General Article

Culture and Language in the Emergence of Autobiographical Memory

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ABSTRACT—*Current conceptualizations of childhood amnesia assume that there is a "barrier" to remembering early experiences that must be overcome in order for one to begin to accumulate autobiographical memories. In contrast, we present a social-cultural-developmental perspective on the emergence of autobiographical memory. We first demonstrate the gradual emergence of autobiographical memories across the preschool years and then relate this developmental process to specific developments in language, narrative, and understanding of self and other that vary among individuals, as well as by culture and gender.*

Just over one hundred years ago, Freud (1924/1953) identified the phenomenon of childhood amnesia, adults' inability to recall events that occurred before 3 or 4 years of age. Explanations of childhood amnesia, however, have been more elusive (see Pillemer & White, 1989, and Pillemer, 1998, for excellent reviews). Whether focusing on neurological developments (e.g., Newcombe, Drummey, Fox, Lie, & Ottinger-Alberts, 2000), cognitive-schematic changes (e.g., Neisser, 1962), or the role of self in the development of accessible and durable autobiographical memories (e.g., Howe & Courage, 1993), current explanations assume there is a "barrier" that needs to be overcome, and that once this barrier is crossed, autobiographical memories are possible. Barrier accounts assume that what needs to be explained is the lack of memories before a certain developmental point, and then the offset to childhood amnesia that results in the accumulation of autobiographical memories.

In contrast, we propose that what is in need of explanation is the presence of autobiographical memories at all. How and why do humans have autobiographical memory, and what is the process by which it develops? Although almost all adults recall at least some events from their childhood, the age of earliest memory, density of memories across childhood, and level of detail and coherence of autobiographical memories vary widely across individuals. Some of these differences are related to gender and culture: Adult females and individuals from Western cultures have an earlier age of first memory, and have longer and more detailed memories of their childhood, than adult males and individuals from Asian cultures (see Fivush & Haden, 2003, for an overview). These findings call for a different kind of explanation of childhood amnesia.

In this article, we present a social-cultural-developmental perspective on the emergence of autobiographical memory. We first demonstrate the gradual emergence of autobiographical memories across the preschool years and then relate this developmental process to specific developments in language, narrative, and understanding of self and other that vary among individuals, as well as by culture and gender.

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ADULTS' RECOLLECTIONS OF CHILDHOOD

Whether adults are asked to recall their earliest memory or to generate childhood memories from a set of cue words, the average age at which the earliest remembered events took place (at least among Western participants) is consistently between 3 and 4 years. However, many people can recall some details about at least some events that occurred as early as age 2, when specific events (e.g., the birth of a sibling, an overnight hospitalization) known to have occurred at specific points in their past are targeted (Usher & Neisser, 1993). When forgetting curves are fitted to adults' recollections of early childhood memories, two points of divergence from the expected linear function are found. First, there are significantly fewer memories from below the age of 7 than would be expected by extrapolation of the forgetting curve, and, second, there are almost no memories before the age of 3 (Wetzler & Sweeney, 1986). Weigle and Bauer (2000) confirmed that memories from the preschool period are sparse; they asked participants for their two earliest memories and found that the earliest memory was from about age 3, with the next earliest memory occurring, on average, a year later. Bruce, Dolan, and Phillips-Grant (2000) developed a technique for estimating when autobiographical memories become more continuous. By calculating the age at which early childhood events that are "remembered" become more numerous than early childhood events that are "known" to have happened but not personally recalled, they found that autobiographical memory does not become continuous until about age 4 1/2. These results point to the critical fact that childhood amnesia is not an all-or-none phenomenon.

At least some fragmentary memories may begin to emerge quite early. Yet early memories are sparsely spaced across time and do not seem to approach a continuous sense of the past until the end of the preschool years. How might developmental research help elucidate the gradual emergence of coherent autobiographical memories across the preschool years?

