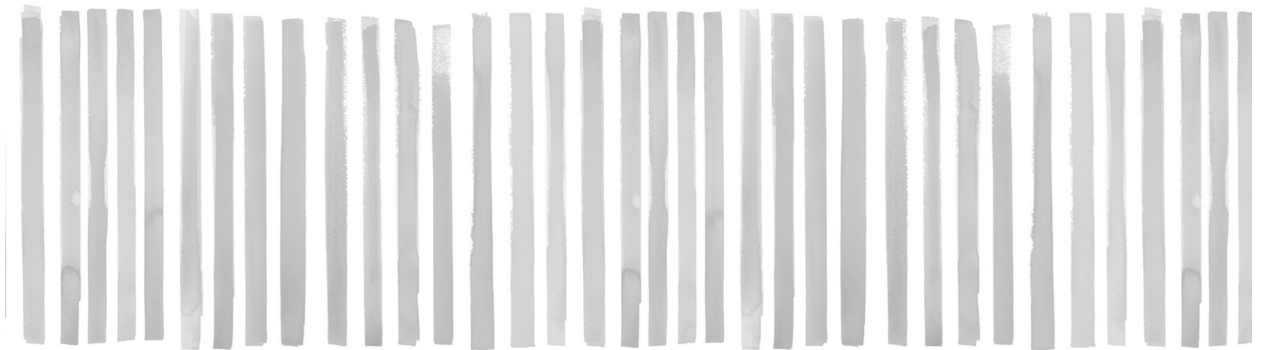


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Adults' Memories of Their Own Childhoods

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INTRODUCTION

Research examining adults' recollections of their own childhoods has a long history, dating back to the late 1800s (see, for example, Miles, 1895). Clinical interest burgeoned with Freud's 100-year-old discovery of the phenomenon of infantile amnesia: 'What I have in mind is the peculiar amnesia which, in the case of most people, though by no means all, hides the earliest beginnings of their childhood up to their sixth or eighth year' (1905/1953: 174). Freud attributed the inaccessibility of early memories to the blockading force of repression. Adler (1937) emphasized instead the psychological importance of long-lasting early memories, and researchers continue to explore the special meanings of earliest recollections (Barrett, 1980; Saunders and Norcross, 1988; Sutin and Robins, 2005).

In contrast to Freudian and Adlerian explanations for the absence or persistence of childhood memories, research psychologists have long favoured accounts that focus on developmental changes in memory organization and function (see, for example, Piaget, 1962; Waldfogel, 1948). Previous reviews have identified and contrasted alternative

explanations for infantile amnesia (Fivush and Nelson, 2004; Howe and Courage, 1993; Nelson, 1993; Newcombe, Lloyd and Ratliff, 2007; Pillemer, 1998b; Pillemer and White, 1989; Wang, 2003; White and Pillemer, 1979). Proposed causal factors include developmental changes in language, cognitive abilities, self-concept, the quality of parent-child social interaction, and neurological maturation. A shared premise is that early childhood memories are not encoded in a fashion that facilitates their voluntary narrative recall in adulthood. Accordingly, researchers frequently use the indirect strategy of examining qualities of children's memory processes and extrapolating to adults' long-term autobiographical memory failures (see, for example, Fivush and Nelson, 2004; Pillemer and White, 1989; Richardson and Hayne, 2007).

This chapter presents a synthesis of research and theory on adults' memories of childhood. First, we examine memories of early childhood. We look at reported ages of the earliest childhood memory and also at age distributions of childhood memories provided in response to various types of memory prompts. As part of this analysis, we address the issue of memory accuracy and

consistency. We also explore emotional content, focusing on the balance of positive and negative themes. We conclude this section with a methodological analysis and critique. Second, we examine individual and group differences in early childhood memories, with a primary focus on the effects of culture and gender. Third, we examine adults' memories of middle childhood and early adolescence. In contrast to the theoretical importance placed upon memories of early childhood, and the voluminous research literature on this topic, recall of personal events occurring later in childhood has been the focus of study only infrequently. We outline reasons for this relative neglect, and we suggest ways to address it. We conclude by exploring implications for research on childhood.

Our analytical approach differs somewhat from the theoretical and methodological perspectives taken by other contributors to this volume. Like many other memory development researchers, our analysis focuses primarily on the accessibility, persistence, accuracy, and consistency of early childhood memories. We do not focus on what can be learned about the subjective and objective experience of childhood from adults' memory reports. For example, a largely unanswered question is how adults' and children's retrospective reports of comparable childhood events might differ based on cognitive and socio-emotional factors. If adults' memories of childhood are distorted, then our understanding of children's everyday lives based on adults' reports may be similarly biased. On the other hand, some aspects of early experience may be revealed more clearly or persuasively in adults' reports than in those provided by children themselves, given that adults have better verbal skills, greater reflective ability, and a broader and deeper perspective on the meaning of events and their long-term consequences. Future research should explore if and how adults' recollections of childhood can contribute to a fuller understanding of the cognitive, social, and emotional world of the child.

ADULTS' MEMORIES OF EARLY CHILDHOOD

Researchers have elicited early childhood memories in three principal ways (Pillemer, 1998b): (a) by asking participants to report and date their earliest childhood memory; (b) by asking participants to report multiple early childhood memories; and (c) by using memory prompts for specific early childhood events with known dates of occurrence.

The earliest childhood memory

The oldest and most common research strategy for determining the starting point for autobiographical recall involves administering questionnaires to adults and asking them to describe and date their earliest childhood recollection. Although memory probes are for the most part open-ended and non-directive, and participants provide their own subjective estimate of their age at the time of the remembered episode, study results have been consistent over the years. Dudycha and Dudycha (1941) reviewed a number of studies published from the 1890s through the 1930s and concluded that 'the earliest remembered experience for most people dates back to their third or fourth year' (673). Results of recent studies are strikingly consistent with these earlier estimates. We have identified 26 studies that used a questionnaire methodology to elicit the earliest childhood memory from adults (see Table 27.1). These studies produced 49 separate estimates of the age of the earliest memory. The distribution of mean ages from these studies is presented in Figure 27.1. The average age of the earliest memory almost always occurs at 3 or 4 years, with an unweighted mean age across the 49 samples of 3.69 years. As is apparent in Table 27.1, some of the variation in age estimates within and across studies is attributable to the effects of culture, which we discuss later in this chapter.

