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Demystifying the beginnings of memory[☆]

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Abstract

A longstanding issue in psychology has been, When does human memory begin? More particularly, when do we begin to remember personal experiences in a way that makes them accessible to recollection later in life? Current popular and scientific thinking would have us believe that memories are possible not only at the time of our birth, but also in utero. Indeed, some writers in the popular press (as well as some recent television programs) suggest that we can remember past lives and that such memories are affecting our current behaviors. The purpose of this special issue is to examine, in a scientific context, what the most recent empirical data have to say about the nature of early memory and its development. In this article, we provide the background to the questions that prompted this special issue and suggest that memory for personal events, although it may start quite early in life, does so much later than claimed in popular writings about early memory.

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When does human memory begin? More specifically, when does memory for our personal experiences begin? When these memories do begin, are they stored permanently, affecting us regardless of their status in consciousness? These questions are at

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the heart of this special issue of *Developmental Review* and the papers that follow address different aspects of these issues.

We thought it was important to address these longstanding problems in psychology because recently many lay people, some members of the judiciary, and writers in the popular and scientific press routinely espouse the sentiment that, “Hidden away in each of us is a permanent record of our past. The smell of a school canteen can conjure up long-forgotten images of childhood; vivid replays of past events can flash by at times of intense fear. Even if it is sometimes hard to recall experiences, they are permanently inscribed somewhere amid the billions of neurons in your brain” (Furlow, 2001, p. 25). The idea that even the earliest of our memories survive intact (perhaps even veridically) in our neural structures is not just a recent belief but one that dates back to the days of the early philosophers. This view of memory was recapitulated at the beginning of the 20th century by Thorndike (1905, pp. 330–331) when he stated: “Each mental acquisition really leaves its mark. . . Nothing of good or evil is ever lost. . . Every event of a man’s mental life is written indelibly in the brain’s archives. . . .” Similar claims were echoed by Freud (1916–1917/1963) and Rank (1924/1994).

In fact, so entrenched is the notion that events experienced early in life are formative and remain in memory continuing to exert their influence throughout our lives, that we take it for granted in many areas of our everyday functioning. Our courtrooms are filled with claims about the earliest age at which we can remember traumatic events and the influence those memories have on our current behavior. The residue of early experiences is thought to play a key role in our behavior as adolescents and adults regardless of whether we do or do not experience conscious recollections of these memories. Indeed, some claim that the vestiges of early experiences shape subsequent violent behavior (e.g., Karr-Morse & Wiley, 1997). So prevalent is this view that it is not only common in some areas of psychology, but it has spread to sciences other than psychology (e.g., biology, see De Ortiz & Arshavsky, 2001; Dietrich & Been, 2001; Holliday, 1999), and is firmly fixed in folk beliefs about memory.

These beliefs have even been translated into modern therapeutic practices. Here, memories of very early experiences (presumably imprinted on our nervous system) are said to shape a child’s future psychological health (e.g., Janov, 2000). Indeed, the very process of being born is thought to cause severe trauma that scars one for life. For example, some therapists have opined that a desire for sexual bondage in adulthood can be traced to memories of entanglement in the umbilical cord during birth and that the fear of being crushed is linked to memories of a prolonged birthing process caused by the narrowness of the mother’s pelvis (e.g., Janus, 1993). The idea that we can remember being born is not as uncommon as it once was and has appeared in a number of popular books. Some writers have even speculated that remembering our birth is the rule rather than the exception (e.g., Chamberlain, 1990, 1998). According to Chamberlain, birth memories are “deeply hidden in the unconscious mind (and) usually announce themselves indirectly. They appear in association with some triggering event, such as watching people fall through space in a movie, seeing someone pinned down in a fight, or perhaps just watching a fish wriggling and struggling on a fishing line” (1998, p. 92). Like repressed memories of

sexual abuse before them, memories of birth and intrauterine life are said to lie hidden deep in the recesses of the unconscious but can, under the appropriate conditions, become conscious (e.g., Chamberlain, 1998; Janov, 2000).

So strong is this belief in the survival of early memories that a number of therapeutic interventions seek to have the patient contact these memories in order to effect a cure. For example, the popular press was recently awash with the news of a tragedy that occurred during a “rebirthing” therapy session. Based on the belief (one not substantiated in any empirical data) that psychological disturbances can be brought about by memories of trauma encountered during the birth process, therapists Connell Watkins and Julie Ponder and their two assistants wrapped Candace Newmaker in a blue flannel sheet, laid her on a floor in the fetal position, and covered her with large pillows. As the therapists and their assistants applied their weight to the pillows, Candace was urged to be “reborn” to her adoptive mother, Jeane Newmaker, who was sitting nearby. Unfortunately, the 70-pound Candace was unable to get free, began shrieking that she could not breathe, that she was going to die, and eventually she did die (for an account of this tragedy, see Lowe, 2001).

