

*THE USE OF PROMPTS TO ENHANCE VICARIOUS EFFECTS
OF NONVERBAL APPROVAL*

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The effect of nonverbal teacher approval (physical contact in the form of patting approvingly) delivered to target subjects on the attentive behavior of adjacent peers was examined in a special-education classroom. In a reversal design, two pairs of moderately retarded children were exposed to nonverbal approval, with only one subject in each pair receiving approval. In different phases, nonverbal approval was delivered alone or in conjunction with a verbal prompt directed to the adjacent peer or to the class as a whole. The prompt was designed to make salient the target subject's attentive behavior and the nonverbal reinforcing consequences that followed. Providing contingent nonverbal approval alone consistently altered attentive behavior of the target subjects but did not alter the attentive behavior of adjacent peers. However, accompanying nonverbal approval with a verbal prompt did increase attentive behavior of nonreinforced peers.

DESCRIPTORS: vicarious reinforcement, nonverbal attention, prompt, classroom behavior, approval, peers, preschool, retardates

Research in laboratory and applied settings has shown that the behavior of one individual can be altered by observing the reinforcement of another, *i.e.*, vicarious reinforcement (*e.g.*, Bandura, 1971; Kanfer, 1965; Kazdin, 1975; Patterson, 1974). Classroom investigations have shown that reinforcing the attending behavior of a target subject increases similar behavior in nearby nontarget subjects (Brodin, Bruce, Mitchell, Carter, and Hall, 1970; Drabman and Lahey, 1974; Kazdin, 1973a). Verbal praise usually has been used in classroom settings to demonstrate the vicarious effects of reinforcement. Of course, not all approval in the classroom is verbal. Nonverbal forms of approval

(*e.g.*, physical contact, smiles, nods) are often employed and effectively alter behavior (Kazdin and Klock, 1973). Although nonverbal approval can effectively reinforce behavior, its delivery to one individual may be less noticeable to onlookers than the delivery of verbal approval. Consequently, nonverbal approval may not have the same vicarious effects as verbal approval. In recommending that teachers and parents employ praise, one consideration is the possible differences in the indirect (*e.g.*, vicarious) effects of diverse forms of praise (*e.g.*, verbal and nonverbal approval).

In the present investigation, the effect of nonverbal approval delivered to target subjects on the attentive behavior of nonreinforced (adjacent) peers in a classroom setting was examined. An important goal was to determine whether delivering nonverbal approval to target subjects in a manner obvious to adjacent individuals increased the vicarious effects. Specifically, the role of verbal prompts in facilitating vicarious effects of nonverbal approval was examined.

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METHOD

Overview

The vicarious effect of nonverbal attention was evaluated in separate reversal designs for two pairs of subjects. Because the phenomenon being evaluated (*i.e.*, vicarious reinforcement) suggests a spread of effects of reinforcement of one individual on the behavior of others, the phases and experimental interventions were presented at different points in time across the two pairs of subjects. The vicarious effect of nonverbal approval was evaluated by identifying (randomly) in each pair of subjects a target subject who would receive direct consequences for attentive behavior and a nontarget subject who would not receive direct consequences for behavior throughout the study.

Subjects and Setting

Three boys and one girl, ranging in age from 7 to 9 yr and in IQ from 70 to 76 (median = 74.5) on the Stanford-Binet (Form L-M) were selected from a class of 17 children at the laboratory demonstration school at The Pennsylvania State University. They were chosen specifically for the project by the teacher because of their disruptive behavior and inattentiveness to the lessons.

The four subjects were grouped into two pairs (Ted and Dave; Tina and Fred). Subjects in each pair sat next to each other and each pair was studied separately. For each pair, observations were made at different times of the day, experimental interventions were introduced at different points in time, and the interventions were carried out by different agents (*i.e.*, teacher aide or teacher). Within each pair, one child was randomly assigned to serve as the target subject to whom the interventions were directly applied. In the first and second pair, Ted and Tina, respectively, served as target subjects; Dave and Fred, as nontarget subjects, did not receive direct interventions. A teacher aide and a teacher served as experimenters for the first and second pair, respectively.

Assessment

Observations of the aide in relation to the first pair of children and of the teacher in relation to the second pair began each day at 1:00 p.m. and 1:30 p.m., respectively. Each pair of subjects with the aide (or teacher) was observed for 50 intervals. Each interval was divided into 10 sec for observing followed by 2 sec for recording. To maintain this interval schedule, observers listened through earphone jacks to a prerecorded tape.

