

Slamecka N J & Graf P. The generation effect: delineation of a phenomenon.

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Five experiments compared memory for words generated by the subjects themselves, with the same words simply being presented to be read. In all cases, performance in the generate condition was superior to the read condition. This held for cued and uncued recognition, free and cued recall, and confidence ratings. Several potentially explanatory notions were considered, and their difficulties enumerated. The generation effect is real, and it poses an interesting interpretative problem. [The *SSCI*® and the *SCI*® indicate that this paper has been cited in more than 220 publications, making it the most-cited paper published in this journal.]

Delineation of the Generation Effect

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At the end of the 1977 spring semester, I regarded the coming summer session as the beginning of a brand new research opportunity. My current laboratory pursuits were yielding diminishing returns, and I was ready for a change of direction. Accordingly, I deviated from the "official" plan in the grant program statement in order to indulge my curiosity about another aspect of human verbal learning and memory. Briefly, the simple question that had captured my interest was whether self-generated words would be better remembered than words that were presented to be read. It was a straightforward empirical question, but there was no satisfactory systematic examination of it in the literature. However, memory research in those years was highly oriented toward the levels-of-processing approach of F.I.M. Craik and R.S. Lockhart,¹ emphasizing the memorial consequences of the types of processing used during study. That the present question was broadly compatible with the spirit of those times may account for its ready acceptance.

I contracted the assistance of a promising undergraduate student at Toronto, Peter Graf, for whom the job was an interesting summer project. (Peter later earned a PhD on this topic and is now an established scientist at the University of British Columbia.) We devised a method whereby subjects are constrained to generate the same words that would be presented in the reading condition. This was necessary in order to eliminate idiosyncratic item-selection artifacts. It was done by providing a cue word, the first letter of the to-be-generated word, and a rule of relation. For example, the cue "hot," the letter "c," and the rule "antonym," virtually guaranteed generation of "cold." It was that simple. Armed with a clean way of comparing generated-versus-read versions of words, we established that the former were better remembered in a variety of circumstances. This is the generation effect.

What started as a modest inquiry soon ballooned into a veritable avalanche of experimental articles on the phenomenon from laboratories around the world. It became almost a fad to have a go at the generation effect and, above all, to explain why it happened. In the course of all this activity, the phenomenon became weighed down with complications in the form of various limiting conditions, as well as interesting elaborations. Our own laboratory contributed its share of these developments, including (1) there is no generation effect produced when nonwords are used;² (2) we confirmed that the memorial advantage of generating accrues even when one fails to generate the word;³ and, (3) the effect is sensitive to the experimental design employed, and it does not occur with bilingual materials.⁴

The initial, seductively simple, generation effect has been transformed into a challengingly complex body of observations. In my opinion, no explanation capable of persuasively accounting in detail for all of its varied manifestations and limitations has yet come forth. In any event, we have learned a little bit more about the objective determinants of human memory.

1. Craik F I M & Lockhart R S. Levels of processing: a framework for memory research.

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2. McElroy L A & Slamecka N J. Memorial consequences of generating nonwords: implications for semantic-memory interpretations of the generation effect. *J. Verb. Learn. Verb. Behav.* 21:249-59, 1982. (Cited 45 times.)

3. Slamecka N J & Fevreiski J. The generation effect when generation fails. *J. Verb. Learn. Verb. Behav.* 22:153-63, 1983. (Cited 40 times.)

4. Slamecka N J & Katsaiti L T. The generation effect as an artifact of selective displayed rehearsal. *J. Mem. Lang.* 26:589-607, 1987.

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