

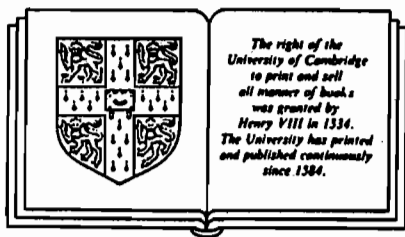
# Knowing and remembering in young children

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## Children's concerns and memory: Issues of ecological validity in the study of children's eyewitness testimony

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Did you ever wet your pants in school? As a child, did you ever hurt yourself so badly that you had to go to a hospital? Were you ever spanked with a belt? These questions can be answered quickly by most people. We seem to know well if such events happened in our childhood or not, at least once the barrier of infantile amnesia has been passed. What unites these questions is that they all concern actions that are personally significant to children, actions that affect a child's sense of well-being, safety, or social acceptance. People often feel that they remember whether such events occurred or not. Yet the study of memory development has been largely silent on how such personally significant events affect children's memory. A main theme of this chapter is that actions affecting a child's sense of well-being, safety, and social acceptance are remembered remarkably well and that, at least by the age of 4 years, children are surprisingly resistant to suggestions about them.

The study of children's testimony, especially as it relates to child abuse, led us to examine children's memory and suggestibility for personally significant actions. Children who testify in courts of law and are involved in legal investigation often do so as victims of child abuse. These child victim/witnesses are interviewed about such personally significant and potentially embarrassing experiences as having their clothes removed, being hit, being kissed, or seeing someone's "private parts." If such experiences are not remembered well, children may be more subject to suggestive influences by adults and hence more easily led to give false reports of abuse.

Currently, there is great public and professional debate concerning children's testimony in child abuse cases. Some fear that the use of leading questioning by legal and mental health professionals is resulting in false allegations of abuse and consequently prosecution and conviction of innocent adults. Others claim that children do not report abuse readily and that leading questioning may be necessary to facilitate children's disclosures. Despite strong claims by both sides, ecologically valid

research in which children are asked about bodily injury and sexual acts has been virtually nonexistent.

A second theme of this chapter thus concerns ecological validity. Like studies of children's memory, studies of children's testimony typically suffer from a lack of ecological validity. Trivial stimuli (e.g., cartoons or stories), which children in actual court cases or legal investigations would hardly ever be asked to testify about, are followed by questions concerning peripheral details or descriptions of strangers. In child abuse investigations, central actions and identifications of familiar people are of primary concern. Thus, many of the existing studies are likely to underestimate children's ability to provide accurate testimony in actual child abuse investigations, just as laboratory studies of children's memory have generally underestimated children's cognitive and memory abilities (DeLoache, Cassidy, & Brown, 1985; Donaldson, 1978; Nelson, 1986).

In the present chapter, we describe a series of studies that combine ecological validity with experimental control to examine children's memory for information relevant to personal safety. One of our main motivations for conducting the studies was to determine whether false reports of abuse can be readily elicited from children. Before describing the studies, we will outline the theoretical framework that guides our research.

### Conceptual framework

Our guiding assumption is that children's "concerns" play a prominent role in their memories (cf. Frijda, 1986). By concerns we mean children's drives, fears, wishes, and preferences. (We will use the term *personal significance* to refer to events that are relevant to children's concerns.) One primitive concern is physical safety – that is, not being hurt or assaulted. Another concern that emerges fairly early is fear of abandonment. More positive concerns such as interests in food, comfort, and play also exist. These more positive concerns also play an important role in children's memory.

Some concerns, such as ones for personal safety and food, are quite basic, but others rely on cognitive development. For example, a concern not to be embarrassed implies the existence of a symbolic social self (Fischer, Shaver, & Carnochan, 1989). As we grow older, attacks on or bolstering of the symbolic self can be as important as attacks on or nurturance of the real self. Suicide in the name of lost love or social dishonor serves as a somber reminder.

Concerns may also rely on the acquisition of cultural norms. Certain practices (e.g., appearing partially nude in public) may cause little embarrassment in some cultures (e.g., Tahitian) but a great deal of embarrassment in others (e.g., American). Relevant experience and maturity are

required for children to learn the values and expectations of the culture in which they are reared.

It has been difficult in laboratory experiments to address children's concerns in relation to their memory, particularly for aversive events. Ethical issues pose the main obstacle. We cannot, for research purposes, actively threaten children's safety or deprive them of food or comfort. Another obstacle is that the more ethically manipulable concerns (e.g., interest in toys) change with time, place, and need. Thus, it is difficult to standardize the importance of stimuli in relation to a child's concerns.

Why should children's concerns have a profound effect on their memory? The answer is evident: Survival of the species requires that we learn – quickly and with lasting impact – to avoid danger and sustain life. Children, who are particularly helpless should be in a sense "prepared" (Seligman, 1970) to have lasting memories for events that threaten or promote their well-being. In that way they can avoid danger and gain nurturance. Garcia's (e.g., Garcia & Koelling, 1966) classic taste-aversion experiments indicate the power of memories for information relevant to self-preservation, and his findings surely have implications for humans as well as for less advanced species.

Physiological, cognitive, and motivational factors may also help explain improved memory for events associated with children's concerns. Recent research suggests that nature wisely provided us with a physiological mechanism to consolidate memory for personally significant events rapidly. Gold (1987) describes an elegant series of studies indicating that certain hormones, such as adrenaline, result in enhanced memory through the release of plasma glucose. Gold proposes that these memory-enhancing hormones, which are released in response to important but not to trivial events, may indicate to brain cells whether information is worthy of more permanent storage or not.

Cognitive research also supports the view that personally significant events are retained in memory better than less significant events, such as those typically used in laboratory studies (Bohannon, 1988; Keenan, MacWhinney, & Mayhew, 1977; Linton, 1982). Keenan and Baillet (1980) argue that better retention of personally significant events results at least in part from the self being the most informationally rich schema in memory. Since semantic structures to which events are encoded influence the amount of elaboration received by a given piece of information, hence influencing its memorability, events encoded in relation to the self will be highly memorable. Such "self-referencing" effects are especially evident when memory tasks require use of self schema and when appropriate retrieval cues are available (Brown, Keenan, & Potts, 1986). Better memory for information relevant to the self has been demonstrated both in adults (Rogers, Kuiper, & Kirker, 1977) and children (Pullyblank,

Bisanz, Scott, & Champion, 1985). Children's concerns, such as the desire for safety and comfort, are by definition highly relevant to the self and should, according to this formulation, be highly memorable. Keenan and Baillet's (1980) view is couched in purely cognitive terms, but, as they acknowledge, motivational factors such as emotion may also ensure a high degree of memorability for personally significant events.

Many have argued that emotions play a primary role in memory (see Rapaport, 1942). Certainly, access to early autobiographical memories is influenced by emotion, since when adults are asked to recount their earliest memories, the vast majority of recollections are associated with either negative or positive affect (see Pillemer & White, 1989, for a review). Motivational and cognitive factors are likely to interact to further strengthen children's memories for personally significant events. For example, the way a child feels about an event is likely to affect how much elaborative processing and how much mental (if not overt) rehearsal that event receives.

In sum, there are a number of reasons to suspect that children's concerns influence their memory. Concerns are linked to survival and as a result to the self, informationally rich memory schemas, and emotion.

Most forms of child abuse have a direct impact on children's concerns. Physical as well as sexual abuse influences a child's sense of physical safety. In addition, to the extent that children are aware of social taboos against sexuality, premature sexual involvement is likely to be embarrassing. We turn now to a discussion of children's concerns for physical safety and avoidance of embarrassment. If we are correct that children's concerns have a powerful effect on memory, it is important for us to identify children's concerns as they pertain to abusive actions. Wherever possible, we relate this discussion to children's memories.

### **Bodily injury**

All victims of child physical abuse and some victims of child sexual abuse suffer bodily injury. Since children, like adults, are interested in maintaining personal safety, abuse violates one of children's most basic concerns. As might be expected, when children are questioned about their fears, bodily injury is mentioned frequently. For example, Lentz (1985) questioned a hundred 5- and 6-year-olds about their fears at home, at school, and at the baby-sitter's. Children's main fears concerned bodily injury, punishment, and abandonment. Although all children expressed considerable concern about these events, females expressed more fear of bodily injury than males did. Similarly, Angelino, Dollins, and Mech (1956) uncovered a number of individual and sex differences in the specific content of children's fears, but generally found that 9- to 18-year-olds

expressed the greatest number of fears about safety, a category that included violence, being hurt, and punishments (see also Jersild & Holmes, 1935).

