CORRESPONDENCE BETWEEN SAYING AND DOING: SOME THOUGHTS ON DEFINING CORRESPONDENCE AND FUTURE DIRECTIONS FOR APPLICATION

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Israel (1978) evaluated and discussed research on positive and negative verbal-nonverbal correspondence. In the present report we attempt to delineate the relationship of correspondence training to two major intervention goals—producing (increasing) behavior and inhibiting (decreasing) behavior. The concepts of noncorrespondence and generalized positive correspondence are introduced. Past research relating to the correspondence analyses offered for the two intervention outcomes and possibilities for future research are discussed. The relationship of verbal correspondence training to the issues of response maintenance and response generalization is also examined.

DESCRIPTORS: verbal-nonverbal correspondence, positive correspondence, negative correspondence, facilitating behavior, inhibiting behavior, self-instruction

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An area of research concerned with the correspondence between an individual's verbal and nonverbal behavior was recently discussed by Israel (1978). Early studies in this area presumed that there was a relationship between verbal and nonverbal behavior, i.e., changes in verbal behavior would cause changes in nonverbal behaviors (Bem, 1967; Lovaas, 1961, 1964; O'Leary, 1968). Later, however, a group of studies appeared that were concerned with developing functional correspondence when it was not initially apparent and with examining the processes by which correspondence can be achieved (Israel & Brown, 1977; Israel & O'Leary, 1973; Karoly & Dirks, 1977; Risley & Hart, 1968; Rogers-Warren & Baer, 1976). One aspect of the development of correspondence explored by this latter group of studies, as indicated by Israel (1978), was the choice of training sequence. The essential manipulation involved either having the individual report what *will be* done (say-do) or report upon what *has been* done (do-say). A central question that was discussed by Israel related to

defining specific types of correspondence. In accordance with the approaches taken by the recent studies, Israel (1978) defined *positive correspondence* (+ saying + doing) as saying something will be (or was) done and, correspondingly, doing (or having done) it. In what could be considered a logical extension, he defined *negative correspondence* (− saying − doing) as no verbal statement being made and no target behavior being observed. Finally, Israel discussed an important methodological issue related to the choice of dependent measures in the recent studies. None of the recent studies except that of Israel and O'Leary (1973) directly reported correspondence according to the definitions given above, but instead, reported the percentage of individuals saying and the percentage of individuals doing. Only Israel and O'Leary (1973) reported the percentage of persons actually saying *and* doing. Israel (1978) noted the possible distortion that can result from merely reporting how many said and how many did as the dependent variables; he described the extreme example in which five of ten children were observed to say they would do X while the other five subsequently did X. This would be reported as 50% saying and

50% doing, leading one to conclude that half the individuals displayed correspondence when, in fact, none did. However, in all these recent studies, reinforcement contingencies were consistently dependent upon individual positive correspondence. That is, during correspondence training, reinforcement was delivered to each child only if he or she had demonstrated both saying and doing. Thus, the use of group percentages obscures the individual effects. It is impossible to ascertain which persons are contributing what effects because individual data cannot be identified within, or across, sessions.

The purpose of this paper is to continue the definition of correspondence begun by Israel (1978). The implications of these definitions and of the correspondence paradigm itself for applied research will be discussed. Finally, consideration will be given to an area of applied behavior analysis not addressed by the recent studies on verbal correspondence training: decreasing, or inhibiting, behavior. The recent emphasis has been on increasing, or facilitating, the occurrence of play or prosocial verbal and nonverbal behaviors through the control of verbal behavior. This represents only one of the two traditional goals of applied interventions. This paper will also address certain methodological issues, especially those of definition, related to the use of correspondence between saying and doing to decrease or inhibit behavior wherein a person says something will not occur (or has not occurred) and it does not (or has not).

PRODUCING BEHAVIOR

Prior research efforts have used two strategies; the first strategy might be termed verbal mediation by which prior verbal statements serve to facilitate the production of subsequent behavior directly. This represents the say-do training sequence. The second strategy is more indirect; a verbal report follows the actual occurrence of the behavior and the truth value of

the report is consequated in an effort to modify future occurrences of the target behavior. This forms the do-say training sequence. Thus, in each training sequence, interest is focused upon whether the individual performs or does not perform the behavior of interest.

