



# THE ADVISOR

AMERICAN PROFESSIONAL SOCIETY ON THE ABUSE OF CHILDREN

## SPECIAL ISSUE Child and Adult Memory

—by John E.B. Myers

The ability to protect children from abuse and neglect, and to help adult survivors cope successfully with the sequelae of childhood abuse, often depend upon victims' ability to remember what happened to them. This issue of *The Advisor* is devoted to memory. The article by Nancy Perry describes memory development in children, and discusses the impact on memory of stress, intimidation, inducements to keep secrets, and suggestive questions. Kathleen Faller's article discusses whether therapy can affect children's memory. Elizabeth Loftus' contribution is an excerpt from her recent book titled *Witness for the Defense*. The excerpt provides insight into the fallibility of memory, and is enlightening regarding the perspective shared by some psychologists and many defense attorneys. The article by Karen Saywitz describes the technique of cognitive interviewing. Dr. Saywitz and her colleagues are conducting research on cognitive interviewing with children. The research holds exciting promise for helping children remember. Margaret Steward and her research team are completing a three year study of children's memory, and in her article, Dr. Steward describes some of the fascinating findings of her research.

Memory is seldom perfect, whether in children or adults. Yet, modern research discloses that children have better memories than we think (Fivush, in press). Indeed, young children often astonish us with

their memories. When children are interviewed skillfully and patiently, they can remember what they know. The key to unlocking children's secrets lies not in improving children's memory, but in improving the skill of adults who talk to children.

Turning to adult memory, we focus on the phenomenon of delayed memory for childhood abuse. How common is a period of amnesia for childhood abuse? How reliable are delayed memories of abuse? How do we most constructively respond to such disclosures? How do we proceed to find trustworthy answers to these pressing questions? John Briere reports on research conducted with a clinical sample of 450 adults, and provides a conceptual framework for considering the phenomenon of adult amnesia. Linda Williams offers preliminary findings from research with a longitudinal sample of 100 women known to have been abused as children. Finally, Roland Summit offers his insights about the current backlash surge in response to the phenomenon of delayed memory, and suggests that the proper venues for approaching the terribly difficult issues raised by delayed memory are the researchers' and therapists' quarters, not the courtroom.

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John E.B. Myers, JD, is Professor at McGeorge School of Law, University of the Pacific, and Executive Editor of *The Advisor*.

## OVERVIEW How Children Remember and Why They Forget

—by Nancy W. Perry

"My memory is the thing I forget with."

(a child's definition, cited in Grossberg, 1985, p. 60)

Children are a fascinating blend of abilities and shortcomings. Children's skill in the use of memory is no exception. In some respects, the capacity for remembering is less well developed among children than adults (Fundidis, 1989). In other respects, however, children's memory abilities are most impressive (Brainerd & Ornstein, 1991; Chi & Koeske, 1983). This article outlines the development of memory in childhood, describes children's use of memory strategies, and discusses the impact on children's memory of such factors as stress, intimidation, inducements to keep secrets, and suggestion.

### Memory Processes

For children and adults alike, memory involves three phases: acquisition, storage, and retrieval of information.

**Acquisition** The first steps in remembering an event are to perceive it and to pay attention to it. Even infants can perceive and attend (see, e.g., Fantz, 1965, 1966). If children pay attention at the time of an event, they are quite capable of accurately perceiving what transpires. This is particularly true with relatively straightforward, factual occurrences. However, children are likely to have difficulty conceptualizing complex events, identifying relationships, recognizing feelings, and attributing intentions (Perry & Teply, 1984-1985). In each of these circumstances, the accuracy of children's reporting depends upon their ability to order and interpret perceptions, a gradually acquired skill that does not reach the standard of adult reliability until about the age of 12 (Collins, Wellman, Keniston, & Westby, 1978; Flapan, 1968).

**Storage in Memory** Research on memory duration suggests that the ability to store information does not change greatly with age. Once a piece of informa-

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tion is successfully stored in memory, a preschooler probably will remember it as well as an adult (Werner & Perlmutter, 1979).

