et al 1997) or when asked to demonstrate certain events that never happened (e.g. Gordon et al 1993).

Thus, dolls may be suggestive if children have not made any allegations but are asked by an interviewer, who suspects abuse, to demonstrate abuse with the dolls. Our recent studies provide evidence for this hypothesis (Bruck et al 1995b, c). Three- and four-year-old children had a medical examination where some of the children had received a routine genital examination. The children were then interviewed about the examination. They were then given an anatomical doll and told, "Show me on the doll how the doctor touched your genitals." A significant proportion of the children (particularly the girls) showed touching on the doll even though they had not been touched. Furthermore, when children who had received a genital examination were asked the same question, a number of children (particularly the girls) incorrectly showed that the doctor had inserted a finger into their genitals or anus; the pediatrician never did this. Next, when the children were given a stethoscope and a spoon and asked to show what the doctor did or might do with these instruments, some children incorrectly showed that he used the stethoscope to examine their genitals and some children inserted the spoon into the genital or anal openings or hit the doll's genitals. None of these actions occurred. We concluded that these false actions were the result of implicit suggestions that it is permissible to show sexualized behaviors. These suggestions were communicated through enjoiners to use the dolls to show and talk about touching of the genitals and buttocks. Also, because of the novelty of the dolls, children were drawn to insert fingers and other objects into their cavities.

THINKING ABOUT AND IMAGINING Guided imagery is another interviewing technique that is potentially suggestive. Interviewers sometimes ask children to try to remember or pretend if a certain event occurred, and then to create a mental picture of the event and to think about its details. Because young children sometimes have difficulty distinguishing between memories of actual events and memories of imagined events (e.g. Parker 1995;, Welch-Ross 1995), when asked to pretend about or imagine certain events, children may later come to report and believe these imagined activities. This hypothesis is supported by studies conducted by Ceci and colleagues (1994a, b). Here, young children were repeatedly asked to think about real as well as imaginary events, creating mental images each time they did. In one study (Ceci et al 1994b), children increasingly assented to false events with each interview. When after 11 sessions these children were told that some of the imagined events had not happened, most of the children who had previously assented to false events continued to cling to their false statements. These data may suggest that a number of the children had actually come to believe that they had experienced the false events.

SUBTLE SUGGESTIVE INFLUENCES Many of the techniques that have been described seem quite explicit and when used repeatedly can appear to be coercive. There are other techniques whereby suggestions can be subtly introduced to children who subsequently incorporate them into their reports. In a series of studies, Poole & Lindsay (1995, 1996) have shown how parents can subtly suggest false events to their children. In their initial study (Poole & Lindsay 1995), preschoolers played with "Mr. Science" in a university laboratory. During this time, the child participated in four demonstrations (e.g. lifting cans with pulleys). Four months later, the children's parents were mailed a storybook that contained a biographical description of their child's visit to Mr. Science. Although the story described two of the experiments that the child had seen, it also described two that the child had not seen. Furthermore, each story finished with the following fabricated account of what had happened when it was time to leave the laboratory: "Mr. Science wiped (child's name) hands and face with a wet-wipe. The cloth got close to (child's name) mouth and tasted really yucky."

Parents read the story to their children three times. Later, the children told the experimenters that they had participated in demonstrations that, in actuality, had only been mentioned in the stories read by their parents. For example, when asked whether Mr. Science put anything "yucky" in their mouths, more than half the children inaccurately replied "yes," and many of these children elaborated their "yes" answers. When asked, "Did Mr. Science put something yucky in your mouth, or did your Mom just read you this in a story?," 71% of the children said that it really happened.

This study demonstrates that subtle suggestions can influence children's inaccurate reporting of nonevents that, if pursued in followup questioning by an interviewer who suspected something sexual had occurred, could lead to a sexual interpretation. The study, along with several others, also illustrates preschoolers' difficulty in identifying the source of a suggestion (these are called source-monitoring errors); children in this study confused their parent reading them the suggestion with their experience of the suggestion.