Yamamoto, Soliman, Parsons, and Davies (1987) conducted a cross-cultural study of children's fears. The youngest children were third-graders and the oldest were teenagers. Most of the children's high-fear responses can be grouped into four categories: bodily injury (e.g., going blind, having an operation); abandonment or separation from loved ones (e.g., losing a parent, getting lost); embarrassment (e.g., wetting in class); and punishment (e.g., being sent to the principal). Yamamoto et al. note that adults are not always accurate in assessing children's fears. Parents tend to think that children fear the birth of a sibling, for example, yet children themselves rated this as the least feared event out of 20 possibilities. In contrast, events that caused embarrassment or social rejection figured more prominently in children's fears than adults might expect.

It is thus clear that bodily injury constitutes one of children's primary concerns. But when children sustain physical injury, do they remember it? The link between children's memory and their concerns about bodily injury was recently revealed in a study of very young children's recountings of personal experiences. Miller and Sperry (1988) recorded conversations between children, aged 1 year 7 months to 2 years 8 months, and their mothers. In these conversations, children's memories primarily concerned negative events, especially events of physical harm. When child-initiated conversations were considered, 91% of them concerned negative events and 70% involved events of physical harm. When another person initiated the topic of conversation, recountings of negative events still predominated (53%); mention of physical harm was the largest single category (30%). Overall, the children's recountings were about evenly split as to whether or not the child had been hurt in or witnessed the event, although individual differences on this dimension were strong. Examples of the children's memories of harm included such acts as getting an inoculation, falling, being burned, and being hit, slapped, grabbed, or otherwise physically assaulted.

### **Embarrassment, punishment, and sexuality**

As the surveys just discussed indicate, another childhood concern is embarrassment. Children's reactions to child abuse, especially child sexual abuse, may involve embarrassment. Even questioning children about sexual matters may cause them to blush. Social commentators and researchers alike note that sexuality is characterized in children's minds by embarrassment, mystery, and even fear, particularly fear of punishment

(Goldman & Goldman, 1982, 1988; Jackson, 1982). Young children may not know anything about sex other than having observed that adults treat the topic as something to be avoided or kept secret, or for which one can be punished or ridiculed. Thus, children come to react to situations that carry sexual connotation by becoming embarrassed – a shame that they are taught to feel, without necessarily understanding the reasons why.

Perhaps one of the first things children are taught to be embarrassed about concerning sexuality is the exposure of their own bodies to others. Jackson (1982) comments that

adults' reactions to children's behavior turn previously innocent activities into guilt-ridden ones, but many children will already have an inkling that "sexual" games are taboo, infringing as they do the rules of modesty that have most likely already been learnt. Children are taught early on that certain parts of the body must be kept hidden and that it is "rude" or "dirty" to expose them to others. (pp. 96–97)

Goldman and Goldman (1982, 1988) observed that guilt and inhibition about nudity and sexuality are soon acquired from the child's parents, who reflect not only their own personal restraints but those of the society in which they have been reared.

Goldman and Goldman reached this conclusion after conducting a cross-cultural study in which they asked children, the youngest being 5-year-olds, about many aspects of sexual thinking, including nudity. In the study, children were asked, for example, about their attitudes toward clothing. Responses to such questions as "Do we need to wear clothes in a warm climate?" revealed the taboo, embarrassment, and fear of punishment associated even in the minds of 5-year-olds with exposure of one's genitals. For example, an English 5-year-old boy answered, "Yes, because your father would give you a hiding." And from a 7-year-old Australian girl, "My mom says you shouldn't do that. She says it's not right to go around with nothing on." An 11-year-old American girl focused on the fact that others would laugh.

Other outward signs of embarrassment were revealed in answers given to the question "Would you ask your parents about sex?" A 7-year-old answered, "Sometimes they get very nervous about it." An English teenager replied, "Even if we did ask, . . . we'd be all embarrassed." A 5-year-old Australian girl answered, "I wouldn't tell anyone or ask anyone, 'cos it's supposed to be a secret." Children reported being afraid to ask even their friends for fear of being laughed at. Interestingly, of the four countries studied, American society proved to be the most restrictive in its treatment of sexuality, at least as reflected by the children's statements.

We know of no studies that have traced the very beginnings of embar-

rassment about nudity in children. Thus, it is difficult to say when this potentially important variable might begin to influence memory. Although research is sparse, anecdotes indicate that embarrassment about nudity starts early, at least for some children. Take the following example from one of the present authors' visits to a relative:

Last year, one of us (GG) was invited to give a talk in Fort Worth, Texas, about her work on children's testimony. She took the occasion to visit a relative whose son, Nick, had just turned 2. Coincidentally, the father arrived home from work at the same time that the child testimony researcher drove up in front of the house. As they entered the house together, Nick raced to the door completely naked to greet his dad. When the little boy saw that his father was not alone, he stopped in his tracks, covered his groin, turned red, let out a loud squeal, and raced back into his room.

Already at the age of 2, Nick knew that nudity in front of strangers was taboo. And he knew exactly what area of his body to conceal.

Research on the development of embarrassment is limited in general (see Edelman, 1987, and Seidner, Stipek, & Feshbach, 1988, for reviews). Nevertheless, as Seidner et al. point out, it is clear that precursors of embarrassment appear in infancy. In order to feel embarrassment, one must recognize a contingency between one's own behavior and an outcome. The concept of the self as an agent, that actions of the self can produce outcomes, is believed to arise in early infancy (Watson, 1966). The ability to engage in self-evaluation is also believed to be necessary for the feeling of embarrassment. This ability is likely to be present by the second year of life (Lewis & Michaelson, 1983). Thus, there is reason to believe that children might experience embarrassment by the second year. Nevertheless reasons for becoming embarrassed may change developmentally.

Seidner et al. (1988) recently conducted a developmental study of the concept of embarrassment. In it, 5-, 7-, 9-, and 11-year-old children as well as adults were asked to reveal events that made them "very, very embarrassed." Although both children and adults tended primarily to give examples of outcomes for which they were responsible, children tended more than adults to indicate that events outside their control also caused embarrassment. Child sexual abuse, an act that is outside of the child's control, may be one such event.

We have been unable to locate studies of children's memories for embarrassing events generally or sexually related events (such as a nudity) specifically. Our studies address this issue by asking children about acts related to sex. However, our studies concern whether children know that certain potentially sexual acts (e.g., having one's clothes removed) and certain potentially injurious acts (e.g., being hit) did *not* occur.

Young children's conversations about the past consist not only of what did happen but of what did not (Todd & Perlmutter, 1980), indicating that even young children remember both types of information.<sup>1</sup> Todd and Perlmutter give the example of a 3-year-old who, when asked what happened when he climbed the stairs onto an airplane, remarked, "I didn't fall." Thus, this child knew he had not been hurt. Similarly, our studies indicate that children, at least by the age of 4 years on average, generally know that they were not physically or sexually abused when they were not. Moreover, they are able to assert this knowledge even under the force of suggestive questioning.

In summary, nudity and sexuality are associated with embarrassment and secrecy – if not punishment – in children's minds. Previous research provides few insights about when this association first arises or how it affects children's memory. Our own studies, described later in this chapter, provide relevant but indirect information by examining whether children remember that sexually related and potentially embarrassing events did not occur.

### Ecological validity

The study of children's concerns and memory highlights the issue of ecological validity, a particularly important consideration in research on children's testimony. Studies of children's testimony, and of adults' testimony, for that matter, have suffered from a lack of ecological validity in numerous ways. Children are typically exposed to nonengaging events presented in stories (e.g., Ceci, Ross, & Toglia, 1987; Saywitz, 1987) or films (Cohen & Harnick, 1980; Dale, Loftus, & Rathbun, 1978). When live events are enacted, they are often of an uninvolved or mundane nature, such as a person watering a plant (King, 1984). The children are typically bystanders to the events, and it is seldom determined whether the events carry much interest to the children. Another serious problem with many studies involves limitations on the legal relevance of the questions asked: Children tend to be queried about peripheral details rather than the main actions that occurred. Children's memory for main actions is typically superior to their memory for other forms of information (Fivush, Gray, & Fromhoff, 1987; Goodman, Hirschman, and Rudy, 1987; Pear & Wyatt, 1914), and in child abuse cases, the main actions and who performed them are of primary interest. It is important for psychologists to determine if the findings of their studies generalize to the types of events children in fact testify about. Otherwise, we may mislead ourselves and the legal system.

