Failure to obtain pseudoconditioning in a shuttlebox¹

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Abstract

In two shuttlebox experiments, rats were given a series of shocks, then tested for pseudoconditioning in the presence of a light. Virtually no pseudoconditioned responses were obtained. These findings contradict a prediction derived from the stimulus generalization hypothesis for pseudoconditioning.

Problem

Typically, in a pseudoconditioning study the experimenter presents first a series of trials with a noxious training stimulus and then a series with a test stimulus. Pseudoconditioning is said to have occurred if, as a result of this procedure, the test stimulus now controls a "conditioned response," even though the two stimuli never have been associated closely in time.

Initial attempts to explain pseudoconditioning emphasized various non-associative factors, including response dominance (Sears, 1934) and expectancy (Grether, 1938). Later, Wickens & Wickens (1942) assigned a major role to associative factors and suggested that pseudoconditioning does not differ qualitatively from regular conditioning. They reasoned that certain aspects of the noxious training stimulus, such as its rate of onset, function as conditioned stimuli. Thus, insofar as the test stimulus has aspects in common with the training stimulus, stimulus generalization insures that the test stimulus will elicit the conditioned response.

Varying the rate of stimulus onset for groups of rat Ss, Wickens and Wickens obtained data in agreement with their hypothesis. Significantly more pseudoconditioned responses occurred when both training and test stimuli appeared suddenly (or gradually) than when the training stimulus appeared suddenly and the test stimulus appeared gradually (or vice versa). Although this study provides the only direct evidence for their hypothesis, subsequent writers frequently have emphasized the stimulus generalization explanation of pseudoconditioning. The present research attempted to replicate the findings of Wickens and Wickens.

Method and Results

All experiments were performed with naive, 2-3 month old albino and hooded rats in a shuttlebox similar to the one described by Wickens & Wickens (1942). Essentially, this box permitted the presentation of either the training stimulus (shock) or the test stimulus (light) in any one of two compartments. A pseudoconditioned response was defined as movement from the lit compartment to the unlit compartment during the 5-sec. period while the light appeared. Reacting to the light with a pseudoconditioned response prior to any

shock trials caused S to be discarded from the study.

Experiment 1

During several pilot studies, in which both training and test stimuli appeared suddenly, virtually no pseudoconditioned responses were observed. Accordingly, a concerted effort was made to duplicate as closely as possible the conditions for the original "sudden-sudden" Ss in the experiment by Wickens and Wickens. More specifically, all Ss experienced 35 sudden-onset shocks distributed over three daily experimental sessions. At the end of the third session and at the beginning of the fourth session, Ss were exposed to a series of sudden-onset light presentations until no pseudoconditioned responses occurred during three consecutive light presentations.

Pseudoconditioned responses were obtained from only 1 of the 15 Ss in Experiment 1. By way of contrast, in the original study by Wickens and Wickens, pseudoconditioned responses were obtained from 7 of the 9 comparable Ss.

Experiment 2

In Experiment 1, removal of Ss from the shuttlebox at the end of each of the four experimental sessions was accompanied by considerable running and "emotional" behavior. To rectify this situation, which might have caused the adaptation of any pseudoconditioned responses, all training and test trials occurred during a single experimental session in Experiment 2. Also in Experiment 1, shock-escape latencies were shortest during early training trials and then became longer during subsequent training trials. To capitalize on any relationship between number of training trials and incidence of pseudoconditioned responses, each S in Experiment 2 experienced a sequence of either 4, 12, or 36 training trials, followed by a series of test trials.

Pseudoconditioned responses were obtained from only 1 of the 20 Ss in Experiment 2.

Discussion

Several subsequent shuttlebox experiments, not primarily concerned with pseudoconditioning, also have yielded results consistent with the above findings. No compelling explanation can be offered at this time to account for the consistent and appreciable discrepancies between original and present findings for "sudden-sudden" Ss.

Present findings contradict, by implication, the prediction that pseudoconditioning should occur significantly more frequently among "sudden-sudden" Ss than among either "sudden-gradual" or "gradual-

sudden'' Ss. Accordingly, a full-fledged test of the stimulus generalization hypothesis, involving all four stimulus-onset conditions, was judged to be unwarranted. Although indirect evidence still can be mustered to support the stimulus generalization hypothesis (e.g., Grant & Dittmer, 1940), direct evidence for the hypothesis appears to be somewhat limited, being based on one or more factors that failed to materialize in the present studies.

References

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Note

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