

Memory for the Events of Early Childhood

Madeline J. Eacott¹

Department of Psychology, Science Laboratories, Durham, United Kingdom

Abstract

There has been much recent interest in the phenomenon of childhood amnesia, the difficulty most adults have in recalling at least the first 3 years of life. In contrast, it has been shown that infants 18 months of age or less can retain information over long periods. Although there is no agreed-upon explanation of this paradoxical phenomenon, there are proposed biological, cognitive, and social-cognitive explanations. Distinguishing among these accounts involves investigating both adults' memories for childhood events and the mnemonic abilities of young children. These studies may not only reveal the reason why our earliest years are shrouded from us as adults, but also shed light on the memory processes that allow us a rich representation of the remainder of our personal past.

Keywords

childhood amnesia; infantile amnesia; declarative memory; episodic memory; autobiographical memory

We all have memories of our personal experiences that make up our autobiographical memory. However, there is a period of our lives for which we have a surprising paucity of memories—our earliest childhood years. Few people can recall, for example, what occurred on their second birthday, although many will recall their 22nd birthday. This relative lack of mem-

ories is known as *infantile or childhood amnesia*.

MEMORY IN ADULTHOOD FOR CHILDHOOD EVENTS

The Quantity of Adult Memories of Childhood

Freud first described and named the phenomenon of infantile amnesia, which has since been more accurately termed childhood amnesia. However, Freud's description was largely anecdotal. It was not until later that objective evidence of childhood amnesia was gathered. For example, Waldfoegel (1948) asked people to report their earliest memories and found a scarcity of memories from before the age of 8. The average age of earliest memory is about 3.5 years, although the range is wide (2–8 years). This paucity of early memories cannot be explained simply as a result of greater forgetting with increasing time since the event, as childhood amnesia does not expand with increasing age and has been demonstrated with adults aged 18 to more than 70 years. Moreover, the number of memories that adults can recall from before their fifth birthday is significantly fewer than would be expected from the extrapolation of the mathematical function that describes forgetting from the age of 5 onward. Thus, memories of our earliest childhood are conspicuous by their absence.

Of course, asking people to recall their earliest memory presents some problems. Not only is it diffi-

cult to accurately date memories, it is also possible that some people report false memories, confusing events that they remember with those they have merely been told about or imagined. Alternatively, therefore, one can probe for memories of specific and notable events, such as those surrounding the birth of a sibling. These events have the advantage of usually having a known date, and other people who were present at the original events may confirm the accuracy of any memories. Studies of this type have confirmed that people have a genuine dearth of memories available for events that occurred before they were age 3 (e.g., Eacott & Crawley, 1998). Why could this be?

The Quality of Adult Memories of Childhood

One approach to this question is to look at the nature of early memories. If a qualitative difference is found between early and later memories, this may provide a clue as to why so few early memories survive to adulthood. Studies that ask adults to recall memories find that the earliest memories are often fragmentary, lacking social and temporal context and narrative structure. A memory may stand out as a snapshot of an event ("I just recall pedaling my tricycle"), without antecedents, consequences, context, or other participants. The earliest memories are also commonly associated with strong emotion, although positive as well as negative emotions are common, suggesting that the Freudian concept of repression is not an adequate explanation. It is possible, therefore, that the emotional content of these reported memories allows them to be well retained against the background of childhood amnesia. Despite these differences from later memories, there is no evidence that very early memories are less accurate, or dif-

fer in the type of information retained. However, very early memories may be less consistently recalled. This quality may be related to the isolated and fragmentary nature of early memories.

MEMORY FOR EVENTS IN YOUNG CHILDREN

Are Young Children Mnemonically Incompetent?

Studies of adults' memory of childhood events are always retrospective and are therefore open to criticism. An alternative is to examine the memory of young children. This may reveal mnemonic difficulties in infants that explain why, as adults, we appear to have no memories from this period. However, a recent review of the mnemonic abilities of children up to the age of 18 months showed that such young children can form memories that last over many months (Hartshorn et al., 1998). Naturally, young children are unable to express their memories verbally, so one must seek evidence of their memory in their behavior. For example, in one study, pressing a lever resulted in brief movement of a toy train. Children found this movement reinforcing, and quickly learned to increase their levels of lever pressing. At the age of 18 months, well within the veil of childhood amnesia, children retained this learning over periods of many weeks. Thus, a simple view that young children are unable to form long-lasting memories is unsustainable.