In a clever experiment, Ochsner and Zaragoza (1988) directly tested the issue of ecological validity for bystander child witnesses to a "crime."

They examined whether viewing what appeared to be a real purse-snatching led first-graders to provide more accurate testimony than viewing a neutral event. In their study, three children at a time were brought to an empty schoolroom to complete a puzzle. While the children worked on the task a man entered the room, introduced himself by saying that he was looking for the principal, and fumbled about by, for example, dropping a pencil. At that point, one of two things happened. In the theft condition, the confederate stole a purse that was in the room. In the no-theft condition, the confederate simply walked out in search of the principal. The researcher soon reentered the room and interviewed the children.

Several interesting findings emerged, the main one being that in almost every way children in the theft condition were more accurate than children in the no-theft condition. Compared to the no-theft group, the theft group produced more correct statements in free recall while at the same time producing fewer incorrect statements; were less willing to select a suggested (misleading) alternative on a forced-choice test; were more likely to correct the interviewer when an incorrect alternative was presented; and were less suggestible overall.

This study demonstrates that much of the former research on children's testimony is likely to have underestimated children's ability to provide accurate eyewitness reports. As Ochsner and Zaragoza point out, the control condition in their experiment was probably more involving than the stories and films used in many investigations of children's testimony. Thus, studies that rely on uninvolved stimuli would be expected to widen the performance gap even further than the study by Ochsner and Zaragoza.

### The present studies

The studies described in this chapter examine a number of issues related to children's testimony. The studies are united by our interest in children's memory and suggestibility about actions associated with child abuse, actions pertinent to children's concerns. Our primary focus is on whether false reports of abuse can be created through suggestive questioning. A number of other issues, such as the effects of participation and stress on children's reports, are addressed in individual experiments. In the first set of studies, children were involved to varying degrees in social interactions. In Study 1 we compared the testimony of bystander and participant witnesses. One child was actively engaged in games with an unfamiliar man while the other child merely watched. After a delay, the children were interviewed as if they were in a child abuse investigation. The second study examined children's use of ana-

tomically detailed dolls to recount an event. Children were again involved in a social interaction with an adult. But in contrast to the first study, some of the children were later interviewed with anatomically detailed dolls. We can therefore examine whether these controversial forms of "stimulus support" increase children's suggestibility about acts related to sexual and physical abuse.

The second set of studies concerns children's testimony about a stressful event, one that simulates victimization. The effects of stress and of long delays on children's reports are examined. Finally, we describe a study that explores the effects of intimidation on children's reports of a stressful event.

The questions used in our interviews were often strongly leading. They were at times repeated, so that the children's initial reports were challenged. If a child disclosed abuse in an actual legal or social service interview that included questions such as ours, the interviewer would likely face severe criticism from the accused that the child was led into making a false accusation. Child abuse charges have often been dismissed by judges on this ground. These criticisms are based on the assumption that children are highly suggestible (see, for example, Loftus, 1979). If children are indeed as suggestible as some have claimed, then we should be able in our studies to create false reports of abuse.

### Children's testimony about social interactions

#### *Study 1: Child participant versus bystander witnesses*

The goal of this study was to examine the influence of participation on children's memory. There is reason to believe that participation leads to better memory in children (see Slackman, Hudson, & Fivush, 1986). We were interested in the participation-bystander distinction for two reasons. One is that child victims will be forced to participate in abusive events, whereas other children may not be victimized themselves but may be in a position to watch. The second is that most former research on children's testimony has focused almost exclusively on child-bystander witnesses. To the extent that participation leads to better memory, former studies may have underestimated children's abilities.

In our experiment, children experienced a neutral event. A neutral event was chosen because it is often argued in child abuse cases that nothing abusive happened to the child but that a false report of abuse was created through interviewer questioning. The use of a neutral event permitted us to examine this claim. Three specific questions thus motivated the study: (1) What are the effects on memory of children's participation in, versus observation of, social interactions? (2) How suggestible

are children about actions associated with child abuse? And (3) Are there age differences in children's susceptibility to such suggestions?

The setting of the study was a fairly dilapidated research trailer equipped with a one-way mirror and a few chairs. We selected the trailer as the site of the first session for two reasons. One was that it provided a unique retrieval cue; the children could later be asked what happened when they went into the trailer, which was presumably a more memorable cue than asking them what happened when they went into an ordinary room. The second reason concerned ecological validity; several actual cases of child abuse of which we were aware took place in trailers.

In the study, thirty-six 4- and 7-year-old children, in same-age and same-sex pairs, were escorted to the trailer. The children, randomly selected from subject files maintained by the Department of Psychology at the University of Denver, were strangers to each other. On entering the trailer, the children were introduced to a male confederate who had been waiting for them inside. The trio sat and talked, using puppets to make the children feel at ease. At one point the confederate put on a funny mask for the children's entertainment. After that, the participant-bystander manipulation began. One of the children (the "participant") was randomly selected to engage in further games with the confederate, while the other (the "bystander") was randomly selected to observe. To ensure that the children would believe that the decision was made by chance and not because the confederate favored one child, the children were presented with a box containing two marbles, and each child was asked to select one. The children in the participation condition were told that they had selected the marble that permitted them to play further games, whereas the bystanders were told that they would do an equally important task, that of watching. The participants were engaged in the following activities: playing Simon Says, during which time the confederate and child, in the midst of performing other actions, touched each others' knees; the confederate dressing the child in a clown costume that was placed over the child's clothes; the child being lifted onto a table and having her or his photograph taken in several poses; thumb wrestling; and playing a game invented for the experiment called "Funny Things That Clowns Do," which involved such actions as the child tickling the confederate. The bystander was frequently told to watch carefully and was complimented for paying attention. At the end of the session, each child received a small toy. The session lasted approximately 12 minutes.

The activities used in the study were selected based on actual cases of child abuse. In actual cases, children at times report that: their clothes were removed; their picture was taken while posing naked, presumably for pornographic purposes; the sexual acts were described as tickling; the perpetrator used a mask to scare them; and they were touched in the

context of games. The events in the trailer permitted us to ask about such events because related (but nonabusive) actions occurred. They also permitted us to investigate whether innocent actions would be confused with abusive actions under conditions of suggestive questioning.

From 10 to 12 days after the trip to the trailer, the children were interviewed. Each was first asked three recall questions. Specifically, they were asked to tell the interviewer everything about what happened in the trailer, what the man in the trailer looked like, and what kinds of games were played. They were then asked a series of misleading and specific questions about the appearance of the confederate, the activities played in the trailer, the appearance of the inside of the trailer, and the timing of the event. For example, the children were asked: "He had a beard and a mustache, right?" (In fact, the confederate was clean-shaven.) "Did he take a picture of you?" "What color were the curtains on the windows of the trailer?" (In fact, there were no curtains.) "How long were you in the trailer with the man?"

The questions about the activities in the trailer were of two types: Some concerned actions that might lead to an accusation of child abuse, such as "He took your clothes off, didn't he?" whereas others did not, such as "He took you to another room and took your shoes off, right?" All of the action questions were asked in relation to the child being questioned and also in relation to the other child. Therefore, each child was asked, "Did he kiss you?" and "Did he kiss the other child?" In addition, each child was asked to pick the confederate's picture from a "blank" lineup, in which the confederate was not pictured.

The purpose of the specific questions was to obtain more detailed information from the children compared to that obtained during free recall, since it is well known that children's free recall is sketchy and does not reflect all that they know (Goodman & Reed, 1986; Johnson & Foley, 1984; Nelson, 1986). In addition, we wanted to mimic the kind of questioning often included in legal and social service investigations. Some would consider our specific questions, such as "Did he hit you?" as leading because they included specific information that the children did not spontaneously mention (White & Quinn, 1988). Nevertheless, the misleading questions were clearly more suggestive than the specific questions and placed greater pressure on the children to conform to the implied answer.

The findings support a view of children as having specific strengths and weaknesses in their reports, with one of the strengths being an ability to answer abuse-related questions accurately. The older children recalled more correct information in response to both the initial question ("I need you to tell me exactly what happened"),  $M = 10.78$ , and the second question ("What did the man look like?"),  $M = 1.72$ , than

the younger children did,  $M = 4.61$ , and  $M = 0.78$ ,  $F(1, 34) = 10.30$ ,  $p < .01$ , and  $F(1, 34) = 4.20$ ,  $p < .05$ , respectively. The difference between the two groups in the amount of correct information recalled in response to the third question ("What kinds of games did you play?") was nonsignificant; 7-year-olds,  $M = 3.11$ ; 4-year-olds,  $M = 2.22$ . The children recalled little incorrect or ambiguous information. On average, they provided less than one incorrect or ambiguous item of information, and there were no significant age differences on these two measures. Thus, although older children recalled more information than younger children, they were not more accurate in absolute terms. The younger children recalled very little, but what they did recall was typically correct.