THE DEVELOPMENT OF MEMORY

Even before birth, the human child is capable of discriminating incoming information and retaining this information over time. De Casper and Spence (1986) demonstrated that neonates can differentiate their mother's voice from other voices within hours of birth. During the first 6 months of life, infants will habituate to objects and pictures of presented stimuli, and by 6 months of age, infants will continue to show decreased looking times to pictures seen as much as 2 weeks in the past (Fagen, 1973). Infants will also learn to kick their feet in order to get a mobile over the crib to move, and they will remember this contingency over increasing time delays across the first year of life (Rovee-Collier & Hayne, 2000). Between 9 and 12 months of age, infants begin to engage in deferred imitation (Bauer, Wenner, Dropik, & Wewerka, 2000); after seeing a novel action performed on an unusual object, infants will remember and perform this action when presented with that object even several days later. By the end of the first year, infants are able to recall several actions performed on multiple objects for reliably longer periods of time. Between the ages of 1 and 3 years, deferred imitation becomes more reliable, more durable over more extended periods of time, and more temporally organized (Bauer et al., 2000). Finally, across the first few years of life, infants develop reliable memory for routine events in their everyday lives (Nelson, 1986).

As impressive as these early memory abilities are, they do not provide evidence of autobiographical memory. Autobiographical memory requires explicit memory of an event that occurred in a specific time and place in one's personal past (Tulving, 2002). Further, autobiographical memory is referenced to the self and has personal significance as part of an organized "life story" (Conway & Rubin, 1993). The need for repeated learning trials and dependence on environmental cues for memory to be demonstrated in the first 2 years of life suggest a developing ability to recall events, but as yet no sense of a self remembering a specific point in the past, or a past memory being related to current conceptions of self in a continuous self-narrative.

Even when children first begin to refer to the past in language, at about 18 months of age, these references are fleeting and fragmentary (Nelson & Ross, 1980), and usually refer to just-completed actions or familiar routines. At about 20 to 24 months of age, children begin to make more extended references to events that occurred in the more distant past. The emergence of linguistic references to past events raises the thorny issue of the relation between language and autobiographical memory.

LANGUAGE, NARRATIVE, AND AUTOBIOGRAPHICAL MEMORY

Language appears critical in the development of autobiographical memory for three interrelated reasons. First, language is not simply the way in which memories are expressed, but is instrumental in providing an organizational structure for personal experience. Second, language allows children to enter into dialogues with other people about their experiences, and these dialogues facilitate children's developing abilities to form organized representations of their experiences. Finally, these dialogues highlight for children the fact that memories are representations of events that occurred at specified points in the past and that are evaluated from multiple perspectives.

Language and the Organization of Memory

If language is merely a form for expressing existing memory representations, then existing memories should become expressible in language as it develops. However, there is now substantial evidence that experiences that occurred before the advent of language, and that may be remembered nonverbally, are not easily "translatable" into language. Perhaps the best evidence of this is a recent study by Simcock and Hayne (2002). Two- and 3-year-old children engaged in complex play activities, and memory for these activities was assessed both behaviorally and verbally 6 and 12 months later. Simcock and Hayne also assessed both receptive (comprehension) and productive language skills at both the time of experience and the time of recall. Strikingly, although all children provided verbal recall, "in no instance during test did the child use a word or words to describe the event that had not been part of his or her productive vocabulary at the time of the event" (p. 229). The specific language skills available at the time of an experience affect what can subsequently be verbally recalled about it (see Bauer & Wewerka, 1995, and Peterson & Rideout, 1998, for similar results).

Moreover, even after children become more competent language users, the linguistic structure provided by adults during an experienced event provides the organization for subsequent recall. When a child and adult experience events together, the adult provides a linguistic "scaffold" that helps to focus the child's attention and organize the event into a coherent whole. Several studies have demonstrated that those aspects of an experienced event that were linguistically scaffolded by an adult are better recalled by the child than aspects not scaffolded through an adult's language, even when the child demonstrated interest in those particular aspects of the event (Haden, Ornstein, Eckerman, & Didow, 2001; Tessler & Nelson, 1994). Throughout the preschool years, children remain at least somewhat dependent on adults to structure ongoing events through language to help organize the events for future recall. But recalling an event in retrospect also requires linguistic scaffolding. The ways in which adults and children reminisce about past events influence children's developing ability to organize and recall their personal past, which brings us to the second way in which language and autobiographical memory are interrelated.