Does the consistent pattern of mean age estimates allow us to confidently set a lower

Table 27.1 Mean age of earliest memory (in years) by study

<i>Study</i>	<i>Sample characteristics</i>	<i>N</i>	<i>Mean age</i>
<i>Bruce et al. (2005)</i>			
Experiment 1 (Remember earliest)		112	4.22
Experiment 2 (Remember earliest)		129	4.36
<i>Dudycha & Dudycha (1933a)¹</i>		200	3.71
<i>Dudycha & Dudycha (1933b)¹</i>		233	3.58
<i>Gur-Yaish & Wang (2006)</i>	Israeli	83	4.15
<i>Hankoff (1987)</i>	Male criminal	32	4.37
	Male control	50	3.75
<i>Harpaz-Rotem & Hirst (2005)</i>			
Experiment 1	Kibbutz	103	4.15
	Non-kibbutz	104	3.08
<i>Howes, Siegel, & Brown (1993)²</i>			
	Male	–	3.40
	Female	–	3.07
<i>Jack & Hayne (2007)</i>			
Uncued earliest condition		40	3.92
<i>Kihlstrom & Harackiewicz (1982)</i>		164	3.24
<i>MacDonald, Uesiliana, & Hayne (2000)</i>			
Experiment 1	New Zealand European	32	3.57
	New Zealand Maori	32	2.72
	New Zealand Asian	32	4.82
Experiment 2	New Zealand Asian		
	Male	16	3.30
	Female	16	4.51
<i>Matsumoto & Stanny (2006)</i>			
	Japanese bilingual	18	3.20
	US monolingual	15	4.00
<i>Miles (1895)</i>	Female	89	3.04
<i>Mullen (1994)</i>			
Experiment 1	Asian	24	3.94
	Caucasian	117	3.21
Experiment 2	Asian	35	3.71
	Caucasian	133	3.27
Experiment 3	Asian	70	3.63
	Caucasian	235	3.23
Experiment 4 ³	Korean	41	4.63
<i>Potwin (1901)</i>			
	Male	–	4.40
	Female	–	3.01

(Continued)

Table 27.1 (Continued)

<i>Study</i>	<i>Sample characteristics</i>	<i>N</i>	<i>Mean age</i>
<i>Rabbitt & McInnis (1988)</i>	Older adult		
	Low IQ	70	4.79
	Medium IQ	228	3.88
	High IQ	79	3.14
<i>Rule (1983)</i>	First born	27	3.77
	Later born	37	3.70
<i>Rule & Jarrell (1983)</i>		66	3.70
<i>Saunders & Norcross (1988)</i>		184	3.83
<i>Spirrison & McCarley (2001)</i>		107	4.90
<i>Wang (2001)</i>	Caucasian American	119	3.49
	Chinese	137	3.95
<i>Wang, Leichtman, & White (1998)</i>	Chinese	137	3.95
<i>Wang & Ross (2005)²</i>			
Experiment 1 (Control condition)	Chinese	~45	3.34
	Asian	~44	4.17
<i>Weigle & Bauer (2000)⁴</i>	Adult deaf	13	3.08
	Adult hearing	12	2.92
<i>West & Bauer (1999)</i>			
Experiment 1	Female	48	3.33
Experiment 2	Male	15	3.33
<i>Westman & Orellana (1996)</i>			
Experiment 1		53	3.10
<i>Westman, Westman, & Orellana (1996)</i>			
Experiment 1 (No modality cue condition)		66	3.30

Note: All subjects were college or graduate students unless otherwise specified. Partial years reported as months were converted to a proportion of year. For example, 3 years 8½ months was converted to 3.71 years. Dashes indicate unknown values and tildes indicate estimates based on authors' descriptions.

¹ Memories from age 5 and above were excluded from original analyses.

² Sample sizes were estimated from authors' descriptions.

³ Included students and their spouses.

⁴ Adult hearing mean calculated excluding subject reporting birth memory.

boundary on personal memory? In practical settings, such as court proceedings, should we doubt the veracity of memories for events that occurred before age 3? Not necessarily. First, the age cut-off of approximately 3.5 years is based on *mean scores*, so that approximately one half of the reported events within any given study will occur at an earlier age. For example, Saunders and Norcross (1988) found that the age of the earliest

memory ranged from 1 year to 9 years, and that 90 per cent of memories fell between 1.5 and 7 years. Second, it is unclear if participants are able to identify and accurately date their 'true' earliest memory in response to a single questionnaire item. Mullen (1994, Study 3) asked participants to identify ways that they estimated the age of their earliest memory, and some responses do not generate a great deal of confidence: guessing, just

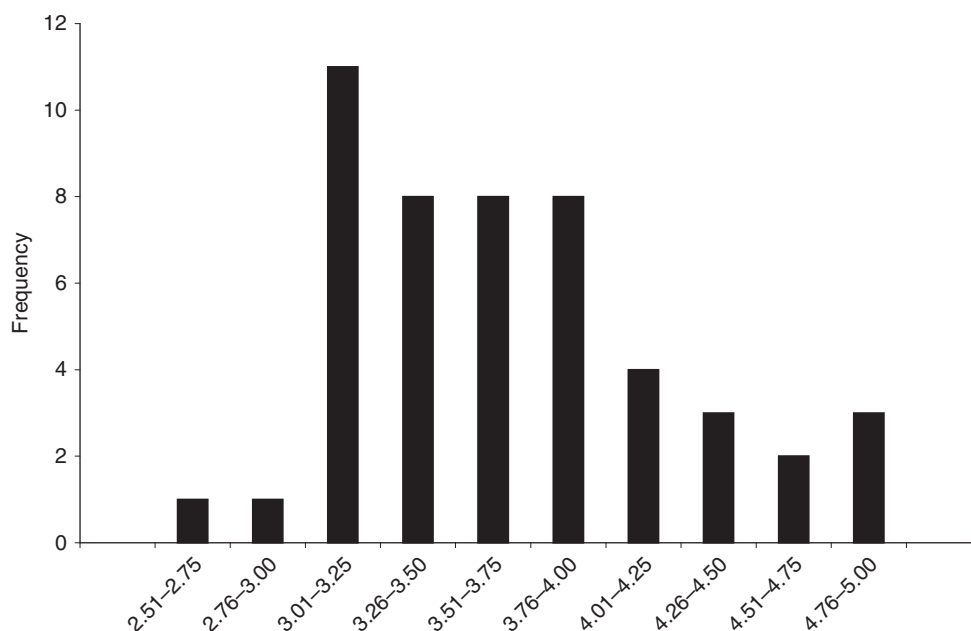


Figure 27.1 Mean age in years of the earliest memory (49 independent samples)

remembering, having an image of how they looked at the time, and linking the memory to a location preceding a family move. Accuracy of memory is addressed in a later section.

