Implicit memory, explicit memory and the picture bizarreness effect

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Abstract

The experiments reported here were designed to explore the bizarreness effect in implicit and explicit memory by using simple line drawings of common objects (normal vs. bizarre). Each drawing was presented alone under mixed-list encoding conditions. Results showed that performance on explicit conceptual memory tests (cued recall in Experiments 1 and 2) was higher when material was studied in a bizarre format. No such effect was found with implicit conceptual tests (free association in Experiment 1 and category association in Experiment 2). Experiment 3 showed no effect of bizarreness with word-fragments as perceptual implicit or explicit test cues. These dissociative results have important theoretical implications for the comprehension of memory processes.   © 1998 Elsevier Science B.V. All rights reserved.

PsycINFO classification: 2343

Keywords: Implicit memory; Explicit memory; Bizarreness; Imagery

1. Introduction

There has been a great deal of interest in implicit and explicit memory (Graf and Schacter, 1985) stimulated in particular by the finding of several dissociations between these two hypothesized memory systems (for reviews, see Richardson-Klavehn

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and Bjork, 1988; Roediger and McDermott, 1993; Schacter, 1987). Whereas in explicit memory tests subjects are instructed to retrieve intentionally previously studied items, in implicit tests the study episode is not mentioned and retention is measured indirectly as performance facilitation on a seemingly unrelated task. This facilitation, called priming effect, is an index of implicit memory (Tulving and Schacter, 1990).

This classification was further elaborated by Roediger et al. (1989) in the framework of their processing view of memory (Roediger and Weldon, 1987). The main assumptions of their approach can be summarized as follows. First, performance on memory tests is improved as long as the cognitive operations involved in the test recapitulate or overlap those engaged during learning. Second, implicit memory tests usually require different mental processes than do explicit tests and consequently they differentially benefit from these processes. Third, the most commonly used implicit memory tests draw primarily on perceptual or data-driven processes used in word recognition and object recognition. Such tests are referred to as perceptual implicit tests. One common test is the word-fragment completion, in which subjects are asked to find the missing letters of a word from a fragment such as e_ _ p_ _ n_. Generally subjects are more likely to find the solution if they have been presented with the word "elephant" in a previous stage (see Tulving et al., 1982). Fourth, most explicit memory tests that involve recall and recognition draw largely on conceptual processing (elaboration, organization, meaningful processing and the like), and can therefore be classified as conceptual explicit tests. Fifth, the perceptual/conceptual contrast is not coextensive with the implicit/explicit distinction: conceptual implicit tests and perceptual explicit tests can be implemented. In the case of conceptual implicit tests, subjects are given a cue that is meaningfully related to the target item that was studied beforehand. In the word association test, they are instructed to freely associate to the cue (e.g. tusk for elephant). In the category association test, they are asked to produce members of the relevant category (e.g., animals). In the case of perceptual explicit tests, subjects are instructed to retrieve encoded information with the help of some perceptual display similar to the target. A word-fragment completion test stressing on intentional remembering (word-fragment cued recall) may be considered as a perceptual explicit test (e.g. Weldon et al., 1989; Roediger et al., 1992).

In sum, the implicit/explicit and perceptual/conceptual classifications can be combined to yield four kinds of tests: implicit perceptual tests (e.g. word-fragment completion); implicit conceptual tests (e.g., category generation or free association); explicit perceptual tests (e.g., word-fragment cued recall); and explicit conceptual tests (e.g., free recall or semantic cued recall). It is interesting to note that using the same test cues, one can develop an implicit or an explicit test by manipulating the critical instructions used to implement the tests. Thus, using word-fragments as test cues, we can ask subjects to retrieve material from the study episode (perceptual explicit test) or simply to complete spaces with letters in order to produce a word (perceptual implicit test). Moreover, using associates or categories, one can instruct subjects to retrieve material from the study episode (conceptual explicit tests), to produce words meaningfully related to the target, or to produce members of a relevant category (conceptual implicit tests). Schacter et al. (1989) have referred to the retrieval intentionality criterion as the distinguishing feature between explicit and implicit tests.