Verbal conditioning: Awareness and subject set

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This study attempted to demonstrate that intelligent Ss would show learning without awareness (LWA) in a verbal conditioning situation where cues and references pertaining to psychology were minimized. College students and graduates performed a simple verbal conditioning task under these circumstances and were then given an elaborate interview to determine presence or absence of awareness. Control Ss were given the same amount of reinforcement, delivered randomly. To control for potential biases, E was deliberately misled concerning the expected results. LWA occurred as expected, although whether it was specifically due to the absence of a "psychological set" could not be determined.

Lanyon (1967) concluded that learning without awareness has by no means been discounted in verbal conditioning, although circumstances favorable for its occurrence have not been widely explored. For example, the available evidence suggested major differences between college and non-college Ss in the degree of awareness reported after a verbal conditioning task. Reasoning that intelligence is one important factor differentiating college students from other populations studied, Lanyon & Drotar (in press) compared high and low intelligence high school students on a simple verbal conditioning task, equating for degree of learning. Awareness was reported significantly more often by the high intelligence Ss, even after an exhaustive postexperimental interview.

In addition to intelligence, college and non-college Ss used in verbal conditioning studies have differed in another way. Their expectations of the situation and their need to understand the proceedings have presumably been different. College students, typically recruits from introductory psychology classes, are likely to approach a verbal conditioning situation hoping to understand the nature of the experiment, or possessing a set toward "learning about psychology," which would lead them to engage in cognitive activity and to test hypotheses about the nature of the situation. On the other hand, non-college groups have less reason for being interested in the underlying purpose of the study, and might therefore be expected to treat the situation in a "nonpsychological" manner.

The present study attempted to demonstrate learning without reported awareness in Ss exposed to verbal conditioning in the type of nonpsychological situation described above. To lessen the likelihood that learning without awareness would be due to Ss' low intelligence, college students and graduates were used.

To preclude the possible effects of experimenter bias, both during the conditioning procedure and during the subsequent interview, E, an undergraduate, was given a deliberate bias against the expected results. The author explained to him that nearly all learners in verbal conditioning could be shown to be aware of the response-reinforcement contingency, provided they were questioned closely enough. Thus, the author promoted Levin's (1961) position.

Method

The initial Ss were 25 males and 25 females, of whom 32 were college students and 18 were recent graduates. Mean age was 20.3 and mean educational level was 14.8 years. Sixteen Ss (eight males and eight females) were randomly assigned to each of two experimental groups: Group F, to be reinforced for using first-person pronouns, and Group T, to be reinforced for using third-person pronouns. Sixteen Ss formed the control group (Group C), which was run last for reasons given below. Two Ss who later verbalized awareness were discarded. To equate groups for initial differences in response level, five Ss were systematically eliminated from each group, leaving 11 Ss in each of the three groups.

The Ss were asked to take part in "a short research study." Those who asked for more than a minimal amount of advance detail were not used. The E said he was a premedical student. Subsequent questioning indicated that only five Ss had regarded the study as psychological, and that only two were currently taking a psychology course or had done so previously.

The Ss were seated across a table from the E in a room free from distraction in the Rutgers student center at Camden, N. J. Taffel's (1955) verbal conditioning task was used, with 80 stimulus cards containing "I," "we," "he," and "they" typed across the bottom in random order, and a different past tense verb typed in the center. The procedure was the same as that described by Lanyon & Drotar (in press). For Trials 21-80, Group F was reinforced for choosing "I" or "we," and Group T for "he" or "they." For Group C, the reinforcing stimulus was delivered randomly, in the same proportion for each block, as had been given to the experimental Ss. Group C was run last in order that the amount of (random) reinforcement to be delivered would be known.

Following the 80 trials, E questioned each S about his perception of the nature of the experiment, using

Fig. 1. Frequency of criterion responses for each block of 20 trials, for Group F and Group T Ss (all unaware) and for control Ss.

the extension of Levin's (1961) interview schedule described by Lanyon & Drotar (in press). The only two Ss to verbalize awareness were discarded.

Results

Since the groups differed moderately on operant frequency of criterion responses during the first 20 trials, five extreme Ss were discarded from each group. This operation, performed without reference to data beyond the first 20 trials, brought the initial criterion response frequencies for the first 20 trials to approximately 10 for each group.

The mean criterion response frequencies over 80 trials, in blocks of 20, are presented in Fig. 1. For the control Group C, both I-we responses and he-they responses are represented. These are complementary, so the two sets of comparisons described below are not independent. For Group F, the mean change in I-we responses from the first to the fourth block of trials was significant ($t=2.71$, $df=10$, $p<.05$). This change was nonsignificantly greater than the corresponding change in I-we response frequency in Group

C ($t=1.60$). For Group T, the mean change in he-they responses from the first to the fourth block of trials was significant ($t=4.48$, $df=10$, $p<.01$). This change was also significantly greater than the corresponding change in he-they response frequency in Group C ($t=2.11$, $df=20$, $p<.05$).

Discussion

The results tended to confirm the hypothesis that, given suitable experimental circumstances, verbal conditioning would increase response frequency despite the absence of reported awareness. The experiment does not allow the conclusion that the absence of a "psychological set" was in itself responsible for the difference between these and most previously reported results. However, a major alternate interpretation of the results, in terms of E bias, was precluded by giving the E a deliberate bias in the other direction.

The findings tend to support a behavioral view of verbal conditioning (e.g., Maltzman, 1966), and are incompatible with a purely cognitive approach. It could be argued that the amount of learning which occurred was small, and that the use of cognitive processes must precede the occurrence of more complete learning. It could also be argued that regardless of what one might arrange in a particular experiment, intelligent people tend to use cognitive processes in most of their learning. Neither statement is disputed in this paper; rather, the point is simply that learning without awareness can be made to occur, given suitable conditions.

References

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