Temporal distributions of childhood memories

A second research strategy involves asking research participants to report multiple memories of their childhood or their entire lifetime and then examining the shape of the resulting age distributions. If childhood amnesia exists, very early memories should be scarcer than would be expected as a result of normal forgetting (Wetzler and Sweeney, 1986). Waldfogel (1948) was perhaps the first researcher to adopt this methodological strategy. College students were allotted 85 minutes to record all of their memories up to their eighth birthday. They then dated each memory to the nearest year of occurrence. Very few memories were identified as occurring before age 3, and the rate of increase in

memories accelerated for each year up to age 5, after which the rate of increase diminished. In other words, there is a notable under-representation of memories occurring before age 3 and an especially sharp year-to-year increase up to age 5.

Results of contemporary studies are consistent with Waldfogel's (1948) findings. Rubin (2000) synthesized data from multiple studies, including over 11,000 individual memories. He identified several general strategies for obtaining memories: exhaustive-search methods similar to the one used by Waldfogel (1948), word-cued methods in which memories are given in response to word prompts (Rubin, 1982), and interview methods (Thorne, 1995). The age distribution of memories from the combined studies demonstrates a scarcity of memories before age 3 (only 1.1 per cent of the memory total) and a rapid increase in the number of memories thereafter. The prototypical distribution is well illustrated by Rubin and Schulkind's (1997) analysis of memories provided by college students and older adults in response to word cues. Figure 27.2 displays a paucity of very early memories, a rapid increase

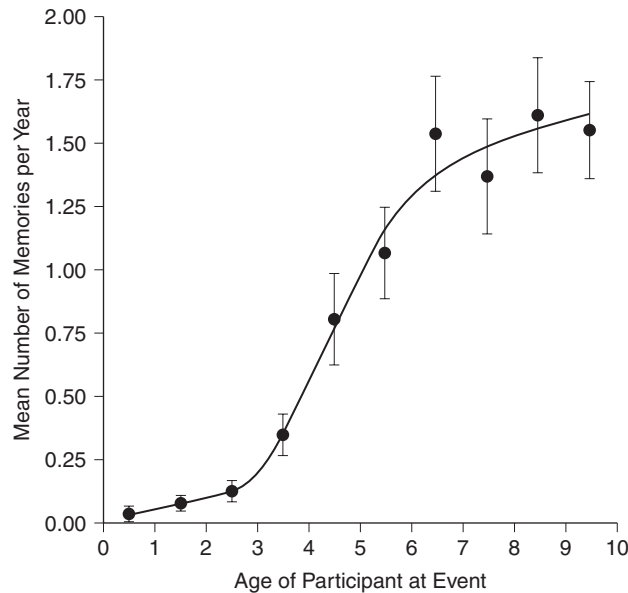


Figure 27.2 Distribution of word-cued autobiographical memories for the first 10 years of life

Source: From 'The Distribution of Important and Word-Cued Autobiographical Memories in 20-, 35-, and 70-Year-Old Adults', by D.C. Rubin and M.D. Schulkind, 1997, *Psychology and Aging*, 12, p. 528. Copyright by the American Psychological Association. Reprinted with permission.

during the preschool years, and a levelling off after age 7.

Memories of targeted childhood events

A different strategy for pinpointing the beginnings of personal memory involves asking participants direct questions about particular past events with known dates of occurrence. Winograd and Killinger (1983) obtained memories of the 1963 assassination of President John Kennedy from adults who were between the ages of 1 and 7 years at the time of the shooting. Memory questions probed personal circumstances such as one's location and ongoing activity when receiving the tragic news. Using a lenient recall criterion, in which respondents had to answer only one memory question, the age drop-off was linear, with very few memories reported by participants who were younger than age 3 in 1963. Using a stricter recall criterion that required

answers to multiple questions, memories were scarce before age 4 and increased rapidly thereafter, with 50 per cent of participants producing detailed recollections by age 6.

One would not expect the shooting of an American president to be easily comprehended by very young preschoolers. Therefore, the onset of personal memories for this episode may be delayed compared to more easily interpretable events. Sheingold and Tenney (1982) examined female college students' recollections of the birth of a sibling. Students answered 20 questions about the birth episode. Participants who were age 3 or younger at the time of the birth rarely were able to answer memory questions, whereas those who were age 4 or older could provide relevant information.

Usher and Neisser (1993) asked college students to answer direct questions about four known childhood events: sibling births, hospitalizations, family moves, and family deaths. For example, questions about a sibling

birth included 'Who took care of you while your mother was in the hospital?', 'Where were you the first time you saw the baby?', and 'What was the baby wearing?' A majority of participants who were age 2 at the time of a sibling birth or hospitalization were able to answer some memory questions, whereas many participants answered questions about family deaths and moves only at age 3 or 4.

Eacott and Crawley (1998) examined memories of the birth of a sibling using Usher and Neisser's (1993) procedure but with a much larger sample of participants who had been between ages 2 and 3 at the time of the birth. A majority of participants who were 2 years 4 months or older were able to answer multiple memory questions; remembering before this age was apparent but less extensive. In a follow-up study using the same methodology, Eacott and Crawley (1999) targeted memories of sibling births that occurred between the ages of 1 year 2 months and 1 year 11 months. A majority of participants could answer at least one memory question (60 per cent), and a sizeable minority could answer multiple questions.

Although studies by Usher and Neisser (1993) and Eacott and Crawley (1998, 1999) indicate that personal memories of events occurring even before age 2 or 3 may persist into adulthood, the methodology – asking participants to answer a series of direct questions about particular events – raises serious methodological concerns (see, for example, Loftus, 1993), which will be addressed in a later methodological comparison and critique.

Consistency and accuracy

Age distributions of early memories are orderly and reasonably consistent, but do memories accurately reflect the original events? The possibility exists that memories from the early ages of 2, 3, or 4 years are misremembered or misdated (see also Hayne and Tustin, Chapter 29 this volume). Because

it is rarely possible to determine with certainty what happened at the time of the original occurrence, researchers have looked instead for corroboration from other people who were present at the time or who have relevant knowledge. It is important to keep in mind, however, that memories provided by independent observers also are vulnerable to distortion and decay and as such provide a standard for tests of consistency but not factual accuracy (Loftus, 1993).

Howes, Siegel, and Brown (1993) provided some support for the general veracity of earliest memories. College students first reported their earliest childhood memories. They were then asked to contact another person who had been present when the remembered event occurred, to explain the purpose of the study to that person, and to provide them with as little detailed information as possible about the target event. The other person (the 'verifier') then wrote out their independent version of the episode. Participants were excluded if they talked with the verifier prior to obtaining their independent memory or failed to follow other directions and safeguards. Most (80 per cent) memories were either partially or fully verified. Although tests of memory accuracy did not rely on objective factual records, and a minority of memories were judged to be distorted in some way, the high level of consistency between students and verifiers bolsters the credibility of earliest recollections: 'the assumption of a standard or frequent distortion factor in infantile recall was not supported' (Howes et al., 1993: 108).