Adult-Child Memory Dialogues

Extensive research has documented that parental reminiscing style influences children's developing autobiographical memory skills (see Nelson & Fivush, 2000, for a review). Parents vary along a dimension of elaboration in their reminiscing style; some parents talk a great deal about past events, asking many questions and providing a great deal of embellished detail, whereas other parents are less elaborative, discussing the past in less detail and asking fewer and more redundant

questions. Longitudinal research confirms that children of more highly elaborative parents come to tell more richly detailed narratives of their own past than do children of less elaborative parents (Fivush, Haden, & Reese, 1996; Reese, 2002).

Talking about the past involves more than recalling details of what occurred. Children must also learn the canonical narrative structure of autobiographical recall in early parent-guided conversations. Those parents who provide more orienting information, setting past events in time and place, and more evaluative information, placing events in emotional and personally meaningful contexts, have children who, by the end of the preschool years, are recounting more coherent and more evaluative narratives of their own personal past (Haden, Haine, & Fivush, 1997).

Thus, our claim is that an elaborative maternal reminiscing style fosters the development of specific autobiographical memory skills that help the child to organize and elaborate on personally experienced events, both as they are occurring and in reminiscing. Although all children will develop autobiographical memories, children of more highly elaborative mothers will come to have more highly elaborated and coherent autobiographical memories than children of less elaborative mothers. Moreover, as children develop the language and narrative skills to organize and recall their past through participating in adult-guided reminiscing, they are also beginning to differentiate the past *as* past, that is, to understand time and sequence and how past experiences fit along a developing time line. Through locating past events in time, children begin to develop the idea of a continuous self, a self that exists through time.

Language of the Past

The emergence of autobiographical memory involves at least two orderings of time. The first is the ordering of the sequence within the event recalled, an ordering that includes settings, plans, goals, actions, outcomes, achievements, and the temporal and causal relations among them. Very young children have good command of sequences of familiar routines, or scripts (Nelson, 1986), and are sensitive to order, especially causal order, in brief, newly learned action sequences (Bauer et al., 2000). The second ordering dimension places the event narrative at a specific time in the past. Friedman (1993) showed that the ability to order familiar daily events increases over the preschool period, and that children's understanding of sequence, duration, and distance of events begins during the preschool years but continues to develop in later childhood. Preschool children also begin to mark time through language. For a young child who has no external measures of time, such as days, weeks, months, and years, sequencing of events in past time can be achieved primarily by nominal days, for example, "my birthday" or "Christmas," or times of the year, such as "last summer." Use of labels of this kind indicates that the child is conceiving of an event as having happened at a particular time in the past different from the present. However, the acquisition of relative time markers, such as *yesterday* and *tomorrow*, is typically a late achievement, often not realized until late in the fifth year. At the outset of their use, *yesterday* and *tomorrow* may be used for any day not today, or *yesterday* may be used for any time in the past (Harner, 1982).

The beginning use of temporal language marks children's earliest understanding of a personal past, an awareness that it is the current self that engaged in these past activities. Early research on self highlighted the achievement of self-recognition (Lewis & Brooks-Gunn, 1979). Between 16 and 24 months of age, children will begin to touch that place on their face that has been surreptitiously marked with rouge when they see themselves in a mirror. Howe and Courage (1993) have argued that the achievement of this "cognitive self" heralds the offset of childhood amnesia, as there is now a self-schema around which to organize autobiographical memories. Reese (2002) has shown that early in development, autobiographical skills are related to mirror self-recognition, but that by the end of the preschool years, maternal reminiscing style eclipses mirror self-recognition in predicting the development of autobiographical memory. Thus, we agree with Howe and Courage that mirror self-recognition is critical to the emergence of autobiographical memory, but in contrast to them, we see this as just one component of a more complex understanding of self in time.

