Semantic satiation as a function of type of associate

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This study investigated the relative strength of verbal association in common verbal associates, semantic space verbal associates, and non-associates. Repetition-satiation inhibition procedures were used in the test period. It was found that common associates and semantic space associates show equivalent inhibition effects and both showed significantly less inhibition than non-associates. Interference in the form of noise· during repetition did not significantly affect the course of inhibition.

Staats & Staats (1959) have argued that the meaning of a word is based upon the process of conditioned verbal mediation and thus cannot be defined simply in terms of overt verbal behavior. When a word is paired with either experimentally selected or "natural" (free) associates, both the connections between the word and its associates, and the connections between related associates are strengthened. Because of this observation, Staats and Staats maintain that with continued pairings between a word and its associates, the associates tend to acquire the same meaning as the word itself.

The stronger the pre-experimental association between a word and its associate, the easier it should be for Ss to learn the word pair and the more difficult it will be for inhibition to occur. Words may be associated with one another on more than one level. They may be relatively synonymous with one another on a surface level, they may not be synonymous and have a high frequency of joint occurrence, or they may be related in semantic space. The last of these levels of association is most indicative of the mediational nature of word meaning. Osgood, Suci, & Tannenbaum (1957) maintain that words which are related in semantic space are those words which have similar ratings on the evaluative, potency and activity dimensions of the semantic differential. Whether these semantic space associates have surface relationships or not, they are nevertheless said to have similar connotative meanings.

League (1966) has generated a three-dimensional rank-ordered model of semantic space for 343 words taken from Jenkins, Russell, & Suci's (1958) *Atlas of Semantic Profiles*. Using changes in polarity as a dependent measure, he found that semantic space mediators show satiation or inhibition effects similar to those demonstrated for free associates and synonyms. Jakobovits & Rice (1967) found similar satiation effects using both changes in polarity and changes in scale relevance.

It seems reasonable that immediate effects of loss of scale relevance and polarity represent weakening of the mediating response as postulated by Staats and Staats. Therefore, it may be expected that paired associates previously learned to criterion will suffer some loss of association following semantic satiation procedures. However, the strength of this association should depend upon at least two factors: (a) the strength of association between the members and (b) the strength of the mediating response defined by contiguity in semantic space. Moreover, if semantic satiation is inhibited through interference with the procedure, this satiation effect should be reduced accordingly.

METHOD

In order to test these hypotheses three lists of 10 paired associates each were generated. One member of each pair was identical from list to list. The second member of each pair of common associates (CA) was chosen to be moderately distant in semantic space. The second member of each pair of semantic space associates (SS) was not a common associate but was close in semantic space. The second member of each nonassociates pair (NA) was not a common associate and was very distant in semantic space. The mean semantic space distances for the pairs of associates by list were: Nonassociates—evaluative 4.5, potency 4.3, activity 3.7; Common associates—evaluative 2.4, potency 4.1, activity 2.4; Semantic space—evaluative .1, potency .1, activity 1.0.

The Ss were 90 females chosen from the S pool of students enrolled in the introductory psychology course at the University of Florida. The Ss were randomly assigned to each of the word list conditions and satiation conditions so that each cell of the 2 by 3 designs contained 15 Ss.

The Ss were trained to a criterion of one errorless trial on the lists of paired associates. In Part 1 of the study, the pairs were projected before each S individually on a black screen by a Carousel slide projector. The order of presentation of the pairs was randomized for each trial. The words were projected as white letters on a black background and each pair was presented according to a typical anticipation procedure in an A, A-B sequence. A remained on the screen for 5 sec; it was followed by a dark slide which made the screen blank for 5 sec, after which A-B was projected for 5 sec. After the first trial, Ss were instructed to anticipate B in the interval between the presentation of A and A-B.

Part 2 immediately followed the learning of the pairs as evidenced by one errorless trial. Each S was then given a satiation treatment for each pair of associates: B was projected for 40 sec and the S was instructed to repeat B aloud at least twice a second for as long as it remained on the screen. One half of the Ss were given this straight satiation treatment. The other half of the Ss were given the same instructions but also heard through earphones interfering noises of random duration, volume and kind during their repetitions. Immediately following the 40 sec satiation period, the screen went blank for 3 sec during which time the S was to recall the appropriate A. Each S was thus given satiation treatment to her entire respective list of pairs five times; the order of presentation of the B members was randomized for each of these satiation trials.

Two 2 by 3 analyses of variance were used to evaluate the data. The first analyzed trials to criterion as a function of associate type and noise, and the second errors in the repetition period as a function of associate type and noise.

RESULTS

The only significant effect in both analyses of variance was that of type of associate. In the 2 by 3 analysis of trials to criterion, it was found that the type of associate was a significant factor in the rate of learning the association (F = 14.52, df = 2,84, p < .001). Individual mean comparisons revealed that common associates (CA) are learned in fewer trials than either semantic space associates (SSA) or non-associates (NA) (p < .05). Also, SSA are learned in fewer trials than NA (p > .01).

In the analysis of errors during the repetition-test period, again a significant difference was found between types of associates (F = 3.44; df = 2,84; p < .05). Mean comparisons of the three associate groups indicated that there was no difference in the number of errors between CA and SSA and that both of these showed a significantly lower incidence of errors than the NA group (p < .01). These findings indicate that satiation effects due to repetition are not different for associates linked by surface meaning and those linked through mediated association.

The proposition that introducing an interfering stimulus into the repetition-test period should serve to inhibit the ongoing process of satiation, was not supported by the findings of this study.

Finally, it should be noted that since significant differences were found on type of associate in both learning and repetition periods, an analysis of covariance was done with trials to criterion as the X-covariate and number of errors during the repetition period as the Y-covariate. While the effect of covariation between trials to criterion and errors during repetition was to reduce somewhat the level of significance of difference between type of associate in the repetition period, this reduction was not extreme (F = 2.79, df = 2,83, p < .07).

DISCUSSION

The results of this study indicate that associates related in semantic space and therefore through connotative meaning, show

inhibition effects equivalent to associates related in surface meaning (CA). Furthermore, although there was no apparent surface relationship between SSAs, they showed inhibition effects which were different and significantly less severe than those exhibited by non-associates.

These findings provide support for Staats & Staats' (1959) position that verbal mediation processes can account for word meaning. Thus, the bond between words with meaning equivalence in terms of mediational semantic space dimensions, but without surface relationship appears to be as strong as the bond between associates with surface relationships. Further investigation will be necessary to determine if these mediational components and denotative components of meaning have congruent characteristics other than their resistance to inhibition.

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