Bruce, Dolan, and Phillips-Grant (2000) elicited college students' personal memories of events that occurred during the first eight years of life. The researchers obtained permission to write to the participants' parents or other relevant individuals to validate reported memories. Again, memories were frequently validated by these sources: 49/55 memories were judged to be accurate, and two memories differed in only minor ways.

When college students are asked to recall pinpointed early childhood events, such as

the birth of a sibling (Eacott and Crawley, 1998, 1999; Usher and Neisser, 1993), their memories also are corroborated frequently by parents. Usher and Neisser (1993) contacted mothers and asked them to answer the same questions that their college student children had answered, and then to rate their children's memories for accuracy. Most of the responses given by college students were judged to be valid, and only 12 per cent were identified as definitely inaccurate. A majority of participants' responses in studies by Eacott and Crawley (1998, 1999) also were verified by their mothers, and only 13 per cent were denied.

Parents usually provide the independent confirmation in studies of memory consistency. Although agreement may be high in part because the remembered events have been rehearsed in family contexts, the evidence supports the general believability and robustness of early memories and is inconsistent with the idea of pervasive memory distortion.

Emotional content

The emotional tone of early memories has long been a topic of research and theory. A historical impetus for both scientific and clinical interest is Freud's repression theory, in which emotion-laden early memories, containing anxiety-provoking remnants of infantile sexuality, are thought to be repressed and replaced by more neutral, surrogate 'screen memories' (Kihlstrom and Harackiewicz, 1982; Pillemer and White, 1989; Waldfogel, 1948). An analysis of emotions expressed in earliest memories provides a test, albeit oversimplified, of the psychoanalytic model. A second reason for scientific and practical interest in emotions accompanying childhood memories involves concerns about the accuracy of early memories of trauma (Alexander, Quas, Goodman, Ghetti, Edelstein, Redlich, Cordon and Jones, 2005; Terr, 1988). A thorough analysis of memories of extreme trauma is beyond the

scope of this chapter, but we return to this issue in our concluding section.

Both positive and negative emotions are well represented in studies of the earliest childhood memory. For example, Kihlstrom and Harackiewicz's (1982) college student participants identified their memories as pleasant (43 per cent), unpleasant (27 per cent), or neutral (30 per cent). Saunders and Norcross (1988) reported a similar distribution of self-identified emotional tones: pleasant (43 per cent), unpleasant (32 per cent), and neutral (25 per cent). Dudycha and Dudycha's (1933b) participants identified fear (30 per cent), joy (28 per cent), anger (10 per cent), and wonder or curiosity (8 per cent) as the predominant emotions accompanying their memories. Wang (2001) also found a mixture of positive and negative emotions in earliest memories. Waldfogel (1948) had students report multiple early childhood memories. His analysis of emotion terms that students used to describe the remembered experiences revealed a 'wide variety of emotional experiences' (p. 18), with joy (approximately 30 per cent) and fear (approximately 15 per cent) being the most common reactions.

Howes et al. (1993) coded earliest memories for emotional content (a single memory could be coded as containing both positive and negative affect); they identified a preponderance (55 per cent) of negative emotions, with 19 per cent involving positive emotions and 29 per cent falling into no-affect-reported or explicitly non-emotional categories. It is unclear whether differences in method (for example, using researchers' content coding to identify emotions rather than obtaining participants' self-evaluations of emotional tone) contributed to the comparatively high incidence of negative memories in this study.

Emotions expressed in earliest memories appear to be comparable to emotions accompanying memories of events occurring at older ages. West and Bauer (1999) compared earliest and later memories (occurring after age 7) directly, using the same sample of participants and the same methodology, and

concluded that 'there do not appear to be systematic differences in the emotional content of early and later memories' (273). Pillemer and White (1989) also noted a similar range of positive and negative emotions in earliest memories and in memories of later life events, such as those occurring during the college years.

The range of feelings accompanying earliest memories is inconsistent with the idea that negative emotional reactions are hidden by banal screen memories: 'memories of troubling experiences from early childhood appear to be no less common than negative memories from adulthood' (Pillemer and White, 1989: 308). But simple distributions of emotions expressed in early episodes do not address the important issue of memory accuracy or consistency across emotional categories. Howes et al. (1993) examined whether certain types of emotional memories are more likely than others to be independently verified: proportions of fully and partially verified memories were quite similar across positive (67 per cent), negative (65 per cent), and no-affect-reported (60 per cent) emotion categories.

Memory complexity

Studies have identified age-related changes not only in memory incidence, but also in memory complexity, elaboration, or completeness. Winograd and Killinger (1983) analyzed the number of questions that participants could answer regarding their personal circumstances when learning of the Kennedy assassination. Informational complexity of memories increased markedly for respondents who had been older than age 4 at the time of the shooting. When college students answered direct questions about sibling births, family moves, family deaths, and hospitalizations, their memories showed age-related increases in elaboration from 2 to 3 years and again from 3 to 4 years (Usher and Neisser, 1993). Davis, Gross, and Hayne

(2008) elicited students' memories of a sibling birth using open-ended probes rather than direct questions; they identified a consistently low level of reported information between the ages of 1 and 3, followed by a strong increase in memory elaboration at age 4 and a levelling off at age 5.

A different way to identify age trends in informational complexity involves comparing fragmentary and intact memories. Bruce, Wilcox-O'Hearn, Robinson, Phillips-Grant, Francis, and Smith (2005) asked college students to report two distinct types of memories. They elicited event memories by asking for 'the earliest personal event in your life that you can remember ... it is a story about an event or incident in your life ... it has a beginning and an end and you will be able to recall some specific details about what happened' (571). The probe for fragment memories requested 'the earliest memory fragment in your life that you can remember. A memory fragment is not a story with a beginning and an end ... it is nothing more than an isolated fragment that sticks in your mind' (571). Results supported the idea that earliest memories become more complete and story-like with increasing age: the mean age of the earliest memory fragment (3.52 years) was younger than the mean age of the earliest memory story (4.36 years).

Analyses of informational complexity support the idea that memories formed later in childhood are richer than memories formed earlier. Memories from the first two years of life are scarce, and 'when memories do begin to appear, they are relatively thin and incomplete' (Usher and Neisser, 1993: 164). These analyses also provide indirect support for the idea that adults' memory reports are trustworthy. If early events are shaped, reinterpreted, and distorted from an adult's perspective as part of the remembering process, why would memories of learning about the Kennedy assassination (Winograd and Killinger, 1983) or a sibling birth (Davis et al., 2008) show marked increases in complexity precisely at ages 4 or 5? It is

difficult to attribute sudden age-related increases in memory elaboration to the influence of family stories or to other distorting reconstructive processes operating during recall.

