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Adolescents with Learning and Behavioral Handicaps as Behavior Modifiers

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ADOLESCENTS WITH LEARNING AND BEHAVIORAL HANDICAPS AS BEHAVIOR MODIFIERS

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DEDICATION

To the staff of Children's Workshop and all others who are dedicated to improving the quality of life for individuals with handicaps.

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There have been many people who have influenced my growth, education, career, and life. I cannot possibly acknowledge them all here, mainly for fear of forgetting someone.

But there are a few individuals whose influence has been most significant to my development. My parents who have taught me to keep all my options open. My friend, Lynne, who always believed in me and inspired me to achieve more. And most importantly, I wish to thank my husband, friend, confidant, and critic, Ken, who made this dissertation a reality.

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Chapter I

Introduction

Behavior modification is a body of strategies and tactics for changing behavior patterns that has arisen out of applied and basic laboratory research over the past 75 years (Kazdin, 1987; O'Leary & O'Leary, 1972). The research literature on applied behavioral techniques began to grow in the late 1950's and early 1960's, and, almost from the beginning, researchers taught behavioral techniques to individuals who were in charge of or otherwise close to the person whose behavior was felt to be in need of change (Allen, 1982; Gambrill, 1978; O'Leary & O'Leary, 1972). The past two decades have seen a continued increase in the training of such individuals in behavior modification skills, a practice that Milne (1986) has recently referred to as "giving away behavior modification."

Prominent in this literature are reports on the successful training of individuals who must manage serious behavior problems in their day-to-day activities, but who are not professional behavior therapists, per se. Teachers (Koegel, Russo, & Rincover, 1977), psychiatric nurses (Martin, Kehoe, Bird, Jensen, & Darbyshire, 1971), mental health workers (Panyan, Boozer, & Morris, 1970), and others in the human service professions (Watson, Gardner, & Sanders, 1971) have been taught to implement successful programs of behavior management. Because these individuals have received extensive training in human interaction as

part of their respective professional training programs, it seems reasonable that they would be able to acquire the necessary skills to implement a successful behavior management program. More exciting, therefore, are the reports of the successful training in behavior management skills of individuals who have not had prior training in sophisticated procedures of human interaction.

Parents (Brock & Coufal, 1985), grandparents (Fabry & Reid, 1978), and siblings of children with severe handicaps (Schreibman, O'Neill, Koegel, 1983) have been taught successfully to modify the behavior of the children with whom they live. These demonstrations have been particularly encouraging because of the assistance that loved ones can provide in teaching their relatives some of the skills essential to leading more normalized lifestyles. They are also encouraging because they indicate that behavior management skills can be acquired by persons who are in the most frequent contact with the individuals whose behavior is in need of change, thereby providing a potential for the greatest meliorative impact.

Some researchers have attempted to extend the domain of possible behavior modifiers to include individuals with handicaps, thereby extending the logic of providing behavioral skills to those who are closest to the ultimate trainees (Craighead & Mercatoris, 1972; Wagner & Sternlicht, 1975). One population of individuals with handicaps not previously trained as behavior modifiers includes adolescents with learning and behavioral handicaps. These adolescents generally lack a repertoire of appropriate social behaviors, are frequently aggressive, withdrawn, and/or immature, and, in addition, have general learning difficulties. They typically require a special living environment with

a strong behavior management component.

As students in the California educational system, these adolescents are typically labeled Severely Handicapped (SH). If they make contact with the mental health system, they are likely to receive the DSM-III diagnosis of Atypical Pervasive Developmental Disorder. However, characterizing them as adolescents with learning and behavioral handicaps is preferred for the present investigation. The term comes closer to identifying the actual behavior patterns of the adolescents than the educational system's or the psychiatric system's terms. Secondly, there is no uniformity across states in the labeling system for special education students; or do the districts in California use its nomenclature uniformly. Some students in special education get other labels, such as Learning Handicapped (LH). Thirdly, not all of the adolescents with learning and behavioral handicaps will make contact with the mental health system, and since psychiatrists differ in their choice of DSM-III categories, it is not clear how many of the adolescents with learning and behavioral problems would receive the Atypical Pervasive Developmental Disorder diagnosis.

Several humanitarian reasons recommend study of adolescents with learning and behavioral problems. They are especially refractory to standard procedures of formal education, so information concerning effective training procedures would be very helpful in designing educational programs for them. Secondly, even though these adolescents have serious handicaps, they have the potential to become parents. Thus, training them in behavior management skills, which constitutes at least part of appropriate parenting skill, seems desirable if they are expected to rear children who themselves will be capable of contributing

to our social system. Thirdly, with appropriate training in behavior modification these adolescents might be helped to become more employable in industries that rely on these skills, such as child care. Finally, the peers of these adolescents are likely also to display learning and behavioral handicaps because of the way in which these students are grouped in school and in group living situations. If they can be trained to use behavior management strategies effectively, they might be able to have a major impact in the acquisition of appropriate behavior patterns by their peers.

