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Edited by Dorthe Berntsen and David C. Rubin
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1 Introduction

Dorthe Berntsen and David C. Rubin

The ability to remember personal events is at the heart of what defines an individual as a person with obligations, roles, and commitments in a given society. It enables us to draw lessons from our past and plan our personal future. It helps us to orientate and participate in complex social communities. Autobiographical memory is therefore crucial for a sense of identity, continuity, and direction in life.

In spite of this significance, concerted and systematic psychological research on autobiographical memory only began to emerge in the 1980s, roughly a hundred years after the publication of the first book launching experimental research on memory (Ebbinghaus, 1885/1964). Until then, experimental memory research had been focused on testing learning and memory for verbal material.

Research on autobiographical memory broke away from the existing field of memory research by introducing new methodological, theoretical, and philosophical challenges (e.g., Brewer, 1986; Crovitz and Schiffman, 1974; Neisser, 1982). For that reason, autobiographical memory researchers often had difficulty in getting their work published in existing psychology journals. Instead, edited books became an important medium for scientific exchange during the first decade.

The first edited book on autobiographical memory was published in the middle of the 1980s (Rubin, 1986). At this time, the autobiographical memory field was small and exotic. A total of roughly 20 journal articles had been published on this topic (according to a literature search using *autobiographical memory* as a keyword in the database PsycINFO, July 2011). A decade later, when a sequel was published (Rubin, 1996), there were about 200 published journal articles. In 2011, when this introduction was written, a similar literature search revealed a total of 1,900 published journal articles (see Figure 1.1). Thus, about 25 years after the publication of the first book launching research on autobiographical memory, the field has grown dramatically.

A number of factors have contributed to this success. One is the introduction of two important journals. The journal *Applied Cognitive*

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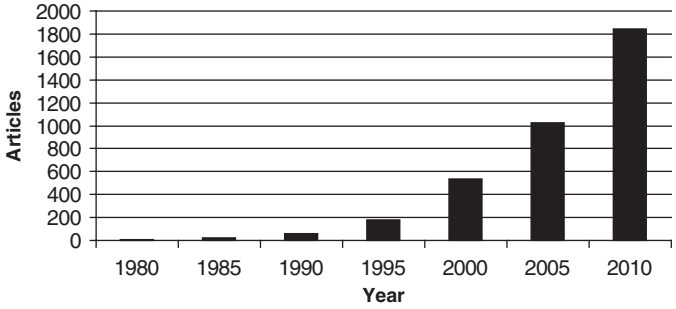

Figure 1.1. Accumulative number of peer reviewed articles with autobiographical memory as a keyword from 1980 to 2010.

Psychology was started by Graham Davies in 1987, and served as the official journal for the Society of Applied Research on Memory and Cognition (SARMAC). The journal *Memory* was started in 1995 by Susan E. Gathercole and Martin A. Conway. Both journals were open to studies conducted outside the traditional laboratory paradigms and very quickly became important outlets for the growing field of autobiographical memory research. Other important factors were the existence of a few vibrant research communities pursuing research on autobiographical memory and serving as important meeting places for more isolated autobiographical memory researchers around the world. Two key centers were the Emory Cognition Project, headed by Ulrich Neisser, and the MRC: Applied Cognition Unit at Cambridge University, directed by Alan Baddeley.

It is beyond the scope of this introduction to provide an exhaustive review of the progress that the autobiographical memory field has made over the years. The following only serves as a few key examples, illustrating that autobiographical memory research has yielded novel, robust, and replicable findings that could not have been discovered through more traditional memory studies in laboratory settings with verbal material.

Developmental research conducted in the 1980s showed that the ability to remember past personal events is present much earlier in life than had originally been thought. Systematic studies showed that children as young as 2.5 years of age were able to remember unique personal events that had taken place several months earlier (Fivush, Gray, and Fromhoff, 1987). Such observations forced researchers to radically reconsider young children's memory abilities and to revise the prevalent understanding of childhood amnesia as reflecting lack of encoding and retention of experiences experienced in early life.

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Other researchers demonstrated that the long-term retention of autobiographical memories deviated from Ebbinghaus' (1885) standard forgetting curve by showing a marked increase of memories deriving from young adulthood (Rubin, Wetzler, and Nebes, 1986). This reminiscence bump has been replicated many times for many different kinds of self-related memory material and has spurred a variety of related research.

Studies of autobiographical memory in clinical disorders similarly have led to robust and important findings. Notably, using the Crovitz and Schiffman (1974) cue-word technique, Williams and colleagues demonstrated that people suffering from depression have difficulty in retrieving autobiographical memories of unique events. Instead of specific episodes, depressed individuals tend to retrieve script-like summary representations of many similar occurrences. This overgeneral memory effect may reflect reduced executive control processes in depression, as well as avoidance and rumination (Williams, Barnhofer, Crane, *et al.*, 2007).

