



An investigation of false memory in perceptual implicit tasks

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Abstract

Reports of critical lure priming in perceptual implicit tasks [e.g., McKone, E., & Murphy, B. (2000). Implicit false memory: Effects of modality and multiple study presentations on long-lived semantic priming. *Journal of Memory and Language*, 43, 89–109] using the Deese–Roediger–McDermott [Roediger, H. L., III, & McDermott, K. B. (1995). Creating false memories: Remembering words not presented in lists. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 21, 803–814] procedure have suggested availability of the lexical form of lure items at study. Three experiments were conducted to further explore “false” implicit priming in perceptual tests. In Experiments 1 and 3, implicit and explicit stem completion tests were given in the DRM procedure with semantic lists; in Experiment 2, a graphemic response test was used in a similar design. For all experiments, explicit instructions resulted in reliable false memory, while implicit instructions resulted in priming for list items and no priming for lure items. Priming for lure items was evident for “test-aware” subjects only in Experiment 1 and in a combined analysis for all three experiments. These results establish boundary conditions for priming for critical lures and indicate that access to the lexical form of critical lures may not occur under incidental learning conditions when strong controls against explicit retrieval are implemented.

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1. Introduction

Findings of experimentally induced false memories have been frequently reported in recent studies. Many of these studies have utilized a paradigm originally developed by Deese (1959) and recently popularized by Roediger and McDermott (1995). In these experiments subjects are shown or read a list of words (e.g., *dream, bed, blanket*, etc.) that are linked by a conceptual theme word (e.g., *sleep*) that is not presented. Subjects commonly exhibit rates of false memories for the theme word (also called a critical lure) in tests of recall or recognition that are similar to rates of accurate recall or recognition for the list items that were presented (Roediger & McDermott, 1995). This method is now known as the DRM procedure.

In attempts to understand how these false memories are created, researchers have investigated several variables that attenuate or enhance false memories as compared to true memories. For example, semantic study tasks with levels of processing manipulations increase both accurate memory for list items and false memory for lure items (Coane & McBride, 2002; Rhodes & Anastasi, 2000). This finding is not surprising, because the semantic study tasks are likely to strengthen the conceptual link between the list items and the critical item making them more likely to be remembered (or falsely remembered for the critical item) in the test.

A finding that is more surprising is the one reported by several researchers (Hancock, Hicks, Marsh, & Ritschel, 2003; McDermott, 1997; McKone & Murphy, 2000; Tajika, Neumann, Hamajima, & Iwahara, 2005; Tse & Neely, 2005) where implicit false memory was found in implicit tasks typically classified as perceptual in nature. In contrast with explicit memory tasks (such as recall and recognition), implicit tasks do not require intentional retrieval of studied items. Instead, subjects are asked to perform a task that involves studied items with no reference made to the study episode. Many implicit tasks have been classified as perceptual tasks, because the test cues involve a perceptual form of the studied items. For example, in a word stem completion task, three-letter word stems are provided as cues in the test for the subjects to complete with the first word they think of. In lexical decision, items are presented for speeded word/non-word judgments. Target (studied) item performance that exceeds baseline rates when the items have not been studied provides measurements of implicit memory in the tasks. Performance in perceptual implicit tasks (like stem completion and lexical decision where perceptually altered forms of the studied items are given as cues) tends to be affected by perceptual manipulations (e.g., change in study to test modality), but is less likely to be affected by conceptual manipulations (like level of processing). In addition, there should be little or no perceptual advantage for critical lure items (over other non-studied items) in perceptual implicit memory tests because they are linked to study items conceptually and are not seen in the study phase. Critical lures should only show priming effects in perceptual implicit tests if their lexical form is accessed when list items are studied.

Findings of false memory in perceptual implicit tasks have important theoretical implications. Evidence of priming for lures could be interpreted as evidence for long-term semantic priming. Semantic priming refers to the facilitation target items receive when the prime is semantically related (e.g., responses to *nurse* are faster and more accurate when the prime is *doctor* relative to when the prime is an unrelated word like *cat*). Whereas repetition priming (i.e., facilitation for items previously presented) tends to be long lasting, semantic priming tends to be very short-lived, and tends not to last across intervening

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