Another set of reasons for determining whether adolescents with learning and behavioral handicaps can be successful behavior modifiers is more theoretical, and pertains to the conceptualization of behavior modification as a complex set of social skills. As a behavior modifier (or mediator), a person must arrange the circumstances for a lesson, provide instructions, prompt desirable responses if necessary, ignore mild disruptive behaviors, provide feedback, close the lesson, and possibly record data. Performing this set of responses is made especially complicated for the mediator because each of the mediator's responses must be modulated by the relationship of the trainee's behaviors to task proficiency. It may be possible, therefore, that individuals with severe problems of social interaction can not acquire the full complement of behaviors essential to becoming successful mediators.

In fact, researchers have yet to demonstrate that individuals with handicaps can perform all aspects of the mediator's role. Those researchers who have demonstrated that individuals with mental handicaps can be trained in the role of mediators, have only asked these

individuals to perform a few behavior modification skills and the situations in which the mediators were tested were relatively circumscribed (Craighead & Mercatoris, 1973; Wagner & Sternlicht, 1975). Consequently, it remains uncertain that individuals with learning and behavioral handicaps can acquire the behaviors necessary to become mediators.

Other evidence on this issue comes from the research conducted on social skills training. Social skills training programs designed for adolescents and adults with learning and behavioral handicaps (Goldstein, Spratkin, Gershaw, & Klein, 1980; Hazel, Schumaker, Sherman, & Sheldon-Wildgen, 1985; Schumaker, Pederson, Hazel, & Meyen, 1983) provide direct training in some of the behaviors necessary to become a mediator. "How to ignore undesirable behaviors," "how to praise desirable behaviors," and "how to give instructions" are typical of the behaviors taught by these programs. Success with individuals who are learning and behaviorally handicapped has been reported for these programs (Hazel, Sherman, Schumaker, & Sheldon, 1985; Filipczak, Archer, & Freidman, 1980; Zigmond & Brownlee, 1980), so it seems clear that such individuals can acquire at least some of the subskills necessary to becoming a mediator. Whether adolescents with learning handicaps and severe social interactional problems can acquire the full set of behavior management skills and whether they can implement them consistently with their students' developing proficiencies were two of the questions addressed in this investigation.

Finally, it has been noted widely (Hazel et al., 1985) that skills acquired by individuals with learning handicaps do not readily generalize to nontraining situations. However, if training as a mediator is to be at all meaningful, the skills must display some degree of generalizability. Consequently, questions concerning the generalizability of mediator skills were also addressed.

Statement of the Problem

The principal question investigated was whether adolescents with learning and behavioral handicaps could be taught how to apply basic behavior modification principles in teaching preschoolers two different skills. The following, more specific research questions were investigated: (a) can adolescents with learning and behavioral handicaps be taught to use behavior modification procedures to teach preschoolers with learning and behavioral handicaps a simple skill; (b) if so, can these adolescent mediators generalize such procedures to teach the same child a different skill without benefit of further training; and (c) can they also generalize behavior modification procedures to teach one of their peers to perform a skill without further training in behavior modification.

Statement of Hypothesis

The following hypotheses were tested in the present study:

Hypothesis I - Adolescents with learning and behavioral handicaps can be taught to use behavior modification procedures to teach a simple skill to preschoolers with learning and behavioral handicaps.

Hypothesis II - Adolescents with learning and behavioral handicaps can generalize behavior modification procedures to teach the same preschooler a different skill without benefit of further training in behavior modification.

Hypothesis III - Adolescents with learning and behavioral handicaps can generalize behavior modification procedures to teach one of their peers to perform a skill without benefit of further training in behavior modification.

Relevance to Leadership

This study provides information allowing community leaders to utilize human resources to the best advantage of all participants. Appropriately trained, individuals with learning and behavioral handicaps may lead independent or semi-independent lives, requiring less restrictive and less costly supportive environments. Their own social skills may also greatly improve. They may be able to act as paraprofessionals, assistant teachers, child care workers or mental health workers. They may also act effectively in their role as parents of their own children and parent surrogates of the children of their relatives and friends. It is also possible that individuals with severe learning and behavioral handicaps may, in acquiring behavior management skills, be more effective supporters of the pro-social behaviors of their associates.

Definition of Terms

Behavior modification - Behavior modification is the systematic manipulation of environmental events antecedent to and/or consequent of behavior(s) that are to be changed.

Ignoring - Ignoring is a brief withdrawal of verbal and physical attention given to a person.

Mediator - A mediator is a person who acts as a behavior modifier under the direction of a professional supervisor (Tharp & Wetzel, 1969; Milne, 1986).