**Retrieval** In addition to the perception, encoding, and storage of events, memory involves the recalling and reporting of information. Children may be able to perceive and encode an event accurately, and to store it in memory, but they may have difficulty effectively communicating the existence or content of the memory. It may be difficult for younger children to translate memories into verbal descriptions.

### Types of Memory

Children recall information in three ways: recognition, reconstruction, or recall.

**Recognition Memory** Recognition is the simplest form of remembering because it requires only that the child realize that an object or person was experienced previously. Recognition memory is within the capacity of infants (See Piaget & Inhelder, 1973). For example, within the first two weeks of life, newborns can recognize the smell of their own mother's breast milk, and prefer it to the smell of milk provided by other lactating mothers (Cernoch & Porter, 1985).

Recognition memory improves rapidly as children mature. For example, one study found that two-year-olds were correct in their recognition judgments on 81 percent of the objects presented, and that four-year-olds were correct 92 percent of the time (Myers & Perlmutter, 1978).

Some studies indicate that recognition memory may be better during the early elementary school years than at other times. For example, two studies report the curious finding that face recognition memory improves steadily from six to ten years, declines from eleven to twelve years, and then improves from age thirteen on (Carey, 1978; Goodman & Reed, 1986).

Children under 10 have difficulty identifying faces that are observed briefly, are disguised, or are unfamiliar. Recognition memory is of relatively little help in such cases. Skill in making identifications increases with age (see Ceci, Togliola, & Ross, 1987; Chance & Goldstein, 1984), but lacks consistency even in adulthood.

By the time children enter school, their recognition memory is very good, at least for simple stimuli. Indeed, five-year-olds are as proficient as adults in recognizing pictures of commonplace objects (Nelson & Kosslyn, 1976). Children generally do not do so well with more complex stimuli, which require skilled scanning and registration of information (Perlmutter, 1984).

**Reconstruction Memory** Reconstruction is a specialized form of recognition (Piaget & Inhelder, 1973). Reconstruction involves reinstating the context in which the original event occurred. Revisiting

the scene of a crime is an example. Goodman and Hahn (1987) note:

The extent to which the retrieval environment matches the encoding situation is an important determinant of a person's ability to provide accurate and complete eyewitness testimony. The more cues shared at acquisition and retrieval, the better retrieval will be (p. 271).

The interview procedure called "context reinstatement" capitalizes on reconstructive memory (Fisher, Amador, & Geiselman, 1989; Fisher, Geiselman, Raymond, Jurkevich, & Warhaftig, 1987; Geiselman, Fisher, Cohen, Holland, & Surtes, 1986; Geiselman, Fisher, Firstenberg, Hutton, Sullivan, Avetissian & Prosk, 1984; Geiselman, Fisher, MacKinnon, & Holland, 1985). With context reinstatement, a previously experienced scene is mentally recreated. For example, the interviewer may ask the person to think of the surroundings, the smells and sounds, the temperature, the location of the furniture, or anything about the event that may elicit memories. Recent evidence suggests that context reinstatement leads to recall of more detail than standard interviews (Fisher & Quigley, 1989).

Even very young children perform impressively with the help of context reinstatement. Indeed, two- and three-year-olds have demonstrated up to 75 percent accuracy on simple reconstructions (Perry, Nielsen, Burns, Cunningham, & Jenkins, 1987). Not surprisingly, on complex tasks, the performance of most young children is less impressive.

**Free Recall Memory** Free recall is the most complex form of memory. Recall requires that previously observed events be retrieved from storage with few or no prompts. Unlike the simpler forms of memory retrieval, free recall is strongly age-related. Generally speaking, infants are poor at recall. Although preschoolers begin to organize their memories around concepts which could aid the reporting of memories, the recall skills of preschool children develop gradually.