Povinelli and his colleagues have studied the understanding of the relation of the present self to the past self in 3- and 4-year-olds by using a delayed-self-recognition paradigm (Povinelli, Landry, Theall, Clark, & Castille, 1999). In this paradigm, while the child engages in a game of sorting cards, the experimenter surreptitiously places a sticker on the child's head; the sticker remains visible in a video record of the game. A few minutes later, the child watches the video recording. Most children spontaneously point to and name their image on the screen. However, whereas most children note the sticker on the child's head in the video, only 4- and 5-year-olds attempt to remove it from their heads; very few 3-year-olds do so. This research indicates that only at about age 4 do children begin to have a temporal sense of self, relating past self to present self, a requirement for autobiographical memory. Welch-Ross (2001) found a strong relation between children's ability to recognize themselves on video and to tell a detailed personal narrative, providing a direct link from awareness of self in time to the construction of autobiographical memory.

Language of the Self and Other

Autobiographical memory depends not only on an awareness of self in the past, but also on an awareness of others with whom one has shared the past, as well as an awareness that others may remember the past differently. Through participating in adult-guided interactions, children may become aware that memories are subjective representations, in the sense that what one person remembers about an event may or may not be the same as what someone else who has experienced that same event remembers (Fivush, 2001). In mother-child reminiscing, there are critical conversational junctures at which mothers and children disagree about what occurred. Sometimes this is at the level of the "facts" of the event—who was there, what objects were present, what activities were engaged in. These kinds of disagreements challenge children to begin to understand that memories are representations of what occurred, and that different people may remember different aspects of experienced events. The same process encourages children to reflect on their own recollection of an event as a unique reexperience unshared by others.

Often, disagreements in recollection are not about facts but about emotions and evaluations. Mothers and children may disagree on whether they felt sad or angry, whether or not they were scared, and whether or not they liked the roller coaster or visiting Santa. These points of conflict highlight for children that they may have a different interpretation of, evaluation of, or emotional reaction to an event than

others do. This awareness is clearly related to concomitant developments in children's theory of mind (Perner, 2000), that is, their emerging awareness that they and others have thoughts, feelings, desires, and beliefs, and that these mental states can vary among individuals. Theory of mind develops gradually across the preschool years, and both Perner and Welch-Ross (2001) have shown that developments in theory of mind are related to autobiographical memory. Through negotiating disagreements about the past, children may come to understand that they have a unique perspective on what occurred. Their memory is "owned" in the sense that they have a particular evaluative stance that may or may not be shared with others. Thus, parent-child reminiscing can facilitate children's understanding of a past self as differentiated from others, yet as continuous with the self in the present: "This is what I remember about that past event in contrast to what others may remember, and this is how I evaluate that experience from my current self-perspective."

CULTURE AND GENDER IN AUTOBIOGRAPHICAL MEMORY

Thus far, we have presented evidence that autobiographical memories emerge gradually across the preschool years and are related to children's developing abilities in language and in understanding self through time and in relation to others. Each of these skills also develops gradually across the preschool years and shows individual differences in rate of acquisition and achievement. We have further demonstrated that these abilities emerge within the context of social interactions within which adults provide a linguistic scaffold for children to organize memories of the past, and, again, that these interactions show great individual variation. Thus, our approach underscores individual differences. In this section, we consider factors related to culture and gender that may contribute to these individual differences in maternal style and child outcome.