Comparison of methods

Studies published over the past 100 years have produced a reasonably consistent picture of adults' early childhood memories. There is a scarcity of memories before age 2 or 3, and a rapid increase in memory incidence and richness thereafter. But the overall picture is not entirely consistent. For example, between-study variation exists in the reported age of the earliest memory. Although some of the variation is undoubtedly due to sampling error or to differences in participant characteristics, differences in study methodology also are apparent and potentially influential (Davis et al., 2008; Jack and Hayne, 2007; Loftus, 1993; White and Pillemer, 1989).

Studies using open-ended probes consistently identify the average age of the earliest memory as occurring between ages 3 and 4, whereas some studies employing direct questions about targeted events identify age boundaries at or even before 2 years. These findings are not entirely contradictory. Because the mean age of the earliest childhood memory is a statistical abstraction rather than a lower limit, occasional reports of isolated memories from before age 3 should be expected. In addition, identifying a single earliest lifetime memory without cues of any sort is a challenging task (Pillemer and White, 1989); self-generated strategies that people use to identify their earliest memory are not well known. Specific probes help to structure the search process and could lead to greater success in identifying very early memories.

On the other hand, asking direct questions about targeted events may overestimate the degree to which very early memories are available to adults' purposeful recall efforts.

Some of the questions appear to be answerable using simple inference or general knowledge rather than specific episodic memory (Davis et al., 2008; Loftus, 1993). For example, in Usher and Neisser's (1993) influential study, answers to questions such as 'Who took care of you while your mother was in the hospital?' could be based on general knowledge rather than a precise memory of a pinpointed early childhood episode.

Davis and colleagues (2008) showed that study outcomes are in fact strongly influenced by variations in scoring criteria. Participants were asked to recall the circumstances of a sibling birth in response to direct questions used previously by Usher and Neisser (1993) and Eacott and Crawley (1998). Answers were scored using three different criteria: (1) a lenient system used by Usher and Neisser (1993) and Eacott and Crawley (1998) in which any informative response was accepted; (2) a somewhat stricter system used by Sheingold and Tenney (1982) in which answers were required to be specific; and (3) a new system based on suggestions by Loftus (1993) in which responses were required to be so detailed that they could not have been a product of guessing. For example, acceptable answers to the question 'What was the baby wearing?' included 'a blanket' using the most lenient scoring system, 'a slightly pale pink towel' using the intermediate scoring system, and 'a bright pink floral wrap' using the strict scoring system. Not surprisingly, choice of scoring criteria matters. Using the criteria adopted by Usher and Neisser and by Eacott and Crawley, Davis et al. (2008) found that fully 100 per cent of their college student participants were able to answer at least three memory questions about a sibling birth that had occurred when they were 1 year old. This surprising result suggests that participants were relying at least in part on general knowledge rather than on precise memory images or content. Using the strictest scoring criteria, only 40 per cent of respondents who were age 5 when a sibling was born received credit for three valid answers to memory questions.

The authors made a case for using the intermediate scoring criteria, in which responses are required to be specific but not so overly detailed that many apparently reasonable responses are disqualified.

Even among researchers who use the same general methodological approaches, minor variations in how memory questions are asked can be influential. For example, the degree to which instructions stress that participants should decline to answer direct questions when they have no corresponding specific personal memory may be important (Eacott and Crawley, 1998). Bruce et al. (2005) demonstrated a dramatic effect of question type: requests for disconnected fragmentary memories produced a younger mean age of the earliest memory than requests for fully formed, story-like memories.

Given the potential impact of method on reported outcomes, study results cannot be accepted simply at face value. The valuable research strategy used by Hayne and colleagues (Davis et al., 2008; Jack and Hayne, 2007), in which different methodological approaches are implemented and compared within the same study, can inform both critiques of prior research and the design of new studies.

Culture and gender

Culture and gender are among the most prominent individual difference variables in autobiographical memory research. Other potential influences include intelligence (Rabbit and McInnis, 1988), personality (Kihlstrom and Harickiewicz, 1982; Myers and Brewin, 1994; Spirrison and McCarley, 2001), and handedness or inter-hemispheric interaction (Christman, Propper and Brown, 2006). We limit our analysis to gender and culture because relevant studies are plentiful and because gender and cultural effects have well-articulated theoretical implications for the development of autobiographical memory.

Gender and cultural differences in early memory have attracted intense scientific

interest in large part because they bear directly on a major new theory of autobiographical memory development, what has been called the social construction or social interaction model (Hudson, 1990; Nelson, 1993; Pillemer, 1998a, 1998b; Pillemer and White, 1989; Wang, 2003) or the social cultural theory (Fivush, Haden, and Reese, 2006; Fivush and Nelson, 2004; Nelson and Fivush, 2004; Wang, 2008). According to this theoretical perspective, autobiographical memory development is much more than the predetermined evolution of an internal cognitive system. Development occurs as a result of social interactions involving parents and family members. Parents engage their children in memory talk from a very early age, even before the child has the language skills necessary to contribute fully. With increasing age the child slowly assumes more and more conversational responsibility. These parent-guided conversations show the child what personal memory is and how to use it to forge social connections, solve problems, and construct an autobiographical sense of self (Fivush et al., 2006).

One implication of the social interaction model is that memory should vary as a function of the amount and quality of parent-child talk about the past. Fivush and colleagues have extensively examined reminiscing in parent-child dialogues (summarized by Fivush et al., 2006). Highly elaborative mothers eagerly engage their children in memory talk by using open-ended questions and by providing and encouraging detailed event descriptions. Less elaborative mothers use a more sparse and informational questioning style in which they seek out answers to particular questions rather than personal details. Children of highly elaborative parents also adopt an elaborative memory style and produce richer and more detailed personal memories than children of less elaborative parents (Reese, Haden and Fivush, 1993). Memory styles are modifiable: children whose mothers received training in elaborative reminiscing techniques produce memories that are more detailed and under

some circumstances more accurate than do children of untrained mothers (Boland, Haden, and Ornstein, 2003; Reese and Newcombe, 2007).

Comparisons between males and females, and among cultural groups, provide a natural laboratory for examining how distinctive styles of social interaction in childhood contribute to memory performance. Do adults representing different cultural and gender groups vary systematically in the ways that childhood is remembered? Do corresponding cultural and gender differences exist in parent-child talk about the personal past? Research has provided affirmative answers to both of these questions.