The upper half of Table 1 presents the four relationships that are found when examining saying or not-saying and doing or not-doing; each relationship forms an episode of behavior which is labeled according to the agreement between the occurrence of the verbal and target behaviors. The desired outcome of training represented by this portion of Table 1 is the production of behavior that has not been demonstrated by an individual or that is in evidence but at an unacceptably low level. As Israel (1978) suggested, positive correspondence exists when the verbal report (saying) is followed by the actual behavioral occurrence (doing). Israel (1978) further suggested that negative correspondence refers to the case where no verbal report and no target behavior are found. This definition is based upon what the observer records for a particular episode: The absence of a verbal statement and the absence of the

Table 1

Verbal correspondence defined in terms of appropriate or inappropriate saying and doing.

GOAL: PRODUCING BEHAVIOR		
	Saying (+)	*Not Saying* (−)
Doing (+)	Positive Correspondence	Noncorrespondence
Not Doing (−)	Noncorrespondence	Negative Correspondence
GOAL: INHIBITING BEHAVIOR		
	Saying Not (+)	*Not Saying Not* (−)
Doing (−)	Noncorrespondence	Negative Correspondence
Not Doing (+)	Positive Correspondence	Noncorrespondence

target behavior are both recorded as minuses and thus these "negatives" correspond. Two additional situations are possible; both relate to instances in which only one of the two behaviors is present. Each of these instances would be considered noncorrespondence. For clarity, the situation in which (a) the person states that an act will be done, but does not follow through or (b) reports having done something that was not done will be called *noncorrespondence* (+ *saying* — *doing*). The occurrence of an action not promised or reported will be called *non-correspondence* (— *saying* + *doing*). As will be discussed later these two instances, noncorrespondence (+ saying — doing) and noncorrespondence (— saying + doing), may well have different applied significance.

Before discussing the implications of these definitions, the basic verbal correspondence training paradigm introduced in recent research will be briefly described. Early research in this area used only a single treatment phase; after a baseline or pretest measure of the verbal and target behaviors was collected, the subjects were instructed to use or were reinforced for producing verbal behavior (verbal training) (Bem, 1967; Lovaas, 1961, 1964). If verbal behavior mediated, or "controlled," the target behavior, increases should have been evident in the incidence of target behavior. Recent research has extended this paradigm by introducing a "correspondence training" phase during which reinforcement is given only when saying and doing are jointly observed (Israel & Brown, 1977; Israel & O'Leary, 1973; Karoly & Dirks, 1977; Risley & Hart, 1968; Rogers-Warren, Warren, & Baer, 1977). Correspondence training follows verbal training if increases are not seen in the target behavior during verbal training. The expansion of the two original definitions of correspondence, i.e., positive and negative correspondence, to include the two types of noncorrespondence introduced in this paper, provides a complete conceptual structure for the analysis of the effects produced in each of the three phases

(baseline, verbal training, correspondence training) of the correspondence paradigm.

During baseline, the person may not exhibit any target responses yet may infrequently emit the appropriate verbal behavior. Thus, according to the definitions, there would be a large proportion of negative correspondence with some noncorrespondence (+ saying — doing) and little, if any, positive correspondence. If the individual did exhibit some target behavior, but at an inappropriately low level, then there would probably be a small proportion of non-correspondence (— saying + doing).

During verbal training, the objective is to increase verbal statements regarding the target behavior and to determine whether the target behavior occurs as a consequence. The preferred outcome is that positive correspondence increases while negative correspondence and noncorrespondence (+ saying — doing) decrease in proportion. Research suggests, however, that when the person is reinforced merely for saying he will do something (say — do) or merely for reporting that something has been done (do — say), noncorrespondence (+ saying — doing) is more likely to increase in proportion to the other categories. When this occurs, it is necessary to introduce the direct correspondence training phase.

