Response prompting: The practice time variable¹

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Three experiments were designed to investigate the contributing effects of practice time to the reported superiority of response prompting over confirmation in paired-associate learning. With more adequate controls, the oft cited facilitating effects of prompting failed to materialize.

In a recent review of the response prompting literature, Aiken & Lau (1967) concluded that in paired-associate learning (1) prompting was equal or superior to confirmation, and (2) an emphasis on response-contingent events might be inefficient for modifying human behavior when avenues for direct verbal instruction were available. The purpose of this paper is to describe three experiments designed to test the effects of available practice time, a confounded variable favoring prompting that may have contributed to these effects.

The method of research basic to studies carried out in this area has been provided by Cook & Kendler (1956). In this and in subsequent experiments (e.g., Angell & Lumsdaine, 1960; Barch & Levine, 1967; Cook, 1958; Cook & Spitzer, 1964; Reynolds, 1967; Levine, 1965) the prompting design involved presentation of the stimulus and then the response (or S-R simultaneously), following which S wrote or called out the response term just presented. Although there may be slight variations in the method, no errors are made during training and retention is measured during interspersed test trials. Of course with classical confirmation, the stimulus is presented, S anticipates the response, and then the correct response term is shown (feedback). As a consequence, less time is available for practice before the stimulus for the next paired associate appears.

GENERAL METHOD

In each of three studies, Ss were instructed to learn 10 paired associates consisting of digit-nonsense syllable combinations. The list was composed by randomly assigning single digits (0-9) to each of 10 nonsense syllables, CVC trigrams of 25% association value (Archer, 1960). No two syllables began or ended with the same consonant.

All Ss received 12 trials, nine training and three test. During training Ss learned by the anticipation or prompting methods described below. Recall tests were given on Trials 4, 8, and 12, with only the stimulus term being shown and S required to write the response without feedback. Different random orders of the material were presented on each training and test trial.

The Ss were students from introductory psychology courses at San Diego State College who received class credit for serving. All were run individually, and assignment to conditions was random.

EXPERIMENT 1

Method

Eighty Ss were assigned to either a prompt or confirmation condition with an equal number of males and females in each. With prompting, the stimulus digit was shown, then the associated nonsense syllable, and then S wrote the response term just presented. In the confirmation condition, Ss saw the stimulus, anticipated and wrote the response, and then were shown the correct nonsense syllable. Each stimulus and response term was individually flashed onto a screen by a Dunning-filmstrip projector at a 2-sec rate; Ss were allowed 6 sec to respond. The interpair interval was 1 sec. On test trials, the stimulus was flashed for 2 sec and 6 sec allowed for

recall. Responses were written on a paper tape that automatically advanced at the end of each trial.

Results

Analyses of variance on the number of correct responses showed significant superiority for prompting ($p < .01$) on each of the three test trials. This result is in general agreement with those reported by others using the basic Cook & Kendler (1956) design (Aiken & Lau, 1967; Angell & Lumsdaine, 1960; Cook, 1958; Cook & Spitzer, 1964; Levine, 1965).

EXPERIMENT 2

Method

Experiment 1 was replicated in all respects but one: The inter-pair interval was shortened for the prompt group from 1 to .5 sec and lengthened for the confirmation condition from 1 to 3 sec. This offered more available practice time to the latter group and shortened it for the former, although the advantage still favored prompting by 3.5 sec.

Eighty different Ss were randomly assigned to either a prompt or confirmation condition. Equal numbers of males and females served in each.

Results

Analyses of variance on the total number of correct responses showed no significant differences between experimental conditions on any of the three test trials.

EXPERIMENT 3

Method

The results of Experiment 2 suggested the need for a more detailed evaluation of the practice time variable. Therefore, in Experiment 3, 160 different Ss were randomly assigned to each of four experimental conditions. Three groups were subjected to the confirmation method and differed only in interpair interval times, 1, 3, and 7 sec, respectively. A fourth group used the prompting method with a 1-sec interpair interval. Thus, the prompt and confirmation 1-sec groups duplicated the conditions of Experiment 1 and offered a test of reliability. The 3-sec group replicated the time difference in Experiment 2, and the 7-sec condition offered one confirmation group the same amount of total practice time as was available to the prompt group, if the Ss cared to use it. In all other respects, the procedures for Experiments 1, 2, and 3 were alike.

Results

Separate analyses of the various combinations of conditions indicated that the prompt, 3-sec, and 7-sec confirmation treatments produced significantly more correct responses than the 1-sec confirmation group on all test trials ($p < .01$). However, prompt, 3-sec, and 7-sec confirmation groups were not significantly different from each other.

DISCUSSION

The results of Experiment 1 and the two equivalent groups of Experiment 3 indicate that prompting results in significantly more correct responses than confirmation when the classical Cook & Kendler (1956) design is used and all stimulus, response term, interpair, and overt response (anticipation) intervals equalized for the two conditions. However, we have noted that adherence to a "clean" design allows more practice time for the prompt groups. [Cooper & Pantle (1967) cite this as a distinction between nominal and effective practice times.] When this advantage is neutralized, confirmation groups fare just as well. Thus, statements concerning the superiority of prompting and the questionability of theory and method used in classical anticipation-type learning (Aiken & Lau, 1967; DeCecco, 1968) appear dubitable.

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NOTE

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