If we assume that a major function of talking about the past is to help construct an understanding of self through time, then the way in which the self is conceptualized will influence the way in which the past is constructed, and, in turn, the way in which the past is constructed will influence the way in which the self is conceptualized, in an ongoing dialectical relation. Several theorists have postulated that Western and Eastern cultures differ along a dimension of individualism-collectivism in defining the self (Markus & Oyserman, 1989). More specifically, they propose that Western cultures define the self as an independent autonomous agent, in control of its own emotions, actions, and outcomes, whereas Eastern cultures define the self as an interdependent part of a social group, regulating its actions, emotions, and outcomes in relation to others. Intriguingly, there are cultural differences in autobiographical memory that mirror these distinctions. Mothers from Western cultures talk about the past in more elaborated and more emotional ways than do mothers from Eastern cultures; Western mothers focus on the child's own activities and emotional reactions, whereas Eastern mothers place the child in a more communal setting, playing down emotions, such as anger, that might separate the child from the group and highlighting moral emotions and lessons (Leichtman, Wang, & Pillemer, 2003).

An elaborative and emotional reminiscing style among mothers would predict more elaborated and more detailed autobiographical memory in their children for several reasons. First, a more elaborated reminiscing style would lead to more organized and detailed, and therefore more accessible, memories. Second, more elaborative reminiscing would facilitate children's developing understanding of time, and especially self in time, through focusing children on details of temporally specified events. Finally, more elaborated reminiscing would allow more opportunities for mothers and children to disagree and negotiate the past, thus facilitating children's developing understanding of memory as representational and of the self as having a unique perspective, thus creating a truly personal past. Indeed, as early as middle childhood, children from Western cultures tell more elaborated, more detailed, and more emotional narratives of their past than do children from Eastern cultures (Han, Leichtman, & Wang, 1998), and this pattern persists through adulthood (Pillemer, 1998). In addition, adults from Eastern cultures have a later age of first memory than do adults from Western cultures and much sparser memories of childhood in general (Pillemer, 1998), again suggesting a less elaborated, less differentiated autobiographical self.

Similar to cultural concepts, gendered self-concepts are also expressed in autobiographical memories. In general, compared with adult males, adult females have longer, more detailed, more vivid, and more emotionally laden autobiographical memories of events from both adulthood and childhood, and females have an earlier age of first memory than do males (Pillemer, 1998). And again, maternal reminiscing style differs by gender; mothers are more elaborative, more evaluative, and more emotional when reminiscing with daughters than with sons (Fivush & Buckner, 2003). Thus, early culture- and gender-differentiated patterns of maternal reminiscing seem to be related to later culture- and gender-differentiated patterns of autobiographical memory and self-understanding.

FUNCTIONS OF REMINISCING: A SOCIAL-CULTURAL-DEVELOPMENTAL PERSPECTIVE

Given the theoretical perspective we have outlined here, the question changes from why human beings do not have autobiographical memories before the age of about 3 (at least in White, Western cultures) to why they develop an autobiographical memory system at all. Although we agree that developments in neurocognitive functioning and basic memory abilities lay a foundation for autobiographical memory, we argue that autobiographical memory emerges within specific social and cultural milieus, which shape the ways in which individuals may or may not develop memories of a specific personal past. Moreover, the kinds of autobiographical memories that are formed, as well as their content, organization, and temporal density, vary as a function of individual and cultural interactions that help shape autobiography and self-concept. Thus, we expect that historical and cultural constructions of self will be reflected in the way in which individuals construct their own autobiographies (Nelson, 2003).

Thus, we argue that autobiographical memory serves mainly social and cultural functions. Whereas memory for specific episodes is important for anticipating and predicting the environment, autobiographical memory is about defining self in time and in relation to others. These functions allow the individual to create a shared past with others from which an individual personal past emerges. The uniquely human ability to create a shared past allows each individual to enter a community, or culture, in which individuals share a perspective on the kinds of events that make a life and shape a self (Fivush et al., 1996). In some cultures, and to some extent in all, these functions may be served by shared cultural narratives; in other cultures (such as contemporary Western culture), more may depend on

the individual's self-definition and self-story (Nelson, 2003). Through the creation of a shared past, individuals gain a sense of who they are in relation to others, both locally within their family and community and more globally within their culture. They also attain a shared perspective on how to interpret and evaluate experience, which leads to a shared moral perspective. In a very real sense, the achievement of an autobiographical memory system sets the stage for the intergenerational transmission of family and cultural history, which is the bedrock of human culture.

