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ABSTRACT

This paper describes the development and use of language training procedures, referred to as cues-pause-point procedures, that rely on behavioral principles and simple and natural teaching procedures and that are exhibited in many normal parent-child or teacher-student verbal interactions. The procedures have been effective in teaching severely language deficient and language-disordered individuals with a wide variety of speech problems, including immediate and delayed echolalia, perseverative or tangential speech, nonsensical or unrelated speech, and virtually no speech. The procedures teach individuals to provide functional verbal responses to trained verbal input (i.e., to say "fine" when asked how are you); they also provide an interactive communication strategy that increases the likelihood of appropriate responses to untrained or novel verbalizations. The main goal is to produce the appropriate verbal response quickly so that the major training focus can be on maintaining it through a series of fading steps. A case study is presented of a severely mentally handicapped boy who was trained to respond to five stimulus-response pairs in a particular setting and was able to generalize his skill to other settings and to maintain his new communicative strategy. (JDD)

Teaching a Generalizable Language Strategy

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Teaching a Generalizable Language Strategy

The expressive language skills of most young children appear to develop quite "naturally" as they interact with their parents. An analysis of early parent-toddler language interactions suggests that one reason why is that parents rely on cues in the physical/natural environment to prompt language. For instance, the response "Daddy" is often taught by pointing to the relevant cue (i.e., Daddy) and asking "Who is this?". Pre-school teachers employ a similar approach. For example, a teacher may hold up a ball and ask students "What do we play catch with?". In both cases the children's verbal responses are prompted by directing their attention to environmental cues. Furthermore, parents and teachers seldom ask children to say something that they have not said before or that cannot be taught at that moment. Thus, we typically attempt to increase the likelihood that the child will respond appropriately to our verbalizations. Another aspect of early language development is that parents teach language during ongoing activites in the natural environment which, of course, increases both the number of teaching opportunities and the probability that the child's language will generalize to novel settings.

The obvious success of these strategies suggests that language training for individuals displaying severe language deficits should attempt to incorporate some of the approaches taken by the parents and teachers of language proficient children. As a result, our research has focused on the development of language training procedures (hereafter referred to as cues-pause-point procedures) that rely almost exclusively on simple and natural teaching procedures that are based on behavioral principles and exhibited in less structured ways in many normal parent-child/teacher-student verbal interactions.

Our research (Foxx, Faw, McMorrow, Kyle, & Bittle, submitted; Foxx, Kyle, Faw, & Bittle, submitted; Foxx, McMorrow, Faw, Kyle, & Bittle, 1987; McMorrow & Foxx, 1986; McMorrow, Foxx, Faw, & Bittle, 1987) has demonstrated that

cues, pause, point procedures are very effective in teaching severely language deficient and language disordered individuals functional verbal responses to trained verbal input (e.g., to say "Fine" when asked "How are you?" or "Soap" when asked "What do you wash your hands with?"). More importantly, the procedures have taught students a communication strategy (i.e., responding on the basis of either the cues that are present or their established repertoires of labeling responses) that resulted in a wide variety of generalized improvements in their verbal communicative behavior (see McMorrow, Foxx, Faw, & Bittle, 1986).

General Rationale and Characteristics of Cues-Pause-Point Language Training

Cues-pause-point language training procedures are based on the rationale that we must greatly increase the likelihood that the student will respond appropriately to our verbalizations. This process begins during structured training and is accomplished in several ways. First, we insure that the student has an appropriate verbal response to whatever we might say. To maximize success we begin by using the student's existing verbalizations (i.e., known object labels). Second, we teach the student to verbalize the appropriate response whenever we manually prompt him to do so thereby establishing control over when a particular verbalization will occur. Thus, we insure that the student can produce the appropriate response quickly and whenever we want it before we ever present a verbal stimulus for which it would be appropriate. This requires two steps. Prior to structured training we use a series of response identification prompts (i.e., pointing to the object to be labeled, tapping in front of it, tapping and saying "What's this?", then tapping and giving the answer) with the goal being to teach the student to verbalize the label when we simply point to the object. Then, at the start of each training session, the student labels each cue (i.e., object) to the point prompt only. Third, we arrange the interactional