Overall, the older children were more accurate in response to the specific questions,  $M = .69$ , than the younger children were,  $M = .59$ ,  $F(4, 29) = 10.00$ ,  $p < .001$ . Univariate tests revealed, however, that although the older children were more accurate in response to questions about the person -  $M = .89$ , and actions,  $M = .90$  - than the 4-year-olds -  $M = .71$  and  $M = .80$ , respectively - there was very little difference between the age groups in response to questions about the room,  $M = .61$ , and  $M = .66$ , or time,  $M = .24$  and  $M = .30$ , for the 4- and 7-year-olds, respectively. Apparently, both age groups were still unfamiliar with the concept of time as communicated in adult units of measure such as minutes. The room represented the most peripheral information queried; it is likely that both age groups paid little attention to the barren appearance of the inside of the trailer.

The children were also asked misleading questions about the person, actions, room, and time. Responses were scored as correct if the child actively resisted the suggestion by disagreeing with it. It is also possible to consider "don't know" responses as resistance to suggestion, and so analyses were conducted in two ways, once including "don't know" responses and once excluding them. In either case, higher scores indicate greater resistance to suggestion. When "don't know" responses were included, 4-year-olds,  $M = .68$ , were significantly more suggestible than 7-year-olds,  $M = .82$ ,  $F(1, 32) = 5.63$ ,  $p < .05$ , although this difference is only marginally significant when "don't know" responses were excluded. Univariate analyses revealed that the older children,  $M = .94$  and  $M = .95$ , compared to younger children,  $M = .74$  and  $M = .84$ , were better able to resist suggestions about the person,  $F(1, 34) = 11.31$ ,  $p < .01$ , and the actions,  $F(1, 34) = 10.07$ ,  $p < .01$ . The two age groups did not reliably differ in their ability to resist suggestions about the room, 7-year-olds,  $M = .74$ , and 4-year-olds,  $M = .63$ , and about time, 7-year-olds,  $M = .67$ , and 4-year-olds,  $M = .50$ . This pattern matches that for the children's answers to the specific questions, indicating that age differences in suggestibility result at

least in part from younger children having weaker memories than older children for certain types of information.

Surprisingly, there were few overall differences in the amount of information recalled or the proportion of specific or misleading questions answered correctly as a function of participation, although as we shall see shortly, other effects of participation did emerge.

Of particular interest in this study were children's responses to the abuse questions. If questioning about actions associated with abuse leads to false allegations, as is often claimed, we would expect children to use such questions as a basis for generating fictitious reports of abusive events. On the other hand, the children could be especially accurate in response to these questions because of their direct relevance to the child's body and physical well-being. Table 10.1 presents the accuracy of the children's responses to the abuse questions. In general, the children were very accurate in answering these questions. The 7-year-olds answered 93% of them correctly, and the 4-year-olds answered 83% correctly.

Despite the high accuracy rates, it was of interest to examine the types of errors made. Not all errors would be considered legally dangerous. Perhaps the most dangerous error from a legal perspective is to say that something occurred when it actually did not, a "commission" error. Another legally relevant but often less serious error is to leave out something that did occur, an error of "omission." The relevant findings are also included in Table 10.1. Out of 252 opportunities, the 7-year-olds made only one commission error. This error was made by a 7-year-old bystander child who responded affirmatively but without elaboration to the correctly leading question "The person in the trailer didn't touch you, did he?" Thus, commission errors were rare for the 7-year-olds. The more common error was to omit actions that did occur. Even then, virtually all the omission errors made by the 7-year-olds were in response to a specific subset of questions – those concerning touching.

The 4-year-olds made 13 out of a possible 252 commission errors. Thirty-eight percent of the commission errors made by 4-year-olds were to the questions about touching, again reflecting the children's difficulty with these questions. None of the children produced any sexualized answers to these questions, however. The only elaboration was offered by a 4-year-old, who said, in response to the question about whether he had touched the man, "Yes, but only to get the puppet."

Two of the three commission errors to the question about kissing were made by a single child. She answered "yes" to both questions about kissing and then spontaneously added, "I am a boy. I pretend to be a boy every time." The significance of her response remains a mystery to us. The third commission error about kissing was produced by a boy who

Table 10.1. Number of children who provided a correct response, a commission error (CO), an omission error (OM), or a "don't know" (DK) in response to abuse questions

	4-year-olds				7-year-olds			
	Correct	CO	OM	DK	Correct	CO	OM	DK
He took your clothes off, didn't he?	18	0	0	0	18	0	0	0
He took the other girl's (boy's) clothes off, didn't he?	18	0	0	0	18	0	0	0
How many times did he spank you?	17	1	0	0	18	0	0	0
How many times did he spank the other girl (boy)?	17	1	0	0	18	0	0	0
The person in the trailer didn't touch you, did he?	10	1	6	1	13	1	2	2
The person in the trailer didn't touch the other girl (boy), did he?	10	2	4	2	13	0	2	3
Did he kiss you?	17	1	0	0	18	0	0	0
Did he kiss the other girl (boy)?	16	2	0	0	18	0	0	0
Did he put anything in your mouth?	18	0	0	0	18	0	0	0
Did he put anything in the other girl's (boy's) mouth?	17	1	0	0	18	0	0	0
Did he take a picture of you?	13	2	2	1	18	0	0	0
Did he take a picture of the other girl (boy)?	18	0	0	0	17	0	1	0
Did you touch him?	10	2	5	1	5	0	4	0
Did the other girl (boy) touch him?	11	0	5	2	9	0	7	2

also made the only two commission errors about spankings. He made no spontaneous comments in relation to these errors.

Three other commission errors were made by a single child. This boy was the most inaccurate child in the whole study and one of the most inaccurate children we have ever seen after testing more than 400 children in studies of this sort. He confused the visit to the trailer with a visit his class had just taken to an anatomy museum, and thus described blood and bones as having been in the trailer. He claimed that the man in the trailer had used a magic wand to make the other little boy disappear. He also gave some accurate testimony, but in a way that made it seem incredible: He said there had been a turtle in the trailer that flew through the air. In fact, there had been a turtle that flew through the air – it was one

of the puppets that the confederate pretended could fly. The boy never qualified his response by indicating that the turtle was a puppet, which made his statement sound bizarre. The extent of this boy's inaccuracies is exceptional in our experience. It is important to note, however, that his commission errors were generally not the kind that would lead to a false accusation of abuse, especially in the context of his other bizarre statements. His worst error on the abuse questions was to say that the man had put a hot dog in the other boy's mouth. Interviewers in child abuse cases are instructed to determine the children's own words for genitals (e.g., Jones & McQuistin, 1986). Without knowing this little boy's terms for sexual anatomy, it is unclear how his response would be interpreted had he produced it in an actual investigation. It might well have caused concern, however.

Even for the 4-year-olds, omission errors on the abuse questions were more prevalent than commission errors. Twenty-two omission errors were made. As was true for the 7-year-olds, the 4-year-olds made the majority of these errors in response to the questions about touching. Given that so many of the errors were made to these questions, some discussion of them is warranted. These questions were intentionally vague in that they did not indicate what parts of the body might have been touched. Within the context of our questioning, it seemed to be unclear to children what constituted a touch: Was it a touch when the man helped the participant put on the costume? Is a tickle a touch? Is it a touch to tweak someone's nose, as they did in the *Funny Things That Clowns Do* game? Both the 7- and the 4-year-olds tended to add qualifiers to their answers to the touch questions, such as "I don't think so" or "Only to get the clown costume on," indicating that they felt our questions about touching were unclear. Or perhaps they realized our questions concerned inappropriate touching. One child recounted to us that there is good touch and bad touch, but that there had been no bad touch in the trailer.