Declarative Memory in Early Childhood

However, a behavioral measure of recall, such as lever pressing, presents a problem, as all memory abilities may not be alike. An ability to recall facts and events has

been contrasted to the ability to learn and remember how to use skills and strategies. Memories of facts and events can be brought to mind and be made consciously available, whereas skills and strategies are often implicit and not accessible to consciousness. These two aspects of memory are called declarative and nondeclarative (or procedural) memory, respectively. The long-term memory abilities demonstrated in infants may be an example of nondeclarative memory. If so, it may be that they do not have declarative memory, allowing an explanation of childhood amnesia in terms of a late-developing declarative memory system (Bachevalier & Mishkin, 1984). Without declarative memory of our early childhood, we would have no conscious recall of early events. It is therefore important to demonstrate whether the long-term retention shown by infants is of a declarative (conscious) nature. However, one of the few ways of demonstrating conscious memories is through verbal report, something infants cannot provide. Thus, an entirely different approach is required.

Following brain damage, adults can lose declarative memory and become amnesic. Nevertheless, these patients retain the ability to learn new skills and strategies, as nondeclarative learning is spared. Infants may be like amnesic patients, having intact nondeclarative learning abilities in the absence of declarative memory. If so, a correspondence between the mnemonic abilities of infants and individuals with amnesia following brain damage might be expected. This idea can be tested by comparing the memory abilities of infants and amnesic patients. There are many tests, such as those involving verbal responses, for which direct comparison between infants and amnesics is impossible. However, in a series of studies, it has recently been shown that amnesic patients

fail to demonstrate memory in tasks on which infants succeed, such as the delayed imitation of an action (McDonough, Mandler, McKee, & Squire, 1995). From this evidence, we can conclude that human infants have an operational declarative memory system long before the age from which we have adult memories. Thus, childhood amnesia cannot be explained as the result of an absence of a declarative memory system.

Episodic or Self-Referent Memory in Childhood

If infants are capable of laying down declarative memories of events, we must look elsewhere for the cause of childhood amnesia. However, a further division of declarative memory is important here. Declarative memory has been subdivided into memory for facts (semantic memory) and memory for events (episodic memory). Tulving (1985) has argued that the crucial difference lies in the fact that episodic memory involves recollection of a personally experienced event ("I remember X"). Semantic memory lacks this recollective experience ("I know X" or "I believe X"). Thus, semantic memory may allow one to state that the weather is often cold in northern England, but this would represent an episodic memory only if it were accompanied by the recollective experience of the chill weather. This distinction between "remembering" and "knowing" is one that people find relates to their personal experience and can be experimentally manipulated. It has been claimed that episodic memory, the ability to encode events as personally experienced, is absent in children under the age of about 4 years (Perner & Ruffman, 1995). Before the development of this ability, the argument goes, young children cannot distinguish accurately between knowledge that they have

on the basis of personal experience and knowledge from other sources, as it is all stored within a semantic ("know") memory system. Thus, adult memories of early childhood events cannot come from episodic memory, although one may know about the events via semantic memory. As a result, these memories will lack the quality of a recollective experience ("remember"). Development of the ability to encode events episodically has been related to the development of the frontal lobes of the brain (Wheeler, Stuss, & Tulving, 1997) and hence may have an underlying biological cause.

A related view is that the developing cognitive abilities of the child mediate the increasing ability to remember the personal past. Howe and Courage (1997), for example, while denying the need to posit separable episodic and semantic memory systems, suggested that infants' lack of a sense of self prevents autobiographical memories being formed. Autobiographical memory, they claimed, is critically dependent on what happened to the self, to "me" (e.g., "a cat scratched me"). In contrast, other types of memory do not rely on the concept of self (e.g., "cats scratch"). Howe and Courage suggested that lack of a sense of self prevents personally referent memories being formed, although non-personally-referent memories are present. Thus, an infant may recall that the cat sat on the mat, but not that he saw the cat sitting on the mat. This emphasis on autobiographical memory as consisting of personally referent events provides a link to Perner and Ruffman's (1995) account discussed earlier. However, in Howe and Courage's account, it is the absence of the concept of self around which to organize memories that results in a lack of self-referent memories for this period, resulting in childhood amnesia.

