Changes in commonality scores as a function of task and time: Implications for PA learning¹

Sydelle S. Shapiro

AUSTEN RIGGS CENTER, STOCKBRIDGE, MASS.

Abstract

An assumption made in the use of associative strength as a variable in PA learning is that the norms from which it is taken reflect stable group characteristics. The present study tested this by comparing groups which had received PA training designed to change their responses to a WA test with a control group which had received no specific training. The results showed that all groups, regardless of condition, changed more than 50% of their associations and that all groups increased in commonality.

Problem

Word association (WA) norms are frequently used to develop indices of associative strength. When WA strength is used as a variable in learning tasks it is presupposed that the index reflects fairly stable group characteristics. This would suggest that even if specific learning tasks could be devised which would change an experimental group's set of responses to a WA test, a control group which had not been subjected to any differential training should continue to respond as it had when originally tested. Such changes can be measured by the use of the commonality score (C). The C is the number of responses which a S gives which is the same as the primary (the most frequent associate) for the group.

The present study tested the effect of learning a list of high frequency associates on the C of one group of Ss, the effect of learning a list of idiosyncratic associates on the C of a second group, and the effect of time on the C of a control group.

Method

The Ss were 48 eighth grade children, 24 boys and 24 girls who had scored in the middle range for C on a WA test taken two months prior to the experiment, and scored on the basis of Shapiro's (1963) norms. The range of C, based on responses to 30 words was 13-15. The Ss were divided into three groups of eight boys and eight girls each. Group I was given a paired associate (PA) learning task consisting of eight pairs of stimulus words and their primaries as responses i.e., boy-girl; pay-money; wax-floor; rib-bone; jet-plane; new-old; far-away; hop-jump. The list was randomly presented at a 2:2 rate on a Stowe memory drum. Ss task was to anticipate responses to a criterion of one perfect trial. Immediately following criterion, the Ss were given a WA retest consisting of the same 30 words on which they had been previously tested two months before. The stimulus words of the PA list were included in the 30 words. Group II followed the same procedure except

that the response words on the PA task consisted of very low frequency associates i.e., boy-like; pay-hour; wax-cast; rib-talk; jet-water; new-stamp; far-knife; hop-push. Group III acted as a control group. It did not receive any PA training but merely took the WA retest.

Results

Group I reached criterion in 3 trials while Group II required 8.8 trials to reach criterion. A t-test showed this difference to be significant ($t=4.7$; $df, 30$; $p < .01$).

Table 1 shows percentage comparisons between the WA test and retest of the 30 words. All groups, including the control (Group III) increased in C. The largest increase, that of Group I reflects both the increase obtained across all groups and also a specific increase in the subgroup of words i.e., the words and their primaries which were contained in the PA task. Group II and Group III scored about the same in all categories.

All groups show that well over 50% of the WA changed on the retest. The protocols of all 48 Ss were inspected and showed that in 40 cases at least half of the associations changed on the retest. In order to assess the nature of this change, 10 protocols were chosen at random from the control group (Group III) and were inspected. Of 54 responses which became primaries on the retest, 43% were within the first four most popular responses on the group norms. Of 33 responses which changed from the primary to another word, 42% became words which were among the first four most popular responses.

Discussion

The results described help to explain the failure to get a differential effect using word association frequencies as observed by Jenkins (in press) using adults. Although response hierarchies may be stable for groups, they are fluid for individual Ss. In PA studies where this variable

Table 1. Test-retest Percentage Scores for Selected Characteristics on 30 Item Word Association Test

Characteristics	Group I	Group II	Group III (Control)
C (test)	45.7	43.3	47.7
C (retest)	62.3	50.7	51.7
WA Changes	58.3	57.7	55.0
Primaries lost on retest	11.3	12.0	14.3
Words which became primaries on retest	28.0	20.0	18.7
Subgroup (8): Primaries lost on retest	3.7	13.7	16.2
Subgroup (8): Words which became primaries on retest	42.5	13.7	17.5

is effective, the levels tested are usually very high and very low frequencies and the Ss are grade school children. (Castaneda, Fahel, & Odom, 1961; McCullers, 1961; Shapiro, in press). Wicklund, Palermo, & Jenkins (1964) used an intermediate list as well as a list of primaries and a list of very low frequencies. While significant differences were obtained between the high frequency list and the other two, there was no appreciable difference between the intermediate and low frequency list.

It seems reasonable to conclude that verbal response hierarchies can make only gross predictions in the PA learning of children. It may be that with adults language habits are so strong that one exposure to a list is sufficient to change the response strengths of the entire hierarchy. In children this also occurs, but not over the entire hierarchy. Rather, it can be conceived of as occurring within a range of values from any specified strength. This would allow for differences at the extremes but not at the intermediate levels.

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Note

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