situation by displaying these relevant physical cues (usually three to five) on a table in front of the student. Fourth, we teach the student to remain quiet and attend until it is his turn to talk. This is accomplished through the use of a pause prompt in which the teacher keeps her index finger at eye level midway between her and the student (see Photo). The student is taught to never vocalize when the teacher's finger is in this position. Fifth, when we present a verbal stimulus, we use a set of manual prompting procedures that (a) increase the likelihood that the student will attend to our verbal input (pause prompt); (b) reduce the likelihood that competing responses will occur (e.g., echolalia); (c) direct the student's attention to the appropriate (correct) cue in the interactional environment (point prompt); and (d) indicate when the student is to respond (i.e., the teacher ceases using the pause prompt). Sixth, we encourage the student to listen carefully by requiring the appropriate response when the cue is hidden from view. Finally, once the student reliably responds appropriately following a particular verbal stimulus, we fade the cues and prompts that produced the response. We do this by first removing the cues (i.e., objects) and eliminating the point prompt and then asking questions using only the pause prompt. Next, we ask the questions without the pause prompt and then begin to remove reinforcers, mix trainers, and change settings. Figure 1 illustrates the cue-pause-point prompting sequence.

Insert Figure 1 about here

The teacher provides as much assistance as necessary in the beginning to increase the likelihood that the desired response will occur and then gradually reduces it until the student responds appropriately without help. This feature illustrates one of the primary differences between our procedures and other types of language training. Most training procedures

rely on shaping appropriate speech through a series of steps towards a target response, whereas ours are intended to make initial performance as errorless as possible. Thus, our main goal is to produce the appropriate verbal response quickly so that the major training focus can be on maintaining it through a series of fading steps.

Generalization

Without question, procedures that fail to produce generalized improvements in language behavior will be of limited value because it is impossible to teach a student an appropriate response to every verbal stimulus. Our procedures are designed to overcome this problem because they not only teach stimulus specific verbal responses, but also a communicative interactive strategy that increases the likelihood of appropriate responses to untrained or novel verbalizations. Accordingly, we emphasize testing for generalization after some successful training has occurred by asking a set of two or three untrained questions in the presence of cues that the student can label (see Figure 2). Testing is conducted periodically until generalization occurs.

Four procedural factors appear to facilitate the generalized language improvements found in our research. These factors are teaching students a) to visually attend to anyone who talks to them; b) to pause briefly following someone's verbal input; c) to attend to the physical and verbal cues in the interactive environment and verbalize on the basis of these cues; and d) that their previous nonfunctional verbalizations (e.g., echolalia) never result in reinforcement. Their acquisition of these behaviors appears to not only increase the likelihood that they will use the interactive environment to produce an appropriate response even when novel verbal input is presented, but also competes with any existing inappropriate verbal behavior. Thus, students are taught indirectly that we would not present verbal input unless (1) they had previously appropriately responded to it

and (2) a cue was present that corresponded to that appropriate verbalization.

Insert Figure 2 about here

Who Can Be Trained?

The procedures were initially developed to treat the pervasive immediate echolalia of students whose IQ's ranged from 21 to 40 and who had virtually no functional speech and limited repertoires of labeling responses. Echolalia is a "speech disorder" in which the individual repeats all or part of a temporally related sample verbalization rather than responding in an appropriate manner. Our goal was to develop procedures that reduced the likelihood of echolalic responses and "replaced" them with stimulus appropriate ones. The results have been gratifying. Our students have not only learned appropriate responses to as many as 30 different verbal stimuli (i.e., questions and statements) in about 4 hours of training, but also used these responses when novel persons presented the stimuli in different settings and used no prompts, feedback or reinforcement. These effects have been maintained several months after training. More importantly, the students' correct responding to untrained stimuli also improved and their echoing often decreased.