Modeling - Modeling establishes new behaviors by having the learner observe someone else perform the behaviors.

Persons with learning and behavioral handicaps - These individuals lack a repertoire of appropriate social behaviors in addition to having some general learning difficulties. They typically require special education that includes a social skills training program and a curriculum that focuses on functional independent living skills.

Reinforcement - Reinforcement is a response consequence that strengthens the behavior on which it is contingent.

Trainee - A trainee is a person in the natural environment whose behavior is being modified by a mediator (Milne, 1986).

Prompt - A prompt is a stimulus that is added to the antecedent stimulus, thereby strengthening the probability of the required response.

Corrective prompt - A corrective prompt is giving a speech cue.

Instructional prompt - An instructional prompt is a clear, specific direction for a response (e.g., "Point to your cheek.").

Assumptions of the Study

1. It is assumed that the subjects (i.e., mediators and trainees) chosen are reflective of the "learning and behaviorally handicapped" population more generally.

2. It is assumed that the skills taught the trainee by the mediator are appropriate and in accordance with the trainee's Individualized Educational Program (IEP).

Limitations of the Study

1. The results are limited to adolescents classified as learning and behaviorally handicapped until other research suggests generalizability.

2. It is a short term study which consequently does not allow for the observation of any effect(s) due to the treatment which occurs over time.

3. The training is limited to a school setting so generalization to the home environment and community more generally will not be known.

4. The supervisor was an established positively reinforcing individual and has high status with the students at their school. The supervisor, who is also the school principal, spends a large part of each day in positive interactions with the students and is rarely looked on by the students as the disciplinarian. Therefore, initial motivation on the part of the students to work with the supervisor was not an issue.

Chapter II

Review of Literature

Applied behavior analysis, or behavior modification, is presumed to have emerged in the 1950's and 1960's as a result of a general dissatisfaction with the traditional approaches in psychiatry and clinical psychology in the areas of diagnosis, assessment, and treatment (Kazdin, 1985). According to Miller (1980), applied behavior analysis is "a behavioral science that develops and experimentally analyzes practical procedures for producing changes in socially significant behaviors" (p. 2). As such, behavior analysis has three important attributes. First, it focuses on what people actually do and/or say, their overt behavior(s) rather than what they are thinking or feeling. Second, it analyzes and attempts to alter the environmental influences on an individual's behavior. Third, it employs single subject designs to determine which combinations of environmental factors are most effective in changing behavior.

Watson and Rayner (1920) published what is considered the first study concerning how a child could acquire fearful behavior through conditioning. A healthy, eleven-month-old infant was taught a fearful response by being presented with a loud noise each time he touched a rat. This fear also generalized to other furry objects. Jones (1924) expanded the Watson and Rayner work to the elimination of fears. He

demonstrated not only the acquisition of a normal fear but also the deconditioning of that fear. Despite the success of these early studies in providing demonstrations of how fears might be acquired and how they might be treated, behaviorally-oriented treatment procedures gained little respectability until the late 1950's and 1960's. Practitioners saw conditioning therapy as synonymous with "rat therapy," probably because the procedures were adopted from basic learning research which used laboratory rats as subjects. Most clinicians had difficulty understanding how it could be applied to solve problems of human concern. Moreover, treatment based on psychoanalytic concepts was ascendent.

In his "Science and Human Behavior," B.F. Skinner (1953) helped the field of behavior analysis gain prominence by critiquing psychoanalytic procedures and reconceptualizing learning principles with implications for many human problems. Subsequent studies, primarily with children as subjects, revealed that behavior analysis could be applied to solve problems of genuine human concern. Azrin and Lindsley (1956) taught children cooperative behavior. Gewirtz and Baer (1958) showed that an adult's reinforcing power depended on how deprived or satiated a child was with adult attention. Williams (1959) demonstrated that tantrums of a 21-month-old child could be eliminated merely by ignoring them. Similarly, Harris, Johnston, Kelley and Wolf (1964) used ignoring and reinforcement to decrease a 3 1/2-year-old child's inappropriate crawling and to increase her standing and walking.

A significant aspect of the studies conducted by Williams (1959) and by Harris et al, (1964) is that the researchers did not actually carry out the intervention procedures. The child's parents were

Williams' mediators and the teachers at the University of Washington's Ranier preschool were the mediators for Harris et al. Harris, Wolf and their associates published numerous pioneering studies of applied behavior analysis by the teachers at the Ranier preschool (O'Leary & O'Leary, 1972; Allen, 1982), providing convincing evidence that teachers could be trained as effective behavior modification mediators.

