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Implicit memory refers to the nonconscious influence of previous experiences on the performance of tasks that do not require explicit or conscious recollection. This article provides a historical survey of observations concerning explicit memory, reviews contemporary experimental findings, and assesses alternative theoretical accounts of various implicit memory phenomena. [The *SSCI*<sup>®</sup> and the *SCI*<sup>®</sup> indicate that this paper has been cited in more than 375 publications, making it the most-cited paper published in this journal.]

## Memory Without Remembering

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In traditional memory experiments, people are exposed to a set of target materials, such as words or pictures, and sometime later are asked to think back to the study episode and try to recall or recognize the targets. During the early 1980s, evidence from various laboratories indicated that the influence of previous experiences could be detected on tests that do not make explicit reference to, or require conscious recollection of, a prior study episode; subjects simply perform a task, and memory is inferred from changes in test performance that are attributable to prior study of target materials. For example, amnesic patients who cannot consciously remember their recent experiences still exhibit nonconscious influences of these experiences when given certain kinds of tasks to perform.

These kinds of observations were enormously provocative. Numerous theories were quickly proposed to account for this intriguing form of memory that differed in many ways from the kind of memory that psychologists had been studying for years. In 1985, Peter Graf and I labeled the phenomenon *implicit memory*, and contrasted it with *conscious* or *explicit* memory. Although implicit memory was novel to the cognitive psychologists and neuropsychologists who studied it, I was aware that psychologists had been interested in unconscious influences of memory at least since the time of Freud. I became curious about the nature and extent of historical antecedents to the new wave of research and began tracking down old books and journal articles in which relevant issues were addressed. Though trained as an experimental

cognitive psychologist, I had long possessed an interest in the history of memory research; during my years as a graduate student I was sufficiently fascinated by the case of a neglected turn-of-the-century memory theorist, Richard Semon, to write a book on the subject.<sup>2</sup> Thus, I was quite comfortable spending significant chunks of time in remote library stacks.

The project developed nicely, and soon I had enough material to write a historical review of implicit memory research, although I was not yet quite sure about the exact form that such a paper would take. In May 1986 I presented a version of the review to the annual meeting of the Midwestern Psychological Association in Chicago. One of the members in the audience was Roddy Roediger, then editor of the *Journal of Experimental Psychology: Learning, Memory, and Cognition*, which had published the Graf and Schacter article<sup>1</sup> and many others on the subject of implicit memory. He apparently liked what he heard, and asked whether I would consider expanding the talk into an article for the journal. I welcomed the opportunity and accepted his invitation on the spot. Roediger later made what turned out to be a prescient prediction in the letter in which he accepted the article for publication: "I expect to see it cited many times in the years to come and you may even have a 'citation classic' on your hands."

I had an inkling that the paper was going to be influential on the basis of seemingly endless reprint requests, and the frequency with which the paper was cited in other articles. I must admit, however, that I was surprised to learn from an Institute for Scientific Information<sup>3</sup> study published in 1992 that the article had been the most frequently cited in all of psychology from 1986 to 1990.<sup>3</sup> I think that the paper's impact is largely attributable to the fact that it helped to define an area of research that is relevant to numerous sectors of psychological and neurobiological investigation, and it did so at just the right time—when interest in the issue was increasing rapidly and no other integrative reviews had yet been published. Research on implicit memory has continued to expand,<sup>4</sup> and my colleagues and I have already updated the 1987 review.<sup>5</sup> The impact of the paper no doubt played a significant role in my receipt of the American Psychological Association's Distinguished Award for an Early Career Contribution to Psychology (1990) and the National Academy of Sciences' Troland Research Award (1991).

1. Graf P & Schacter D L. Implicit and explicit memory for new associations in normal and amnesic subjects.

*J. Exp. Psychol.—Learn. Mem. Cogn.* 11:501-18, 1985. (Cited 255 times.)

2. Schacter D L. *Stranger behind the engram: theories of memory and the psychology of science.* Hillsdale, NJ: Erlbaum, 1982. 288 p.

3. Garfield E. Psychology research, 1986-1990: a citationist perspective on the highest impact papers, institutions, and authors.

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4. Roediger H L III. Implicit memory: retention without remembering. *Amer. Psychol.* 45:1043-56, 1990. (Cited 90 times.)

5. Schacter D L, Chill C-Y P & Ochsner K N. Implicit memory: a selective review. *Annu. Rev. Neurosci.* 16:159-82, 1993.

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