Because most studies of children's testimony have not included questions that relate to abusive, embarrassing, or personally significant actions, we felt it would be enlightening to compare the children's responses to the abuse questions with their responses to the other action questions. These latter, nonabuse questions would be more comparable to those asked in previous research. If the children were more accurate in answering our abuse questions, it might suggest that former studies underestimated children's ability to provide accurate testimony about abuse-related actions. We conducted separate analyses for the specific and misleading abuse questions. For this purpose, we compared the children's answers to the abuse questions with their answers to the nonabuse questions. When the questions were divided into abuse and

Table 10.2. Mean proportion of correct answers to misleading questions as a function of participation condition and type of question

Type of question	Participation condition	
	Participants	Bystanders
Abuse	.91	.92
Nonabuse	.94	.79

nonabuse specific questions, the younger children provided fewer commission errors in response to the abuse,  $M = .05$ , as opposed to the nonabuse questions,  $M = .09$ ; the same pattern held true for the 7-year-olds (who made very few errors),  $M = .00$  and  $M = .03$ , respectively. Given that 95% of the 4-year-olds' answers to the abuse-specific questions were either correct, "don't know" responses, or omission errors, these findings suggest that children as young as 4 years of age can provide largely accurate testimony in response to specific questions that are particularly relevant in child abuse investigations.

The mean proportion of commission errors to the misleading questions were similarly analyzed. The participants, regardless of age, did not make a single commission error to the abuse or the nonabuse questions. Of the bystanders, only one 7-year-old made a commission error and it was to a nonabuse question. Only one 4-year-old bystander made any commission errors to the abuse questions, resulting in a group mean of .05 for this condition. On the other hand, the 4-year-old bystanders made an average of .13 commission errors to the nonabuse questions.

Interestingly, and in accord with our predictions, participants,  $M = .93$ , were more resistant than bystanders,  $M = .86$ , to suggestions about the actions,  $F(1, 32) = 4.05$ ,  $p = .05$ . Given that the children's roles differed for the activities in the trailer, the action questions should be particularly sensitive to possible differences between the bystanders' and the participants' memories. This effect must be considered, however, in light of an interaction of participation condition with type of question,  $F(1, 32) = 8.33$ ,  $p < .01$  (see Table 10.2). The interaction reflects the fact that the participants' and bystanders' resistance to suggestion did not vary for the abuse questions: Both groups were highly resistant to these suggestions. The participants' and bystanders' resistance to suggestion did differ, however, for the nonabuse questions. The participants maintained a high resistance to suggestion, but the bystanders did not. This finding is important because most studies have examined the suggestibil-

ity of bystander witnesses when asked nonabuse questions, the kind of questions that led to the poorest performance in our study.

Children thus evidenced considerable accuracy in answering specific abuse questions and even in resisting strongly worded suggestions about actions associated with abuse. We also noticed that children's demeanor changed once we began to ask the abuse questions. Many showed signs of embarrassment by giggling or smiling. Others looked surprised. Some covered their eyes with their hands, puckered up their faces in disgust, asked in disbelief if we would repeat the question, or, if their parent was in the room during the questioning, glanced over at her or him in an act of "social referencing" (Klennert, Campos, Sorce, Emde, & Svejda, 1983), with a look of "good grief!" on their faces. We scored the children's nonverbal responses to three of the most blatant abuse questions: "Did he kiss you?" "He took your clothes off, didn't he?" and "Did he hit you?" in comparison to the questions preceding that line of questioning, which mostly concerned the confederate's appearance. The children showed significant increases in smiling and surprise as soon as the abuse questions began.

The children were also asked to identify the "trailer man" in a blank lineup consisting of photographs of five men similar in appearance to the confederate, but not the confederate himself. The 7-year-olds made a greater number of correct nonidentifications,  $M = .62$ , than did the 4-year-olds,  $M = .39$ , although the difference was not reliable. It is disturbing that 38% of the 7-year-olds and 61% of the 4-year-olds made a false identification. In the majority of child abuse cases, however, the perpetrator is known to the child and identification of a stranger is not an issue (Goodman et al., 1988). Research indicates that children's identification of familiar persons is substantially better than their identification of strangers (Diamond & Carey, 1977), as is also true for adults (Bahrack, Bahrack, & Wittlinger, 1975).

In conclusion, the data indicate that even very young children can give accurate, unsuggested testimony about actions that are significant to them. If it were true that children within the age range we tested are highly suggestible in relation to questions about abuse, we might have seen many children make claims of abuse in response to our questioning. We did not.

In contrast, the children evidenced a number of weaknesses in their testimony. They made many false identifications on the blank photo-identification task. Their performance in answering questions about the timing of the event was poor. Thus, children show specific strengths and weaknesses in their testimony. At least by the age of 4 years, one of their strengths was in correctly answering questions that relate to physical safety and sexuality.

Nevertheless, a few 4-year-olds provided answers that might lead to the suspicion of child abuse (e.g., an affirmative response to a question about being hit or kissed). Such responses were given by so few children that it was difficult to identify factors predicting their performance.

#### *Study 2: Children's use of anatomically detailed dolls*

Although significant age differences were not evident in the children's ability to answer abuse questions, there was a hint that such differences might exist if even younger children were tested. Perhaps the few 4-year-olds who produced commission errors to the abuse questions were developmentally delayed compared to the other 4-year-olds. We therefore conducted a study in which 3-year-olds were included. Previous research indicates that 3-year-olds' performance on eyewitness testimony tasks is inferior to that of older children and adults in almost every way (e.g., Ceci et al., 1987; Goodman & Reed, 1986). These studies have not included questions directly related to children's physical safety or to sexually abusive acts, however. Therefore, it was still possible that even 3-year-olds would be resistant to the abuse suggestions. Nevertheless, we suspected that in addition to 3-year-olds' having general cognitive and memorial deficits, they might not fully understand the implications of many of our abuse questions. If, for example, they did not fully understand that some of the questions concerned acts that had sexual or embarrassing connotations (e.g., kissing, the removal of one's clothes), they might be more suggestible in regard to these questions than older children. After all, adults innocently kiss children and young children's clothes are taken off by some people, such as relatives and baby-sitters, without embarrassment or distress necessarily occurring.

Another interest was to examine the effects of stimulus support on children's testimony. Stimulus support has been shown to enhance young children's ability to report events (Price & Goodman, 1985), although it is not always successful in doing so (see Perlmutter, 1984, for a review). In the present case, we were interested in a very special type of stimulus support, namely, anatomically detailed dolls. These dolls are often used in investigations of child sexual abuse, on the assumption that children can demonstrate sexual acts that might be difficult or embarrassing for them to express verbally. The dolls have sexual characteristics such as breasts and penises and openings for orifices such as the mouth and vagina. Although the dolls were designed to provide stimulus support for accurate reporting, concern has been raised that the dolls may lead to false reports of abuse. Critics have argued that the dolls' sexual characteristics might falsely suggest abuse to children, elicit sexual fantasies, or lead interviewers to misinterpret children's play with and curiosity about

the dolls' "privates" as signs of abuse. These effects, it is argued, would be especially likely to occur under conditions of suggestive questioning (e.g., Gabriel, 1985).

In our study, we investigated 3- and 5-year-olds' use of anatomically detailed dolls to report an event. Because our focus was again on whether false reports of abuse could be easily elicited from children, participants were engaged in a neutral, real-life experience rather than a stressful one. Specifically, 80 children (forty 3-year-olds and forty 5-year-olds) individually engaged in games, such as playing with a Hula-Hoop and pretending to have a tea party, with a male confederate. One week later the children were interviewed. The interview consisted of first having the children name body parts of dolls. They then recalled their interactions with our confederate. In the two doll conditions, the children were encouraged to show as well as tell what happened. Several other toy props such as two chairs and a distractor bed were available to the children. After they recalled/reenacted what happened, children in all groups answered a set of specific and misleading questions about the confederate's appearance and actions. A subset of the questions related to abuse; for example, we asked, "Did he touch your private parts?" "Did he keep his clothes on?" "Did he ask you to keep a secret about your private parts?" and "How many times did he spank you?" Within each age group, one-fourth of the children were interviewed with anatomically detailed dolls, one-fourth with regular dolls, one-fourth with dolls out of touch but in view, and one-fourth with no dolls in the room. The regular dolls were identical to the anatomically detailed ones except that they did not possess the sexual characteristics associated with anatomically detailed dolls. The four conditions permitted us to determine whether or not the use of anatomically detailed dolls leads to false reports of abuse and whether dolls, anatomically detailed or not, help or hinder children in recounting an event.

When the children's free recall/reenactment was analyzed so that both correct verbal responses and gestures were scored, the 5-year-olds communicated more correct information in both doll conditions than in the no-doll condition (see Table 10.3). The 3-year-olds' reports were not significantly affected by the presence or absence of dolls, although their mean performance was highest in the regular doll condition. When the children's responses were scored in terms of a checklist of the games played, the 5-year-olds recalled or reenacted more correct information than the 3-year-olds. On both measures, the age and doll groups did not differ in the amount of incorrect information communicated, although 3-year-olds,  $M = .13$ , verbally recalled a significantly greater proportion of incorrect information than 5-year-olds,  $M = .04$ .