Poole & Lindsay (1996) recently replicated these findings with children from a wider age range (three- to eight-year-olds). The findings were similar across ages, with one exception: The source-monitoring procedures enabled the older but not the younger children to reduce the rate at which they reported having experienced the suggested

events. That is, when asked, “Did Mr. Science really put something yucky in your mouth, or did your Mom just read you this in a story?,” the older children recanted their previous claims and said that their Mom had told them.

MULTIPLE SUGGESTIVE TECHNIQUES The studies discussed above have predominantly examined the effect of using a single suggestive technique on the accuracy of children’s reports. According to our model, the number of suggestive techniques used in an actual interview is a function of the degree of the interviewer’s bias. Interviewers who have strong a priori beliefs and who view their role as one of obtaining information to confirm these beliefs will include the most suggestive elements in their interviews. However, when a number of techniques are combined in one interview, these procedures have detrimental effects much larger than seen in studies where only one suggestive technique is used (e.g. Leichtman & Ceci 1995). Two recent studies support this conclusion.

The first study (Bruck et al 1997a) examined the impact of repeatedly interviewing children with a combination of suggestive procedures. Preschool children were asked to tell about two true events (a recent punishment and helping a visitor who had hurt her ankle) and about two false events (helping a lady find her monkey in the park and witnessing a thief steal food from the day-care facility).

Children were interviewed on five different occasions about the four events. In the first interview, the children were asked if the event had happened and if so to provide as many details as possible about its occurrence. The next three interviews included a combination of suggestive interviewing techniques that have been shown to increase children’s assents to false events. These techniques included (a) the use of peer pressure (“Megan and Shonda were there and they told me you were there, too.”); (b) guided imagery techniques (“Try to think about what might have happened.”); and (c) repeating (mis)information and providing selective reinforcement (“It’s so wonderful that there are such nice kids like yourself to help people out when they need it.”). The same interviewer questioned the children for the first four interviews. In the fifth interview, a new interviewer questioned each child about each event in a nonsuggestive manner.

Across the five interviews, all the children consistently assented to the true-helping event. However, children were at first reluctant to talk about the true-punishment event, many denying that it had occurred. With repeated suggestive interviews, however, the children agreed that the punishment had occurred. Similar patterns of disclosure occurred for the false events; that is, children initially denied the false events, but with repeated suggestive interviews they began to assent to these events. By the third interview, almost all the children had assented to all true and false events, which included witnessing a thief take food from the day-care. This pattern continued to the end of the experiment. Thus, the combination of suggestive techniques produced high assent rates for true and false events, one of which was a criminal act.

This study illustrates both the beneficial as well as detrimental consequences of using suggestive techniques to elicit reports from young children. For children who may not want to talk about true-unpleasant (the punishment), the use of repeated interviews with suggestive components did prompt them to correctly assent to previously denied events. However, the use of these very same techniques prompted children to assent to events that never occurred.

Garven et al (1998) showed how a combination of suggestive interviewing techniques that were used in the McMartin case can compromise the accuracy of children’s reports in one 10-minute interview. In this study, a stranger visited children at their day care and read them a story. One week later, children were interviewed about the visit. Half the children were asked leading questions (e.g. “Did Manny break a toy?”). The other children were also asked leading questions, but in addition, other suggestive techniques were used, including (a) peer pressure (“The other kids said that...”); (b) positive consequences (giving the child praise for certain answers and telling him that he is a good helper); (c) negative consequences (telling the child that this was not the appropriate answer, and repeating the question); (d) enjoiners to think about it (children were asked to think hard about questions they said “no” to); and (e) enjoiners to speculate (asking children to pretend or to tell what might have happened). Children in the combined technique condition accurately answered 42% of the questions, compared with an accuracy rate of 83% of children who were just asked leading questions. The children in the combined suggestion group misreported that Manny said a bad word, that he threw a crayon, that he broke a toy, that he tore a book, and that he bumped the teacher. Another important result of this study is that children in the combined suggestion condition came to make more false claims as the interview progressed: That is, within a short (5- to 10-minute interview), children made more false claims in the second half than in the first half of the interview. Thus, the children had learned what types of answers the interviewer wanted to hear.

