VISUAL EXPLORATION IN A CONDITIONED EMOTIONAL RESPONSE PARADIGM¹

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Although operant responding reinforced with visual exploration is not new (Butler, 1957; Moon, 1961; Thompson, 1964), we are unaware of its previous use as a reinforcer for baseline responding in the conditioned emotional response (CER) procedure of Estes and Skinner (1941).

Three monkeys (*macaca mulatta*), which differed in surgical status and behavioral histories, were studied in the CER paradigm to determine the usefulness of this reinforcer as a substitute for food. Subject 170 was unoperated, 154 had a small medial forebrain lesion, and 141 had undergone ablation of one hemisphere with subsequent removal of both the tip of the temporal lobe and part of the amygdala of the remaining hemisphere. Among other behavioral tasks, all had experienced the CER procedure with food reinforcement and subsequent testing on visually-reinforced lever pressing.

A Foringer primate testing chamber was modified to permit *S* to see outside only through a 6-in. square window. A masonite door was externally positioned to cover the window and could be opened and closed by an instantaneously reversible electric motor. While overhead fluorescent lights remained on outside the chamber, only a 25-w bulb lit the inside. A panel of 30 colored lights (G.E./C71½) served as the primary external stimulus and was positioned about 5 ft in front of the window. Extraneous noises and auditory cues were masked by white noise of 62 db intensity.

Subjects were tested about 1 hr before daily feeding time and were under no special conditions of visual deprivation. Reinforcement, a 5-sec viewing period of the external environ-

ment, was programmed on a VI 10-sec schedule and was contingent upon manipulation of the response lever.

This particular schedule allowed *S* to see out for a maximum of half of each 30-min session. Cumulative curves for the last four days of baseline stability testing appear in Fig. 1.

Because *Ss* had been previously tested on CER, signals and shocks were programmed to reinstate a conditioned emotional response only if the response was not retained during a signal-no shock testing session. The signal, a tone of 60-sec duration, raised the sound level by about 10 db. For *Ss* 170 and 141, half of the signals were randomly terminated with

RESPONSE RATE STABILITY

Fig. 1. Cumulative curves of baseline responding prior to CER training.

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electric shock of 4 to 5 ma intensity. Subject 154 showed a nearly complete response suppression during the signals and reconditioning was thus unnecessary.

CER TRIALS

Fig. 2. Selected cumulative curves during CER testing.

The cumulative curves in Fig. 2 represent some of the clearest records of these Ss during sessions in which CER testing trials were superimposed upon the baseline responding. For S 141, the record of the fifth session is shown, for 154, the fourth session, and for 170, the 15th session. Arrows indicate the application of shocks.

While the vast differences in neurological conditions and the differences in behavioral histories of these Ss suggest that little importance should be placed upon the differences in their performance, it must be emphasized that visual exploration can be used to reinforce stable baseline responding in the presence of the noxious stimulating conditions of a CER paradigm. Thus, the general applicability of this reinforcement method has been extended.

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