During an interval, the behavior of each member of a pair was simultaneously but separately scored. Thus, an observer would look at both members of a pair for 10 sec, stop observing, and score the behavior of each subject separately for that interval. Observers sat at the opposite end of the classroom from the subjects being observed. The children had the opportunity to adapt to the observer for several days before the study began.

Teacher aide and teacher behavior. The behavior of the reinforcing agent (teacher aide and teacher for pair one and two, respectively) was observed simultaneously with the behavior of the children. The frequency with which the aide or teacher delivered nonverbal approval (contingent upon attentive behavior) was scored. Nonverbal approval took the form of physically patting a child in an approving fashion. This did not change throughout the investigation. Aide or teacher behavior was scored by placing a check mark next to the interval in which the approval was delivered. In different phases, nonverbal approval was accompanied by other teacher behaviors, such as the delivery of verbal praise or verbal prompts. In these phases, the check mark represented nonverbal attention plus the other events (*e.g.*, nonverbal approval plus verbal prompt). There was no need to separate instances of nonverbal approval from, for example, prompts in a given phase because during a particular phrase, nonverbal was always or never associated with the prompt. Throughout the investigation, only those interactions

that were scheduled as part of the contingencies transpired between the teacher aide or teacher and the subjects while observations were being made.

Child behavior. The child behaviors observed were categorized as either attentive or inattentive (*cf.* Kazdin, 1973*b*). To be scored as attentive, the child had to be sitting in his seat, working on the assignment, or paying attention to the teacher, and not talking to a neighbor without permission. The child had to be attentive for the full 10-sec observational interval. Behavior was scored as inattentive if the child did not meet the above requirements, played with materials inappropriate to the task, or reclined on his desk. Each day, individual seat work (writing from the board or in response to instructions delivered by a record) constituted the assigned task. The type of work did not vary throughout the study.

Reliability of observations. Reliability checks were completed on 51.6% of the occasions that observations were made across all phases of the study. Percentage reliability was computed by dividing agreements between observers by agreements plus disagreements and multiplying by 100. For teacher behavior, an agreement was defined as agreement on occurrence of the behavior during the same interval. For child behavior, an agreement was counted only when the observers agreed on the behavior scored for each of the students simultaneously observed in the same interval. For the interval to be counted as an agreement, at least one student had to be scored for attentive behavior. If the observers agreed on the nonoccurrence of behavior for each subject during an interval, this was not counted as an agreement. For both teacher and child behavior, a disagreement was scored if one observer scored the occurrence of a behavior during an interval and the other did not. Agreement ranged from 85.7% to 100% for aide and teacher behavior (median = 100%) and 82.9 to 97.4% for child behavior (median = 92.0%).

Procedure

Nonverbal approval, in the form of physically patting a child in an approving fashion, was the reinforcer. A subject was patted in a conspicuous fashion by providing several pats for any instance of approval, rather than touching the child only once. When a subject was patted approvingly, no explicit verbal information was provided to the target or nontarget subject about the reinforced behavior. Information was withheld to determine, in part, whether information was available (to the nontarget subject) from either the target subject's (*i.e.*, model's) behavior or the cue properties of nonverbal reinforcement.

During the intervention phases, 30 consecutive seconds of attentive behavior by the target subject of a given pair was reinforced. The timing of reinforcement delivery was controlled by an experimenter in an observation room with a one-way mirror. The experimenter communicated to the teacher aide or teacher when to deliver approval through a walkie-talkie "bug-in-the-ear device". The signals were inaudible to others (children or observers who collected data).

For the first pair of subjects, the teacher's aide executed the contingencies. The aide stood approximately 3 ft (0.9 m) behind but directly between the two subjects in the first pair. This arrangement was not awkward because she was at the side and near the back of the seating arrangement of the class. The aide stood in the same place throughout all the phases to control for differential proximity of the reinforcing agent to target and nontarget subjects. When the aide delivered nonverbal approval, she leaned between the target and nontarget subject and patted the target subject (on the shoulder near the nontarget subject) in a conspicuous fashion to maximize the opportunity of the nontarget subject to view the consequences for behavior. The use of the teacher aide with one pair of children also permitted careful control of the delivery of approval. The aide could

immediately respond to the exigencies of the reinforcement schedule because she had no other obligations during the lesson.