During correspondence training, reinforcement is delivered contingent upon instances of positive correspondence. If this procedure is effective, then the proportion of positive correspondence should increase while the proportion of noncorrespondence (+ saying — doing) decreases. If a nonzero baseline had been obtained for the target behavior, then noncorrespondence (— saying + doing) should decline as the target behavior comes to be "controlled" by the verbal behavior.

The failure to obtain increases in positive correspondence during conditions of reinforcement merely for saying may have different interpretations depending upon whether a say-then-do or a do-then-report task sequence was

involved. By requiring the person to state what will be done, the intent, presumably, is for verbal behavior to acquire cue functions resulting in stimulus-response control. In common parlance, a person who fails to live up to his or her promises, "I will do X," can be accused of lacking self-control (assuming they remembered what they said). In a do-say reporting task, it appears that the act of doing could be an antecedent for saying. If a person does not do but reports that he did, then he can be accused of lying (assuming they remembered the failure to do). The person who lacks self-control is expected to increase positive correspondence (to remember what they promised and to do it). The person who lies is expected either to increase positive correspondence (to actually engage in the behavior that they will report) or to increase negative correspondence (to refrain from reporting a behavior in which he or she did not engage). The direction taken is very likely controlled by instructions, in the form of feedback, given to the individual, e.g., "You really didn't do it. If you tell me that you did something you had better make sure that you did it."

It is also possible that shifting to the positive correspondence contingency in a do-then-report task may produce an unintended positive correspondence. After an individual has been prompted to and rewarded for saying that he or she did something regardless of the truth value of the statement (as during verbal training), that individual could begin to report what he or she was actually doing instead of the target behavior after the contingencies change. The individual has engaged in an alternative to the target behavior and has reported that fact accurately. For example, the child who has learned to say "I played with blocks," (the target behavior) while, in fact, he or she played with paints (the baseline behavior) might begin to report, "I played with paints." Thus, data collection procedures would need to be sensitive to the possibility of verbal correspondence involving alternate, nontarget behaviors if such

behaviors were present during baseline or began to occur later.

Research on Correspondence Training in Producing Behavior

Much of the research conducted thus far would appear to be analytic in nature; it has been concerned with comparative analyses of do-say and say-do sequences (Israel, 1973; Israel & O'Leary, 1973; Karoly & Dirks, 1977) and with component analyses of the paradigm sequence itself (Israel & Brown, 1977; Rogers-Warren & Baer, 1976), of the effects of having reinforcement occur at various places in the behavioral chain (Paniagua & Baer, Note 1), and of the procedures for developing the component verbal and target responses (Rogers-Warren, Warren, & Baer, 1977). Little attention has been paid in prior research to the issues of maintenance and generalization of the effects of verbal correspondence training. Maintenance will be discussed here as the continued performance of the target behavior, i.e., maintenance of the increases in the target behavior following training. Generalization will be examined in terms of the ability of the individual to control other target behaviors with his or her own verbal behavior following correspondence training to increase a particular target behavior.

Maintenance of the desired increases in the target behavior has not been documented in past research. Only two studies (Risley & Hart, 1968; Rogers-Warren & Baer, 1976) have used sequences of procedures that allow maintenance to be examined. The studies discussed earlier as establishing the basic verbal correspondence paradigm used a sequence consisting of baseline, verbal training, and correspondence training. Risley and Hart (1968) added a final baseline condition; this allows maintenance to be assessed but in the absence of reinforcement either merely for saying or for correspondence between saying and doing. Rogers-Warren and Baer (1976) also used a final baseline condition in portions of the three experiments they report.

During these final baselines, positive correspondence declines.

