SWETS, J. A., TANNER, W. P., JR., & BIRDSALL, T. G. Decision processes in perception. *Psychological Review*, 1961, 68, 301-340.

WATSON, C. S., RILLING, M. E., & BOURBON, W. T. Receiver operating characteristics

determined by a mechanical analogue to the rating scale. *Journal of the Acoustical Society of America*, 1964, 36, 283-288.

WINER, B. J. *Statistical principles in experimental design*. New York: McGraw-Hill, 1962.

The isolation effect and verbal discrimination learning*

SHARRON S. WIKE and EDWARD L. WIKE
The University of Kansas, Lawrence, Kans. 66044

The present study was a 2 by 2 factorial design of verbal-discrimination learning with isolation vs no isolation of a pair of items as one factor and isolation vs no isolation of the correct item feedback as the other factor. The Ss were 36 undergraduates, 9 to a group. It was found that there were significantly fewer errors on the isolated item when the pair was isolated, but not when the feedback was isolated.

If an item is made different in some way from other items, as for example, by being printed in red, that item is learned faster or with fewer errors. This isolation effect, as it is called, has been demonstrated with serial learning, paired-associate learning, and free-recall learning. Stimulus isolation in paired-associate learning may have a greater effect than response isolation (Erickson, 1965).

In the verbal-discrimination task, the stimulus consists of a pair of items and the response consists of one of the items of the pair. Response learning is unimportant for verbal-discrimination learning because the correct response is given when the pair is presented.

The present experiment investigated the effects of isolation upon verbal-discrimination learning. The design of the experiment was a 2 by 2 factorial, with isolation vs no isolation of a pair of items as one factor and isolation vs no isolation of the correct item feedback as the other factor.

METHOD

The Ss were 38 volunteers from the introductory psychology course at the University of Kansas. Two Ss were lost—one due to misunderstood instructions and one due to an outside

interruption while the experiment was in progress. There were 36 Ss, 14 males and 20 females, in the experiment proper. The Ss were assigned randomly and equally to four groups.

The apparatus consisted of a Sawyer Rotomatic slide projector programmed by three timers activated by a power supply. The material consisted of 50 pairs of low meaningful CVCs. The items had a rated meaningfulness of 1.46 to 2.95 (Noble, 1961). Two items were used in the instructions; the remaining items were combined to minimize intrapair similarity. The same list had been used in a previous study (Wike & Wike, 1970 Experiment 2). There were two interpair orders of the 24 pairs. The isolated pair was the 6th pair in the first order and it was the 15th pair in the second order. The order of the pairs was determined randomly. The item chosen to be isolated was selected because in the previous study it was one of the more difficult items. Since verbal-discrimination learning is relatively rapid and the probability of making an

error by chance is only .50, one of the more difficult items was chosen. The pair that was isolated was zum and qal, with zum correct.

Ten trials were administered; the rate was 1:1. There were four groups: Group 1 had neither the stimulus pair nor the feedback item isolated; Group 2 had both the stimulus pair isolated and the feedback item isolated; Group 3 had only the stimulus pair isolated; and Group 4 had only the feedback item isolated. Isolation was accomplished by making the background of the slide red. The instructions were standard verbal-discrimination instructions in which S was directed to guess on the first trial. No mention in the instructions was made of a slide's being red.

RESULTS AND DISCUSSION

The measure used was the number of errors made on the isolated pair on Trials 2-10 (the first trial was a guessing trial). The data were submitted to a 2 by 2 analysis of variance. The factors were (1) stimulus isolation and (2) feedback isolation. Only stimulus isolation was significant ($F = 10.88$, $df = 1/32$, $p < .005$), with isolation leading to fewer errors. The F for feedback isolation was below 1. The F for the interaction was also below 1. The means for the four groups are presented in Table 1.

Contrary to what has been normally found in other learning situations where isolation was manipulated, there seems to be no effect of isolation of the feedback term. Isolation usually is a fairly influential variable. It is somewhat unusual to fail to get an effect at all of isolation. Perhaps part of the isolation effect is to facilitate response learning. In the verbal-discrimination task, response-learning requirements are at a minimum.

A substantial isolation effect was observed when the isolation of the stimulus pair was manipulated. Thus, the isolation effect would appear to be a stimulus phenomenon, at least in verbal-discrimination learning. The finding that stimulus isolation is more important than response-term isolation agrees with the results of Erickson (1965) on paired-associate learning.

REFERENCES

- ERICKSON, R. L. Differential effects of stimulus and response isolation in paired associate learning. *Journal of Experimental Psychology*, 1965, 69, 317-323.
- NOBLE, C. E. Measurements of association value (a), rated associations (a'), and scaled meaningfulness (m') for the 2100 CVC combinations of the English alphabet. *Psychological Reports*, 1961, 8, 487-521.
- WIKE, S. S., & WIKE, E. L. Presentation rates and verbal discrimination learning. *Psychonomic Science*, 1970, 19, 253-254.

Table 1
Mean Number of Errors for the Four Groups

Group	Isolation	Mean
I	None	2.64
II	P + F*	.64
III	P	.82
IV	F	2.73

*P = pair; F = feedback

*These studies were supported by a grant, HD 00870, from the National Institute of Child Health and Human Development and a Biomedical Sciences Support grant, FR-07037.