In studies of free recall, kindergartners and first graders typically recall only one or two facts about an incident, third and fourth graders recall about three, seventh and eighth graders recall about six, and adults recall between seven and eight (Marin, Holmes, Guth & Kovac, 1979; Perry, et al., 1987). It is important to note, however, that although young children recall less, what they do remember tends to be correct (Lepore, 1991; Perry, Kern, Eitemiller, Mohn, Fischer, & Stessman, 1991). Moreover, young children are capable of answering simple, direct questions about an incident (Goodman & Helgeson, 1985). By the time children enter school their recall skill is improved. For example, when six- or seven-year-olds in one study recalled a story, they remembered as much as adults (Kail & Hagen, 1977). Memory for core aspects of events tends to be

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stronger than memory for peripheral details

Interestingly, in some cases, younger children can provide *more* accurate information than adults (Lindberg, 1991). For example, if an event is particularly salient (as sometimes happens in cases of trauma), recall may be exceptionally good (Brainerd & Ornstein, 1991; Lindberg, 1991). In a study of children who witnessed a sniper attack at an elementary school, Pynoos and Nader (1989) found that "the sight of injury or blood had a uniquely profound impact on the children's memory" (p. 240). Other researchers have demonstrated that children's memories for meaningful events — including a visit to the dentist (Peters, 1987); a physical examination (Ornstein, Gordon, & Braddy, in press); an inoculation (Goodman, Aman, & Hirschman, 1987); and a class trip (Fivush, Hudson, & Nelson, 1984) — can be very good over extended periods of time.

If the material to be recalled is part of a young child's pattern of daily life (i.e., a script memory), recall may be outstanding. For example, when three- and four-year olds were studied in their own homes, they showed an amazing amount of recall about their daily experiences. Children demonstrated good spontaneous recall as well as good recall in response to questions. Sequences of actions, however, were poorly recalled (Todd & Perlmutter, 1980).

In general, school-age children demonstrate better recall in familiar situations (Johnson & Foley, 1984). This phenomenon was demonstrated in two studies of children who had experienced group trauma. Children who witnessed a sniper attack at their own school (a familiar setting) tended not to err in sequencing or estimating the duration of the event (Pynoos & Nader, 1989). In contrast, children kidnapped and buried in a school bus (an unfamiliar setting) produced significant memory errors in sequencing and estimating event duration (Terr, 1979).

### Strategies for and Deficiencies in Remembering

Children have limited ability to use memory strategies. For this reason, children often know more than they can freely recall. When children begin using memory strategies efficiently, their ability to communicate material through the memory system

improves dramatically.

The use of *rehearsal* as a memory strategy is almost automatic for adults. We use rehearsal when we repeat information to ourselves in order to remember a telephone number or the items on a grocery list. Ten-year-olds also commonly use rehearsal to aid memory. Young children, however, have not mastered rehearsal (Harris & Liebert, 1991).

Another memory strategy is imagery, which involves (1) mentally picturing a person, place, or object, or (2) visually associating two or more things that are to be remembered. Children develop imagery much later than other memory strategies. Indeed, some people never learn this memory strategy (Flavell, 1977). Like other techniques, imagery can be used by some young children if they are instructed in its use and given reminders to continue using the technique (as in context reinstatement).

One of the most effective memory strategies is organization, which is the grouping of items around some common element or theme. Preschoolers do not organize material as well as older children because preschoolers are not adept at categorical representation. Although children as young as five can sort items into categories, young children do not use the categories to help them remember (Moely, 1977). For example, when five-year-olds are presented with a list of random words and asked to "put together the words that go together," most of the children can categorize animal-words, food-words, color-words, etc. After completing this task, however, most young children fail to use the organizational information as cues to help remember the words on the list. Similarly, when items are presented to young children in small blocks, one category at a time, children can remember the categories (e.g., fruits, toys, colors). However, when the individual items are presented randomly, most six-year-olds do not organize the material well, even when there are only a few items in each category (Furth & Milgram, 1973).

Another technique that can aid recall is the use of *external cues*, such as the proverbial string tied around the finger. Elementary school children typi-

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with the discrepancy between remembering and reporting. Many children do not tell us what they know. The challenge is finding ways to help children tell.

