

*CORRESPONDENCE TRAINING, PRIOR VERBAL
TRAINING, AND CONTROL OF NONVERBAL BEHAVIOR
VIA CONTROL OF VERBAL BEHAVIOR*

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The role of prior verbal training in correspondence training and later verbal control of nonverbal behavior was examined in two groups of Head Start children. One group received correspondence training without prior verbal training, the other with. Essentially no differences were found between the two sequences; thus it seems appropriate to consider the content phases (reinforcement contingent on target verbalization alone) of previous research as control procedures and not a necessary precursor to correspondence training.

DESCRIPTORS: verbal behavior, nonverbal behavior, correspondence, conditioning, training, reinforcement, language, preschool children

The assumption that there is some correspondence between an individual's verbal and nonverbal behaviors is an essential, though infrequently acknowledged ingredient of a variety of social influence procedures. For example, in both verbal psychotherapies and common child-rearing practices, the socializing agent seeks to gain control over target nonverbal behavior by changing the individual's verbal behavior. The degree of congruence that is presumed to exist in adults is probably assumed to be a function of an acquired self-regulatory function of speech. Acquisition of corresponding verbal/nonverbal sequences is theoretically an important aspect of the developmental process by which this self regulation is achieved (Luria, 1961; Vygotsky, 1962). Yet direct investigation of the training of verbal-nonverbal correspondence, has received

only limited attention (*e.g.*, Israel, 1973; Israel and O'Leary, 1973; Risley and Hart, 1968).

Previous research has indicated that repeated reinforcement of correspondence resulted in being able to alter preschool children's nonverbal behavior simply by reinforcing related verbal behavior (Israel and O'Leary, 1973; Risley and Hart, 1968). In all these investigations, a phase in which reinforcement was contingent on verbal content alone preceded correspondence training. This phase was conceptualized as a control procedure. It might be argued, however, that the verbal content phase is not merely a control procedure, but a necessary precursor to the correspondence training phase. Such an argument would view the verbal content phase as a procedure that strengthened a verbal mediator. From this perspective, the sequence of training the verbal mediator and then the desired correspondence would be viewed as desirable if not necessary. Of course, the opposite prediction could also be made; reinforcing verbal behavior alone could interfere with acquisition of subsequent correspondence by rewarding the child for saying and *not* doing.

In view of these issues and the possible implications for applications of correspondence train-

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ing, the present research sought to investigate the role of the verbal content phase. The effect of prior reinforcement of verbal content on acquisition of correspondence and subsequent control of nonverbal behavior was examined.

METHOD

Subjects

Sixteen Head Start children were randomly assigned to one of two groups. The mean age for each group was 4 yr, eight months.

Setting and Recording

The study was conducted in a large room of the children's school. The play area was separated by shelves, behind which were seated four observers who recorded children's play on a 20-sec observe, 10-sec record basis for 15 min. Each observed the play of two children. Play was defined as looking at, or looking at and touching the play material for any portion of the interval. Touching, but not looking at the material, was not considered play. Observation assignments were rotated daily. A total of 69 reliability checks, made by an additional observer, was distributed over both groups and all phases of the experiment. The teacher-experimenter, a female graduate student, conducted the verbalization and reinforcement procedures directly outside the area.

Procedure

The children were escorted daily, one at a time and in random order, to the experimental room by an assistant. The child was greeted by the teacher-experimenter and before proceeding to the play area was asked, "What are you going to play with during your special play time?" During this verbalization session, each child was given two such queries and required to answer in a sentence containing the word "I" and the name of a toy (*e.g.*, I'm going to play with cars). The child's response was recorded by the teacher-experimenter. Praise was given for any

verbalization throughout all phases of the experiment.

Upon completing the verbalization part of the daily routine, the child was directed to the play area and told by the experimenter, "Now it's your special play time. You can play with any of the toys you want to." The next child was then escorted to the experimenter, *etc.* After 15 min of free play, the experimenter led each child outside the play area and asked about his/her play activities. If appropriate (see below), the child then received a snack. A slip of paper placed on a divider by an observer informed the experimenter about whether each child had engaged in the targeted play behavior.

The procedure resulted in children rotating in and out of the play area. At any one time, from one to eight children were engaged in free play, and children from the two different groups never overlapped in the play area; *i.e.*, Group I finished the routine before Group II began. To control for possible differential effects of teacher attention on choice of play activity, the experimenter was told that if the children asked questions she was to inform them that she had work to do and could not talk with them until after play time. After the first few days, few demands were made for her attention.

In addition to the two target play materials (plastic dinosaurs and cars) there were approximately 20 other kinds of play materials in the play area. Sufficient numbers of all toys were present to allow any or all of the children to play with any particular toy. The two target activities were chosen during the initial baseline because they occurred at a low and approximately equal frequency.