The Effect of Suggestive Interviews on Children's Credibility It has often been stated that it is easy to detect false reports that are the result of suggestion, because it was thought that children were merely "parroting" the words of their interrogators. However, evidence from the past decade provides no support for this assertion. First, we have found that when children are suggestively interviewed, their subsequent narratives include false reports that were not suggested to them, but that are consistent with the suggestions (e.g. Bruck et al 1995a, 1997a). Second, subjective ratings of children's reports after suggestive interviewing reveal that these children appear highly credible to trained professionals in the fields of child development, mental health, and forensics (e.g. Leichtman & Ceci 1995, Ceci et al 1994a, b); these professionals cannot reliably discriminate between children whose reports are accurate from those whose reports are inaccurate as the result of suggestive interviewing techniques.

Third, results of our most recent study revealed that linguistic markers do not consistently differentiate true from false narratives that emerge as a result of repeated suggestive interviews (Bruck et al 1997a). In the Bruck et al study (1997a), wherein children were repeatedly and suggestively interviewed about true and false events (described above), the children's narratives of the false events became more embellished and detailed, so that by the third interview, it was impossible to differentiate the true from the false narratives on a number of factors that are generally considered to be markers of good narratives and of autobiographical recall. That is, by the third interview, the false narratives contained the same number of spontaneous statements, details, adjectives, emotional terms, and dialogue statements as did the true narratives. Two measures differentiated the true and false stories. First, children were more likely to repeat the same details across interviews for true than for false narratives. Thus, the true narratives were more consistent than the false narratives. One reason for this difference was the fact that with each retelling, children included more new details in their false than in their true narratives (i.e. the false stories expanded and sometimes changed). Second, for some of the children, with repeated suggestive interviews, the number of aggressive, exaggerated, and fantastical details increased for false narratives, but not for true narratives.

Children's False Reports: Compliance or False Belief? We have had little to say in the foregoing description about the mechanisms underlying the children's suggestibility. Because the field is only beginning to develop in this area, we focus on one major area of concern: Do children's assents to suggestive interviewing procedures reflect social compliance to the perceived wishes of their interviewer, or do they reflect fundamental changes in their cognitive system such that they come to believe their false statements (false beliefs)? To preview our conclusion, this either/or dichotomy is probably too simplistic to account for all reports that result from suggestive interviews.

A number of arguments supports the view that children's suggestibility is socially motivated. One of the most salient characteristics of young children, and one that is required for socialization, involves their compliance, their willingness to please adults, and their inherent trust of adults (see Ceci & Bruck 1993, for a review). Thus, it has been argued that children may be especially prone to suggestive influences because of their natural tendency to trust the honesty and cooperation of their adult interviewers. It has been argued that young children trust that adults are asking them well-intentioned and reasonable questions, and as a result they provide a response regardless of their comprehension or knowledge about the questioned event. For example, when asked nonsensical questions such as "Is milk bigger than water?" or "Is red heavier than yellow?", most five- and seven-year-olds replied "yes" or "no"; they only rarely responded "I don't know" (Hughes & Grieve 1980). It also seems that when asked the same question twice, young children change their answers to please the adult who is questioning them; they reason that the "adult must not have liked the first answer I gave so I will give another answer" (e.g. Siegal et al 1988).