Two other major research projects pointing to the effectiveness of individuals as mediators were conducted by Ayllon and Azrin (1968) and by Lovaas (1967). The "token economy" program of Ayllon and Azrin used positive reinforcement to improve the behaviors of institutionalized psychotic patients. One advantage of their program was that it could be implemented by personnel who were not trained as psychologists, such as nurses, aides, correctional officers, and the friends and family members of the individuals receiving the service. Lovaas and his colleagues showed that by applying learning procedures to autistic children, their self-destructive behavior could be eliminated and they could acquire important skills, such as speech, self-help, reading, writing and arithmetic. Lovaas also demonstrated that, not only could the behavior of autistic children be changed, but that the behavioral procedures could be taught to parents and university undergraduates who in turn could administer the program to the children.

The development of behavior analysis has been largely responsible for the emergence of non-professionals as effective behavior change agents. Behavior modification allows for simple, readily acquired and clinically effective techniques to be used in a wide variety of settings and with important social issues. Moreover, behavior modification techniques apparently can be taught to non-professionals in relatively

short training periods (Milne, 1986).

Research on Non-Professionals as Mediators of Behavior Modification

Since the early research efforts of Harris and Wolf, Ayllon and Azrin, and Lovaas, several non-professional groups of individuals have been trained in the behavioral techniques necessary to teach persons with mental handicaps. The strategy has been to teach behavioral skills to individuals who are closest to those who need to be trained. For example, the following two studies concentrated on the available adults as mediators.

Adubato, Adams, and Budd (1981) taught a parent to train her spouse in the child management techniques (i.e., the use of instructions, prompts and reinforcement) necessary to work more effectively with their son who was mentally handicapped. Two multiple baseline designs were used. One assessed the effect of supervisor training across two sets of parent responses. This design enabled the researchers to analyze the function of clinic training on the mother's use of child management skills. The other design assessed two sets of their child's responses in order to evaluate the mother's training of the father. The parent training results showed increases in both the rates and stability of the target behaviors (dressing, eating, and toy use) whether training was provided by a therapist (for the mother) or by a spouse (for the father). Also both parents showed some skill generalization to the untrained activities (eating and toy use).

Fabry and Reid (1978), trained five foster grandparents in giving instructions, prompting, modeling and reinforcement in order to teach five children with severe handicaps head and neck skills, reaching

skills, and manipulating skills. A combination multiple baseline design and reversal design was used across three subcategories of training behaviors. Grandparents' frequency of training three skill areas increased as the specific training (i.e., teacher instructions, modeling, praise, and prompts) was implemented in the multiple baseline format.

Other investigators have attempted to teach siblings or peers how to be successful mediators in the training of children with handicaps. For instance, Weinrott (1974) trained eighteen sibling-mediators in the behavioral skills of praising, ignoring, cueing, prompting, fading, and pacing. These mediators subsequently used these skills to modify the self-help, academic, and social skills of "handicapped" trainees. The mediators also learned to analyze behavior according to the A-B-C Model (Antecedents - Behavior - Consequences). In addition to these skills, older siblings were also taught skills involving schedules of reinforcement, backward chaining, and data collection. Unfortunately, subjective impressions and anecdotal information were the only evidence used to evaluate the sibling training program, and Weinrott's results were reported in vague terms. For instance, the mediators were described as having "improved the 'quality' of their interactions with the retardate" (p. 372). "Quality" had two dimensions: a tendency to focus attention upon adaptive behaviors, and a shift in the direction of teaching rather than custodial care. The results were also reported not to have generalized from the training setting to other settings (i.e., home or school).

In a similar vein, Blew, Schwartz and Luce (1985) taught two "normal" peers to teach autistic children functional community skills using commands, prompts, modeling and reinforcements. A multiple baseline design across settings was used to analyze the effects of the training with both children. The results demonstrated that during baseline and modeling conditions no functional community skills were acquired. However, direct instruction of the trainee by the mediator resulted in learning and maintenance of functional community skills.

Two of the studies that have successfully demonstrated that siblings or peers can be trained to be effective behavior modifiers are especially noteworthy for their thoroughness. Gladstone and Sherman (1975) instructed seven "nonhandicapped" high school students in behavior modification techniques. Training of these mediators consisted of videotaped modeling, rehearsal, corrective feedback and praise. Following this behavioral training, the mediators were asked to teach one child with profound mental handicaps to follow the instruction "bring ball." When the mediators were successful in teaching the child this skill, they were to then begin teaching a second child with profound handicaps to follow the instructions "sit down" and "come here." With this second child the mediators were given instructions describing what to teach the child and the desired topography of the target responses was demonstrated, but the mediators were not told how to go about the instruction and they were given no corrective feedback or praise during the training sessions. This was done to examine a special aspect of generalization (Stokes & Baer, 1977): namely, whether a person trained to apply specific techniques to teach one child a particular response could, without further training, apply the same

techniques to teach a different child a different response.

