Recall and Recognition:
A Reply to Light, Kimble, and Pellegrino

Michael J. Watkins
Yale University

Endel Tulving
Yale University and University of Toronto

Some of the comments made by the reviewers of the manuscript highlight difficulties in communicating about recall and recognition. These difficulties become particularly acute in considering the conditions of recall and recognition testing. Our critics repeatedly stress the fact that in our experiments recall and recognition were not obtained under identical conditions; the point of this fact escapes us. Conversely, we maintain that the precise conditions of testing are not relevant to the theoretical implications of our finding that recallable words may go unrecognized; this view, apparently, communicates very little to our critics. Thus, Santa and Lamwers (1974), as well as the reviewers of the present paper, have questioned the main thrust of our conclusions on the grounds that the recall and recognition procedures did not involve, as Light, Kimble, and Pellegrino put it, *"the very same set of test conditions."*

In this very brief reply to our critics, we will try to summarize (a) what we think our experiments show, (b) why the notion of testing recall and recognition under identical conditions makes no sense to us, and (c) our view of the theoretical implications of our experiments.

First let us try to state once again, and as clearly as we can, what we think our experiments show. A cue–target pair of words is presented among other such pairs to a person for study. The person expects that at test he will be given the cue and required to produce the target. He is in fact asked to retrieve the target under two conditions. These two conditions we refer to as recall and recognition. Both conditions include the general retrieval information that the required words appeared as target (capitalized) words in the last study list. In addition, in both conditions target-specific retrieval information is given; this information takes the form of the cue word in the recall condition, and the target word in the recognition condition. In the recall condition, the person is told that the cue word was one of the cue words in the study list; in the recognition condition the target word is mixed with other words that were not in the study list. The experimental finding is that the target word may sometimes be retrieved in the recall test (that is, in the presence of the cue) but not in the recognition test (that is, in the presence of the target)—a state of affairs we refer to as "recognition failure of recallable words."

Consider now our difficulties in making sense of the possibility of testing for recall and recognition "under the very same set of test conditions." We take it as a truism that stored information will be retrieved if and only if the person is provided with appropriate retrieval information. Whether or not some particular stored information will be retrieved depends on how well that information is matched by the information present in the person's cognitive environment at the time of the test. This retrieval information can be partly controlled by the experimenter, as for instance, when a nominal copy of the target item is provided. Following long-standing tradition we call this situation a recognition test. Alternatively, retrieval can be measured under conditions that do not include the presentation of a copy of the target item. Following tradition again, we call this situation a recall test. Given these definitions, the inescapable fact is that the testing conditions in recall and recognition are always different.

Given then that recall and recognition testing conditions must of necessity differ, we can ask what would happen if the recognition test differed from the recall test *solely* in the inclusion of copy cues in the recognition test–this is presumably the question raised by our critics. We think the answer to this question is obvious. That recognition performance would, under such conditions, be at least as good as recall performance must surely rank as one of the most reliable findings to emerge from nearly a century of experimental research on human memory. Our own conceptualization of the memory process (like others') must, of course, conform to this elementary fact. We think of this situation as one in which the recognition test includes *more* (appropriate) retrieval information that the recall test; hence a recognition test will be easier than a recall test. This state of affairs has been taken for granted throughout our work on recognition failure of recallable words, and, moreover, was explicitly stated as far back as the first report of this phenomenon by Tulving in 1968. We have never said or implied that the conditions of our recall and recognition tests were identical or even similar, and we have never wanted to deny the fact that recognition is likely to be at least as high as recall when efforts are made to equate the recall and recognition conditions in all respects save the presence of nominal copies of the target words. But it is also true that this well-known fact is not particularly critical to the main business at hand, namely, the evaluation and modification of theoretical ideas on the subject.

Since we fear that the communication problem in considering recall and recognition comparisons is serious, we will give a second example of the difficulties that we are faced with. Our reviewers comment that "the recall and recognition procedures employed by Tulving's research group are not comparable . . . [since] . . . the cues for cued recall were those used at input, but the cues available for recognition were not present at input." We would say that the recognition test, by definition, *does* include cues that were present at input. The difference betwen recall and recognition in our

experiments was not a matter of the presence or absence of some specific cue, but rather a matter of different types of retrieval cue: the cue word in the recall test, and the target word in the recognition test. Thus, for the study pair *glue*–CHAIR, the target item CHAIR was cued with *glue* in the recall test, and with a copy cue ("CHAIR") in the recognition test.

Finally, let us turn very briefly to the theoretical implications of the fact that recall and recognition were tested under conditions that differed in several respects in addition to the presence of copy cues. Whereas we think the details of the testing conditions are not particularly relevant to our theoretical conclusions and formulations, our critics seem inclined to disagree. To quote once again:

Tulving and his associates believe that recognition failure of recallable words is inconsistent with the assumptions of transsituational identity and automatic access, since it is inconceivable (if these assumptions are true) that recall, which involves the staged subprocesses of retrieval and recognition, should succeed when recognition, which involves only one of these processes, fails. This argument would be rather convincing *if* Tulving's group had shown that *under the very same set of test conditions recall but not recognition was successful.* However, what they have demonstrated is that under some circumstances words can be recalled, while under other circumstances they cannot be recognized.

We fail to appreciate how the differences in the two testing conditions can weaken our argument. Given the assumptions noted by Light et al.—namely that the occurrence of a target in the study list and its subsequent occurrence in the recognition test both entail access to one and the same memory node in some relatively permanent associative network (the transsituational assumption), and that recognition differs from recall only in that access to the node is certain or automatic—then it should not be possible to recall a word that cannot be recognized, regardless of how much assistance in accessing the target node is given in recall. That is, access in recall cannot exceed access in recognition, if the latter is perfect. This is why we claim the assumptions to be inconsistent with our findings of recognition failure of recallable words.