A Social-Interaction Account of Childhood Amnesia

Early childhood is a period during which abilities, including language skills, develop rapidly. Nelson, Fivush, and their colleagues (e.g., Nelson, 1992) have suggested that, through experience, children learn conventionalized narrative structures around which they can build and interpret a coherent personal past. These organized memories are more long lasting and accessible than unorganized memories. In this account, therefore, episodic (self-referent) memories exist in early childhood, but are prone to forgetting as a result of the absence of structure. Once episodic memories are combined with the newly developed language-based narrative skills, long-lasting autobiographical memories become possible. In a study supporting such a view, recall of a naturally occurring event (evacuation of a nursery school following a minor fire) 7 years later depended on the age of the child at the time of the fire (Pillemer, Picariello, & Pruett, 1994). Each of these children had initially given his or her own account of events shortly after the fire. Only the older children included a temporal, causal sequence in their account. Thus, the ability to construct a causal narrative about these somewhat unusual events may have aided retention of the memory over a 7-year period.

When narrative, structural abilities are emerging, recall of past events can be aided by the caregiver, who helps provide the structure ("So what did they do next?"). Long-lasting autobiographical memories therefore initially depend on social interaction, although later the necessary skills become internalized. Studies that have examined the development of a child's ability to talk about past events show that interest in memory-related conver-

sations and ability to engage in them increase rapidly between 20 and 30 months, although both interest and ability continue to develop until the age of 5 years. The gradual increase in the ability to represent structure, and engage in sharing, of memories, therefore, may underlie the gradual increase in the availability of autobiographical memories from this period.

TOWARD A THEORY OF CHILDHOOD AMNESIA

There is, at present, no commonly agreed-upon explanation of our failure to recall our earliest childhood. An all-encompassing theory will have to account for both adults' failure to recall their earliest childhood (at least before age 2) and the gradual increase in memories from the age of 3 onward. The theory should allow vast individual differences in age of earliest memory and the range of memory abilities shown in young children. The final analysis that allows a theory of childhood amnesia to be widely accepted is likely to involve fine-grained analysis of the emergence of abilities in children and the emergence of an autobiographical past from the point of view of adults. Such an analysis will not only explain childhood amnesia, but also help us understand the formation of the rich personal memory that is available for the rest of our lives.

Recommended Reading

- Bauer, P. (1996). What do infants recall of their lives? Memory for specific events by one- to two-year-olds. *American Psychologist*, 51, 29-41.
- Howe, M.L., & Courage, M.L. (1997). (See References)
- Nelson, K. (1992). (See References)
- Wheeler, M.A., Stuss, D.T., & Tulving, E. (1997). (See References)

Note

1. Address correspondence to Madeline J. Eacott, Department of Psychology, Science Laboratories, South Rd., Durham, DH1 3LE, United Kingdom; e-mail: m.j.eacott@durham.ac.uk.

References

- Bachevalier, J., & Mishkin, M. (1984). An early and late developing system for learning and retention in infant monkeys. *Behavioural Neuroscience*, *98*, 770–778.
- Eacott, M.J., & Crawley, R.A. (1998). The offset of childhood amnesia: Memory for events that occurred before age 3. *Journal of Experimental Psychology: General*, *127*, 22–33.
- Hartshorn, K., Rovee-Collier, C., Gerhardstein, P., Bhatt, R.S., Wondolowski, T.L., Klein, P., Gilch, J., Wurtzel, N., & Campos-de-Carvalho, M. (1998). The ontogeny of longterm memory over the first year and a half of life. *Developmental Psychobiology*, *32*, 69–89.
- Howe, M.L., & Courage, M.L. (1997). The emergence and early development of autobiographical memory. *Psychological Review*, *104*, 499–523.
- McDonough, L., Mandler, J.M., McKee, R.D., & Squire, L.R. (1995). The deferred imitation task as a non-verbal measure of declarative memory. *Proceedings of the National Academy of Sciences, USA*, *92*, 7580–7584.
- Nelson, K. (1992). Emergence of autobiographical memory at age 4. *Human Development*, *35*, 172–177.
- Perner, J., & Ruffman, T. (1995). Episodic memory and autonotic consciousness: Developmental evidence and a theory of childhood amnesia. *Journal of Experimental Child Psychology*, *59*, 516–548.
- Pillemer, D.B., Picariello, M.L., & Pruett, J.C. (1994). Very long-term memories of a salient preschool event. *Applied Cognitive Psychology*, *8*, 95–106.
- Tulving, E. (1985). Memory and consciousness. *Canadian Psychology*, *26*, 1–12.
- Waldfoegel, S. (1948). The frequency and affective character of childhood memories. *Psychological Monographs*, *62*(4, Whole No. 291).
- Wheeler, M.A., Stuss, D.T., & Tulving, E. (1997). Towards a theory of episodic memory: The frontal lobes and autonotic consciousness. *Psychological Bulletin*, *121*, 331–354.