Gladstone and Sherman (1975) used a multiple baseline design across mediators to validate the effectiveness of their training program. The following mediator behaviors were recorded each session for both mediators: (a) verbal instructions, (b) reinforcement, (c) physical prompts, and (d) use of ignoring. Correct responses and both inappropriate and disruptive behaviors were recorded for each trainee. The results showed that consistent and substantial changes occurred in only two of the mediators' behaviors: contingent reinforcement and verbal instructions.

Schreibman et al. (1983) instructed three normal siblings of autistic children in the use of behavior modification principles. Their training appears to have been even more extensive than that provided by Gladstone and Sherman, and consisted of (a) viewing a videotape which discussed reinforcement, shaping, chaining, and discrete trial techniques, (b) discussing with the supervisor how behavior modification procedures could be applied to everyday situations involving problem behaviors, and (c) being given both corrective and positive feedback while they actually worked with their autistic brother or sister.

A multiple baseline design across sibling pairs was used by Schreibman et al. (1983) to assess the acquisition and generalization of behavior modification skills by the siblings. The primary measures for the siblings were the correct use of five behavioral procedures: (a) use of instruction and question, (b) use of prompts, (c) use of shaping, (d) use of consequences, and (e) use of discrete trials. Data were collected during each baseline and training session. Correct responding by the autistic children were also recorded. Results of this study

showed that all three siblings were successful in learning the behavior modification procedures and increasing their autistic sibling's skills. Schreibman et al. also conducted an informal social validation of their mediator training. The parents were asked for examples of comments the siblings made about their autistic brother or sister, both before and after training. The parents felt the training produced a positive shift in the siblings' verbalizations about their autistic sibling.

Adolescents with Learning and Behavioral Handicaps as Mediators

Some researchers have attempted to extend the domain of possible mediators to individuals with handicaps, extending the logic of providing behavioral skills to those who are closest to the ultimate trainees (Craighead & Mercatoris, 1972; Wagner & Sternlicht, 1975). As will be discussed in greater detail below, their attempts have been met with partial success. These partial successes along with the successful results of such researchers as Gladstone and Sherman (1975) and Schreibman et al. (1983) gave confidence in pursing this approach with one "handicapped" population not previously studied.

This group includes those adolescents who lack a repertoire of appropriate social behaviors, are frequently aggressive, withdrawn and/or immature and, in addition, have general learning difficulties. They typically require special education that includes a social skills training program, and they may also require a special living environment with a strong behavior management component. Several humanitarian reasons recommend study of this population. These students are especially refractory to standard procedures of formal education. They are often excluded from school programs, sometimes with the rationale

that their teachers are unable to provide appropriate instruction for them. Many times their exclusion involves a "blaming the victim" mentality in which the students are seen as "unmotivated" concerning schooling. Consequently, designing a program to motivate and instruct these students seems necessary. Secondly, even though they have serious handicaps, these students nevertheless have the potential to become parents. Thus, training them in behavior management skills, which constitutes at least part of appropriate parenting skills, seems desirable if they are to be expected to rear children who themselves will be capable of contributing to our social system. A third reason is that, with appropriate training in behavior modification, these individuals might be helped to become more employable in industries that rely on these skills, such as child care.

Another reason for determining whether adolescents with learning and behavioral handicaps can be successful mediators pertains to the conceptualization of behavior modification as a complex set of social skills. The mediator cannot merely interact with the trainee out of momentary "impulse." Rather, the mediator must modulate his/her behavior in keeping with the learning trajectory of the trainee. Mediators must arrange the situation so that the trainee's attention to the task is optimized. Off-task behavior must be systematically ignored. Instructional and other prompts must be given. Responses of the trainee must be evaluated, and correct responses must be praised and otherwise reinforced. Additionally, these mediator activities must be timed appropriately and they must be sequenced appropriately for training to be successful. The complexity of the mediator's role is problematic because adolescents with learning and behavior problems are

noted for their social skill deficiencies (Schumaker et al., 1983). "Impulsive" behaving is frequently ascribed to them. So, it is possible that these social skill deficits would make it difficult if not impossible for such adolescents to acquire the sophistication necessary to be a mediator. If, indeed, they cannot acquire the full complement of skills, it would be especially important to learn whether it was a particular skill, the timing of its display, or the entire instructional sequence that proved too difficult for these adolescents.

Although adolescents with learning and behavior problems often have serious social skill deficits, there is evidence that at least some of these problems can be remediated by social skills training (Perry & Cerreto, 1977; Goldstein et al., 1980; Andrasik & Matson, 1985). For example, Perry & Cerreto (1977) randomly assigned thirty state hospital residents with mental handicaps to each of three 10-member social skills treatment groups, a structured learning group, a discussion group, and a no-treatment group. Structured learning procedures involved videotaped presentation of a vignette to a small group of learners during which appropriate social behaviors were modeled. The target behaviors were mealtime behavior, and informal social behaviors with peers that were appropriate for a living room setting. The results of observations at mealtime showed that eight of the individuals in the structured learning group changed in a positive direction; five of ten changed positively in the discussion group; and only two of the no-treatment group had positive change scores. The results of a structured role play test showed that nine of ten members in the structured learning and the discussion groups changed positively, while only four of the ten changed positively in the no-treatment group. The results of counselor ratings

showed no significant differences. In summary, these hospitalized individuals did show improvement in social skills with training, and the structured learning approach was more effective in remediating the mealtime behaviors and informal social behaviors.