On the specific questions overall, doll condition did not significantly

Table 10.3. Mean number of correct items of information communicated by 3- and 5-year-olds as a function of doll condition (Study 2)

Doll condition	Age	
	3-year-olds	5-year-olds
No dolls	7.40	9.70
Dolls in view	5.90	10.80
Regular dolls	10.50	20.50
Anatomically detailed dolls	5.30	16.80

Table 10.4. Mean proportion of correct answers to specific questions as a function of age group and doll condition (Study 2)

Doll condition	Age	
	3-year-olds	5-year-olds
No dolls	.67	.74
Dolls in view	.62	.73
Regular dolls	.58	.77
Anatomically detailed dolls	.52	.77

affect the children's accuracy, but age did (see Table 10.4). On the misleading questions overall, the 5-year-olds were again more accurate than the 3-year-olds, but the doll condition did not influence either age group's performance.

Again, we were particularly interested in the children's responses to abuse questions (see Table 10.5). The 3- and 5-year-olds differed reliably in the proportion of commission errors made to specific as well as misleading questions related to abuse, with 3-year-olds committing significantly more commission errors. Moreover, the younger 3-year-olds,  $M = .36$ , made significantly more commission errors than the older 3-year-olds,  $M = .14$ ,  $F(1, 57) = 12.50$ ,  $p < .001$ , on the misleading questions. Whether or not the children were interviewed with anatomically detailed dolls, regular dolls, dolls in view, or no dolls did not influence their responses to the specific or misleading abuse questions, however.<sup>2</sup>

Most of the commission errors made by the children would not be likely to lead to a prosecution of child abuse, with one prominent exception. Several 3-year-olds and a few 5-year-olds answered affirmatively to the questions about their private parts ("Did he touch your private

Table 10.5. *Proportion correct answers and commission errors to the abuse questions as a function of age and doll condition (Study 2)*

	Age	
	3-year-olds	5-year-olds
<i>No dolls</i>		
Specific questions		
Correct	.75	.79
Commission	.10	.02
Misleading questions		
Correct	.80	1.00
Commission	.20	.00
<i>Dolls in view</i>		
Specific questions		
Correct	.74	.74
Commission	.08	.06
Misleading questions		
Correct	.77	.93
Commission	.23	.07
<i>Regular dolls</i>		
Specific Questions		
Correct	.62	.78
Commission	.18	.02
Misleading questions		
Correct	.68	1.00
Commission	.32	.00
<i>Anatomically detailed dolls</i>		
Specific questions		
Correct	.62	.73
Commission	.19	.09
Misleading questions		
Correct	.73	.97
Commission	.27	.03

parts?" and "Did he ask you to keep a secret about your private parts?"). We therefore began asking the children where their private parts were. The children pointed to their ears, to their arms, and to other not so private places. Thus, we were using a term that the children did not understand. It should also be noted that when the children made commission errors to the abuse questions, these errors consisted almost entirely of nods of the head without any elaboration or detail.

In summary, age differences in answering the abuse questions did

occur when children as young as 3 years were interviewed. Their greater suggestibility may result from deficits in the ability to encode or retain the original event (Brainerd & Reyna, 1988), from a lack of understanding of the implications of some of our questions, or from social factors, such as a desire to please the interviewer or the inability to resist intimidation. We examine this third possibility in connection with a study reported in a later section. In any case, the use of anatomically detailed dolls in and of itself did not increase the chances of obtaining a false report of abuse. Moreover, anatomically detailed and regular dolls helped the 5-year-olds recount what happened.

### Children's testimony concerning stressful events

#### *Study 3: The effects of stress and long delays*

As mentioned earlier, it is important for the sake of ecological validity to understand children's memory and suggestibility about actions associated with abuse even in the context of neutral events. This is so because such research is responsive to claims that children can be easily led to make false reports even when nothing "bad" happened. It is also important to study children's testimony about more stressful events, ones that simulate acts of violence against a child. Such studies can provide valuable information on the effects of stress on children's reports.

It is commonly accepted in the eyewitness testimony literature that stress inhibits accuracy. This conclusion is based on the Yerkes-Dodson law and on research with adults in which various stress manipulations have been attempted, such as the viewing of violent films (e.g., Loftus & Burns, 1978). These studies have concentrated on bystander witnesses' memory for peripheral details or confederates' faces. The few studies to investigate victimization focused on the loss of possessions such as a watch or calculator (e.g., Hosch & Cooper, 1982; Leippe, Wells, & Ostrom, 1978). They did not investigate memory as a function of the stress produced by attacks on a person's body. Such studies are difficult to conduct because of the obvious ethical considerations.

Recently, researchers have avoided this problem by studying memory for naturally occurring stressful situations. Peters (1987), for example, examined children's memory of a visit to the dentist's office, with a focus on children's subsequent ability to recognize the dentist's face from target-present and target-absent photo lineups. On most of his measures, there was no significant relation between stress and anxiety. The vast majority of the children (95%) went to the dentist for checkups and teeth cleaning, however. Thus, the children's anxiety may not have reached high levels.

These findings notwithstanding, there is reason to believe that high levels of stress will have a beneficial effect on memory. As discussed earlier, physiological studies show that high levels of stress are associated with better memory (Gold, 1987). Psychological studies reveal that events of high emotionality and personal significance are retained better than events of low emotionality and little personal significance (Keenan & Baillet, 1980; Linton, 1982).

Over the last few years, we investigated children's memory for naturally occurring stressful events. Specifically, we conducted a series of studies on children's reactions to stressful medical procedures (Goodman, Aman, & Hirschman, 1987; Goodman, Hepps, & Reed, 1986; Goodman, Hirschman, & Rudy, 1987), such as venipuncture and inoculations, which children receive as part of their standard health care. Several of these studies have been reported in detail elsewhere (see Goodman et al., 1987, for a review). Here, we present new data concerning the effects of stress and long delays on children's reports. In regard to the effects of stress on memory, we predicted that more highly stressed children would evidence better memory than less stressed children. In regard to the effect of delay on children's reports, we predicted that although the completeness and accuracy of children's memory would decrease over time, they would remain resistant to suggestion about actions associated with abuse.

We selected medical procedures, and inoculations in particular, because they are known to be stressful for many children. Children associate syringes with their least favorite part of going to the doctor's office (Steward & Steward, 1981), as many adults undoubtedly do. As Steward and Steward report, "medical procedures [are] embedded in an emotional context that is heavily weighted with negative feelings (fear, pain, abandonment, punishment, loss of control) . . . there is often extreme agitation and lack of compliance during a procedure" (p. 79). Thus, for our purposes, studying children's memory for inoculation experiences seemed close to ideal.

In one of our studies, forty-eight 3- to 6-year-old healthy children received inoculations at a medical clinic. Most of the children also received an oral polio vaccine. We did not impose the inoculations on the children or alter the clinic's practices in any way. The ages included reflected practical considerations. Children within this age range are still receiving the standardly prescribed sequence of inoculations and are required to receive certain vaccinations for entry into school. At it happens, children within this age range are particularly frightened by medical procedures. Melamud (1976) found that children under the age of 7 years are more emotional in response to all medical procedures than are older children.

Table 10.6. Children's eyewitness testimony performance as a function of stress level (Study 3)

Measure	Stress level			
	3	4	5	6
Number correct recall	3.46	3.24	3.25	5.20
Number incorrect recall	0.00	0.09	0.13	0.00
Proportion specific questions answered correctly	0.70	0.69	0.66	0.70
Proportion misleading questions answered correctly	0.56	0.63	0.44	0.82
Proportion correct identifications	0.62	0.33	0.25	0.40

Note: None of the children received a stress rating of 1 or 2.

We unobtrusively videotaped the children as they received their shots, and coded the children's reactions in terms of the stress the children evidenced. The children's reactions varied widely. Most looked frightened, but some were quite stoic, relatively unfazed, and said, "It didn't hurt." Others, however, became nearly hysterical. These children had to be physically restrained, often by two or three people. They cried, screamed, yelled for help, tried to run out of the room, and sobbed afterward while complaining that it hurt. In sum, they reacted as if they were being attacked. We know of no other scientific studies in which the stress levels were as high as they were for our most stressed children, perhaps the only exception being two studies involving adults reported by Baddeley (1972). Depending upon one's own experiences, readers can probably best envision the stress these children experienced by thinking back to their own childhood inoculations, to the times their own children received vaccines, or possibly to the experience of sitting in pediatric clinic waiting rooms and hearing other children scream as they receive their shots.