Culture

Researchers have identified consistent relationships between cultural identity and adults' earliest recollections (for reviews, see Leichtman, Wang and Pillemer, 2003; Pillemer, 1998a; Wang, 2003; Wang, 2008 provides a detailed summary of individual studies). Comparisons frequently involve Caucasian and Asian participants, in part because of the availability of large numbers of Asian students attending American universities and in part because of distinctive cultural patterns of child socialization. When adults are asked to recount their earliest memory, Caucasians often describe events that occurred earlier in childhood than do Asians (see Table 27.1). Mullen's (1994) initial analysis focused on college students, graduate students, and adults affiliated with universities in the Boston area. In three separate studies, the age of the earliest memory for Asians (representing both Asian Americans and foreign Asians from various countries of origin) was later than Caucasians by 8.8 months, 5.3 months, and 4.9 months. When Mullen obtained memories from individuals who had grown up in Korea and who completed questionnaires written in Korean, the average age of the earliest memory was substantially older than in mixed Asian college samples.

Mullen's (1994) discovery of a younger age of the earliest memory for Caucasian students compared to Asian students was confirmed in a series of studies conducted by Wang and colleagues (Wang, 2001; Wang and Ross, 2005). The expected cultural difference also was evident when American and Taiwanese college students were asked to report their earliest memories involving the self, mother, family, friend, and surroundings (Wang, 2006). In each of these five domains, memories recounted by Caucasians were notably earlier than memories recounted by Asians. Fiske and Pillemer (2006) elicited college students' earliest memories of dreams; they identified a higher incidence and earlier occurrence of childhood dream memories among Caucasians than among Asians. Matsumoto and Stanny (2006) provided an exception to the predicted pattern of results: Japanese college students reported a younger age of earliest memory than did Caucasian students. Although the sample sizes were small, this discrepant finding for Japanese students indicates that differences between Asian sub-groups should be examined more carefully in future research.

Cultural differences in early memory content also are apparent (Wang, 2001, 2003, 2008; Wang and Ross, 2005). Wang (2003) summarized the differences as follows: 'Childhood memories reported by American adults tend to be voluminous, specific, self-focused, and emotionally elaborate, whereas memories provided by Chinese are often skeletal, generic, centered on relationships, and emotionally unexpressive' (65). The characteristic qualities of Caucasians' earliest memories – high specificity, high elaboration, richness of personal detail – support the development of a well-articulated independent sense of self, whereas the qualities of Asians' earliest memories – low specificity, brevity, and communal themes – are consistent with a later-developing, other-centred self-concept.

According to the social interaction hypothesis, cultural differences in the age and content of early memories should be linked to

corresponding differences in socialization practices. Mullen and Yi (1995) looked directly at patterns of parent–child memory talk among Caucasian families in the United States and Asian families in Korea. Mother–child conversations were recorded and analyzed; talk about specific episodes that the child had experienced was three times higher in the United States than in Korea. Wang and colleagues have reported parallel findings (summarized in Wang, 2003), in which Caucasian mothers reminisce with their children using a more elaborative conversational style and Chinese mothers adopt a less elaborative, factual questioning style. Presumably, the encouragement that Caucasian children receive to remember and talk about specific personal episodes facilitates their long-term recall years later.

Cultural differences in parent–child memory talk appear to reflect different world views about the processes and goals of human development (Fivush et al., 2006; Leichtman et al., 2003; Pillemer, 1998a; Wang, 2003). In general, Western cultures place a premium on the development of an autonomous, independent sense of self, whereas Asian cultures value interdependence and social connectedness. In the United States, ‘personal event memories with specific details and elaboration are an important way for people to distinguish themselves as unique individuals ... a coherent, elaborate, well-integrated life history with the individual cast as the central character is indispensable for psychological integrity and well-being’ (Wang, 2003: 73). In Asian cultures, detailed personal memories do not contribute as strongly to a coherent sense of self: ‘the construction of identity is less dependent on a unique autobiographical history but more on a web of relationships’ (Wang, 2003: 73).

Asian–Caucasian differences in dream recall provide additional support for a connection between earliest memories and socialization practices (Fiske and Pillemer, 2006). As mentioned previously, Caucasian college students were more likely to remember childhood dreams and had a younger age

of the earliest dream memory. Participants also were questioned about dream-related behaviours and attitudes. Consistent with the social interaction hypothesis, Caucasians were more likely to report talking about their earliest dream with a parent; they received stronger encouragement to talk about their dreams; they were more comfortable sharing their dreams with their parents; they were more likely to talk about their dreams with others in adulthood; and they rated their dreams as more important.

MacDonald, Uesiliana, and Hayne (2000) examined earliest memories of New Zealand college students representing three distinct cultural groups: Europeans (mostly Northern European descent), Asians (mostly Chinese), and Maori (indigenous population). The mean age of the earliest memory for Asians (4.8 years) was predictably older than for Europeans (3.6 years), but Maori participants produced an even younger memory age (2.7 years). The age of the earliest memory for the Maori group is consistent with cultural values: Maori culture places a strong emphasis on both ‘personal and tribal history’ (MacDonald et al., 2000: 373). A follow-up study (Reese, Hayne and MacDonald, 2008) provided only mixed support for the social interaction hypothesis. Maori mothers were actually less elaborative than European mothers when talking with their children about recent shared past events, although they were somewhat more elaborative when telling the child about a highly significant past event: the child’s birth. By adopting an elaborative memory style when recounting truly important family episodes, Maori mothers ‘may be helping their children to encode a wide range of early memories in a richer way and later to retain these early memories into adulthood’ (Reese et al., 2008: 122). Nevertheless, the authors acknowledge that other explanations are plausible, such as a greater willingness among Maori participants to report earliest memories that are fragmentary rather than story-like.

Harpaz-Rotem and Hirst (2005) conducted a unique test of the social interaction model

by comparing memories of Israeli adults raised either in a traditional family setting or a kibbutz. Although these groups of participants do not represent different cultures in a technical sense, the family environments differ greatly. Kibbutz-raised children live in a group facility where a trained nurse is responsible for the care of multiple children. Because parent-child contact is more limited in a kibbutz than in a traditional home, memory talk about personally experienced past events may occur less frequently. As predicted, the mean age of the earliest memory for adults raised at home (3.08 years) was younger than the mean age for children raised in a kibbutz (4.15 years). A second study compared adolescents who had grown up in a traditional kibbutz to adults who had grown up in a reformed kibbutz, where children sleep in their parents' house and go to group care only during the day. The mean age of the earliest memory for adults raised in a traditional kibbutz (4.02 years) was older than the mean age for adults who were raised in a reformed kibbutz (2.93 years). A parent questionnaire confirmed that participants from traditional kibbutzim spent less time with parents than participants from reformed kibbutzim. The authors speculated that the traditional kibbutz 'reduces the opportunity for initiating episodes to co-construct the past' (Harpaz-Rotem and Hirst, 2005: 58).