REFERENCES

Bauer, P.J., Wenner, J.A., Dropik, P.L., & Wewerka, S.S. (2000). Parameters of remembering and forgetting in the transition from infancy to early childhood. *Monographs of the Society for Research in Child Development*, *65*(4, Serial No. 263).

Bauer, P.J., & Wewerka, S. (1995). One- to two-year-olds' recall of events: The more expressed the more impressed. *Journal of Experimental Child Psychology*, *59*, 475–496.

Bruce, D., Dolan, A., & Phillips-Grant, K. (2000). On the transition from childhood amnesia to the recall of personal memories. *Psychological Science*, *11*, 360–364.

Conway, M.A., & Rubin, D.C. (1993). The structure of autobiographical memory. In A.F. Collins, S.E. Gathercole, M.A. Conway, & P.E. Morris (Eds.), *Theories of memory* (pp. 103–139). Hillsdale, NJ: Erlbaum.

De Casper, A.J., & Spence, M.J. (1986). Prenatal maternal speech influences newborn's perception of speech sounds. *Infant Behavior and Development*, *9*, 133–150.

Fagan, J.F., III. (1973). Infants' delayed recognition memory and forgetting. *Journal of Experimental Child Psychology*, *16*, 424–450.

Fivush, R. (2001). Owning experience: The development of subjective perspective in autobiographical memory. In C. Moore & K. Lemmon (Eds.), *The self in time: Developmental perspectives* (pp. 35–52). Hillsdale, NJ: Erlbaum.

Fivush, R., & Buckner, J.P. (2003). Constructing gender and identity through autobiographical narratives. In R. Fivush & C.A. Haden (Eds.), *Autobiographical memory and the construction of a narrative self: Developmental and cultural perspectives* (pp. 149–168). Mahwah, NJ: Erlbaum.

Fivush, R., & Haden, C.A. (Eds.). (2003). *Autobiographical memory and the construction of a narrative self: Developmental and cultural perspectives*. Mahwah, NJ: Erlbaum.

Fivush, R., Haden, C.A., & Reese, E. (1996). Remembering, recounting and reminiscing: The development of autobiographical memory in social context. In D. Rubin (Ed.), *Reconstructing our past: An overview of autobiographical memory* (pp. 341–359). New York: Cambridge University Press.

Freud, S. (1953). *A general introduction to psychoanalysis*. New York: Pocket Books. (Original work published 1924)

Friedman, W.J. (1993). Memory for the time of past events. *Psychological Bulletin*, *11*, 44–66.

Haden, C.A., Haine, R., & Fivush, R. (1997). Developing narrative structure in parent-child conversations about the past. *Developmental Psychology*, *33*, 295–307.

Haden, C.A., Ornstein, P.A., Eckerman, C.O., & Didow, S.M. (2001). Mother-child conversational interactions as events unfold: Linkages to subsequent remembering. *Child Development*, *72*, 1016–1031.

Han, J.J., Leichtman, M.D., & Wang, Q. (1998). Autobiographical memory in Korean, Chinese, and American children. *Developmental Psychology*, *34*, 701–713.

Harner, L. (1982). Talking about the past and future. In W.J. Friedman (Ed.), *The developmental psychology of time* (pp. 141–170). New York: Academic Press.

Howe, M., & Courage, M. (1993). On resolving the enigma of childhood amnesia. *Psychological Bulletin*, *113*, 305–326.

Leichtman, M., Wang, Q., & Pillemer, D.P. (2003). In R. Fivush & C.A. Haden (Eds.), *Autobiographical memory and the construction of a narrative self: Developmental and cultural perspectives* (pp. 73–98). Mahwah, NJ: Erlbaum.

Lewis, M., & Brooks-Gunn, J. (1979). *Social cognition and the acquisition of self*. New York: Plenum.