Considering the logic of the basic paradigm, it seems unusual that none of the previous studies reinstated the verbal training condition following reinforcement of true correspondence. Verbal training is introduced after the baseline in order to determine whether saying controls doing. A return to reinforcement of saying (whether or not correspondence is evident) following correspondence training would indicate whether verbal behavior would maintain the desired changes in the target behavior. Maintenance would be indicated by the continued predominance of positive correspondence in the data; the failure to maintain the target behavior would be indicated by decreases in positive correspondence accompanied by increases in noncorrespondence (+ saying − doing). To enhance maintenance, it is suggested that the abrupt withdrawal of the correspondence (truth-value) contingency should be avoided. The intermittent withdrawal and reintroduction of the correspondence contingency should be examined as a strategy for producing enduring control of doing by saying.

Maintenance of the target behavior in the absence of the verbal behavior is another unexplored question. There may be reinforcement available for the performance of the target behavior in the natural settings. Following correspondence training, increases in noncorrespondence (− saying + doing) accompanied by decreases in the level of positive correspondence would suggest that some control of the target behavior is passing from the verbal behavior (which itself begins to decrease) to context or setting cues. Thus, in the presence of such cues, performance of the target response is resulting in some form of reinforcement which serves to maintain the behavior. If verbal correspondence training is to be used as a behavior change strategy, then more research is needed to establish what environmental conditions promote maintenance and how the use of saying can be withdrawn in order to develop such maintenance.

In this paper, generalization will be discussed as it relates to the generalized control of target behaviors by verbal behavior. To clarify, it is necessary to turn once again to the correspondence training sequence. Positive correspondence has been obtained when the target behavior increases beyond baseline levels as a consequence of increases in verbal behavior—doing matches saying. If verbal behavior during verbal training does not initially control the target behavior, then positive correspondence would not be evident until the correspondence phase of training; during verbal training only noncorrespondence (+ saying − doing) would increase. A question that has received little attention is this: For subsequent target behaviors, does positive correspondence increase as a result of simply increasing verbal statements? Such generalized verbal correspondence was reported by Risley and Hart (1968), and by Israel and Brown (1977). Risley and Hart (1968) used a do-say sequence in multiple baseline fashion across various preschool tasks (e.g., painting and blocks). In general, correspondence training was required to produce increases in usage of task materials; however, merely increasing the reports of doing through reinforcement resulted in increased material use for one task. Israel and Brown (1977) reported generalized effects during the implementation of a say-do sequence with a second task. Following correspondence training with each of two different groups, verbal training was initiated for a second play material; this resulted in increases in positive correspondence, i.e., saying controlled doing without direct reinforcement of correspondence. Unfortunately, subsequent research in this area has not pursued the development of such generalization, although the applied significance of generalized verbal correspondence for the development of self-control seems clear.

Future Research

Israel (1978) outlined three possible applications for verbal correspondence training research:

1. *Maintenance* of behavior change *within the training context* might be enhanced by the individual producing verbal cues, in the absence of external cues, for the target response.
2. It has potential for facilitating *generalization beyond the training setting* in that the individual is producing his or her own cues for which controlling functions were developed.
3. Control of less accessible nonverbal behavior might be examined via the monitoring of corresponding verbal behavior.

It is interesting that Israel's applications involve, for the most part, only the maintenance and generalization of behavior change, not the initial acquisition of behavior. In this regard, verbal correspondence is viewed as a management strategy: If the target behavior exists within the individual's repertoire, then correspondence is an appropriate strategy for manipulating its occurrence. This may have been particularly true of prior research by Israel (1973), Israel and O'Leary (1973), Karoly and Dirks (1977), and Risley and Hart (1968), for in this research the tasks involved the use of preschool materials or toys by preschool children. Studies by Rogers-Warren and Baer (1976) and Rogers-Warren, Warren, and Baer (1977) included a component in which the appropriate verbal and target behaviors were modeled. Again, because the subjects were preschool children, it can be assumed that modeling assured that the behaviors would be produced at some level and would then be acted upon by the correspondence training procedures. In general, if the target behavior exists whether through "natural" development or through specific training, verbal correspondence serves as a management technique for maintenance and generalization of skills. Such training serves to impart "self-control" functions to an individual's verbal behavior.