The stress ratings were coded on a scale ranging from 1 (*very happy* or *very relaxed*) to 6 (*very unhappy* or *very frightened*). After either 3 to 4 or 7 to 9 days, the children were interviewed about what happened. The children's performance as a function of their stress level is reported in Table 10.6.

Our general finding was that stress had a facilitative effect on the children's reports. Specifically, planned comparisons revealed that children at the highest stress levels recalled more information than the other children and were less suggestible. Interestingly, the children had to reach a level of great distress before beneficial effects on memory were

evidenced. These effects were maintained even when the amount of time the child spent in the inoculation room was statistically controlled.

Because we could not randomly assign children to different stress groups, there was a possibility that the more stressed children differed in ways correlated with stress that could affect their memories. It might be argued, for instance, that the more intelligent children could better anticipate that the shot might hurt or that they could better remember the last time they received a shot. In an attempt to examine this possibility, a digit-span test was given to the children at the beginning of their interviews. Digit span correlates with IQ and serves as a common test of children's memory. The children's digit-span scores did not reliably differ as a function of stress level.

The highly stressed children's recall was more detailed than the less stressed children's. Here are some examples of their statements:

"I got a shot. I got a band aid on it. I got some stuff in my mouth. Gerald [his brother] was first. He spit it out on the floor. I didn't spit it out. It was gross. Then I went home and played and ride [sic] on my bike and went to my friends" (5-year-old).<sup>3</sup>

"They gave me my shots. My dad had to talk. They gave me two shots on the arms. Then I gave my dad's friend a stomp on the foot and gave my dad a kick in the shin. I don't want anyone holding and touching me because I get mean and that's all that happened. And then we left" (5-year-old).

These children's reports were completely accurate. Not a single error in free recall was made by the highly stressed children. It would not have been surprising if increased quantity of report had been accompanied by an increase in error, with highly stressed children saying more but providing no more accurate statements proportionally. Nevertheless, this did not happen; there was no effect of stress in terms of a greater number of inaccurate statements recalled.

The less-stressed children provided some very skeletal but still very accurate reports. For example:

"They gave me a shot" (6 1/2-year-old).

"I got a shot on this leg" (points to his leg). "It hurt bad" (5-year-old).

It is noteworthy that the effects of stress on the children's ability to identify accurately the nurse who gave them the shot appeared to be in the direction opposite to the effects of stress on recall and suggestibility. Although this effect did not reach statistical significance, it nevertheless points to the possibility that our findings may be consistent with those of other studies showing adverse effects of stress on photo identification (see Deffenbacher, 1983, for a review).

When children suffer abuse, the experience may remain a secret for months or even years. When children become involved in child abuse

Table 10.7. Children's eyewitness testimony performance one year after receiving their inoculations (Study 3)

Measure	Time of test		
	Time 1 (3 to 9 days)	Time 2 (One year)	
Number correct recall	3.50	2.32	$p < .05$
Number incorrect recall	.04	.27	n.s.
Proportion specific questions answered correctly overall	.71	.67	n.s.
Action questions	.87	.73	$p < .05$
Person questions	.57	.66	n.s.
Room questions	.70	.61	n.s.
Central questions	.82	.70	$p < .05$
Peripheral questions	.52	.58	n.s.
Proportion misleading questions answered correctly overall	.64	.51	$p < .05$
Action questions	.75	.59	$p < .05$
Person questions	.62	.51	n.s.
Room questions	.54	.44	n.s.
Central questions	.68	.58	n.s.
Peripheral questions	.57	.47	n.s.
Identifications			
Correct	.50	.14	$p < .01$
False	.41	.32	n.s.

investigations, they are interviewed by authorities soon after disclosure, but again months if not years may elapse before a trial commences. Because such long delays are often involved in actual cases, we waited a year and reinterviewed as many children as we could find who had participated in the study just described. The delay we chose corresponds well to the delays experienced by child victim/witnesses who testify in court (Goodman et al., 1988). After the 1-year delay, we were able to find and reinterview 22 of the original 48 children. The interview was the same as before. We compared the accuracy of the 22 children's earlier reports with their reports after the long delay.

The findings are shown in Table 10.7. The children evidenced significant decreases on several memory measures: the amount of correct information recalled; the number of specific questions answered correctly about actions and about central information (which mostly consisted of action questions); and the ability to identify accurately the nurse in the photo identification task. The children also showed significant increases in their suggestibility generally and in their suggestibility about the ac-

Table 10.8. *Children's responses to the abuse questions initially and after a one year delay (Study 3) (in percentages)*

Question	Time of test					
	Time 1 (3 to 9 days) n = 48			Time 2 (one year) n = 22		
	Correct	Omission	Commission	Correct	Omission	Commission
Did she hit you?	100	0	0	100	0	0
Did she kiss you?	96	0	4	95	0	0
Did she put anything in your mouth?	81	19	0	68	22	0
Did she touch you any place other than your arm?	50	50	0	50	22	14

Note: All percentages add to 100 when "don't know" responses are included.

tions that took place. The children did not, however, evidence a significant increase in the amount of incorrect information recalled, which still averaged less than one item of incorrect information per child. And they did not show significant declines in memory on several of the other measures. Nor did they make a significantly larger number of false identifications. (There was an increase in the number of "don't know" responses.) Unfortunately, too few of the high-stress children were reinterviewed to track the course of their initially more vivid memories.

We were particularly interested in how the children's responses to our "abuse" questions would fare. Only four such questions were included in the study, but it is instructive to examine the children's answers to them as a function of time (see Table 10.8). We included in this comparison the responses of all 48 children at the initial testing and of the 22 children at the 1-year testing. The pattern of the children's responses to the questions "Did she hit you?" and "Did she kiss you?" remained virtually unchanged. Even after a year, all of the children knew they had not been hit and all of them knew they had not been kissed. In response to the question "Did she put anything in your mouth?" there was a slight increase in omission errors and in "don't know" responses. When the children were asked, "Did she touch you anywhere other than your arm?" there was an increase in both "don't know" responses and in commission errors. When we examined the commission errors, none of them involved sexual touching. Rather, the children who made this error claimed, for example, that

they had been touched on the wrist, the other arm, or the leg, when the videotape showed they had not been. Thus, despite the long delay, repeated questioning, and the leading nature of our interview, the children did not make false reports of abuse. It could be argued that the lack of false reports resulted in part because children do not expect nurses to abuse them. We agree that such expectations might have made the children less likely to say yes to the questions "Did she hit you?" and "Did she kiss you?" It should be noted, however, that children also do not expect teachers, church officials, Boy Scout leaders, and baby-sitters to abuse them, yet such people have been accused fairly often in child abuse cases. Thus, our findings are still relevant to such cases.

#### *Study 4: Improving young children's reports*

So far we have seen that children by the age of 4 years are, on average, quite resistant to suggestions about abuse; that anatomically detailed dolls do not in and of themselves lead to false reports; that high levels of stress actually strengthen rather than detract from memory; and that even after a year's time, children still know whether they have been abused or not. But we have also seen that 3-year-olds and some 4-year-olds make more commission errors on abuse questions than other children do.

We were intrigued by the young children's suggestibility and by what might cause it. Two factors indicated by former research are the interviewer's status and degree of intimidation. In eyewitness testimony studies, it has been found that 3-year-olds, compared to older children and adults, tend to look less at the confederate (Goodman & Reed, 1986), indicating that the younger children are more shy and easily intimidated. The status of an interviewer, whether the interviewer is an adult or another child, for example, can also influence children's suggestibility (Ceci et al., 1987; but see Brigham, Van Verst, & Bothwell, 1986). We therefore sought a way to lessen the intimidation produced by an adult interviewer. "Being nice" came to mind.

Clinicians and developmental psychologists typically begin their interviews with children by building rapport. Substantial encouragement of children and reinforcement of their performance are often required to keep them interested and involved in interviews and experiments. Nevertheless, in actual investigations of child abuse, interviewers have been severely criticized for these behaviors. Critics claim, for example, that the responsiveness and encouragement children receive during interviews might lead to false reports because the interviewer would reinforce inaccuracies. We were therefore interested in the effects of such "reinforcements" on children's reports.