One particular problem that autobiographical memory researchers had to address was the problem of measuring accuracy. This was handled by the use of diary studies in which participants recorded personal events, for which their memory was later tested. Among other things, such diary studies yielded novel findings on the accuracy of dating of personal events, and how dating errors are systematically shaped by different levels of temporal schemata. Diary studies generally testified to the reconstructive nature of autobiographical remembering (e.g., Thompson, Skowronski, Larsen, *et al.*, 1996).

People can have subjectively vivid representations of personal events which they believe are memories, but which turn out to be purely imagined events. The demonstration that it is possible to induce such false memories by simply having people imagine events that were described to them as real events from their own childhood (Hyman, Husband, and Billings, 1995; Loftus and Pickrell, 1995) highlighted the constructive nature of autobiographical remembering and had substantial effects on the forensic system. The practical significance of these findings was not limited to the USA (where most of this research was conducted). The false-memory research led to changes in the legal practices in many other countries as well and also made psychotherapists more alert to the risk of inducing memory illusions during psychotherapy (see McNally, 2003, for review and discussion).

Many other characteristics of memories than their accuracy are important for understanding autobiographical memory. Research on autobiographical memory has spurred the development of reliable measures of conscious experience during remembering, including qualities of reliving, emotion, and mental imagery (Johnson, 1988; Rubin, Schrauf, and

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Greenberg, 2003). Such subjective measures have been found to agree well with measures of underlying brain activity as obtained through brain-scanning experiments (Daselaar, Rice, Greenberg, *et al.*, 2008). Such converging evidence demonstrates the validity of subjective reports of conscious experience.

Autobiographical remembering has been the subject of many neuropsychological and brain-imaging studies, showing how the construction of personal memories recruits different subsystems of the brain. Studies of autobiographical remembering have thereby informed our understanding of how neural activity relates to conscious experience.

We also know considerably more about the contents and functions of autobiographical remembering than we did 25 years ago. Researchers have found reliable ways of conceptualizing and measuring the adaptive functions of autobiographical remembering (Pillemer, 2003). We know that autobiographical events vary with regard to their complexities and the amount of episodic details included. Increasingly sophisticated ways of conceptualizing and measuring specificity have been developed and have shown the consistent effects of aging (Levine, Svoboda, Hay, *et al.*, 2002). Cultural background also has documented effects on the content and onset of autobiographical remembering (Wang, 2006).

In short, over the last three decades, research on autobiographical memory has demonstrated its potential in numerous ways. It has shown a strong ability to establish clear empirical generalizations, which could not have been established through traditional laboratory experiments. It has shown its practical relevance, among other things, by deepening our understanding of several clinical disorders, and by demonstrating the induction of false memories in the legal system. It has become an important topic for brain studies, and thus helped to enlarge our general understanding of the brain.

The central goal of the present book is to help to provide an overview and integration of the many theories, perspectives, and approaches that have evolved over the last three decades. We omit two important areas, simply because it is beyond the scope of the present book to include everything of relevance to autobiographical memory. One omitted area is research on false memories and other issues directly related to eyewitness psychology. The other omitted area is clinical aspects of autobiographical memory, which we believe should have its own volume at a later point in time, due to the specific questions characterizing this particular and very rapidly developing research domain.

All chapters in the book offer a review and theoretical integration of findings in a particular area of autobiographical memory research. The book consists of fifteen chapters and a discussion chapter. The fifteen

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chapters are grouped in five parts, each with its own overarching topic. The five parts are as follows: (1) Approaches to the study of autobiographical memory, (2) Neural studies of autobiographical memory, (3) Social and cultural aspects of autobiographical memory, (4) Development of autobiographical memory from infancy to old age, and (5) Evolution and basic processes of autobiographical memory. The following serves as a brief description of the contents of these parts.

Approaches to the study of autobiographical memory

The four chapters in this section describe different approaches to the study of autobiographical memory. The chapter by Rubin examines the neural and biological bases of autobiographical information. In his theoretical model, the processing of autobiographical information and construction of memories are based on the interplay of functionally distinct subsystems of the mind and brain. The chapter by Conway and Jobson emphasizes the central role of the self, its goals, and its social and cultural context in the processing of autobiographical information and construction of memories. It thus combines and integrates a motivational approach with a more standard, information-processing account. Autobiographical remembering and motivated forgetting were studied by psychoanalysts through case observations long before the cognitively oriented examination of autobiographical memory began. The chapter by Habermas offers a rare review of such early psychoanalytic and psychodynamic theories of autobiographical memory, and discusses their differences and similarities with modern cognitive approaches. The section ends with a chapter by Baddeley. As one of the early pioneers of autobiographical memory research, Baddeley now returns to the field and critically evaluates different approaches to the study of autobiographical memory from a historical perspective.