In order to develop the discussion of this important research direction further, the vocational and social skill training of moderately retarded

adults will be introduced as a general example around which specific examples may be framed. Application to this area of training is especially pertinent since moderately retarded adults often have both skill and performance deficits. That is, even after deficient skills are trained, maintenance and generalized performance of these skills are often still lacking. In addition, Rusch and Schutz (1981) have indicated that, in social and vocational work-skills training research with the mentally retarded, attention to maintenance and generalization has been directed toward external control by a significant change agent such as a trainer or supervisor.

Specific areas of application of verbal correspondence to the improvement of the skills of developmentally disabled persons being trained for nonsheltered, competitive employment, and community-based living have been suggested (Karlan, 1980). Unlike sheltered settings for work or living, community-based alternatives require that individuals perform in less closely supervised or less structured settings; it may also be the case that direct interventions for the purposes of maintaining behavior are disruptive of the activities of the setting. For either reason, training designed to develop control of target behavior by verbal behavior of the trainee could enhance the "independence" or "self-reliance" of the persons being trained.

The maintenance or generalization of task behaviors that are not sequence-critical and that produce permanent products or changes in the environment is one area of application discussed by Karlan (1980). For example, in cleaning a dorm room, it is only necessary that it be vacuumed, the bed linen changed, the room dusted, and the wastebaskets emptied; the order in which the tasks are accomplished is unimportant. In addition, completion of these tasks may be checked later by observing the appropriate environmental changes. During maintenance training, correspondence training would consist of a basic say-do sequence; the person would describe what will be done and, later, the product or change would be examined in order to evalu-

ate what type of correspondence has occurred. It would be possible to have the person initially state the product or changes to be produced or to describe component behaviors that are necessary to produce the desired outcome. As long as a particular sequence of behaviors is not required or the process allows various alternative routes to completion, only observation of the terminal objective is necessary. For other tasks, the actual sequence of behaviors may be important, but it might be inconvenient or inappropriate to intervene in these tasks in their natural settings (Menchetti, Rusch, & Lamson, 1981). For example, when employees work a cafeteria serving line, they are expected to keep busy during slack moments by checking miscellaneous items like bread and butter. Direct intervention is difficult because of limited space for the trainer, the irregularity of the slack periods, and the stigmatizing nature of the direct interventions for the trainee relative to other workers and the customers. In such a situation the individual would be required to describe the steps in the sequence of proper performance; further, it would be necessary to observe the process itself in order to evaluate correspondence.

Karlan (1980) suggested an alternative procedure involving a combination of correspondence training and simulation for process-critical situations. In this procedure, the individual would "practice" the entire, critical sequence in simulation and would deliver self-instructions just prior to performing each component. Correspondence with the target behaviors that occur immediately after the verbal behavior would then be evaluated during simulation and could also be determined for the target behavior occurring in the natural setting. The use of such simulated, or role-playing, situations to develop complex social skills with retarded adults has been reported by Bates (1980). In this study, the retarded adults had some, but not all, of the component behaviors in the various skill areas (small talk, asking for help, differing with others, handling criticism). The training package

included verbal instructions and modeling just before each role play, the role playing (behavioral rehearsal), and feedback following role-playing situations. Verbal instructions (coaching) were also used during role playing. The retarded adults were taught to give verbal feedback to their peers during the verbal instructions prior to role playing and during coaching. Although gains in social skills were found for both trained and untrained situational role playing, no generalization was found to the natural environment. This study is of particular interest in several respects. The subjects were taught to instruct one another; had they been taught to rehearse verbally the appropriate sequence of skills prior to behavioral rehearsal (role playing) Bates' package would have closely resembled so-called self-instruction, self-control procedures (Bornstein & Quevillon, 1976; Meichenbaum & Goodman, 1971; O'Leary & Dubey, 1979; Rosenbaum & Drabman, 1979; Morgan, Riva, Rusch, & Ryle, Note 2). Such procedural packages consist of instructions, overt modeling, self-instructional modeling (combined verbal and behavioral rehearsal), and training in task-related speech (primarily self-correction and self-praise). The failure of Bates' subjects to generalize to the natural environment is also of interest. If verbal rehearsal had been included in the training package, then such rehearsal could also have been conducted just prior to the subject entering the natural environmental situations (Crouch, Rusch, Ryle, & Riva, Note 3). Self-instructions would have served as common stimuli that could have enhanced generalization (Stokes & Baer, 1977) Bates' subjects did learn to coach and instruction one another; however, such training has value only if these retarded peers are present in the natural settings. The inclusion of verbal rehearsal also allows feedback regarding correspondence between saying (verbal rehearsal) and doing (behavioral rehearsal and or performance in the natural environment) to be given. Based upon the correspondence research cited earlier, modification of contingencies so that reinforcement was available only