The strong claim of this position is that children's inaccurate responses in suggestive interviews always reflect compliance, and that if later questioned about what really happened, children will be able to throw off the suggestive veil and report events accurately. The results of at least two studies support this position (Cassel et al 1996; Cohen & Harnick 1980). In these studies, it was found that compared with older children and adults, younger children were more prone to inaccurately answer misleading questions about a film. When subjects were later tested, however, there was no differential effect of the misleading questions on the accuracy of the younger children's recall. In general, at the later testing, subjects accurately recalled the original events. These results suggest that younger children were more likely to consciously submit to suggestions than older subjects, but that the suggestions did not differentially affect their memory for the event.

The opposite strong claim is that children's false reports that result from suggestive interviews reflect basic changes in memory; that is to say, children believe their reports. One basic assumption that motivates this claim is that there

are developmental differences in memory that contribute to suggestibility. Thus, there are developmental differences in the degree to which children accurately encode, store and retrieve memories (Brainerd & Ornstein 1991). There are also developmental differences in forgetting, retention, and relearning curves (Brainerd et al 1985). Furthermore, young children are especially prone to making source misattributions (Ackil & Zaragoza 1995;, Parker 1995;, Poole & Lindsay 1996).

Direct evidence for the position that false reports reflect basic changes in memory is provided by several studies, all of which involve asking children to substantiate the basis of their false claims made in suggestive interviews. In these studies, children are asked if the misreported event really happened, and if they remember where they heard about the event. If children misreport an event and then claim that they actually saw it (and don't necessarily remember being told about it), then this is evidence for a false belief. In other studies, children are warned that the experimenter may have made a mistake and are given another opportunity to provide a report in response to a suggestive interviewing technique. If children continue to provide false reports, then this is another indication that the child has lost the source of the suggestion and has come to believe that the event actually happened. When these procedures are included in suggestibility studies, a significant number of preschoolers maintain that that the suggested event really happened, and a significant number cannot remember the source of the suggestion (e.g. Ceci et al 1994b;, Leichtman & Ceci 1995;, Poole & Lindsay 1995, 1996). However, some recent evidence suggests that if these suggested interviews cease for a time, children's previous false memories fade (e.g. Huffman et al 1996;, Poole & Lindsay 1996); they accurately claim that the false events that were previously assented to never occurred.

We hypothesize that a more detailed inspection of children's responses over time will reflect a more complex condition with a comingling of social (compliance) and cognitive (memory) factors in the emergence of false reports. For example, children may start out knowingly complying to suggestions, but with repeated suggestive interviews, they may come to believe and incorporate the suggestions into their memories. However, depending upon the strength of the false belief, children may eventually come to forget their misreports and thus recant their previous allegations, especially if suggestive interviewing has ceased for a long period.

SUMMARY AND CONCLUSIONS

A considerable body of research now exists to indicate that numerous suggestive techniques can compromise the accuracy of young children's reports. These techniques are especially powerful when used by biased interviewers and when used in combination. A review of the literature reveals that (a) there are age differences in children's susceptibility to suggestion; (b) there are individual differences in susceptibility; and (c) the techniques we have reviewed can produce major distortions in children's reports about highly salient events. Each of these topics is now discussed.

First, although we have not placed much emphasis on age differences in children's suggestibility, when studies include developmental comparisons there are often age differences, with preschoolers being the most suggestible age group. This conclusion is based on our previous literature review (Ceci & Bruck 1993), wherein we reported that approximately 88% of the studies (14 out of 16) that involved comparisons of preschoolers with older children or adults, preschool children were the most suggestible group. Since that publication, new studies on children's suggestibility are being published regularly; these newer data continue the trend that we reported in 1993. In the most recent analysis of this literature, McAuliff et al (1998) also concluded that indeed, preschoolers do differ from older children and adults in their susceptibility to misleading or incorrect post-event information, although these authors estimated a smaller effect size than heretofore assumed.

