Determinants of Cued Recall

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This paper reports two cued recall experiments in which the degree of pre-experimental associative strength between rhyming cues and their respective targets is manipulated whilst holding the extent of informational overlap between them constant. Both experiments show that strong rhyming cues are more efficient than weak rhyming cues in eliciting target retrieval in both a short-term and a long-term memory situation. The results are interpreted as consistent with the generation-recognition theory of retrieval and inconsistent with predictions made by the encoding specificity principle. It is therefore suggested that caution must be applied when extending the encoding specificity principle to experimental situations other than that from which it is derived. Implications for the distinction between scanning and reconstructive modes of retrieval are also briefly considered.

Generation-recognition theory (Bahrick, 1970; Anderson & Bower, 1972) proposes that the retrieval process involves two distinct stages. The first of these is a generation stage in which plausible response alternatives are derived from existing cognitive structures. Following this each response alternative is then subjected to a second recognition stage to determine whether or not it is a target. An important prediction of this theory is that any word that can be recalled must be capable of being recognized. This prediction has been rigorously tested using the recognition-recall paradigm in which the subjects' ability both to recall and recognize a target is tested within the same experimental sequence (Tulving & Thomson, 1973). With a few exceptions (e.g., Santa & Lawmers, 1974), most of these studies have shown, contrary to the predictions, that recallable words can often not be recognized (e.g., Wiseman & Tulving, 1976; Wallace, 1978).

In response to these results, Tulving and his associates have proposed the encoding specificity principle as an alternative framework for understanding the retrieval process. According to the principle, retrieval is a function of the informational overlap between the information stored in the target trace and the
'ecphoric' information provided by the retrieval environment. As a result recall and recognition do not represent different types of retrieval process, merely different degrees of overlap between trace and retrieval information (Tulving, 1976, 1977). Thus, with appropriate manipulations, a nominal recognition test can be shown to produce lower levels of retention than a recall test.

Since it was first proposed, the encoding specificity principle has gained considerable currency in modern theorizing whereas generation-recognition theory has receded in importance (Watkins & Gardiner, 1979). However, the ascendency of encoding specificity over generation-recognition has been based mainly on evidence from the recall-recognition paradigm (see Tulving 1977; Watkins & Gardiner, 1979), with few attempts being made to test the relative merits of these two approaches in other experimental situations.

One experimental task which readily lends itself to a direct test of these two theories is the cued recall paradigm in which a subject first learns a list of targets and is then required to remember them in the presence of additional information presented in the form of cues. In terms of generation-recognition theory, the provision of extra-list cues increases retrieval probability by more narrowly defining the set of plausible responses from which a given target can be drawn. Additionally, the effectiveness of a cue will also be positively related to the ease with which it can facilitate the target as a response alternative. Encoding specificity, on the other hand, suggests that the principal factor influencing the efficiency of a cue will be its informational overlap with the target as encoded during acquisition. Thus, if two cues share the same degree of informational overlap with a given target, they should facilitate retrieval to an equal degree regardless of any difference in pre-experimental associative strength.

In most studies of cued recall, pre-experimental associative strength is manipulated in terms of norms based on the semantic interpretation of a given stimulus (e.g., Bahrick, 1970); thus a stimulus that is very likely to produce a target as a free associate will, in terms of generation-recognition theory, be considered as stronger and predictively more effective than one that produces the target less frequently. A problem with this manipulation, however, is that the degree of pre-experimental associative strength may co-vary with the degree of informational overlap shared between two items. For example, the cue TABLE not only elicits the response CHAIR with greater frequency than GLUE, but it also shares a greater number of semantic features with it. As a result, any interpretation of the differential efficacy of TABLE and GLUE as cues for CHAIR will be equivocal since it may arise from greater associative strength or informational overlap.

To test these theories within the cued recall paradigm it therefore becomes necessary to devise a task in which the pre-experimental associative strength of cue-target relationships can be manipulated independently of their degree of informational overlap. The current study attempts this using a cued recall task in which rhymes rather than associates serve as the cues. The advantage of rhyme cues is that two words can vary in the extent to which they are produced as rhyming responses to that cue but remain constant in terms of their informational overlap with it.

In Experiment 1 subjects were first presented with a list of target words on which they performed a phonemic orienting task. This manipulation was used to ensure attention to the pertinent stimulus dimension. Following a short period of distraction the subjects received a cued recall test in which they were presented with rhymes of the words in the target list. The cues were selected (on the basis of normative data) as ones which yielded a relatively strong and relatively weak