Verbal conditioning with "positive" and "positive and negative" reinforcement

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To test the hypothesis that "positive" (+ only) and "positive and negative" (+ & -) reinforcement schedules will affect conditioning of a random noun schedule, 30 Ss were randomly selected and placed into 3 groups (control, + only, and + & -). The nouns to be conditioned were of the animate form where conditioning was done by generalized conditioned reinforcers "mmm-hmm" for the positive and "huh-uh" for the negative. The results support the hypothesis that with the (+ & -) reinforcers the group conditioned significantly faster than with (+ only) and this faster than the controls.

Skinner has commented that one of the principal effects of punishment upon verbal behavior is "...to convert the behavior, ..., into a conditioned aversive stimulus. Any behavior which reduces such stimulation—such as any behavior which is incompatible with or otherwise displaces punished behavior, either in its incipient or final stages—is automatically reinforced. In punishing one response, then we automatically provide for the reinforcement of responses which are incompatible with it" (Skinner, 1957, p. 166).

If it may be assumed that positive generalized reinforcers do strengthen the probability of occurrence of a particular class and if negative generalized reinforcers, in addition, provide for reinforcement for responses which are incompatible with it, it may be hypothesized that (+ & -) reinforcement will have greater influence upon verbal behavior than the (+ only) reinforcement.

Procedure

A random selection of 30 Ss was taken from the population of 1420 students at Central Washington State College during the summer term of 1965 having sophomore through senior status. The 30 Ss were randomized into three groups having 10 Ss in each, where Group I was the control group having no introduction of reinforcement, Group II was on a positive (+ only) reinforcement schedule, and Group III a positive and negative (+ & -) reinforcement schedule was used.

The experiment was conducted in a small, sound proof room. Within the room were two chairs and a desk. The desk and one chair faced the wall where the S was instructed to be seated. The E was seated behind and out of sight of the S. On the desk, in front of the S, was a timer marked off into 10 sec. intervals, which was his rate schedule for word verbalizations.

The S was given the following instructions at the beginning of the experiment: "What I want you to do is to say randomly all the nouns or words that can be used as nouns that you can think of. Do not use any

sentences or phrases. Do not count. Say them one at a time as the time hand passes the designated intervals on the timer face. Continue until I say 'Stop' and as soon as I say 'Start' go ahead."

The experimental sessions were 20 min. in length. For the Ss of each group, the first 5 min. included no reinforcement in order to obtain a proportionality factor of the animate to inanimate nouns and to determine whether there was any appreciable set involved which might affect the results. The Ss in Group I received no reinforcer for each of their responses, those Ss in Group II received only a generalized positive reinforcer, "mmm-hmm," following each animate noun that was emitted, and Ss in Group III following each animate noun were given a generalized positive reinforcer, "mmm-hmm," and when an inanimate noun was emitted, the S received a generalized negative reinforcer, "huh-uh."

In reference to the subject verbalizations and to the reinforcement patterns, the defined word groupings were as follows: (1) animate nouns were those having life qualities such as girl, dog, cat, song, etc. and (2) inanimate nouns were any words not having life qualities, stone, car, river, etc. Any word about which there was any question as to whether it was animate or inanimate was designated as inanimate.

In order to ascertain if the S had knowledge of what was the purpose of the experiment, the S was asked what he thought the experiment was all about at the end of the experimental period. In no case was it necessary to replace a S due to such knowledge.

Results and Discussion

The relationship of the proportions and set to the results of the first 5 min. were found to be not statistically appreciable. For the purpose of statistical analysis, the last 5 min. of the experiment were utilized. It was observed that there were significant differences between the treatment effects ($F=14.496$, $df=2/27$, $p<.01$). The Duncan multiple range test was used to determine the significant differences between the groups. The results showed a significant difference at $p<.01$ between the mean value of the control group ($\bar{X}_1=10.4$) and the mean of the (+ only) group ($\bar{X}_2=23.6$) and of the (+ & -) group ($\bar{X}_3=44.4$). Likewise, the Duncan test showed a significant difference with the $p<.01$ between the (+ only) and the (+ & -) groups.

The basic general conclusions that may be drawn from the results of this study are in support of the hypothesis. Positive reinforcement increases the prob-

ability of the response but that the rate and magnitude of the responses are significantly greater when both positive and negative reinforcement are utilized.

Reference

Skinner, B. F. *Verbal behavior*. New York: Appleton-Century-Crofts, 1957.

Abstract

Levy, C. Michael (U. Florida). Effect of intrastimulus agreement and conflict upon conditioned discrimination and reversal of the eyelid response. *J. exp. Psychol.*, in press—Agreement and conflict within conditioned stimuli were manipulated by presenting two groups with the words PINK and BLUE written in appropriate and inappropriate colors, respectively. Control groups were presented with these words *or* colors. Sixty differential conditioning trials were given to all Ss. Half of the Ss in each group were given 40 reversal trials; the remaining Ss were not reversed. Intra-CS conflict produced poor discrimination of the eyelid response by elevating the CS- function. It was speculated that a cognitive interpretation might well account for the empirical asymmetries since most Ss met the voluntary responder criterion and could verbalize many of the crucial experimental arrangements. (Pre-publication copies of the manuscript are available from the author.)