Several recent studies have demonstrated forgetting of instrumental responses in the rat to be dependent on the extent to which an explicit interference or after effect was presented prior to or after the critical training. Such forgetting appears to be a function of the post-training interval in the case of food deprivation in which the post-reinforcement interval acts as a function of body weight and after training.

The present experiment was designed to determine whether an interference occurs when the original or a new "negative" character of a previously learned instrumental response was introduced during a post-reinforcement interval. The experiment also intended to evaluate the effect of post-reinforcement interval on the retention of the original or new response when the post-reinforcement interval was long or short.

In the present experiment, rats were divided into two groups: high (H) and low (L) groups. The H group received 30 trials on Day 1, followed by 30 trials on Day 2. The L group received 15 trials on Day 1, followed by 15 trials on Day 2. The post-reinforcement interval between trials was 0.5 seconds for both groups. The retention of the original response was measured by testing the rats on Day 3.

METHOD

Subjects and Apparatus

The subjects were 48 male hooded rats of the Long-Evans strain, experimentally naive and approximately 110 days old at the beginning of the experiment. They were maintained at 85% of their free-feeding body weight for 2 weeks, and were run on 24-hour food availability. Each diet regimen was maintained throughout the experiment, both prior to and following the retention test.

During the retention test, the rats were handled in the normal manner of weekly weighing but not otherwise. The results indicated that the retention of the original response was influenced by the post-reinforcement interval, with the H group retaining significantly more than the L group.

RESULTS AND DISCUSSION

In conclusion, this study demonstrates that the retention of an instrumental response in the rat is influenced by the post-reinforcement interval, with a longer interval leading to better retention of the original response. The results also suggest that the retention of new responses can be enhanced by a shorter post-reinforcement interval.
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held if the retention interval was short but not if it was long. Rather similar results were obtained for Groups IL-48 and IL-90. The 8s in these groups were trained identically to those in Groups IL-48 and IL-90 except that their retention interval was interpolated between Trials 14 and 15. (The placement of the interval was based on the fact that the depression effect was first manifested on Trial 15 for the two control groups, H-1 and L-E.) Interpolating a retention interval between Trial 14 and 15 led to a marked decrement in runway speed (P = .02, d = 2.8, p < .01). An analysis of variance conducted to determine performance during Trials 13-15 for Groups H-1, L-1, IL-48, and IL-90 revealed a significant interaction between previous experience and retention interval (F = 4.6, N = 1/2, p = .05). Experiments 2 and 3 both produced significant results and the only significant result in Experiment 3 was the effect of retention interval on running time. In Experiment 3, the treatment of Wyman (1959) and Gleitman and Schachter (1965), for- getting in the present experiment is manifested by an increase rather than a decrease in reac- tive strength. This makes it rather implausible to explain the results in terms of a per- formance decrement; what is left is a relatively undetermined factor that was originally acquired. Nor is it easy to explain these results as a warm-up decrement, for the depression effect fails to develop even after quite a few test trials.

Perhaps a case can be made for an interference theory since the amount of food presented in the home cage is a possible source of conflictive or frustrating influence. Whereas the explanatory mechanism, it appears that one may forget some cognitive aspects of a stimulus as well as the instrumental components required by the task. It may well be that the variety of things that rats can forget is almost as large as the variety of things that they can learn.

REFERENCES


Wyman, G. C. An analysis of variance conducted to determine performance during Trials 13-15 for Groups H-1, L-1, IL-48, and IL-90 revealed a significant interaction between previous experience and retention interval (F = 4.6, N = 1/2, p = .05). Experiments 2 and 3 both produced significant results and the only significant result in Experiment 3 was the effect of retention interval on running time. In Experiment 3, the treatment of Wyman (1959) and Gleitman and Schachter (1965), for- getting in the present experiment is manifested by an increase rather than a decrease in reac- tive strength. This makes it rather implausible to explain the results in terms of a per- formance decrement; what is left is a relatively undetermined factor that was originally acquired. Nor is it easy to explain these results as a warm-up decrement, for the depression effect fails to develop even after quite a few test trials.

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