Despite these significant age differences, it is nonetheless important to point out that concern remains about the reliability of older children's testimony when they are subjected to suggestive interviews. Ample evidence may be cited that children older than six years of age are suggestible about a wide range of events (e.g. Goodman et al 1989;, Poole & Lindsay 1996;, Warren & Lane 1995) and that adults' recollections also are impaired by suggestive interviewing techniques (e.g. Hyman & Pentland 1996;, Loftus & Pickrell 1995;, Malinowski & Lynn 1995, 1996). Clearly, it is important to extend the research to develop newer paradigms for middle childhood and adolescence in order to examine the magnitude, boundary conditions, and factors (as discussed below) involved in suggestibility of these ages—factors that have been as neglected today as the preschoolers were during the first half of this century.

Second, although consistent findings of age differences across studies exist, there are nevertheless individual differences. Some preschoolers are very resistant to interviewers' suggestions, whereas some older children immediately fall sway to the slightest suggestion. We are a long way from understanding the source of these individual differences, although researchers are beginning to assess the association between suggestibility and a number of cognitive (e.g. knowledge base, trace strength, source monitoring); psychosocial (e.g. compliance, self-esteem); demographic (gender, social class); and physiological (salivary and blood cortisol levels) factors that might contribute to these differences (see Bruck et al 1997b for a review).

Third, children are not merely suggestible about peripheral details but also about central details that sometimes involve their bodies. Children can be suggestible about positive as well as negative events (for a review, see Bruck et al 1997a). At times, children's false reports can be tinged with sexual connotations. In laboratory studies, young children have made false claims about "silly events" that involved body contact (e.g. "Did the nurse lick your knee? Did she blow in your ear?"), and these false claims persisted in repeated interviewing over a three-month period (Ornstein et al 1992). A significant number of preschoolers assented to suggestions that a doctor had cut out some bone in the center of the child's nose to stop the child from bleeding (JA Quas et al 1998). Young children falsely reported that a man put something "yucky in their mouth" (Poole & Lindsay 1995, 1996). Preschoolers falsely alleged that their pediatrician had inserted a finger or a stick into their genitals (Bruck et al 1995a) or that some man touched their friends, kissed their friends on the lips, and removed some of the children's clothes (Lepore & Sescio 1994). A significant number of preschool children falsely reported that someone touched their private parts, kissed them, and hugged them (Goodman et al 1991a; Rawls 1996; Melnyk et al 1997). When suggestively interviewed, children will make false allegations about nonsexual events that have serious legal consequences, were they to have actually occurred. For example, preschoolers claimed to have seen a thief in their day-care. (Bruck et al 1997a). The suggestive techniques described in this paper have powerful effects on children's reporting in laboratory controlled conditions.

Notwithstanding the above conclusion, it is clear that children—even preschoolers—are capable of accurately recalling much that is forensically relevant. For example, in many of our own studies, children in the control group conditions recalled events flawlessly. This indicates that the absence of suggestive techniques allows even very young preschoolers to provide highly accurate reports, although they may be sparse in the number of details. Numerous other studies also highlight the strengths of young children's memories (e.g. see Fivush 1993; Goodman et al 1992a). What characterizes many such studies is the neutral tone of the interviewer, the limited use of misleading questions (for the most part, if suggestions are used, they are limited to a single occasion), and the absence of the induction of any motive for the child to make a false report. When such conditions are present, it is a common (although not universal) finding that children are much more immune to suggestive influences, particularly about sexual details.

Thus, the question of whether a young child's report is accurate can be answered tentatively, "maybe, maybe not," depending on the type, number, and severity of suggestive techniques they have been exposed to. In a very real sense, the reliability of young children's reports has more to do with the skills of the interviewer than to any natural limitations on their memory. Research on this topic has been fast finding its way into courts of law, used by one side or the other to bolster or discredit child witnesses' testimony. As we tried to demonstrate in this review, a need exists for practitioners to sift through this research carefully, making certain that the studies they call upon resemble the case at bar in terms of the type of acts, the severity of suggestions, and so on. Failure to do this could lead to miscarriages of justice.

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