Associations between the mean age of adults' earliest memories, cultural values, and socialization practices are compatible with social interaction theory. Because the data are correlational in nature, support for the theory is indirect. The case for social interaction is strengthened because other potential explanatory factors do not lead to straightforward predictions about cultural differences (Harpaz-Rotem and Hirst, 2005). Long-term memory differences between Asians and Caucasians, or between traditional and reformed kibbutz members, could be due to different rates of brain maturation, cognitive development, or language development, but there is no obvious empirical or theoretical rationale for such predictions.

Cultural variation in socialization practices provides the most compelling explanation for the highly consistent pattern of findings across diverse studies.

Gender

Gender differences in adults' recall of early childhood events and early socialization experiences also bear upon the social interaction model of autobiographical memory development (Fivush and Nelson, 2004; Pillemer, 1998a). When adults are asked to recount their earliest childhood memory, women sometimes, but not always, recount episodes that occurred at earlier ages than do men. For example, an early study by Potwin (1901) identified a substantially younger mean age of the earliest memory for college women (3.01 years) than for college men (4.40 years). More recently, Mullen (1994) found that female college students reported earlier memories than male students in three separate studies, although some differences were small (Study 1: 0.8 months; Study 2: 5.2 months; Study 3: 1.3 months) and only the largest gender effect was statistically significant. Other researchers, including Harpaz-Rotem and Hirst (2005), Kihlstrom and Harackiewicz (1982), and Wang (2001), failed to find significant sex differences in the age of the earliest memory. Rubin's (2000) synthesis of studies that elicited multiple childhood memories from respondents revealed a similar pattern: 'gender differences are at best very small. Females might have slightly more memories for ages two, three, and four, but it is not clear whether this difference is reliable' (268).

MacDonald et al.'s (2000) cross-cultural analysis provides the only strongly contrary evidence to a possible female advantage in recall of early memories. The researchers found no gender differences in New Zealand European and Maori samples, but a significant difference for New Zealand Asians in which females actually had much older earliest memories than did men (differences of 31 months and 14.5 months in two studies). This surprising finding will be revisited in a

later discussion of the social interaction hypothesis as it relates to gender differences. When their analyses focused on memory content rather than memory age, MacDonald et al. discovered that earliest childhood memories reported by women contained more information than memories reported by men across all three cultural groups.

Although support for a younger age of the earliest memory for women than for men is weak and inconsistent, the evidence for gender differences is more convincing when probes specifically target emotional memories. Cowan and Davidson (1984) asked college students to report 'one of your earliest memories in which you had a strong emotional reaction to another human being' (102); the median age at the time of the remembered emotional event was 5.5 years for females and 7.0 years for males. When college students provide childhood memories in response to emotion cues, females recall more memories than males and they retrieve them more rapidly. When recall is open-ended rather than cued, women remember more emotional but not non-emotional early memories than men do (Davis, 1999).

According to the social interaction model, gender differences in early socialization should mirror observed differences in adults' childhood memories. Fivush et al. (2006) provided a review and analysis of how mothers and fathers engage in memory talk with their sons and daughters. One principal finding is that parents engage in more elaborative reminiscing with girls than with boys (Reese and Fivush, 1993; Reese et al., 1996). In addition, mothers appear to adopt a more elaborative memory style when talking about emotional memories with daughters than with sons. Preschoolers' memories also reflect differences in emotional expression: 'girls are providing more elaborated and more emotionally rich narratives of their personal past than are boys' (Fivush et al., 2006: 1576).

Gender differences in parent-child reminiscing are consistent with the finding that women's early memories tend to be more detailed than men's memories, and especially

that women have greater access to early memories involving emotions. An important caveat is the indirect and at times post hoc nature of analyses linking early socialization to gender differences in adults' memories of childhood. Consider the contrary findings of MacDonald et al. (2000), in which Asian women in New Zealand reported a substantially older age of the earliest memory than did Asian men. The authors pointed out that Asian boys and girls may be socialized differently with a 'greater family emphasis on the personal experiences and accomplishments of sons relative to daughters' (MacDonald et al., 2000: 374). Yet other research examining the age of Asians' and Caucasians' earliest childhood memories has failed to identify significant culture-by-gender interactions (Wang, 2001, 2006). In sum, cultural comparisons provide more extensive, consistent, and convincing support for the social interaction hypothesis than do gender comparisons.

MEMORIES OF MIDDLE CHILDHOOD AND ADOLESCENCE

The preceding analysis of early childhood memories is based on a large body of theoretically motivated research. Scientific interest in adults' memories of early childhood flows in part from a fascination with the provocative psychoanalytic concept of infantile amnesia and the contrasting theoretical perspectives offered by modern developmental psychology. Although research psychologists have for the most part eschewed repression as a primary explanatory factor, the idea of a dramatic change in autobiographical memory during the preschool years has provided an organizing structure for memory research and a 'dramatic forum for demonstrating the explanatory power and real-world applicability of developmental science' (Pillemer, 1998b: 897; see also Saywitz and Camparo, Chapter 21). The convergence of theory and research has increased our understanding of early memory but at the

same time has diverted attention from the potential importance of later developmental transitions.

Research has targeted adults' memories of middle childhood and adolescence far less frequently and systematically than memories of early childhood. Newcombe et al. (2007) observed that empirical studies of childhood memory 'rarely include data on events experienced at later ages, such as 10 or 12 years'(42). Thorne (2000) noted that personality psychologists' interest in autobiographical memories has been 'relegated to internalized representations of early childhood experiences'(45) and she called for a greater focus on memories of adolescence. The occasional study has examined age-related changes in memory content. For example, Thorne (1995) identified a lower incidence of episodes involving parents, and a higher incidence of episodes involving peers, in memories of adolescence than in memories of middle childhood. But the absence of an overarching theoretical structure or organizational framework for individual studies makes it difficult to summarize the findings concisely and meaningfully.

