

# Response availability and extinction of conditioned suppression<sup>1</sup>

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After 7 days' VI training for water reinforcement, 14 rats were given six (three per day) noise-shock pairings with lever retracted. Following a recovery day, Ss received two daily noise/no-shock presentations for 6 days with lever initially present only for control Ss. After 3 days, lever was returned for experimental Ss who displayed reliably more suppression on Extinction Days 4-6.

The role of the response lever in a CER situation has not been systematically studied, yet there is indirect evidence that lever presence may be a factor determining degree of suppression. Brimer & Dockrill (1966), for example, reported a partial reinforcement effect using conditioned suppression as the dependent variable. On the other hand, Wagner et al (1967) found a PRE only if the response lever was present during CER training, suggesting that the operant component was the one mainly affected. Similarly, Hilton (1967) found greater resistance to extinction of conditioned suppression if the lever was present during CER training. Hilton's results could be interpreted in terms of accidental response-shock contingencies present during CER training. Consequently, presence or absence of the lever during CS-US pairings appears to be an important training variable. However, the role of the lever during extinction of conditioned suppression remains to be assessed.

The present study investigated the effect of lever presence (lever was either absent or present) during early extinction of conditioned suppression for its possible influence on later extinction. Since the lever was absent during CS-US pairings, response-shock contingencies were not possible.

## SUBJECTS

Fourteen individually housed male albino rats (Sprague-Dawley), weighing between 275 and 300 g at the beginning of the experiment, served as Ss.

## APPARATUS AND PROCEDURE

Following handling, magazine training, and shaping, Ss received 7 days of training on a VI 30-sec schedule for water reinforcement (0.1 cc/reinforcement)

during 30-min sessions. Two identical Skinner boxes were housed in sound-attenuated, blower-ventilated enclosures. Food was available ad lib in home cages with 30 min of water given in home cages 30 min following each S's session. Ss were run in the same sequence daily. CER training consisted of three daily noise-shock pairings for 2 days with lever retracted. White noise at 80 dB re .0002 dynes/cm<sup>2</sup> was presented through speakers mounted on the Skinner boxes. Scrambled shock at 1 mA for 0.5 sec was delivered through grid floors as the noise terminated. CS duration was 2 min. CS onsets occurred after 6-7, 13-14, and 25-26 min into the 30-min session, respectively. Following a recovery day of no noise and no shock with lever present, Ss were divided randomly into two groups and given two daily noise presentations for 6 days. The first CS presentation occurred after 9-10 min and the second after 22-23 min into the session. Control Ss had lever present on all six CER extinction days; experimental Ss received passive extinction during Days 1-3 in that the lever was retracted. The lever was present for all Ss during Extinction Days 4-6. The commonly used suppression ratio,  $B/(A+B)$ , was used with the mean ratio of the two daily cycles for each S used in data analysis.

## RESULTS

Figure 1 shows the mean CER

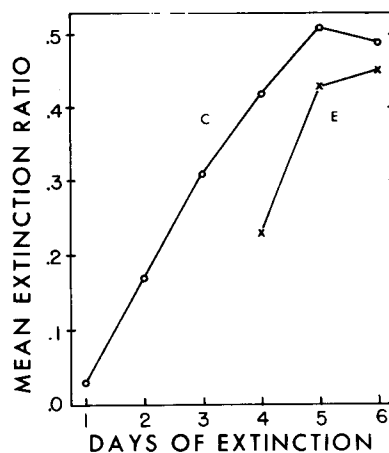


Fig. 1. Extinction of conditioned suppression, two CS presentations daily. Lever absent for Group E during Days 1-3.

extinction curves of the two groups. Analysis of variance of data obtained during CER Extinction Days 4-6 yielded highly significant treatment [ $F(1,12) = 11.93, p < .01$ ] and day [ $F(2,24) = 22.14, p < .01$ ] effects. The significant day effect reflected normal CER extinction, while the significant treatment effect indicated that the experimental group (lever absent on Extinction Days 1-3) was reliably more suppressed on Days 4-6. The groups did not differ with respect to number of responses emitted prior to first CS onset on CER Extinction Day 4.

## DISCUSSION

Since the lever was absent during noise-shock pairings, there was no opportunity for shock to become response-contingent, even in the adventitious sense. For this reason, the results of significantly greater suppression for the passive extinction group are somewhat surprising. It is obvious that responding during CER extinction made a difference, but the actual role of barpressing is unclear. A tentative interpretation is that the water produced by responding serves to enhance extinction of the noxious characteristics of noise via a counterconditioning mechanism. This idea is compatible with Wolpe's concept of reciprocal inhibition (1969). It may be that the act of responding in itself is not critical. This notion can be assessed by the use of a third group employing a yoked design. This group would also have lever retracted during early CER extinction, but would receive water when control Ss did who were actually responding. A fourth group, which has a nonfunctional lever present during early CER extinction, is also recommended. A comparison of the new groups with the nonwatered experimental group will enable the relative roles of responding and reinforcement to be more clearly determined.

## REFERENCES

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## NOTE

1. Presented at Eastern Psychological Association, Philadelphia, 1969.