CC/NUMBER 25
JUNE 18, 1984

This Week's Citation Classic™

Slamecka N J. An examination of trace storage in free recall. *J. Exp. Psychol.* **76**:504-13, 1968.
[University of Vermont, Burlington, VT]

The question was whether, after the study of a list of verbal items, the stored memory traces of the words have formed direct connections to each other, or whether they have not. It was concluded that they have not. [The *Social Sciences Citation Index*® (*SSCI*®) indicates that this paper has been cited in over 140 publications since 1968]

Norman J. Slamecka
Department of Psychology
University of Toronto
Toronto, Ontario M5S 1A1
Canada

May 8, 1984

"This work was started in my days at the University of Vermont, as a modest effort aimed at demonstrating the correctness of the prevailing associationistic doctrine of the time, namely, that memorization of a verbal list entails the forming and strengthening of direct associative bonds among the words on the list. The only original contribution anticipated was the relatively simple method to be employed for the demonstration. After studying a list, an experimental group would be given some of the words free, to use as retrieval cues for recall of the remaining ones. A control group, given no cues, would try to recall the entire list. Both groups were then to be scored on the very same items, those not given free. It was clearly expected that the experimental condition would show superior performance because of activation of some otherwise inaccessible associative links, these being stimulated by the presence of the free words. "Accordingly, I sent my graduate assistant, Ed Coppage, to collect the initial data on this straightforward exercise. In the face of our compelling preconceived expectations, we were annoyingly disappointed to find that the experiment failed to show any advantage for the cued group, and worse, that it revealed a small but significant inhibitory effect in that condition. Thinking that this first outcome was only a matter of bad luck which would not persist across subsequent replications, we returned to the laboratory to carry out a series of variations on this experiment, always keeping the same basic design. We manipulated the proportion of free words given, the type of material comprising the lists, and access to short-term memory. All told, we conducted six separate experiments and each one told the same empirical story, namely, that provision of free words did not aid memory performance. I had no choice but to conclude that the classical theoretical portrayal of memory traces as being joined by direct associative links was wrong.

"It so happened that Endel Tulving came to give a talk at Vermont just when I had completed writing the report of this work. Maintaining a firm grip on his lapel, I regaled him with these findings in my office until 11 o'clock that night. He endured this with exemplary fortitude and, as I found out later, harbored some silent scepticism about the meaning of the whole thing until further work by me[1,2] and independent efforts by others[3,4] extended the tenor of the initial findings, and led to a theoretical picture of a hierarchical storage structure. The original publication doubtless attracted interest because of the beguiling simplicity of the method, and the then counterintuitive nature of the findings. A recent overview of this work is in Roediger and Neely."[3,5]

1. **Slamecka N J.** Testing for associative storage in multitrial free recall. *J. Exp. Psychol.* **81**:557-60, 1969.
2. The question of associative growth in the learning of categorized material. *J. Verb. Learn. Verb. Behav.* **11**:324-32, 1972.
3. **Roediger H L.** Inhibition in recall from cueing with recall targets. *J Verb. Learn. Verb. Behav.* **12**:644-57, 1973.
4. **Rundus D.** Negative effects of using list items as recall cues. *J. Verb. Learn. Verb. Behav.* **12**:43-50, 1973.
5. **Roediger H L & Neely J H.** Retrieval blocks in episodic and semantic memory. *Can. J. Psychol.* **36**:213-42, 1982.