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Encoding specificity manipulations do affect *retrieval* from memory

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Abstract

In a recent article, P.A. Higham (2002) [Strong cues are not necessarily weak: Thomson and Tulving (1970) and the encoding specificity principle revisited. *Memory & Cognition, 30*, 67–80] proposed a new way to analyze cued recall performance in terms of three separable aspects of memory (retrieval, monitoring, and report bias) by comparing performance under both free-report and forced-report instructions. He used this method to derive estimates of these aspects of memory in an encoding specificity experiment similar to that reported by D.M. Thomson and E. Tulving (1970) [Associative encoding and retrieval: weak and strong cues. *Journal of Experimental Psychology, 86*, 255–262]. Under forced-report instructions, the encoding specificity manipulation did not affect performance. Higham concluded that the manipulation affected monitoring and report bias, but not *retrieval*. I argue that this interpretation of the results is problematic because the Thomson and Tulving paradigm is confounded, and show in three experiments using a more appropriate design that encoding specificity manipulations do affect performance in forced-report cued recall. Because in Higham's framework forced-report performance provides a measure of retrieval that is uncontaminated by monitoring and report bias it is concluded that encoding specificity manipulations do affect retrieval from memory.

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1. Introduction

Human memory is not perfect. Everyone has experienced failures to remember certain information, such as the name of a familiar person or what one had for dinner last night. Such failures to retrieve information from memory are called errors of omission. Another type of errors are the errors of commission: the tendency to remember things that did not happen. Not everything we 'remember' is necessarily accurate. For example, participants in a memory experiment may recall words that were not presented on the study list. It is often assumed that, in an attempt to limit the number of such errors, participants monitor the products of retrieval before emitting a response. Thus, the observed performance of a participant in a memory experiment is not only a function of what is retrieved from memory but also of metacognitive processes: Participants may choose not to report a word retrieved from memory if they are not confident that the word was indeed presented on the study list.

To separate the contribution of retrieval processes and metacognitive processes Higham (2002) recently proposed a new way to analyze performance in a cued recall task. According to Higham, cued recall performance is determined by three processes: retrieval, monitoring effectiveness (i.e., the ability to discriminate correct from incorrect products of retrieval) and report bias (i.e., willingness to report an answer). Higham's analysis of memory performance assumes that a 'best-candidate' answer is retrieved from memory. Next, the monitoring mechanism estimates the probability that the best candidate is the correct answer. If the estimated probability surpasses the report criterion, the candidate is reported, otherwise it is withheld. Thus, in standard *free-report* conditions in which participants are not forced to report an answer to every cue, performance is supposedly due to the combination of these three aspects of memory.

Higham's (2002) analysis is based on type 2 signal detection theory (e.g., Healy & Jones, 1973; Lockhart & Murdock, 1970). To derive estimates for the three parameters (i.e., retrieval, monitoring and report bias), participants perform a cued recall task under both free-report and forced-report instructions. Under standard free-report instructions, participants will not generate an answer to every cue because, for some of the generated candidate answers, the probability correct assigned by the monitoring mechanism will not surpass the report criterion. Cues to which no answer was generated under free-report instructions are then presented under *forced-report* instructions (i.e., an answer must be generated to every single cue). Some of the answers initially withheld under free-report instructions will be correct in forced-report whereas other answers will be incorrect. By observing the frequencies in the four cells of a 2 (correct answer/incorrect answer) $\times$ 2 (response initially reported/response initially withheld) contingency table, estimates of report bias and monitoring effectiveness can be calculated. Details about the exact procedure used