For the second pair of subjects, the teacher executed the contingencies in a fashion similar to the teacher aide. However, the teacher's proximity to the subjects varied from moment to moment and could not be readily controlled. The use of the teacher as the reinforcing agent also resulted in less control over the immediacy of reinforcement. When the teacher received a signal to reward a child, she often was not in immediate proximity of the child, and, some delay resulted in adhering closely to the reinforcement schedule. When the program was conducted with the aide, the teacher did not intervene or administer praise to the target or nontarget subject of the first pair. When the second pair of subjects was subjected to the program, the aide was never in the room.

Experimental Conditions

Each pair of subjects was exposed to the phases in the same order, but the phases began at different periods for each pair. The first pair was exposed to an additional phase not provided for the second pair. An *a priori* time restriction, *i.e.*, duration of the school term, in part determined the maximum duration of the individual phases.

Baseline. Attentive behavior was recorded for each child in a given pair without implementing contingencies for performance. Baseline conditions were in effect for eight days for Ted and Dave and for seven days for Tina and Fred. (Baseline did not begin for the second pair until this phase was completed for the first pair.)

Nonverbal approval for attentive behavior. Nonverbal approval was provided to the target subject in each pair to determine if this would vicariously influence the behavior of the nontarget subject. For the first pair, Ted received approval for every 30 sec of uninterrupted attentive behavior. No approval was delivered to Dave. In the second pair, Tina received

approval from the teacher for attentive behavior (on the same schedule as Ted), whereas Fred received none. For each pair, this phase lasted six days.

Verbal and nonverbal approval for attentive behavior. This phase was conducted with the first pair only because the vicarious effect of verbal reinforcement was ancillary to the purpose of the study. Yet, it was important to ensure that vicarious processes similar to those demonstrated in previous investigations (Brodén *et al.*, 1970; Kazdin, 1973a) were operating here as well. For the first pair only, nonverbal approval was combined with verbal praise. Verbal praise was expressed in the statements, "Good, I like what you're doing!" "That's really good!", or "Good, you're doing nicely!". One of these statements was used for an instance of praise to the target subject. To ensure that verbal praise was directed to the target subject (Ted), the subject's name was included with each verbalization (*e.g.*, "Ted, that's really good!"). Verbal praise was paired with nonverbal approval on the same schedule employed in the previous phase. This phase lasted six days.

Reversal. To determine if direct approval to the target subject controlled attentive behavior, all approval was withdrawn. The reversal phase also was important for the first pair of subjects to evaluate whether the combined verbal and nonverbal approval delivered to the target subject was responsible for change in the nontarget subject. For both pairs, this phase lasted five and six days, respectively.

Nonverbal approval for attentive behavior plus a verbal prompt. During this phase, nonverbal approval was delivered in the manner described earlier; no verbal praise accompanied nonverbal approval. Immediately before delivery of nonverbal approval, a verbal statement was given that was intended to function as a prompt for the nontarget subject. For the first pair, the aide delivered the prompt by saying to the nontarget subject: "Dave, look at Ted (the target subject)". Immediately after the statement, the aide delivered nonverbal ap-

proval to the target subject who was behaving attentively. For the second pair, the teacher delivered a prompt to the class as a whole (which approximated more natural classroom practices) before nonverbally reinforcing the behavior of the target subject. The teacher said: "Class, look at Tina", and then immediately nonverbally reinforced her attentive behavior. In this phase, each instance of nonverbal approval to the target subject was immediately preceded by a prompt. Delivery of the prompt and nonverbal approval followed the reinforcement schedule (30 consecutive seconds of attentive behavior) for the target subject.

RESULTS

The effect of the experimental conditions was evaluated on the percentage of intervals each

day in which subjects were scored as attentive. The percentages for the two pairs are presented in Figures 1 and 2. The mean daily frequency of teacher aide or teacher approval to each target subject in each phase is presented in Table 1.

