The effect of familiarization on associative latency

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Abstract

Two experiments dealing with the effects of familiarization on the associative latency of responses to CVC trigrams are reported. In the first experiment, familiarization instructions stressed spelling trigrams, and in the second experiment the stress was placed on pronouncing trigrams. The significant effects (decrease in associative latency) of the second experiment are attributed to the change in instructions. The implications of this phenomenon are discussed.

Introduction

The latency of associations to CVC trigrams is receiving attention from investigators. It has been shown that when trigrams are scaled in terms of associative latency, the measures correlate equally with five other trigrams scales (Gillooly, 1964) and that associative latency predicts ease of learning (Johnson, 1964). With these studies completed, it is inevitable, perhaps, that we inquire into the relationship which may exist between familiarization and associative latency. In inquiring into this matter, one is confronted by the Riley & Phillips (1959) data from which it was concluded, "The evidence from the present experiments shows that familiarization of syllables does not affect either their associative latency or their associative frequency." Quite recently, this conclusion has been used as evidence in support of a theoretical position (Noble, 1963).

Investigation of the effects of familiarization on associative latency was undertaken using procedures that were different from those used by Riley & Phillips. Two experiments were conducted. Each differed from the Riley & Phillips studies in being less protracted (the entire experimental procedure required no more than 45 min. for any S instead of seven daily 1-hr. sessions for Riley & Phillips' Ss). Experiment II differed from Experiment I principally in the instructions given Ss prior to the familiarization procedure but also in those instructions which preceded the association test. The familiarization instructions of Experiment I emphasized spelling (as did Riley & Phillips') whereas emphasis in Experiment II's familiarization instructions was shifted to the pronunciation of the trigrams.

Method

Subjects: Thirty-eight male undergraduate students enrolled in an introductory psychology course participated in these experiments. Eighteen (nine to each condition) were assigned to Experiment I and 20 to Experiment II (ten to each condition).

Materials and Apparatus: Two lists of 20 CVC trigrams each were constructed. List 1 was composed

of trigrams scaled previously by Gillooly (1964) and List 2 was composed of trigrams chosen for being orthographically different from List 1. Associative latencies were measured with a Standard electric timer calibrated in .01 sec. and activated by means of a telegraph key.

Procedure: Each experiment consisted of two parts—a familiarization procedure (using both list 1 and 2) and an association test (on list 1 only). Hence, familiarization on list 1 is termed "Relevant Familiarization" (RF), and familiarization on list 2 is termed "Irrelevant Familiarization" (IF).

Familiarization Experiment I: In individual sessions, Ss were given a booklet in which the stimuli (of either list 1 or 2) were typed. A line was provided beside each trigram. S was instructed to spell the syllable, then print it on the line provided. The list was presented once per page and there were six pages in each booklet. Hence, there were six familiarization (both RF and IF) trials. Booklets (that is, list 1 or 2) were assigned to Ss on a random basis.

Familiarization Experiment II: The procedures were identical to those used in Experiment I except the Ss were instructed to pronounce, spell, and pronounce the syllables again before printing them.

Association Test Experiments I and II: In individual sessions which immediately followed the familiarization procedures, Ss were given an association test. Ss were instructed to respond to the trigram as soon as possible with the first word or thing that occurred to them after seeing the stimuli. In Experiment II's instructions, the words "as soon as possible" were underscored and the sentence, "Remember, you should respond as quickly as possible with the first thing that comes to mind after you have seen the syllable" was substituted for one stating that E was not interested in Ss' personal score.

The stimuli (of list 1) were typed on 3 in x 5 in cards. Timings were taken to the nearest .01 sec. from the exposure of a stimulus trigram to the onset of S's response. The order of presentation was invariant for all Ss. Five stimuli were used to acquaint Ss with the procedure.

Results

Experiment I: To forestall argument that one group differed on a task-relevant dimension from the other, the responses to the practice materials were analyzed. A median test of the 90 responses (18 Ss x 5 stimuli) produced a $X^2 = .044$ which for $df = 1$, $.90 > p > .80$.

A median test of the 360 responses (18 Ss x 20 stimuli) to the test stimuli (list 1) produced a $X^2 = 1.11$ which for

df=1, .30>p>.20 and it is concluded that the two distributions are identical. The directionality of the insignificant difference is such that the IF group is the faster. The medians for the distributions are as follows: 1.70 sec. for the RF group and 1.62 sec. for the IF group.

Mann-Whitney U tests of the response protocols to individual trigrams disclosed that there were no significant differences between the distributions of responses of the two groups to any particular trigram.

Experiment II: Analysis of responses to practice materials (on which neither group received familiarization as before) showed no initial difference between the groups (RF and IF). A median test of the 100 practice responses (20 Ss x 5 stimuli) produced a $X^2 = .0016$ which for df=1, .98>p>.95.

The median test of the 400 responses (20 Ss x 20 stimuli) to the test stimuli (list 1) produced a $X^2 = 11.05$ which for df=1, p<.001 and it is concluded that the two distributions of responses to the test materials are not identical. The medians of each distribution are: 1.21 sec. for the RF group and 1.55 sec. for the IF group. The responses of the RF group have been facilitated.

Mann-Whitney U tests of the response protocols to individual trigrams disclose that the RF group responded significantly faster (p<.05) to 10 trigrams, faster by borderline significances (.10>p>.05) to three trigrams, and faster but not significantly so (.20>p>.10) to three trigrams. The IF group responded faster though not to a significant degree (.50>p>.25) to four trigrams.

Conclusions

In addition to limiting the generality of the Riley & Phillips conclusion that familiarization leaves associative latency unaffected, Experiments I and II taken together suggest that it is the instructions given Ss which determines whether or not familiarization decreases associative latency. Riley & Phillips' instructions

stressed the spelling of trigrams (as did those of Experiment I above) whereas the decrease in associative latency was obtained using instructions which stressed the pronunciation of the materials.

Further, it is more difficult to maintain that meaningfulness and familiarity are independent concepts (Noble, 1963) in the light of the above evidence. If the latency of the first associate to CVC trigrams is significantly reduced by familiarization training, presumably associative frequency is increased (by increasing the probability that an associate will be reported in a constant amount of time and/or by leaving Ss more of that constant amount of time in which to report additional associations.) Also, a decrease in associative latency increases the association value (Glaze, 1928; Archer, 1960; and Witmer, 1935 for CCC trigrams) of the materials (q.v. Gillooly, 1964).

Finally, although associative latency is not the sole mediator of familiarization's facilitating influence on learning, it is reinstated as a possible mediator of such influence.

References

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