for correspondence between saying and doing might have resulted in generalization of the complex social skills by Bates' subjects to the natural environment.

Also revealed by the previous discussion is an aspect of verbal correspondence that has received little attention. In research to date, the controlling verbal behavior has itself been under the control of questions from the experimenter. An interesting strategy would be to shift control of controlling verbal behavior to naturally occurring stimulus cues; the vocational task itself, e.g., the operations required to run an apparatus such as a dishwashing machine, would control the production of the mediating cues. The individual would verbally rehearse the appropriate sequence of target responses at the machine itself, perhaps pointing to the appropriate parts of the machine. A final objective of such techniques should be for the individual to self-instruct covertly. That is, when the target behavior continues to occur in the absence of overt self-instructions—noncorrespondence (− saying + doing)—the self-instructions might be presumed to be occurring covertly, if at all. Thus, a logical extension of correspondence training would be to examine the shift from trainer-controlled verbal behavior to environmentally controlled verbal behavior, and to examine the development of covert verbal behavior.

In order to examine the development of such "covert speech," it would appear necessary for the effects of correspondence training to be maintained. Perhaps this could be done by intermittently reinforcing correspondence (during verbal maintenance) and gradually lengthening the interval between such intermittent correspondence reinforcement. Next, the emission of verbal behavior must be shifted to the naturally occurring cues if such a shift hasn't already taken place. Two final situations are then possible; either the target behavior itself comes under the control of these natural context cues and verbal behavior naturally decreases as it becomes redundant, or a specific intervention must

be developed to encourage the person to first "whisper" and later "say silently" the mediating verbal cues (see Meichenbaum & Goodman, 1971). Maintenance of a specific target skill will thus have been achieved through the development of the self-control functions of a person's verbal behavior, the transfer of control of the production of that verbal behavior from a trainer to naturally occurring context cues, and the final transfer of control of the target behavior from overt instructions to either covert instructions or the naturally occurring situational cues.

Another important direction that future research must pursue is the development of generalized verbal correspondence. To date, only Risley and Hart (1968) and Israel and Brown (1977) have demonstrated that generalized verbal correspondence develops as a function of the repeated application of correspondence training across successive tasks. By generalized verbal correspondence, it is meant that the person's performance of the target behavior corresponds to the promise or the report after training only for verbally saying or reporting has taken place. Risley and Hart found generalized verbal correspondence with some children for two tasks after specific correspondence training had been conducted with four previous tasks. Further multiple baseline applications of the correspondence training paradigm across tasks, e.g. as sweeping, mopping, vacuuming, and dusting that result in the development of positive correspondence are needed. Such results support the contention that generalized control of nonverbal behavior by verbal behavior can be developed in persons initially lacking such control.

INHIBITING BEHAVIOR

A second major area that warrants further development is the use of verbal behavior to inhibit or decrease undesirable behavior. Israel (1978) suggested that inhibitory verbalizations —"do not" sentences—might be an appropriate extension of the correspondence phenom-