During baseline, Ted and Dave were attentive for 54.5% and 24.5% of the intervals per day, respectively (see Figure 1). In the second phase, when Ted received contingent nonverbal approval, his attentive behavior increased to a mean of 87%. Dave's attentive behavior remained close to baseline performance with a mean of 24%. In the third phase, when Ted received nonverbal approval combined with verbal praise, his mean attentive behavior remained high at 92.7%. However, attentive behavior for Dave increased to 69%. Thus, verbal reinforcement of Ted's attentive behavior increased Dave's attentive behavior. In the

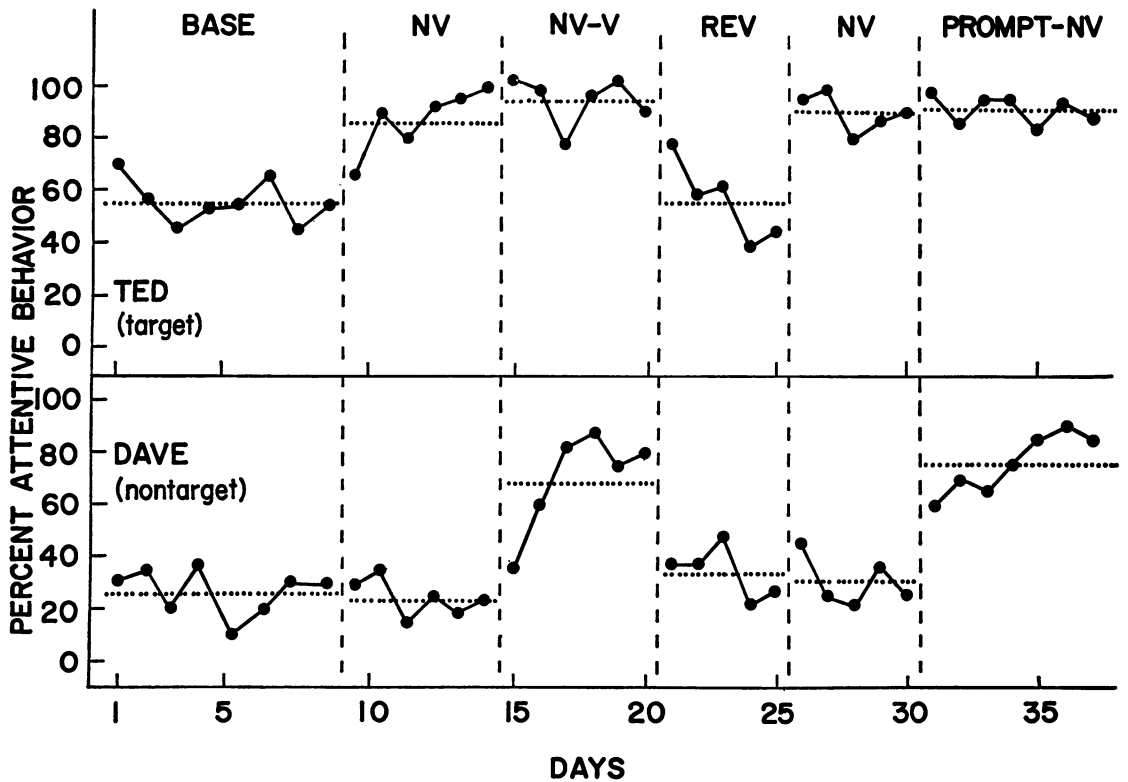


Fig. 1. Attentive behavior of Ted and Dave across experimental conditions. Baseline—no experimental intervention. Nonverbal approval for Ted only for attentive behavior. Nonverbal approval combined with verbal praise for Ted for attentive behavior. Reversal—return to baseline. Nonverbal approval for Ted for attentive behavior. Nonverbal approval for Ted preceded by a prompt to Dave. (Means for each phase are represented by dotted lines.)

Table 1
Mean Daily Frequency of Approval Delivered in Each Phase

Subject	Base	NV	NV + V	Rev	NV	Prompt + NV
Ted	0	13.33	15.17	0	13.60	14.29
Dave	0	0	0	0	0	0
	Base	NV	Rev	Prompt + NV		
Tina	0	12.17	0	12.88		
Fred	0	0	0	0		

reversal phase, when approval was no longer delivered to Ted, attentive behavior declined for both Ted and Dave to means of 57.6% and 32.8%, respectively. In the next phase, Ted

received nonverbal approval (without verbal praise) and increased attentive behavior to a mean of 90%. However, Dave remained at a rate approximating performance during the