There are several successful training programs currently available that are designed to teach directly one or more of the social skills involved in being a mediator. For example, the "Asset Program" (Hazel et al., 1981) teaches "how to give positive feedback." "Skillstreaming the Adolescent" (Goldstein et al., 1980) teaches "how to give instructions." The "Walker Social Skills Curriculum" (Walker et al., 1983) teaches "complimenting" and "ignoring." These programs have reported success; however, notice that they only addresss a limited number of the skills necessary to become a behavior modifier. Furthermore, none of the currently available social skills programs teaches how to perform an entire instructional sequence. Consequently, this investigation was conducted, in part, to determine whether adolesents with learning and behavioral handicaps, could acquire the full set of behavior management skills and then implement them consistently with their trainees' developing proficiencies.

Extending the Role of Persons with Learning and Behavioral Handicaps as Mediators

In their review of the role of individuals with mental handicaps as behavior modifiers, Craighead and Mercatoris (1973) concluded that it has been, at most, limited. Four examples of the studies reviewed by these authors illustrate the flavor of their contention.

Terrell and Stevenson (1965) showed that twenty-six children with mental handicaps could serve as reinforcing agents for other children with mental handicaps using a group design. The mediator child was instructed to read a statement of praise when a window lit up signaling that the trainee had successfully dropped a marble into a slot of the apparatus. The data showed that the mediator's statements had the effect of increasing successful marble dropping. However, the setting in which the mediator was taught how to reinforce was highly structured, and no information was presented to indicate that the mediator was able to reinforce the trainee's behavior in the absence of the structure. Nor were these mediators required to perform any behavior management skills other than praising correct responses.

Wiesen and Watson (1967) attempted to teach six children with mental handicaps to reinforce the social interactions of trainees with mental handicaps using a case study model. The mediators were taught to give an M & M to targeted trainee children when the trainees interacted appropriately with the mediators in a free play setting. The results showed a dramatic decrease in the rate of inappropriate social interaction. However, this result cannot be attributed unequivocally to the delivery of M & M's, because concurrently with these mediator activities, the staff members administered aversive consequences contingent upon inappropriate interactions. Consequently, the Wiesen and Watson investigation fails to tell whether children with mental handicaps can even act in the limited role of reinforcers. Similar difficulties exist with a series of three case studies reported by Kazdin (1971), who reported on the successful training of two clients with handicaps to administer reinforcement to other clients.

Unfortunately, Kazdin's report provides only a brief description of his procedures and he presented no data. Successful or not, Kazdin's clients played only a limited role.

In addition to their review of prior research, Craighead and Mercatoris (1973) also reported on their own study of four women with mild to moderate handicaps, who were trained to observe and record behaviors of other persons with mental handicaps. The reliability achieved by these observers ranged from 74% to 100%, indicating that they became adequate observers. Whether they could have performed any of the other behavior management skills, however, was not evaluated.

Since the Craighead and Mercatoris review, only a single study has been reported on the use of individuals with mental handicaps as mediators (see Andrasik & Matson, 1985, for a recent review concerning social skills training for the "mentally retarded"). Wagner and Sternlicht (1975) trained ten adolescents with mental handicaps to teach other children with mental handicaps both dressing and eating skills using a group design. The authors reported success in terms of the following measures: (a) the trainees made positive gains in their eating and dressing skills, and (b) the mediators showed a decrease in maladaptive behaviors.

Missing from the Wagner and Sternlicht (1975) report are observational data concerning the mediators' teaching practices. Consequently, even though the trainees learned new behaviors when they worked with the mediators it cannot be determined what, if any, behavior management procedures produced these effects. Two other problems with the Wagner and Sternlicht procedure make their results dubious. First, the two professional supervisors remained in the room with the mediators

at all times, "providing instruction and support." The researchers report that this was mainly to prevent the mediators from "inadvertently reinforcing negative behavior exhibited by their trainees" (p. 676). They state that independence was "encouraged," but they do not report just how independently the mediators were able to function. Also, the less proficient, less confident mediators were assisted by mediators who the researchers felt were able to function "independently in their roles." These concerns make it difficult to determine if the mediators (or how many of the mediators) could teach, and, if so, by what means.