ena, but did not elaborate his analysis. The lower half of Table 1 illustrates correspondence in relation to the production or the failure to produce not sentences, e.g., "I will not get angry," "I will not grab toys," and either the inhibition or production of the undesirable behavior, e.g., not being angry/being angry. Because the verbal statements are made to indicate that the undesirable behavior will not or did not occur, correspondence must be evaluated relative to the absence of the undesirable behavior. The presence of the undesirable behavior is viewed as an error and is recorded as a minus, whereas the absence of the target behavior in the observation period is recorded as a plus. Therefore, positive correspondence refers to the instance in which the individual states that a behavior will not, or did not, occur (+ saying not) and the behavior is not, or was not, observed to occur (+ not doing). Negative correspondence describes the failure to make statements or reports (− saying not) together with an observation of the undesirable behavior (− not doing). The remaining two situations reflect noncorrespondence. First, if the individual states that a behavior will not, or did not, occur (+ saying not) and the behavior is observed (− not doing), noncorrespondence (+ saying not − not doing) is evident. If, however, the person does not make a statement (− saying not) and the undesirable target behavior is not observed (+ not doing), noncorrespondence (− saying not + not doing) can be said to have occurred.

In relation to each training sequence, the failure to inhibit behavior following a "will not" statement might be considered to be a lack of self-control or a form of lying depending upon whether one assumes the speaker is merely unable to inhibit behavior or intends to deliberately deceive the listener (assuming, further, that the statement is remembered). Untrue reports (doing followed by "did not" statements) may again reflect either lying (if intent is perceived) or simple failure to remember previous events accurately.

As with producing behavior through verbal correspondence, an intended direction for change is clear. Increased positive correspondence is the desired effect. However, increased positive correspondence followed by decreases in positive correspondence accompanied by increases in noncorrespondence (− saying not + not doing) is also an appropriate outcome. This progression indicates that some control of the inhibition of the undesired behavior has shifted from the verbal behavior to naturally occurring situational cues. As with producing behavior, this outcome might be programmed by transferring control of overt verbal behavior from the trainers ("What will you do?" "I won't hit") to naturally occurring situational cues (A teases B; B says, "I won't hit") then transferring control of the target response from the verbal behavior (A teases B; B says, "I won't hit;" B doesn't hit) to the naturally occurring situational cues (A teases B; B doesn't hit) through fading of verbal behavior from overt to covert behavior. Generalized positive correspondence would also be possible and highly desirable with inhibitory verbal correspondence. Again, such generalized correspondence would develop as a function of the application of inhibitory correspondence across a series of inappropriate, target responses.

Unwanted outcomes include increases in noncorrespondence (saying) and negative correspondence. As noted above, noncorrespondence (saying) may indicate deliberate deception or the faliure of self-control to develop. Based on prior research concerning the production of behavior, initial attempts to increase target behavior through verbal behavior will doubtless lead to noncorrespondence (+ saying not − not doing) without a truth value contingency. An increase in negative correspondence is also an inappropriate outcome; not only is the undesirable target behavior being maintained but the inhibiting verbal behavior decreases so as to correspond to this lack of change. Increased negative correspondence would be most probable when contingencies are changed following reinforcement of saying so as to reinforce only true statements.

An alternative to the direct inhibition of inappropriate behavior through the use of "do not" verbal correspondence might be the production of responses incompatible with the target responses, i.e., the positive verbalization of competing behavior. Thus, an alternative to "I will not grab toys" is "I will ask for toys." There may, however, be classes of problem behaviors for which competing responses are unavailable or unnecessary. Schutz, Rusch, and Lamson (1979) reported on the problem of the abusive verbal behavior of mentally retarded workers in a competitive employment setting. In such a setting, verbal abuse, even if accompanied by compliance with instructions or correct performance of the task, is grounds for dismissal from employment. In these settings, while verbal abuse must be inhibited, nonabusive verbal behavior may be unnecessary. For example, it is appropriate to respond to an instruction to mop the floors by mopping the floor without comment; it is inappropriate to depart for the task with "Get off my back," as a parting comment. In fact, a potential competing response might be an appropriate acknowledgement such as "Okay," but this appropriate target response could occur as part of the verbal abuse ("Okay, okay, get off my back"). In this situation both faciliating verbal correspondence ("I will say 'okay' when told to do something") and inhibiting verbal correspondence ("I will not tell people to get off my back") might be developed.