Design

The experimental manipulations consisted of four training phases defined by differing reinforcement contingencies. The two groups differed in their experiences during these phases. Following baseline, Group I experienced verbal training and then correspondence training before shifting to the final verbal phase. For Group II,

baseline was followed by only correspondence training before the shift to the final verbal phase.

Group I: Verbal Training—Correspondence Training

Baseline. During the verbalization session, throughout the baseline phase, all children had a snack placed in their cups immediately following any verbalization. The children were allowed to consume the snack following play, regardless of the content of their prior verbalizations or the nature of their play activity.

Verbal training 1. During this phase, children in Group I had snack made contingent on verbalization to the experimenter of the target activity (e.g., "I'm going to play with dinosaurs"). On the first six days of this phase, children who did not verbalize "dinosaurs" on the first attempt received a prompt from the experimenter. The child was asked on the second attempt, "Are you going to play with dinosaurs or _____?" Up to two such prompts were given. No prompts were given on succeeding days of this phase. Those children who verbalized an activity other than dinosaurs did not receive a snack. After completing the play period, children who had verbalized the target activity earlier were allowed to consume their snack. Children who had not said "dinosaurs" were told, "Oh, _____, your cup is empty today".

Correspondence training. Children experienced the same procedures as described above during the verbalization period, with two exceptions. No prompts were given and the receipt and consumption of snack following the play period was contingent on the combination of saying dinosaurs and engaging in dinosaur play. Play was defined as a minimum of two consecutive periods of recorded play with dinosaurs. Children who exhibited both the appropriate verbal and nonverbal behaviors received snack accompanied by the experimenter's statement, "Yes, you really did play with dinosaurs, didn't you!". The children who verbalized the appropriate activity, but did not actually play with the target toy, were not given snack and were told,

"You didn't really play with dinosaurs, did you?". The experimenter attempted to adopt a nonpunishing tone when making this statement. Children who had not verbalized the target toy earlier were told, "Oh, _____, your cup is empty today".

Verbal training 2. The contingencies and procedures experienced by the children during this phase were identical to those of the verbal training—1 phase. The only change was a switch in target activities to cars. Prompts similar to those employed during verbal training—1 were presented, when necessary, on the first three days of this phase.

Group II: Correspondence Training Only

Baseline. Children in Group II experienced procedures identical to those for Group I during this phase.

Correspondence training. Group II experienced correspondence training for the period identical to the verbal training—1 and correspondence training experiences of Group I. The procedures during this phase were identical to those experienced by children in Group I during their correspondence training, with one exception. Prompts, like those given to Group I children during their verbal training—1 phase, were given as necessary to children in Group II on the first six days of this phase.

Verbal training. During this phase, children in Group II experienced the same procedures as children in Group I during their verbal training—2 phase. Cars were also the new target toy for Group II.

RESULTS

Reliability of observations was calculated by dividing the total number of agreements (both observers recording the presence of a play activity during an interval) by the total agreements plus disagreements (only one observer recording the presence of a play activity). Reliability of observations of play activity was 92%