What Craighead and Mercatoris (1973) and Wagner and Sternlicht (1975) did not address is what constitutes an "extensive role" as a mediator. Put another way, it is easy to agree with them that individuals with mental handicaps have played limited roles as behavior modifiers, because the authors who have been careful to describe just what their mediators did had them perform only a single task, such as administer a reinforcer. As discussed above, however, behavior modification is a very complex social skill, and merely performing one aspect of it necessarily constitutes playing a limited role. On the other hand, providing a characterization of the complexity of behavior modification against which to determine how extensive a role mediators can play is not an easy assignment. Two methods appear to be available for this purpose.

The most common method for determining the skills that mediators are to use involves constructing a list of the intervention strategies that behavior modifiers typically use. Milne's (1986) recent review of the training of parents, teachers, and nurses as mediators reveals that this method has been used exclusively in those research areas. The

method is illustrated excellently in the recent study by Schreibman et al. (1983) discussed above. To reiterate, normal siblings of autistic children were taught to use the following behavior modification techniques: (a) instructions and questions, (b) prompting, (c) shaping, and (d) response consequences. The specific behaviors taught as prompts, for example, were not given in the report. However, the following criteria were reported for the performance of prompts: (a) "The prompt must be effective; that is, it must evoke a correct response," and (b) "The prompt should be faded (as the teaching situation advances)." These are generally-accepted characteristics of prompts (Gambrill, 1978), and the raters reliably coded whether or not the mediators used prompts given these criteria. However, a greater specification of actual mediator behaviors is possible, and a second way to characterize the behavior modification skills a mediator is to use seems to lend itself to greater specification.

The second method for determining skills mediators are to use involves a model of how the mediator should teach the task. This strategy differs from the more common one as used by Schreibman et al. (1983) in which mediators are taught behavioral strategies, but not necessarily the optimal way to teach a particular skill or type of skill. Potentially, at least, a model of how to teach the skill enables greater specification of mediator behaviors than the "list" method because it specifies when and under what conditions of the task that mediator behaviors should occur. It also provides definition that cannot be provided by the "list" method: the model specifies the sequence in which mediator behaviors should occur. As such, a model of how the skill should be taught informs the training of mediators and it

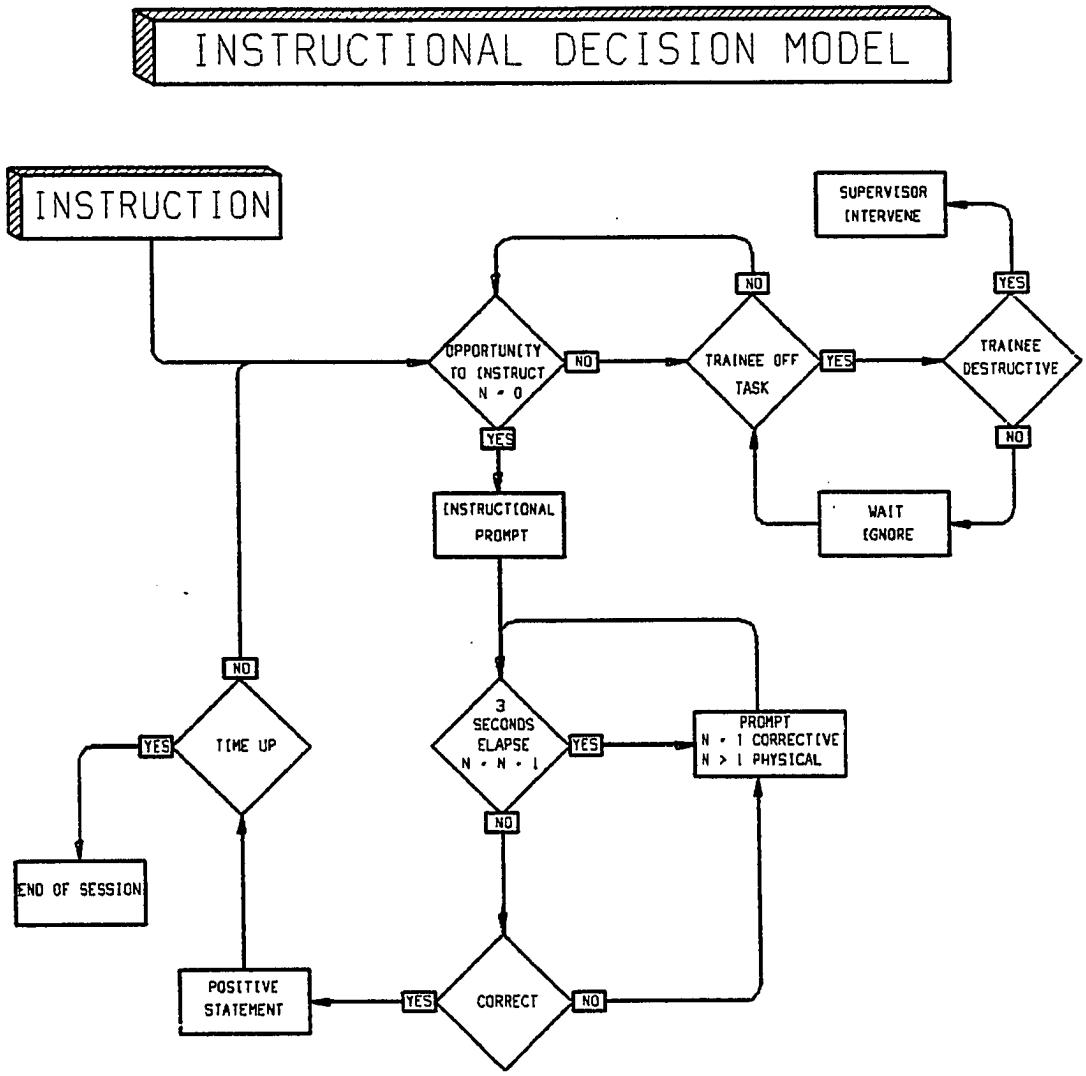
guides the analysis of their teaching activities. Such a model was developed by Whalen and Henker (1971) in their work on the training of inpatients with mental handicaps, but it was not used by them to evaluate the results of their training.

