

Instructions and observational learning in preschool children¹

HAROLD J. FLETCHER AND BILL M. ORR

UNIVERSITY OF WISCONSIN

Preschool Ss were given object discrimination problems to solve in the absence of overt instrumental responses. A pre-established prompt indicated the rewarded object on all observation trials (no instrumental response permitted). A Look Group was instructed during these trials to "Look," a Point Group to "Point to the toy that has the candy under it." One, two, or four such prompted trials preceded one non-prompted test trial (instrumental response allowed). Only the Point Group learned to solve the problems. Results were discussed in terms of implicit responses differentially elicited by the instructions.

In a previous experiment (Fletcher, 1966) test-sophisticated but severely retarded Ss (median MA = 48 mo.) were given discrimination problems the initial trials of which were "observation trials" during which a prompt indicated the correct object, Ss were told to "look," but no instrumental response was permitted. When a choice was permitted on subsequent trials, the probability of correct response was significantly above chance and directly related to the number of prior observation trials. The present study (1) attempted to extend this finding to test-naive but normal children of comparable CA and (2) introduced a new apparatus designed specifically for investigating this form of observational learning.

Method

Mostly from professional families, Ss were preschool children (46-58 mo.) with no known prior object discrimination training experience.

The apparatus² (Fig. 1) consisted of an adjustable-height table supporting a detachable superstructure containing a one-way mirror, a stationary problem tray, and two independently operated curved screens, one opaque and one transparent. Each screen, a one-quarter segment of a cylinder, rotated on a fixed point below the mirror. When both screens were in their forward (lowered) position, the tray was accessible to E from the rear. When the inside opaque screen was rotated back, the tray was visually exposed to S, but the transparent screen prevented his touching the objects; rotation of the transparent screen permitted access to the tray. In the tray's leading edge were two 1 in. jewelled amber lights (prompts) directly in front of the foodwells.

Test stimuli were multidimensional "nonsense" objects. Brightly colored wooden, plastic, metal, and rubber items (toys, bottles, etc.) were reduced to random pieces which were then randomly combined on irregularly shaped wooden bases previously colored

by random blotches of spray-paint. Pretraining stimuli were two identical 4 x 4 x 1 in. gray blocks.

Initially 6 Ss (4 female, 2 male; mean age 52.2 mo.) were randomly selected, seated in front of the apparatus, shown how the screens operated, and told essentially that the object of the "game" was to "find the candy."

A pretraining phase was designed to establish the significance of the prompt. One of two identical gray blocks was baited, the prompt was lighted in front of that block, the opaque screen was raised (rotated backward), and S was instructed to "look." Approximately 2 sec. later the transparent screen was raised and S was told, "Now find the raisin." After S displaced one block, both screens were simultaneously lowered (rotated forward) terminating the trial. At no time did E verbalize the significance of the prompt, but blocks of six prompted trials were given until a criterion of six correct responses within one block was met. For this and all subsequent phases M & M candy rewards were used, rewarded position was randomized, and noncorrection procedures were enforced. To provide minimal object discrimination learning experience, Ss were then given conventional trial-and-error training (no prompting) on four 5-trial object discrimination problems.

Testing began with session 2 and continued for five daily sessions, each beginning with 4-trial practice sequences (two gray blocks and prompts). Observational learning problems differed in the number of observation trials which preceded a single test trial. On Trial 1 of all 0-1 problems the prompt was lighted in front of a randomly chosen one of two objects, the

