The influence of distinctiveness on stimulus selection

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Paired-associate lists with compound stimuli composed of three adjectives which varied along a distinctiveness (D) dimension and single digit responses were presented to 18 Ss. The Ss were given 12 learning trials and then a transfer task on which they were asked to recall the correct response when each word was presented alone. The results indicated that selection occurred along the D dimension.

Several investigators have found evidence for cue selection in paired associate learning with compound stimuli. For instance, Jenkins (1963) and Postman & Greenbloom (1967) examined response recall when only one letter from the stimulus trigram was presented and found significant amounts of recall, particularly for the first element. Underwood, Ham, & Eckstrand (1962) used trigrams and color and found selection of color to be dominant.

The basis for selection of the effective stimulus cue in verbal learning situations is important in determining expected responses and the course of learning. This study involves examination of the effects of a variable labeled distinctiveness (D) on cue selection in the paired-associate situation with three words as the compound stimulus.

Since words as units differ considerably from letters or trigrams in their attributes it is possible that different factors will be involved in the selection process. The basis for this study was the hypothesis that a more distinctive word will be selected more frequently than a less distinctive word. D is defined here as a function of the results of a short term recognition memory experiment of the sort performed by Shepard & Teghtsoonian (1961). The difference between hits (old words called old) and false alarms (new words called old) was the value taken for D.

Furst (1967) showed D to be a potent variable on the stimulus side of paired associated lists when the lists were heterogeneous with respect to the D variable. Since D did not have a significant effect in comparisons across lists which were homogeneous with respect to it the assumption of a selection factor is reasonable. The compound stimulus technique provides one way of testing this.

Other attributes of words which have been shown to affect learning are meaningfulness (*m*) and frequency of usage (*u*). Values of these attributes for the words used were obtained using Noble's (1952) production technique for *m* and subjective ratings for *u*.

METHOD

The Ss were 18 introductory psychology students at the University of Georgia.

They were required to learn six paired-associates using the standard anticipation technique. Each of the six stimuli consisted of three words with one word from each of the D categories. The six high D words (TARDY, ARCTIC, ZEALOUS, JUICY, UNDONE, and RABID) had values ranging from 43 to 45, all six medium D words (DEMURE, LOYAL, ALIVE, OUTER, MASSIVE, and NIMBLE) had the value of 38, while the six low D words (LUSTY, EXTREME, SIMPLE, JAGGED, VALID, and FATAL) had values ranging from 24 to 32. The mean *m* values for the high, medium and

low D words were 5.57, 5.28 and 5.07, respectively, while the mean *u* values for the three D categories were 1.90, 2.43, and 2.98, respectively. Neither of these differences approached significance since $F(2,15) = 1.77$, $p = .20$, and the *F*s for *m* and *u* respectively, were .24 and 1.79. Responses were the single digits 1 to 6. The original list was presented at a 3:3-sec rate with a 3-sec intertrial interval for 12 trials. After OL, each of the 18 words was presented for 4 sec individually in one of two random orders.

The order in which a paired-associate appeared within the list as well as the order of the words within a stimulus were varied from trial to trial. The three words in any single stimulus were of the same length. Six randomizations of the list order were used in combination with the six possible orders in which the three words of a stimulus can occur (e.g., HML, MLH, etc.). On each trial, each of the six possible word orders occurred and for the six randomizations of the list each stimulus appeared only once in each of the possible orders. An equal number of Ss had each randomization within the list as a first trial. The effect of these steps was to counterbalance the frequency with which the various words appeared in each of the possible stimulus positions.

RESULTS

The mean number of correct responses on the last trial of learning was 3.67.

The mean number of correct responses on the test stage for the high, medium, and low D words was 3.00, 2.33, and 1.94, respectively, $F(2,34) = 4.80$, $p < .025$. The Newman-Keuls procedure (Winer, 1962) was used to examine differences between means. The difference between the high and low D words was significant ($p < .05$), while the high-medium and medium-low differences were not significant ($p > .05$).

DISCUSSION

The results suggest that when a PA stimulus contains three adjectives varying in D, there is a tendency to utilize the highest D adjective most often as a cue for the response. These results are in accord with the findings of Furst (1967). Since the differences among the D groups on the *m* and *u* variables were not significant the present results seem attributable to D. This, of course, does not negate the possibility that *m* and *u* might also be selection factors.

Whether or not these or other variables might account for some greater amount of selection, the fact that among words selection occurs and has a bearing on learning is important to consider in many verbal learning situations.

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