This Week's Citation Classic ®

This research shows that verbal context can affect word recognition via two mechanisms. One is a fast-acting, automatic, inhibition-free spreading activation process that facilitates the recognition of words semantically related to the context. The other is a slower acting, strategy-dependent expectancy mechanism that facilitates the recognition of expected words and inhibits the processing of unexpected words. [The *SSCI* ® indicates that these articles have been cited in more than 430 and 155 publications, respectively.]

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Semantic Context and Word Recognition

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Being at the right place at the right time was the key to conducting this research. Having just shifted from research in animal learning to research in human cognition, and with support from my three-year National Science Foundation predoctoral fellowship having just elapsed, I became a graduate teaching assistant for M.I. Posner, who was visiting Yale for the year. He gave me a draft of a chapter[1] in which he and C.R.R. Snyder provided an account of semantic priming—the finding that a word can be recognized more quickly when it has been immediately preceded by a semantically related prime rather than an unrelated prime.[2]

Their account said semantic priming is produced by two mechanisms. One is a fast-acting, automatic, inhibition-free spreading activation process that facilitates the recognition of words semantically related to the prime. The other is a slower-acting, strategy-dependent expectancy mechanism that facilitates and inhibits the recognition of words that are expected or unexpected, respectively, on the basis of the prime. Both of my papers reported experiments testing this theory. And both, particularly the 1977 paper, reported data suggesting this theory.

Although my adviser, Bob Crowder, gave me wonderful advice and encouragement throughout, his lab was not equipped for reaction time research. Wendell Garner generously allowed me to use his lab, but because the Department of Psychology at Yale had not yet acquired lab computers, I conducted the research with slide projectors, shutters, and digital timers. Before testing each of the 122 individually tested subjects in my thesis, I re-ordered the priming slides for counterbalancing. Then, for each of 436 trials, I pushed a button to select the prime-processing time and wrote down each reaction time. I later entered these reaction times at a computer terminal and then triple checked each one for accurate entry. Thus, I'm very appreciative of the microcomputers I now have in my lab.

I believe this research has been cited because it supports the popular distinction between automatic and nonautomatic mental processes. Because lab computers now make it fairly easy to use them, my procedures also have been used to determine if cognitive deficits are due to deficiencies in activational processes or to an inability to form and maintain expectancies.[3,4] Finally, there is an interest in semantic priming because it likely plays a fundamental and nearly ubiquitous role in many cognitive functions (e.g., reading, conversation and listening, memory retrieval, problem solving, and decision making).

Although the concepts of spreading activation and expectancy account for many phenomena, they cannot explain the rich mosaic of effects that now exists in the extensive semantic priming literature. To remedy this, Dennis E. Keefe and I have appended a semantic-matching mechanism to the Posner-Snyder theory.[5] This mechanism was alluded to in my 1977 paper, but was not given much credence at that time. It involves subjects checking if the target and its prime are related, occurring after the target has been recognized, but before task-specific decisions and responses have been completed. A discussion of the alternative theoretical accounts of the many different phenomena observed in the semantic priming paradigm can be found in a recent review.[6]

1. **Posner M I & Snyder C R R.** Attention and cognitive control. (Solso R L, ed.) *Information processing and cognition: the Loyola symposium.* Hillsdale, NJ: Erlbaum, 1975. p. 55-85.
2. **Meyer D E & Schvaneveldt R W.** Facilitation in recognizing pairs of words: evidence of a dependence between retrieval operations. *J. Exp. Psychol.* 90:227-34, 1971.
3. **Burke D M, White H & Diaz D L.** Semantic priming in young and older adults: evidence for age constancy in automatic and attentional processes. *J. Exp. Psychol.—Hum. Percep. Perf.* 13:79-88, 1987.
4. **Glass A L & Buters N.** The effects of associations and expectations on lexical decision making in normals, alcoholics, and alcoholic Korsakoff patients. *Brain Cognition* 4:465-76, 1985.
5. **Neely J H & Keefe D E.** Semantic context effects on visual word processing: a hybrid prospective/retrospective theory. (Bower G H, ed.) *The psychology of learning and motivation: advances in research and theory.* New York: Academic Press, 1989. Vol. 24. p. 207-48.
6. **Neely J H.** Semantic priming effects in visual word recognition: a selective review of current findings and theories. (Besner D & Humphreys G, eds.) *Basic processes in reading: visual word recognition.* Hillsdale, NJ: Erlbaum, 1991. p. 264-336.