Apparently, we need be concerned not just with experiences during or since birth, but according to some, with prebirth experiences as well. “*We must push the envelope back to womblife if we are to understand and treat all manner of later disorders.* Just when some of us caught on that birth trauma affected us for a lifetime, now we must consider prebirth events as even more important in shaping our lives. We ‘do not get over it, nor do we grow out of it.’” (Janov, 2000, p. 211). In addition, there are those who would have us believe that children can remember past lives and that these memories of past lives affect their current behavior as well as their physical and psychological health (e.g., Bowman, 1998; Shroder, 2001).

Is there any evidence to back up these extraordinary claims? In all cases, the evidence is at best clinical observation and at worst armchair speculation. Most of the reasoning in these circumstances is tautological and circular. Unexplained behaviors (e.g., a child’s fear of loud noises) are attributed to musings of children (e.g., a hypnotized 5-year-old’s “memory” of being in a war during a past life—Bowman, 1998) or adults who have been placed in an altered state of consciousness (e.g., using LSD or regression hypnosis—also see Hepper, 1997). Or, as mentioned earlier, birth-related experiences are linked in a circuitous fashion to current behaviors (e.g., being entangled in the umbilical cord during the birthing process and current desires for bondage during sex). Alternatively, some have looked at the correspondence between the mother’s and the child’s narrative account of the birth process for that child, noting both agreements and disagreements (e.g., Chamberlain, 1990, 1998). Of course, such data are interesting (e.g., tell us about narrative concordance between mother and child) but tell us little about memory. As has been pointed out a number of times throughout the history of research on autobiographical memory, such information is ambiguous at best. This is because, in part, there is no guarantee that these are genuine memories and it is always possible that experiences have been discussed after the birth with the child or adult.

Despite the growing number of reports of memories of past lives, life in the womb, and the birth experience, there is no scientific evidence to substantiate these claims

(also see Spanos, 1996). Even in clinical case reports, frequently evidence of retention of such experiences is based solely on the therapist's interpretation. These interpretations are often ambiguous, obscure, and consistent with the particular therapeutic regime subscribed to by the therapist. Like all information revealed in therapy, especially therapy involving an altered state of consciousness, it is never clear what components are true recollections and which are not. Given these and other problems that are associated with clinical case studies, as well as the other (observational) techniques used to substantiate claims of prebirth memories, conclusions that such narratives represent authentic memories of real events is unwarranted.

Despite the ambiguity of these claims about early memory, we are still left with the question: When does memory for personally experienced events begin? In order to answer this question, we need to find when is it first possible to encode, store, and retrieve information from experience. After all, if it is not possible to encrypt information at the time the events are occurring, how could it be possible to later retrieve that information? As well, we need to determine whether these memories for events persist and influence our behavior later in life. Theories of memories for past lives, memories for in utero experiences, and memories for the birthing process require that infants, fetuses, zygotes, and beyond somehow possess memory for experiences at the time they occur and that these memories somehow continue to exist during subsequent maturation. Moreover, during this retention period, somehow these memories do not undergo change and can be accessed (consciously or unconsciously) when required. This issue of *Developmental Review* was conceived with these questions in mind and the articles that follow summarize what the science of psychology has to say about the origins of early memory and the persistence of such memories over what are sometimes very protracted periods of time.

As we will see, contrary to popular claims about the prodigious nature of early memory for encoding, storing, retaining, and retrieving birth and pre-birth experiences, the evidence accumulated to date indicates the opposite to be true. In what follows, the most recent research is brought to bear on questions about the nature of memory in infancy and our subsequent ability to recollect those memories (Hayne, 2004), the continuity of memory development (Rose, Feldman, & Jankowski, 2004), whether traumatic experiences enjoy a special status in memory (Cordon, Pipe, Sayfan, Melinder, & Goodman, 2004), and the nature of memory representation early in life (Munakata, 2004). We begin with an overview of the extant scientific literature on early memory (Courage & Howe, 2004), an article that serves as a historical backdrop to this special issue. Next, Hayne addresses the issue of infantile amnesia (our inability to recollect many childhood events later as adults) by examining the most recent research on the veracity of memory early in life. This is followed by an article that examines the continuity of early memory (in this case, visual recognition memory) in infancy to memory processes later in childhood (Rose et al., 2004). Cordon et al. address the question of whether memories for traumatic experiences in childhood are somehow special, achieving a status in memory unlike that of memories for other events. Munakata then examines the nature of early memory, including how memories are represented, and provides a review of the latest findings from computational cognitive neuroscience. All of these new and

innovative research themes are brought into perspective in the final article (Neisser, 2004) in which the progress toward answering these long-standing questions is charted. In the end, although much remains to be discovered and a complete theory of early memory remains to be articulated, it is reasonably safe to say that memory for personally experienced events (as conceived in almost any definition) begins well after our entrance into this world, not before.

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