Research on Inhibiting Behavior

Previous research conducted on the problem of inhibiting nonverbal behavior through the control of verbal behavior may be divided into two types: those studies which involved tasks requiring concurrent verbal and nonverbal behavior and those studies in which the prior verbal behavior was to control subsequent "immoral behavior." Many studies in the former class were directed toward establishing developmental, age-related differences in the ability to use both overt and covert self-instructions either to

facilitate or to inhibit the occurrence of certain concurrent instrumental behaviors (pushing a knob, finger tapping, level pressing); self-instructions were limited to simple directives such as "faster/slower" or "push/don't push" that were uttered while motor responses were being made (Birch, 1966; Lovaas, 1964; Luria, 1961; Meichenbaum & Goodman, 1969a). This research indicated that developmental differences existed for the emergence of the inhibiting and the initiating functions of verbal behavior in young children. Whether these differences are evident in research concerning the development of inhibitory verbal correspondence is a matter for investigation. The ability to inhibit behavior via correspondence training might develop earlier than previously determined by developmental research because direct training and reinforcement are parts of the correspondence paradigm. The difference between the two research approaches reflects a difference of intent: Developmental research seeks to identify at which time inhibitory control develops naturally (presumably as a consequence of common experience); behavioral research seeks to establish the regulatory function by providing consequences for positive inhibitory correspondence. Other studies in this area (Meichenbaum & Goodman, 1969b, 1971) examined verbal control of concurrent nonverbal behaviors in children referred to as cognitively impulsive. However, in these studies the goal was developing appropriate, well-paced, nonimpulsive response sequences through concurrent verbal mediation rather than using verbal responses to directly inhibit impulsive nonverbal responses. Kendall and Finch (1976) did directly reduce rapid, impulsive "switching" from task to task using concurrent verbal self-instructions; in this study, the child was taught to make "Do not switch, finish the task" verbalizations.

Two studies have been reported that investigated the control of overtly "inappropriate" nonverbal behavior by prior verbal behavior (Monohan & O'Leary, 1971; O'Leary, 1968). In each study, children learned that in the pres-

ence of certain stimulus cues it was "wrong" to press a lever even though primary reinforcement was available for lever pressing. Prior experience with expressing overt self-instructions appeared to inhibit subsequent "cheating" (pressing in the presence of the "wrong-to-do-so" cue) although the evidence supporting this conclusion varied in strength. The treatment used in these two studies represented the same sequence used in the correspondence training research discussed earlier in relation to producing behavior: say-do (in this case, say "not"—do not). However, as with the studies relating to inhibition of motor behavior by concurrent verbal behavior, no attempts were made to provide direct consequation for positive correspondence or negative correspondence. Thus, while using verbal mediation, the research available concerning inhibiting behavior through self-instruction does not represent correspondence training as defined in the present paper.

Future research. Clearly, there is a need to examine the use of direct correspondence training procedures similar to those used to produce behavior in the inhibitory control of inappropriate behavior by verbal behavior. Application of such techniques to problems of controlling aggressive, off-task, or bizarre nonverbal behaviors or aggressive or abusive verbal behaviors of persons identified as requiring remediation seems particularly warranted. These behaviors readily identify an individual as deviant, especially if contingent interventions by outside agents are used. It might, therefore, be less intrusive or more "normalizing" to use prior (or subsequent) verbal behavior to bring about control of the undesirable behaviors in the say-do (or do-say) training sequences.

SUMMARY

This paper has explored certain broad conceptual concerns regarding the relationship between verbal and nonverbal behavior when an intent is present to use one to influence the other. Consideration was given to the goals of

the behavioral intervention, that is, whether the overall goal was to produce behavior or to inhibit behavior. These goals were discussed relative to whether the individual would report doing (saying) or not doing (saying "not"). Finally, this report suggested several lines of research intended to clarify the role of verbal behavior in the maintenance of behavior change and intended to explore the question of generalized verbal control of behavior. These discussions seek to resolve ambiguities that might arise from examination of past research and future applications of correspondence training.

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