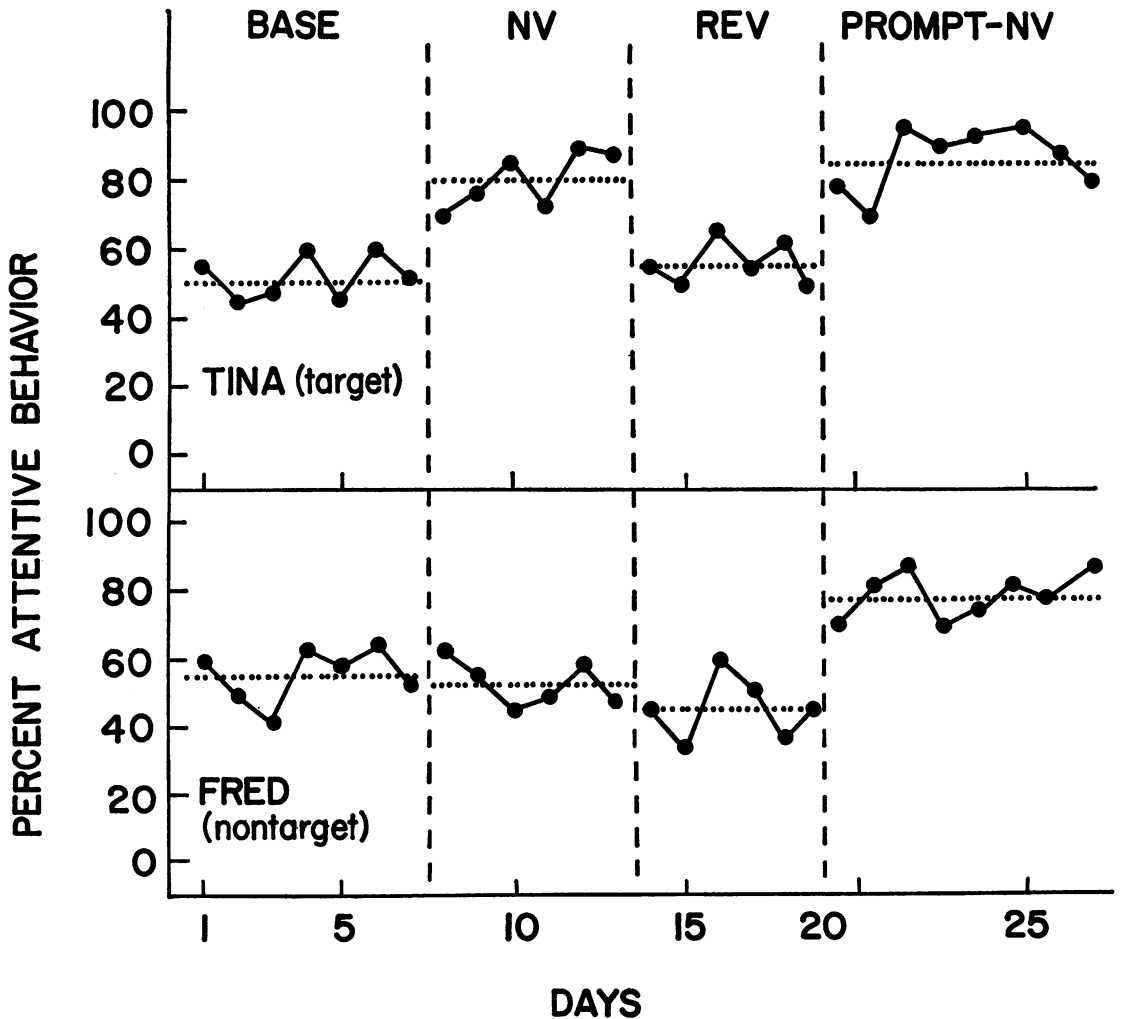


Fig. 2. Attentive behavior of Tina and Fred across experimental conditions. Baseline—no experimental intervention. Nonverbal approval for Tina only for attentive behavior. Reversal—return to baseline. Nonverbal approval for Tina preceded by a prompt to the class. (Means for each phase are represented by dotted lines.)

previous reversal phase at 30% attentive behavior. In the final phase, nonverbal approval of Ted was preceded by a prompt to the nontarget subject (Dave) to make salient to Dave that Ted's attentive behavior was reinforced. During this phase, Ted's attentive behavior remained at a relatively high level (90.9%). Dave's attentive behavior increased markedly to a mean of 75.7%. Thus, the verbal prompt to the nontarget student appeared to produce the vicarious effects of nonverbal approval.