One way to shift scientific attention to middle childhood and early adolescence is to direct the memory search to this specific age range. Collins, Pillemer, Ivcevic, and Gooze (2007) asked college students and middle-aged adults to recount life events that had occurred when they were between ages 8 and 18. Participants described life episodes when they felt especially good or especially bad about themselves. Memories were then plotted as a function of age of occurrence. Figure 27.3 presents separate age distributions of positive and negative memories reported by college students (Collins et al., 2007, Study 2). The incidence of positive memories increases markedly at ages 17 and 18. In contrast, the distribution of negative memories is relatively flat, with only a modest age-related increase. To determine if the sharp rise in positive memories at the end of the requested age interval was tied specifically to late adolescence, college stu-

dents were asked to report a positive and a negative memory occurring between the ages of 10 and 15 (Collins et al., 2007, Study 3). In this case, age distributions of positive and negative memories were quite similar, each showing a modest age-related increase consistent with conventional decay theories of memory.

Collins et al.'s (2007) findings support recent research and theory on what has been termed the reminiscence bump (Berntsen and Rubin, 2002; Rubin and Berntsen, 2003). When older adults are asked to recall life episodes, memories are overrepresented (they form a 'bump') between the ages of 15 and 30. Importantly, the memory peak in late adolescence and early adulthood occurs for positive but not negative life events. Berntsen and Rubin (2002) proposed a life script explanation for the divergent positive and negative age distributions. According to the theory, recall of positive events is guided by temporally constrained cultural expectations that identify positive landmark events during late adolescence and early adulthood. Predictable positive experiences include graduating from high school, gaining college acceptance, getting married, landing a job, and having a baby. A life script points the memory search to the age period where these positive events are expected to occur (but see Dickson, Pillemer, and Bruehl, 2011, for an alternative perspective). In contrast, the age of occurrence of major negative life events is not scripted or highly predictable, such that negative memories are spread more evenly across the life span. The 8- to 18-year age interval used by Collins et al. (2007) captures the beginning of the upward-sloping component of the reminiscence bump. Consistent with the life script theory, only positive memories showed a marked age-related rise during late adolescence. In addition, predictable events marking the major life transition from high school to college – high school graduation and awards, and college acceptance – occurred frequently in positive memories only.

By specifically targeting memories from middle childhood and adolescence, Collins

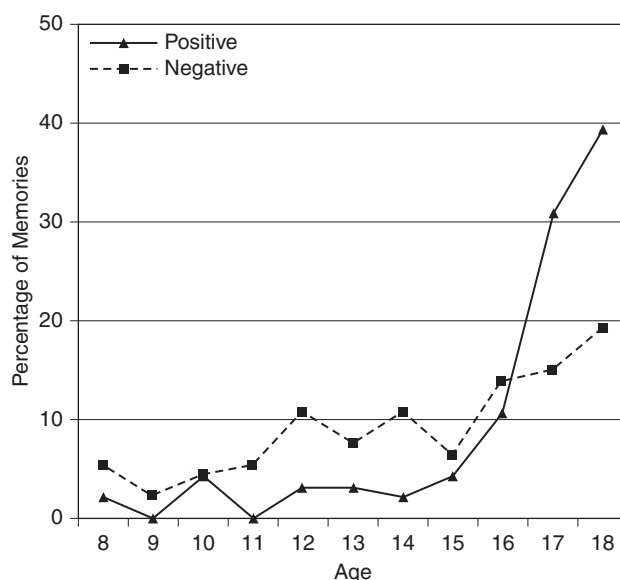


Figure 27.3 Age distributions of positive and negative memories between the ages of 8 and 18 years for Babson College students

Source: From 'Cultural Scripts Guide Recall of Intensely Positive Life Events', by K.A. Collins, D.B. Pillemer, Z. Ivcevic, and R.A. Gooze, 2007, *Memory & Cognition*, 35, p. 654. Copyright by the Psychonomic Society, Inc. Reprinted with kind permission from Springer Science and Business Media.

et al. (2007) revealed an age-dependent, theoretically meaningful pattern of results. When adults reminisce about their childhoods, we should expect not only a scarcity of very early memories, but also an overrepresentation of positive memories in late adolescence. Because highly salient personal memories may inform or direct current attitudes, behaviours, and self-perceptions (Bluck, Alea, Habermas and Rubin, 2005; Pillemer, 2003), vivid recollections of pivotal events from late adolescence could prove to be especially influential over the life course. Beliefs about 'who we are' may be anchored by memories representing the formative transition to adulthood. The clustering of positive memories in adolescence could have important implications for theories of adult self-concept and personal identity (Thorne, 2000).

Research on the reminiscence bump identifies late adolescence as a critical transition point for autobiographical memory, and this age period is likely to draw increasing

scientific attention. What about the neglected decade between ages 6 and 16? Like early childhood and adolescence, middle childhood and pre-adolescence also are marked by developmental changes in brain structure and function, cognition, socialization, and sexuality. Discovering whether and how these changes influence, and are reflected in, adults' memories of childhood is a promising direction for new research.

CONCLUSION

Research on adults' recollections of childhood has enhanced our scientific understanding of long-term autobiographical memory. For example, the temporal distribution of earliest memories is well established, with almost all studies reporting a mean age of the earliest memory at 3 years or older. In addition, the contents of adults' early memories

are frequently corroborated by other individuals who are knowledgeable about the remembered events, thereby increasing our confidence in the validity of retrospective reports. Memory characteristics vary predictably across studies using different participant groups and methodologies. For example, the mean age of the earliest memory is consistently earlier for Caucasian than for Asian adults. In contrast to research on earliest childhood memories, studies of adults' memories of middle childhood are notably under-represented in the scientific literature, and this is a fertile topic for new research.

Although research on adults' memories of childhood has provided a fuller scientific understanding of long-term recall processes, it has much less to say about the everyday *experience* of childhood. What, if anything, can be learned from adults' recollections of childhood that is not evident from children's own accounts or, for that matter, from adults' direct observations of children? These different sources of information may provide distinct yet complementary perspectives. Consider, as just one of many possible examples, adults' memories of strict parental discipline in childhood. Early experiences of 'being punished' are remembered and reinterpreted from an adult's longer view in which the past is connected to the present. When evaluated from the distant perspective of adulthood, the vividly remembered indignities and discomforts of childhood punishment could be offset in part by perceived long-term benefits (for example, 'My Dad was very tough on me, but he helped to make me into who I am today'). In contrast, children's contemporary stories of strict parental discipline, like direct observations of affected children, are unlikely to contain a parallel future-oriented perspective.

Other contributors to this volume draw attention to an issue that developmental researchers have for the most part failed to address: What value should be placed on children's own voices in research and policy decisions? Whether or not children are given

voice in such matters could be influenced by discrepancies between children's current accounts and adults' retrospective accounts. If adults assume that their own perspectives on early life experiences are more valid or useful than those of children, the impact of children's voices is diminished. For researchers interested in capturing the true fabric of childhood experience, a triangulated approach that incorporates and balances adults' memories of childhood, children's current accounts, and direct observations of children is likely to prove most useful and insightful.

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