In our study, 72 children, ranging in age from 3 to 7 years, were interviewed about their inoculations after either 2 or 4 weeks. The children were divided into two age groups, 3- to 4-year-olds and 5- to 7-year-olds. Half of the children in each age group were interviewed in a "reinforcement" condition. These children were given considerable support and encouragement during the interview. At several points, the children were complimented for their performance, regardless of their accuracy. The interviewer smiled frequently, and the children received cookies and juice. In the no-reinforcement condition, the interviewer was more distant. For example, the interviewer was permitted to say "Okay" and "All right," but not to comment positively on the children's performance. The interviewer smiled less and the children did not receive cookies or juice. Regardless of reinforcement condition, the children were asked a set of specific and misleading questions, including a subset of abuse questions. We restrict our discussion here to the abuse questions, most of which were misleading; for example, "She touched your bottom, didn't she?" "How many times did she kiss you?"

The results of the study were quite informative. The reinforcement condition did not affect the older children's error rate to the abuse questions. They made an equal proportion of commission errors with reinforcement,  $M = .09$ , or without it,  $M = .08$ . In contrast, reinforcement had a significant effect on the younger children's answers. The 3- to 4-year-olds made twice as many commission errors to the abuse questions in the no-reinforcement,  $M = .23$ , as in the reinforcement,  $M = .10$ , condition. In fact, in the reinforcement condition, the younger and older children's performances were nearly identical; the use of reinforcement brought the younger children's performance up. The interaction of age group and reinforcement was significant,  $F(1, 62) = 4.20, p < .05$ . When encouraged and supported, the younger children typically knew that they had not been hit or kissed and that their clothes had not been removed or their bottoms touched. Thus these children were best able to resist adult suggestions about such actions when they were made comfortable enough to do so.

### Conclusion

Freud believed that children are easily led to fantasize sexually and even physically abusive events (Freud, 1905/1963; Freud, 1919/1963). Many contemporary psychologists and psychiatrists have also claimed that children are so suggestible that they can easily be led into false reports of abuse. It may be possible to obtain false reports if one relies on nods of the head by 3-year-olds, but we have so far never seen a 3-year-old provide any sexualized detail. By the age of 4 years, most children we

have tested are surprisingly resistant to abuse suggestions. Thus, producing false reports of abuse in children has not been easy. Why?

The answer may lie in the fact that child abuse involves actions directed against a child's body, actions that violate their concerns. These acts also violate children's expectations, which may additionally bolster their memory. But there is undoubtedly more to it than that. The violation of trivial expectations would probably not be very memorable. The violation of one's body is.

According to Piagetian theory, children's earliest organizations involve their bodies. Development seems to flow from self-organization outward. For example, infants' primary circular reactions tend to involve their bodies and children's egocentrism consists of relating information to the self. A focus on the self may be one of nature's ways of promoting self-protection.

Much previous research, starting at the turn of the century and continuing into the 1980s, indicates that children are highly suggestible (e.g., Berenda, 1950; Ceci et al., 1987; Dale et al., 1978; Marple, 1933; Varendonck, 1911; Whipple, 1912; see also Loftus, 1979). They clearly are more suggestible than adults about some kinds of information, particularly information that is not remembered as well (Goodman, Aman, & Hirschman, 1987; Goodman & Reed, 1986). But the study of children's concerns demonstrates that resisting suggestion, like most cognitive abilities, shows considerable unevenness or decalage (Fischer, 1980). It is influenced by age but also by how memorable certain information is (Goodman & Reed, 1986) and, moreover, by the social context under which children are tested. Young children are easily intimidated and cannot necessarily evidence their skills in all contexts.

Unevenness in children's abilities across tasks and contexts has important implications for ecological validity. We may well under- or overestimate children's ability to provide accurate testimony when we test children's memory and suggestibility in artificial situations and for trivial stimuli. The evidence presented in this chapter, supported by work in other laboratories (e.g., Ochsner & Zaragoza, 1988), indicates that the tendency has been toward underestimation. The field of memory development evolved from a study of children's memory for artificial stimuli in decontextualized laboratory tasks to one of greater ecological validity. The study of children's testimony requires a similar transition.

This is not to say that any one study can simulate everything that children experience in legal settings. Because every case is different this would be an impossible task. Rather, it is to say that our studies need to match as closely as possible important aspects of children's experiences, and that in our conclusions we need to guard against overgeneralization.

In an attempt to follow our own advice, we would like to mention

several caveats regarding our own findings. Our studies mainly address children's testimony about one-time events experienced with unfamiliar people. We did not test children's memory about repeated events or the actions of familiar people. Moreover, we did not conduct as many repeated interviews as children often experience in actual cases. None of the children had been taken out of their homes or had reason to fear that they might be. We did not imply to the children that our confederates were criminals, and we did not pose as legal authorities. Moreover, our children did not undergo direct or cross-examination as might take place in a courtroom. And the children had no reason to lie to us as they might if they were trying to protect a loved one. Thus, even though we have attempted to conduct more ecologically valid studies in relation to child abuse cases than have heretofore been attempted, the generality of our findings is still open to question.

The ecological validity of studies of children's testimony affects not only our understanding of children's development but also the lives of those who partake, as victims or defendants, in actual cases. Currently, there is such great concern with children's testimony that findings in this area are almost immediately applied to actual cases, even if researchers do not mean them to be, or even if researchers propose to be investigating only theoretical issues. These studies are nevertheless used to gauge the accuracy of actual child witnesses. Because they influence whether a victimized child receives protection, on the one hand, or an innocent person is falsely convicted, on the other, it is not enough to worry solely about the internal validity of our studies. External validity is also of paramount importance.

Our research indicates that children's concerns, such as a desire for personal safety, influence the quality of their testimony. Children are more resistant to suggestion about personally significant actions than one would predict based on previous research. We believe that children's concerns also effect memory generally. In fact, it is unlikely that a complete theory of memory development can ignore this importance influence. The study of children's testimony about abusive actions provides one window into the corner of children's minds that deals with their concerns. Through this window we may gain important insights both for psychology and for justice.

## NOTES

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- 1 In considering whether children remember what did not as well as what did happen, we were reminded of Piaget's often cited example of how he "remembered" being kidnapped as an infant only to find out years later that the kidnapping never occurred. It is possible that children will be more susceptible to suggestion when the suggestions relate to the period of life associated with infantile amnesia. In any case, it should also be kept in mind that Piaget's example is an anecdote and is not scientifically based.
- 2 For the present report of this study, children's responses to the abuse questions were scored as commission errors if they indicated actions consistent with abuse. For example, in response to the question "Show me where he touched you?" the child had to indicate genital touching or the like for a commission error to be scored.
- 3 The children's recall was scored based on the videotape made at the clinic. We did not score the children's statements about what they did after they left the clinic.

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## 11

## The suggestibility of preschoolers' recollections: Historical perspectives on current problems

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In the year 1692 a strange series of events took place in and around Salem Village and Salem Farms, Massachusetts. During the period between June 10 and September 19 at least 20 residents of Salem were accused, tried, and convicted of being witches and wizards by the Salem magistrates. Sentencing was swift; all 20 were hung, burned, or pressed to death. An additional 10 persons were convicted but not executed. In the villages surrounding Salem, from Andover to Wells, the historical record shows that more than 100 others were accused of witchcraft. Although no record is available to discern how many of these were convicted and executed, surely some, and perhaps many, were.

The important aspect of this epoch in American history for us today is the crucial role played by children in the Salem witch trials. The charges of practicing witchcraft were made primarily by children, the so-called circle girls. Not only were children the accusers, they were often the "evidence," purporting to have been physically afflicted by the defendants. For example, the vomiting of bent nails and pins during the trials were alleged to have been the work of the defendants, as was going into apoplectic fits and total paralysis at the sight of them. Finally, children often were the principal witnesses for the state: Little Ann Putnam alone testified in 19 cases and her friends Elizabeth Hubbard testified in 20, Mary Walcott in 16, and Mary Warren in 12. Between them, they provided the key eyewitness testimony that led to the conviction of all but one of those accused in Salem.

In this chapter we delve into the sociocultural context of the Salem trials for clues that could help us to better understand contemporary cases in which children have given eyewitness testimony that, upon cross-examination, has turned out to be as fabulous and contrived as that provided by the children of Salem. Following this expedition backward in time, we shall review some recent experimental findings of ours and others that indicate some of the factors that influence children's susceptibility to erroneous postevent suggestions. Finally, we conclude by mentioning the important caveats regarding ecological validity needed be-