The procedures now have been used with a wide variety of speech problems, including delayed echolalia, perseverative or tangential speech, nonsensical or unrelated speech, and virtually no speech. Hence, any student who can either label a few objects or imitate a few simple words can benefit from training although those with extensive verbal labeling repertoires or who learn new labels quickly will show the most rapid progress.

Long-term Goal

Although the procedures are used first in structured and distraction-free training situations, the ultimate goal is to incorporate them into virtually all everyday verbal interactions with students because (a) no artificial or programmed props are needed, (b) cues are present in virtually every interactive situation, (c) students are now responsive to much less directive prompts, and (d) there are enough cues for functional language training to continue indefinitely.

Case Study

The following case study illustrates an initial step in the transition from the use of cues-pause point procedures in a structured situation to the achievement of the long term goal.

The Student and Setting

Rob, who is severely mentally handicapped (IQ 22) typically echoes when presented with unfamiliar questions or statements. Approximately six weeks prior to this study Rob was trained to respond to five stimulus (i.e., question) and response (i.e., object) pairs in a lounge setting. Generalization to five novel question and response pairs was assessed in a hallway setting. The cues-pause-point training procedures virtually eliminated his echolalia and produced near errorless responding in the trained setting (lounge). More importantly, his echolalia in the generalization setting (hallway) eventually decreased to 0% and correct responding reached 100%, which suggested that he had learned a higher level communicative strategy since he was correctly responding to questions solely by using the cues (objects) that were present.

The next step was to determine if Rob would use this newly learned strategy in a highly distracting environment. To do so, we assessed whether or not he could use cues to answer questions without receiving any

structured training. The assessment was conducted in a barren room and in an outdoor recreation area that contained trees, playground equipment, benches,and picnic tables. There were always a number of individuals on walks in the area as well as vehicular traffic around its borders.

Two sets of five question-response pairs that pertained to 10 targeted objects in the recreation area were developed. For example, trash can was the referrent for the question "Where do you throw things away?". Response specific feedback (e.g., "no" for an echo, "that's right" for a correct response, and "that's not right" for an incorrect response) was always provided as were positive consequences (edibles) for correct responses. A multiple baseline design across sets was employed.

The teacher first asked the questions in a barren room. Not unexpectedly, Rob gave no correct answers since no cues were present. Following this condition, the teacher asked the questions in the recreation area in the immediate presence (i.e., within two feet) of the objects whose labels represented the correct answers. Rob was positioned so that he faced the object before the question was asked. Rob's correct responding in the presence of the objects was very low even though he was capable of labeling over half of them. As a result, a third condition was conducted in which Rob was first trained to identify the objects in the two sets via a response identification training procedure and later asked the questions in the presence of the objects.

The response identification training consisted of the teacher (a) prompting Rob to stand two to three feet from the targeted object and face it; (b) verbally (i.e., "what's this?") and/or gesturally (i.e., pointing to or tapping the object) prompting him to identify the object; (c) providing the response specific feedback; (d) saying the correct label when he failed to do so and then prompting him (as above) to label correctly; and (e) giving

intermittent edible reinforcement for correct responses. Training continued until each object was correctly labeled during three consecutive trials when the teacher simply pointed to it. This training was used prior to each trial in each set.

We hoped that the use of response identification training would greatly increase Rob's performance since he had been responsive to this level of prompting six weeks earlier in the generalization setting (hallway). This was indeed the case since his correct responding increased to 80% on set one where it remained and also reached 80% when response identification training was later introduced in set two. His echolalia decreased over time in both sets. These results suggested that Rob had maintained his newly learned communicative strategy since the labeling training of relevant cues/objects in his environment was sufficient to enable him to use these labels to answer questions correctly.

Conclusion

An analysis of the success of parents and teachers in developing language with nonhandicapped young children suggests that the use of cues in the environment is of critical importance. Our research has supported this suggestion as does the case described here. Rob's case also demonstrated that it is possible to move from structured training to the use of less formal prompting procedures (i.e., response identification training alone) once the student has demonstrated via generalization assessments that he recognizes the saliency of cues in the environment and hence, has begun to develop a generalized communication strategy.