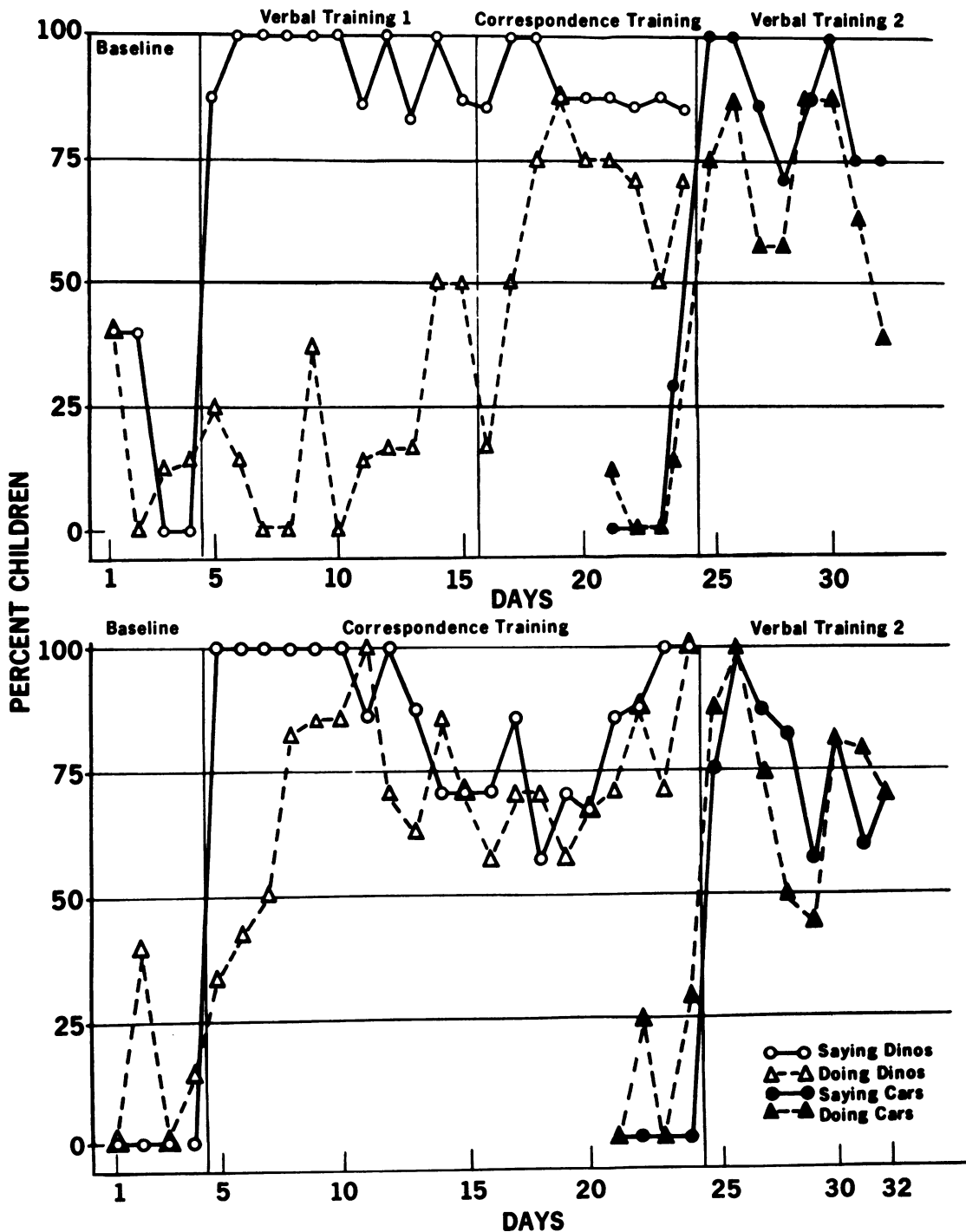


Fig. 1. Percentage of children saying and doing the target activity each day for the verbal training followed by correspondence training group (top) and the correspondence training only group (bottom). Experimental phases are indicated at the top of each figure.

Figure 1 presents the percentage of children saying the target activity during the verbalization period and the percentage of children doing the target activity during the play period for Group I (top) and Group II (bottom). The effect of reinforcement procedures can be seen from the expected changes in both groups from baseline level.

To make a statistical comparison of the two groups during the different phases, the percentage of days during each phase that a child said the target activity and displayed correspondence was calculated for each child. Two *t*-test comparisons (per cent days saying and per cent days correspondence) each were made between groups for (a) Days 5 to 15 (verbal training—1 for Group I *versus* beginning correspondence training for Group II), (b) Days 16 to 24 (correspondence training for both groups), and (c) Days 25 to 32 (final verbal training). The only statistically significant outcome was the difference in correspondence during the first training phase (Days 5 to 15), $t(14) = 4.97$, $p < 0.01$. All other comparisons failed to reach acceptable levels of statistical significance ($p > 0.20$). Regarding the performance of individual children, none in Group I exhibited correspondence on at least half of the days of the first training phase, whereas seven of eight children in Group II performed at this level. During the second training phase (Days 16 to 24) six of eight children in both Groups I and II exhibited correspondence on at least half of the days. The number of children exhibiting correspondence on at least half the days during the final verbal training phase was again six of eight children in both groups.

DISCUSSION

Figure 1 clearly demonstrates the effectiveness of the differential reinforcement procedures. Reinforcing target verbalizations increased this behavior without corresponding increases in corresponding play behavior. However, reinforcements contingent on the occurrence of both

target verbalizations *and* target play resulted in increased correspondence. These results are consistent with previous findings in this area (*e.g.*, Risley and Hart, 1968).

Of greater interest for the present research is the finding that there were no differences in the performance of the two groups during the final verbal phase. Under the conditions of the present research, it seems appropriate to conceptualize the content phases (reinforcement contingent on target verbalization alone) of previous research (Israel, 1973; Israel and O'Leary, 1973; Risley and Hart, 1968) as control procedures and not as a necessary precursor to correspondence training.

The practical implications of these results suggest that following either training procedure, a socializing agent will be equally successful in increasing target nonverbal behaviors by reinforcing appropriate verbal behavior. It does not seem necessary to break the sequence into two components and to strengthen the verbal component before proceeding with correspondence training.

The choice of which sequence to follow may, therefore, be determined by the practical exigencies of the situation. In those circumstances where it is particularly difficult to get access to the nonverbal behavior, or where the introduction of a reinforcement procedure is novel enough so that it is desirable to keep the target behavior simple, the sequence of verbal training followed by correspondence training may be the procedure of choice. However, in those circumstances where these difficulties are not present, the more uniform procedure of correspondence training throughout may be preferable.

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