Neural studies of autobiographical memory

The two chapters in this section review and evaluate how autobiographical memory research has helped to enlarge our understanding of brain processes as well as how studies of the neural underpinnings of autobiographical memory have added significantly to our understanding of its basic behavioral characteristics. The chapter by Moscovitch addresses how neuropsychological studies of autobiographical memory have informed our broader understanding of how memories are retained at the neural level on a long-term basis. The chapter by St. Jacques reviews the rapidly growing field of functional neuroimaging studies of

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autobiographical memory, and describes how such studies have been useful for the understanding of the neural basis of memory processes more broadly.

Social and cultural aspects of autobiographical memory

Often cognitive psychologists treat memories and remembering as processes that take place entirely within each individual, without considering how one individual's memory is embedded in a larger social, cultural, and historical context. The three chapters in this section each helps to correct this limitation by discussing how such larger contexts help to structure the organization and content of autobiographical memories as well as their retrieval and forgetting. The chapter by Brown and colleagues examines the effects of historical events on the organization of autobiographical memories. On the basis of a series of recently published large-scale studies, they argue that only events that "change the fabric of everyday life" will have lasting effects on memory organization. Hirst and colleagues discuss the notion of collective memory and review studies showing how the social context affects retrieval and forgetting and thereby makes autobiographical memories within a social group more collective and uniform. The chapter by Pillemer and Kuwabara addresses the directive functions of autobiographical remembering and thus how our memories help to set the course for our behavior and goals. By discussing the functional aspects of remembering, Pillemer and Kuwabara address how autobiographical memories become adaptive in a larger social and cultural context.

Development of autobiographical memory from infancy to old age

The three chapters in this section address the development of autobiographical memory from infancy to old age. The chapters offer different perspectives on this topic and focus on different parts of the life span. The chapter by Bauer reviews research on memory in infancy and early childhood and discusses what these findings add to the understanding of infantile amnesia – that is, the finding that older children and adults generally are unable to remember experiences from the first three years of life. The chapter by Fivush reviews and discusses how conversations with caregivers shape the development of autobiographical memory in the preschool years, and thus how sociocultural factors affect autobiographical memory development. The chapter by Fitzgerald and Broadbridge is concerned with autobiographical memory development from adolescence

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to old age. Among other things, the chapter discusses the reminiscence bump – that is, the increase of memories from young adulthood relative to the surrounding periods that is observed in middle-aged and older adults across a variety of autobiographical memory tasks.

Evolution and basic processes of autobiographical memory

The three chapters in this section all deal with relatively novel areas of autobiographical memory research. All three chapters attempt to make theoretical and empirical connections between autobiographical memory – as this topic is most frequently studied – and other basic mental processes, thereby extending the concept of autobiographical remembering. Donald's chapter discusses the functions and developments of autobiographical memory in an evolutionary perspective. Among other things, he discusses whether the memory of personally experienced events is a uniquely human phenomenon or whether more primitive forms of autobiographical (episodic) remembering may be found among other species. Donald argues that many nonhuman species are capable of episodic remembering when prompted by concrete cues in the environment, but are unable to initiate the recall process in a decontextualized and controlled fashion. Berntsen addresses the phenomenon of involuntary (spontaneous) autobiographical remembering and argues that it is a basic mode of autobiographical memory that may be evolutionarily earlier than the more cognitively demanding (and much more studied) voluntary retrieval mode. D'Argembeau reviews an accumulating amount of findings suggesting that the ability to remember the personal past and imagine the personal future is supported by the same cognitive and neural processes. He discusses the underlying knowledge structures and the central role of motivational factors.

Discussion

This section includes only one chapter, in which the editors attempt to integrate the main points of the preceding chapters into a coherent ecological theory of autobiographical memory.

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Part I

Approaches to the study of autobiographical memory

How should studies on autobiographical memory be approached? The four chapters in this section address this question from different perspectives. The chapter by Rubin examines the neural and biological bases of autobiographical information. Rubin describes the construction of autobiographical memories as an interaction between functionally distinct subsystems of the mind and brain. He also discusses the implications of this view for our broader understanding of memory. The chapter by Habermas links modern research on autobiographical memory to the earlier psychoanalytic approach to the same phenomenon. Habermas offers a unique introduction to psychodynamic theories of autobiographical memory, and discusses the differences and similarities between these early approaches and modern ones.The chapter by Conway and Jobson addresses the role of the self, its goals, and its social and cultural context in the processing of autobiographical information and construction of memories. This chapter thus emphasizes the cultural, social, and motivational aspects of autobiographical remembering. The section ends with a chapter by Baddeley. As one of the early pioneers of autobiographical memory research, Baddeley takes a historical perspective and evaluates a number of different empirical approaches that have emerged over the years. He concludes by a call for more theoretical integration.

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