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Figure Captions

Figure 1:

(1) The Pause Prompt - The trainer signals quiet and gains attention while she speaks.

(2) Establishing Quiet - Whenever the student vocalizes during the pause prompt, the trainer says "No" or "Shh," moves her finger to her lips, and restates the verbalization.

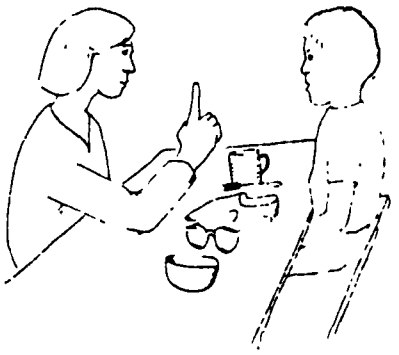
(3) The Point Prompt (Uncovered Cue) - Used after the trainer's verbal input to produce an appropriate response when the cue is visible.

(4) The Pause Prompt - After the student labels correctly, the trainer pause prompts, covers the cue, and restates her verbal input.

(5) The Point Prompt (Covered Cue) - Used after the trainer's verbal input to produce an appropriate response when the cue is no longer visible.

Figure 2:

Generalization Testing - Once structured training has been successful the trainer conducts a generalization test and observes whether the student displayed attending, pausing, and searching behaviors. The student has been taught to label all of the cues that are present. During the generalization test, the trainer simply presents the verbal input that relates to the cues with the expectation that the student may now respond correctly without any prompts.



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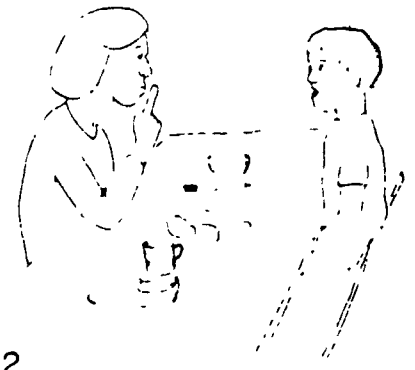

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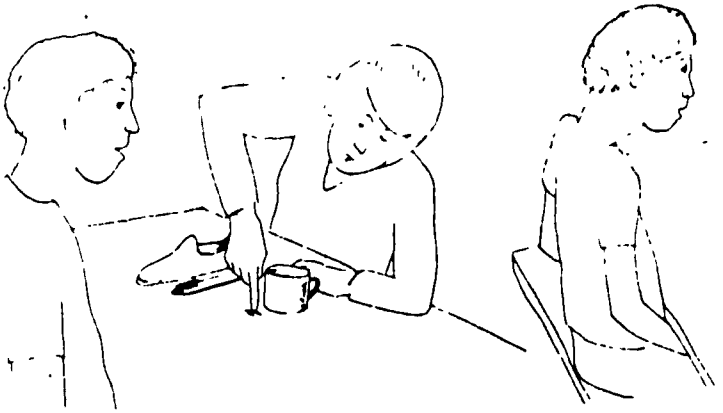

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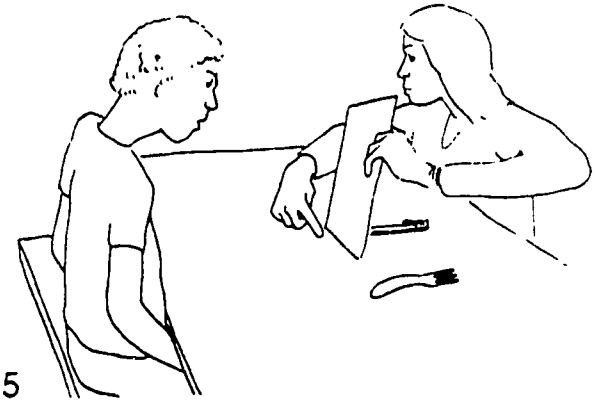

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