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cally do not use such cues spontaneously. However, when trained to use them, six-year-olds may be as proficient in use of external cues as eleven-year-olds (Kobasigawa, 1974).

As with external cues, there is a developmental trend in the ability to use *internal cues* (i.e., imagined cues). Generally speaking, neither preschoolers nor six-year-olds use internal cues to conduct systematic searches of memory. By contrast, some nine-year-olds use internal cues (Kobasigawa, 1977; Salatas & Flavell, 1976).

Although children unquestionably have less sophisticated techniques than adults for recalling information, on some tasks young children perform as well as, or better than, older children and adults. This is particularly true when children know more about a subject than their more mature counterparts. Even very young children can demonstrate impressive memory skills when they have a substantial knowledge base (Lindberg, 1980; Richman, Nida, & Pittman, 1976). For example, a four-year-old boy who had become fascinated with dinosaurs was able to recall the names and characteristics of no less than 46 types (Chi & Koeske, 1983).

## Factors that Influence Children's Memory

A variety of factors may influence a child's memory. These include the developmental sophistication of the child, salience of the events and details to be remembered, the child's ability to use memory strategies, the stress associated with the initial event and with post-event interviews, the suggestibility of the child, and inducements given to the child to withhold information about the event.

*The Impact of Stress and Intimidation.* Some researchers report that stress can decrease a person's willingness and ability to retrieve information from memory (see, e.g., Bussey, 1990; Goodman & Helgeson, 1985; Goodman & Reed, 1986; Peters, 1990). For example, in a study of age differences in

eyewitness testimony, Goodman and Reed (1986) found that the performance of three-year-olds was inferior in almost every way to that of six-year-olds and adults. Goodman and Reed cited evidence suggesting that the three-year-olds seemed to be more intimidated by the research experience than older subjects, and conjectured that this in-

creased stress led to declines in performance. Similarly, Peters (1991) conducted a study of children's memories for a trip to the dentist and concluded: "One fact is very apparent from our data. Heightened arousal never increased the recognition or recall accuracy of our subjects" (p. 75).

However, other studies indicate that stress is not always associated with a negative effect on memory (Ochsner & Zaragoza, 1988). For example,

in a series of studies that investigated children's responses to medical procedures, the researchers reported that, "when stress was very high and children became nearly hysterical with fear, stress was associated with enhanced memory" (Goodman, Hirschman, Hepps, & Rudy, 1991, p. 145). Warren-Leubecker, Bradley, & Hinton (1988) also found that children who rated themselves as more emotional about the explosion of the Challenger space shuttle recalled more about the tragedy than did less emotional children, even after a two-year interval.

How can these conflicting results regarding the impact of stress on memory be reconciled? One explanation is that stress alone may not impair memory processes. Indeed, stress can lead to arousal, heightened attention, and improved encoding (Deffenbacher, 1983). However, stress that results from intimidation may lead to either impairment in encoding or problems in recalling or reporting memories. Peters (1990) found that "confrontational" stress had a negative effect on children's reports of their memories of a staged theft. In postevent interviews, half the children were questioned in the presence of the thief. The other half were interrogated in the absence of the perpetrator. Peters found that the children's accuracy was compromised severely when the thief was present. Bussey (1990) found that when a child expects negative sanctions for disclosing information, truth-telling is compromised.

The stress induced in the experiments by Peters and Bussey is qualitatively different from that present in the Goodman et al. and Warren-Leubecker et al. studies. In the research by Peters and Bussey, stress involved intimidation, whereas in the work of Goodman and Warren-Leubecker, the stress was induced by the nature of the situation (e.g., receiving an inoculation or witnessing the explosion of a space shuttle). Collectively, these studies suggest that stress may not have a negative effect on the memories of young children unless it is coupled with intimidation.