The second pair showed similar results. During baseline, Tina and Fred averaged 49.4% and 55.1% attentive behavior, respectively (see Figure 2). When Tina received contingent nonverbal teacher approval, her attentive behavior increased to a mean of 80.3%. Yet, Fred's attentive behavior remained near baseline levels with a mean of 51%. During the reversal phase, Tina's attentive behavior decreased to 55.7%. Fred's attentive behavior remained relatively low (mean of 45.3%) and continued a slight decline relative to the initial baseline. In the final phase, when the teacher gave a verbal prompt to the class as a whole to notice Tina's appropriate behavior and the delivery of nonverbal approval, Tina's attentive behavior increased to a mean of 85.3%. Moreover, Fred's attentive behavior also increased, to 78%. Thus, delivery of a prompt to the class before delivering nonverbal approval appeared to increase Fred's attentive behavior.

DISCUSSION

The present findings indicate that nonverbal approval (at least in the form of physical contact) altered behavior when delivered directly to an individual. However, nonverbal approval alone did not result in vicarious effects. Vicarious effects were produced only when nonverbal approval was preceded with a verbal prompt. While these prompts appeared to have no direct effect on the attentiveness of the target subject, they determined whether or not vicariously reinforcing effects occurred. An ancillary

finding replicating earlier work (Borden *et al.*, 1970; Kazdin, 1973a) was that verbal praise for attentive behavior in a target subject appeared to increase attentive behavior in an adjacent peer.

Some caution is required in generalizing the present results to other populations. The present investigation studied retarded children. Possibly, the failure of nonverbal approval to result in vicarious effects in the absence of prompts would be limited to such a population. The children who did not receive approval may have been unaware of these consequences being administered to others, despite the attempt to make nonverbal approval as obvious as possible to the nontarget subjects. The present results need to be replicated with nonretardates.

Although nonverbal approval accompanied with verbal prompts to nontarget subjects resulted in vicarious effects, different interpretations of this finding are possible. First, verbal prompts may have made salient to the observing peer the target subject's behavior and its consequences. The prompt may have simply gained the attention of the observer (adjacent peer) to the model. Once having noted the model's behavior, and the consequences for it, the observer could easily imitate the observed response. However, research on vicarious effects has shown that in some situations, prosocial or "desirable" behavior increases after a target subject receives approval for inappropriate behavior (Kazdin, 1973a) or after noncontingent delivery of a punishing stimulus (Morris, Marshall, and Miller, 1973). These studies pose problems for a strict modelling interpretation (*i.e.*, imitation of a model's behavior) of vicarious effects because the model's behavior *per se* does not determine the direction of vicarious effects.

A second interpretation is that prompts *per se*, in the absence of reinforcing consequences, may increase attentive behavior of the nontarget subject. Verbal prompts might make salient cues in the situation (rather than the behavior of the target subject) and serve as discriminative

stimuli for reinforcing consequences from the teacher. Research on the efficacy of verbal prompts in the classroom, at least in the form of instructions, has indicated generally weak, nonexistent, or inconsistent effects on student behavior (e.g., Herman and Tramontana, 1971; Kazdin, 1973*b*; O'Leary, Becker, Evans, and Saudargas, 1969; Packard, 1970). Thus, it would appear that prompts alone would not effectively have controlled behavior in the present investigation. However, prompts were followed by reinforcement delivered to the target subject. Thus, prompts may have served as a discriminative stimulus to nontarget subjects that approval might follow and may have increased the likelihood of attentive behavior. However, this does not explain why nontarget subjects did not eventually discriminate that prompts never were associated with reinforcement of their behavior. Perhaps if prompts effect initial change, the change may be transient without consequences for behavior. This remains to be evaluated.

The above interpretations do not exhaust all possible explanations of the present findings. But they do suggest additional investigations required to clarify the relationship of prompts and vicarious effects. In advance of a fine component analysis of the role of prompts, model behavior, and contingent consequences, the present results would appear to warrant tentative comments regarding reinforcement in applied settings. It appears as if prompts can facilitate vicarious effects. A plethora of studies in the classroom and other settings have shown the importance of consequences such as praise, token reinforcement, aversive contingencies, and other procedures (Kazdin, 1975; O'Leary and O'Leary, 1972). In many classrooms, improvements in behavior might be achieved not only by systematically scheduling response consequences but by judiciously utilizing easily administered setting events. As the present investigation suggests, prompts might enhance the indirect (vicarious) effects of carefully scheduled consequences.

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