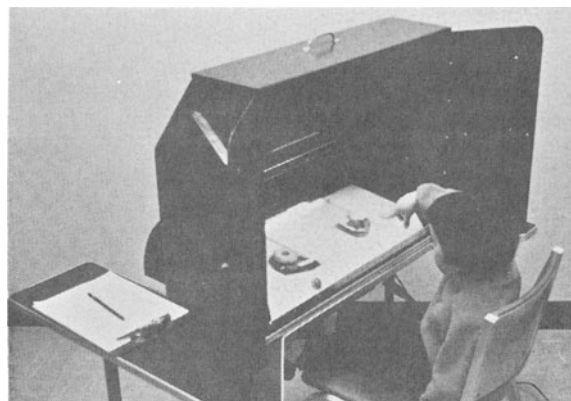


Fig. 1. Subject pointing to prompted object on an observation trial. Opaque screen is raised (rotated backward); transparent screen remains lowered.

opaque screen was raised, S was told to "look," and approximately 2 sec. later the opaque screen was lowered. Thus S could observe, but no instrumental response was permitted. On Trial 2 the same objects appeared with position randomly determined, but no prompting occurred on this (or any) test trial. Instead the previously prompted object was baited, the opaque screen was raised, S was told to "look," 2 sec. later the transparent screen was raised, and S was told "Now see if you can find the candy." For all 0-2 problems two prompted, or observation, trials preceded the single nonprompted test trial. Similarly, the first four trials of all 0-4 problems were prompted. In each of the five daily sessions 15 problems were given, five each of 0-1, 0-2, and 0-4 problems, and each type appeared randomly within blocks of three problems.

Because of the poor performance of this "Look Group," another six Ss were randomly selected and tested identically except for instructions given on prompted trials. During the gray block pretraining, Ss were instructed to "Point to the block you think has the candy under it." (All Ss were made to point to the block, not to the prompt.) The transparent screen was then raised and S was told, "O.K., let's see if you are right." During observation trials of all discrimination problems, Ss were told to "Point to the toy³ that has the candy under it," and E then lowered the opaque screen and made no confirmatory remarks concerning the object pointed to. Because prolonged absence prevented two Ss from completing all sessions, results from this "Point Group" are based on 4 Ss (2 male, 2 female, mean age 52.0 mo.).

Results and Discussion

The Look and Point groups averaged, respectively, 98% and 94% correct on daily practice problems with the two gray blocks. Therefore, Ss in both groups knew the significance of the prompt.

The number of correct choices on nonprompted test trials was subjected to a three-factor analysis of variance: Groups (Look vs. Point); Conditions (1, 2, or 4 observation trials); and Sessions (2-6). The only significant effects, Groups ($F=8.86$, $df=1/8$, $p<.05$) and Groups by Sessions interaction ($F=4.86$, $df=4/112$, $p<.01$), are revealed in the following percentages of correct choices on all test trials of each session: Point Group, 62, 86, 83, 83, 77; Look Group: 67, 50, 52, 51, 56. Thus, while both groups were

initially comparable, only the Point Group learned to benefit from the observation trials.

One simple interpretation of these results may be made in terms of attention. The prompt and correct object were spatially discontiguous, a factor known to suppress discriminative performance of monkeys (e.g., Polidora & Fletcher, 1964) and children (e.g., Murphy & Miller, 1959). Instructions to the Look Group presumably elicited a general orientation to the tray, but S may have primarily (if not exclusively) attended to the prompt. Instructions to the Point Group, conversely, insured attending to the object pointed to.

A second more theoretically interesting interpretation considers the nature rather than the direction of the implicit response presumably elicited by the instructions given on each observation trial. Instructions to the Point Group specifically required an inference concerning the reward contingency of the objects; instructions to the Look Group did not necessarily demand this inference. If observational learning is critically dependent upon the occurrence of this cognitive response—of inferring the outcome of a possible overt response—then it appears that Ss of this age and level of test-sophistication do not spontaneously generate this inference even though sufficient information exists for them to do so.

References

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Notes

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2. This prototype was designed in conjunction with Mr. Arthur Schmidt of Wisconsin Instrument Company. Information concerning production model may be obtained from Mr. Schmidt, 914 Castle Place, Madison, Wisconsin 53703.
3. Most Ss referred to the objects as "funny looking toys."