

## RESPONSE TENDENCIES OF GIBBONS IN SINGLE AND DOUBLE ALTERNATION TASKS<sup>1</sup>

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This paper presents the results of exploratory studies of the gibbon's ability to solve single (SA) and double (DA) alternation problems.

*Method.*—Nine juvenile gibbons were divided into three groups. Group SA received single alternation training, Group DA received double alternation training, and Group SA-ID received single alternation training with an intervening discrimination trial. The latter group provided data on interference between tendencies peculiar to SA and object-discrimination problems.

The apparatus included: a 29 × 21 × 27½-in. testing cage, a tray with two food wells 7 in. apart, a sliding opaque guillotine door, and a pair of identical stimulus objects.

Group SA received 26 trials for 18 test sessions for a total of 468 trials. On the first daily trial both food wells were baited with raisins. The location of the reward on the next 25 trials conformed to an SA pattern with the position selected on Trial 1 determining the starting point of the alternation series. Group DA received 20 trials a day for a total of 800 trials. The general procedure was the same as that used with Group SA except that the location of reward followed a DA pattern. Group SA-ID was trained on a pair of discrimination objects to a criterion of 90 correct of 100 responses, whereupon SA training was initiated with every other trial a presentation of the original discrimination problem. Twenty trials a day were given for a total of 360 SA trials and consequently 360 additional discrimination trials.

*Results and discussion.*—Although SA and DA performance for all three groups remained at a chance level throughout the course of testing, Group SA-ID performed consistently at close to 100% on the intervening object-discrimination trials. On the alternation tasks, first-half and second-half performance in terms of percentage of correct responses was: (a) Group SA, 52% and 52%; (b) Group DA, 47% and 46%; (c) Group SA-ID, 49% and 49%. Analysis of response tendencies during alternation training, however, did reveal systematic behavioral changes as a function of test experience.

Fig. 1 illustrates the development of response tendencies in Group SA. Results of Group SA-ID closely paralleled those shown for Group SA. Position reference persisted longer in Group DA and there was little evidence for the development of a response alternation tendency.

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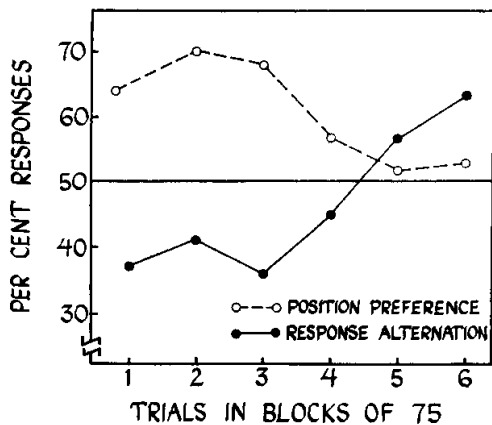


FIG. 1. Percentage of position preference and alternation responses during single alternation training

As may be seen in Fig. 1, position preference was the strongest tendency during the early stages of training and subsequently gave way to response alternation. The tendency towards alternation, however, was not related to the location of the previous reward.

Since nonhuman primates rarely show instances of spontaneous alternation (Yamaguchi & Warren, 1961), the results indicate that gibbons develop a response alternation tendency on the basis of the SA reward pattern. This occurs even though this response tendency is not differentially reinforced. We believe that the animals perceived the alternating reward pattern but had difficulty inhibiting the tendency to alternate away from a single nonrewarded choice. This inference is supported by the high frequency of successive incorrect responses for all SA Ss during the last 150 training trials ( $P_s < .01$ ,  $\chi^2$  tests).

Results of the SA-ID group indicate that response tendencies remained specific to each of the problems.

*Summary.*—Gibbon Group SA was given 26 trials of single alternation training for 18 test sessions. Group SA-ID received 10 trials of single alternation training with interposed nonspatial discrimination trials (SA-ID) for 36 sessions. Group DA received 20 trials of double alternation training for 40 sessions. The results indicate that (a) SA training produced an orderly sequence of response tendencies even though there was no evidence of problem solution. Position preference was the initial response tendency and was gradually superseded by a tendency for response alternation. (b) An interposed nonspatial discrimination apparently did not influence the development of response tendencies during alternation training. (c) Ss given DA training demonstrated a more persistent position preference tendency and did not develop a response alternation tendency.

#### REFERENCE

YAMAGUCHI, S., & WARREN, J. M. Single versus double alternation learning by cats. *J. comp. physiol. Psychol.*, 1961, 54, 533-538.

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