*The Impact of Inducements to Keep Secrets.* Another important factor that influences the accuracy and completeness of children's reports is the use of incentives to keep secrets. Particularly in cases of sexual abuse, children may be motivated to keep secrets through (a) physical threats to the child or to loved ones, (b) telling the child that a perpetrator will get in trouble if the child discloses the secret (which may lead to disruption of the family, the child's main source of support), and (c) promises of tangible rewards if the child keeps quiet (Bottoms, Goodman, Schwartz-Kenney, Sachsenmaier, & Thomas, 1990).

Even young children have some knowledge of secrets (Marvin, Greenberg, & Mossler, 1976) and will keep secrets when given moderate motivation to do so (Bottoms et al., 1990). Bottoms et al. (1990) explored children's accuracy in reporting events which their mothers told them to keep secret. The researchers found that younger children (ages three

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*How the child is interviewed is likely to have a profound effect on the child's ability to recall and report information from memory.*

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and four) tended to disclose the secret, whereas five- and six-year-olds generally kept the secret, "omitting information about the most salient activities of the session" (p. 9). Even a completely leading interview did not result in the children telling the secret.

In another laboratory study, Wilson and Pipe (1989) found that children who kept a confederate's secret were not less accurate in other respects than children who mentioned the secret. Moreover, like Bottoms et al. (1990), Wilson and Pipe (1989) found that errors made by the children were errors of omission (omitting actions that actually had occurred), rather than commission (actively falsifying information). Thus, an inducement to keep a secret may not alter the memory itself. However, such an incentive may have significant effect upon the manner in which the memory is reported to others. Secretiveness may be more of a problem with children

**Once an event is properly encoded and stored in memory, a child's memory of it is likely to be as enduring as an adult's.**

who are less socially mature and lower in moral reasoning, more withdrawn, and more anxious (Clarke-Stewart, Thompson, & Lepore, 1989).

**The Impact of Suggestion.** It is commonly believed that children are more suggestible than adults (see Goodman, Golding, & Haith, 1984). Certainly children, like adults, are subject to suggestion, but children are not as suggestible as many adults believe (see Duncan, Whitney, & Kunen, 1982). Indeed, some studies indicate that children are no more easily swayed into incorrect answers by the use of misleading questions than are adults (Duncan et al., 1982; Marin et al., 1979). In contrast, other studies have found that under certain circumstances, children may be more suggestible than adults (Goodman & Reed, 1986). Because the effect of suggestion on material that has been well encoded tends not to be significantly different across age groups (Cohen & Harnick, 1980), it may be that younger children's inferior performance on suggestive tasks results from inferior encoding. In this regard, Loftus and Davies (1984) conclude:

If an event is understandable and interesting to both children and adults, and if their memory for it is still equally strong, age differences in suggestibility may not be found. But if the event is not encoded well to begin with, or if a delay weakens the child's memory relative to an adult's, then age differences may emerge. In this case the fragments of the event that remain in the child's memory may not be sufficient to serve as a barrier against suggestion, especially from authoritative others. Of course, if the child's grasp of the language is so weak as to make him or her oblivious to the subject implications in the suggestive information, then the child may be immune to the manipulation

regardless of the interest value or memorability of the stimuli, or the loss of an accurate memory record (p. 63).

## Conclusion

Many factors may influence children's memory: developmental sophistication of the child, salience of the events and details to be remembered, the child's ability to use memory strategies, the stress associated with the initial event and with the post-event interviews, the suggestibility of the child, and inducements to withhold information about the event in question. Typically, children are better able to describe a familiar event (i.e., a script memory) than a unique occurrence (i.e., an episodic memory), unless the unique occurrence is particularly salient and/or personally meaningful. It is important to understand that "forgetting" may be caused by a variety of problems: failure to perceive an event, lack of attention, difficulties in encoding or storing material, or problems in recalling the event. In addition, how the child is interviewed is likely to have a profound effect on the child's ability to recall and report information from memory. In the final analysis, once an event is properly encoded and stored in memory, a child's memory of it is likely to be as enduring as an adult's.

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