Markus, H., & Oyserman, D. (1989). Gender and thought: The role of the self-concept. In M. Crawford & M. Gentry (Eds.), *Gender and thought: Psychological perspectives* (pp. 187–220). New York: Springer-Verlag.

Neisser, U. (1962). Cultural and cognitive discontinuity. In T.E. Gladwin & W. Sturtevant (Eds.), *Anthropology and human behavior* (pp. 54–71). Washington, DC: Anthropological Society of Washington.

Nelson, K. (1986). *Event knowledge: Structure and function in development*. Hillsdale, NJ: Erlbaum.

Nelson, K. (2003). Self and social functions: Individual autobiographical memory and collective narrative. *Memory*, *11*, 125–136.

Nelson, K., & Fivush, R. (2000). Socialization of memory. In E. Tulving & F.I.M. Craik (Eds.), *Oxford handbook of memory* (pp. 283–295). New York: Oxford University Press.

Nelson, K., & Ross, G. (1980). The generalities and specifics of long term memory in infants and young children. In M. Perlmutter (Ed.), *New directions for child development: Vol. 10. Children's memory* (pp. 87–101). San Francisco: Jossey-Bass.

Newcombe, N.S., Drummey, A.B., Fox, N.A., Lie, E., & Ottinger-Alberts, W. (2000). Remembering early childhood: How much, how, and why (or why not?). *Current Directions in Psychological Science*, *9*, 55–58.

Perner, J. (2000). Memory and theory of mind. In E. Tulving & F.I.M. Craik (Eds.), *Oxford handbook of memory* (pp. 297–312). New York: Oxford University Press.

Peterson, C., & Rideout, R. (1998). One- and two-year-olds remember medical emergencies. *Developmental Psychology*, *34*, 1059–1072.

Pillemer, D. (1998). *Momentous events, vivid memories*. Cambridge, MA: Harvard University Press.

Pillemer, D., & White, S.H. (1989). Childhood events recalled by children and adults. In H.W. Reese (Ed.), *Advances in child development and behavior, Vol. 22* (pp. 297–340). New York: Academic Press.

Povinelli, D.J., Landry, A.M., Theall, L.A., Clark, B.R., & Castille, C.M. (1999). Development of young children's understanding that the recent past is causally bound to the present. *Developmental Psychology*, *35*, 1426–1439.

Reese, E. (2002). A model of the origins of autobiographical memory. In J.W. Fagen & H. Hayne (Eds.), *Progress in infancy research* (Vol. 2, pp. 215–260). Mahwah, NJ: Erlbaum.

Rovee-Collier, C.K., & Hayne, H. (2000). Memory in infancy and early childhood. In E. Tulving & F.I.M. Craik (Eds.), *Oxford handbook of memory* (pp. 267–282). New York: Oxford University Press.

Simcock, G., & Hayne, H. (2002). Breaking the barrier? Children fail to translate their preverbal memories into language. *Psychological Science*, *13*, 225–231.

Tessler, M., & Nelson, K. (1994). Making memories: The influence of joint encoding on later recall by young children. *Consciousness and Cognition*, *3*, 307–326.

Tulving, E. (2002). Episodic memory: From mind to brain. *Annual Review of Psychology*, *53*, 1–25.

Usher, J., & Neisser, U. (1993). Childhood amnesia and the beginnings of memory for four early life events. *Journal of Experimental Psychology: General*, *122*, 155–165.

Weigle, T.W., & Bauer, P.J. (2000). Deaf and hearing adults' recollections of childhood and beyond. *Memory*, *8*, 293–310.

Welch-Ross, M. (2001). Personalizing the temporally extended self: Evaluative self-awareness and the development of autobiographical memory. In C. Moore & K. Lemmon (Eds.), *The self in time: Developmental perspectives* (pp. 97–120). Hillsdale, NJ: Erlbaum.

Wetzler, S.E., & Sweeney, J.A. (1986). Childhood amnesia: An empirical demonstration. In D. Rubin (Ed.), *Autobiographical memory* (pp. 191–202). New York: Cambridge University Press.

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