The present investigation motivated the development of a similar, but still primitive model that is presented in Figure 1. The model is clearly not appropriate to the teaching of all skills, but it seems applicable to the teaching of the skills studied in this investigation, including a classification skill in which the trainee placed small cards into bins according to their conceptual category, and an identification skill in which the trainee pointed to his/her own body parts as they were named. In order to accommodate the teaching of both skills, the model is presented in a more general form than it might be if it was designed to apply to the teaching of only one of the skills.

Roughly speaking, then, the model starts with an occasion for instruction. That is, there exists a trainee who has a skill to be learned. This determined, the mediator must first evaluate if there is an "opportunity to instruct," meaning that the materials are ready and the trainee is both attentive and able to perform the necessary, task-related responses. If the answer to this evaluation is "yes," the mediator is to give an "instructional prompt" within two seconds. If this prompt is successful, that is, if the trainee performs the correct response, the mediator is to praise the trainee for the response within two seconds. If there is time remaining in the session, the mediator starts the instructional cycle once more with another instructional prompt. This might be called the "successful trial loop."

The "corrective prompt loop" also begins with an instructional

Figure 1. Instructional Model. See text for explanation.



prompt. However, if the trainee makes a task-relevant response that is incorrect, or if, after three seconds, the trainee has still not attempted to respond, the mediator is to give the trainee a "corrective prompt," which is to be a statement that is not to include a reiteration of the instructional prompt. If the trainee's response is correct, the model indicates that the trial should end in the same manner as the "successful trial loop." The "physical prompt loop" is initiated if, after a corrective prompt, the trainee performs a response that is still incorrect, or three seconds elapses without a response. The physical prompt is designed to ensure a correct response by the trainee. Following the correct answer, a positive statement is to be administered by the mediator just as in the "successful trial loop" and in the "corrective prompt loop." At this point if time is up, the session is ended; if not, another instructional prompt is to be given.

An "ignore loop" is entered if the answer is "no" to the "opportunity to instruct," indicating that the trainee is "off task." Ignoring is to continue so long as the trainee remains off task but is not destructive. The supervisor is to intervene if the trainee becomes destructive or assaultive. When the "ignore loop" is exited, instruction proceeds according to whichever instructional loop is appropriate. Finally, it should be noted that placement of the "ignore loop" in the model as presented in Figure 1 may be misleading. Actually, the mediator must be trained to monitor continuously whether the trainee is attentive.

One of the merits of this instructional model is that it allows for a definition of mediator response opportunities. It enables raters to determine, for example, when a "corrective prompt" should occur.

Consequently, corrective prompts that actually occur can be evaluated in terms of occasions when prompts should have occurred and occasions when prompts should not have occurred. This has the effect of freeing the study of mediator prompted from the trainee's subsequent behaviors, which are an important criterion for scoring prompts in the Schreibman et al. (1983) study. Similarly, because the model specifies how an instruction sequence should be performed, an analysis of the mediator's ability can be made independently of the rate at which the trainee acquires the skill. Previous researchers have totally neglected the study of entire instructional sequences, which seems to be the one aspect of mediator activities that is at the heart of the view that behavior modification is a complex social skill.

Generalization of Behavior Modification Skills

Stokes and Baer (1977) define generalization as the occurrence of relevant behavior under different, nontraining conditions. At issue, in other words, is whether the behavior occurs across different subjects, different settings, different people, different behaviors, and/or different times. Generalization is said to have occurred only if there has been no extratraining manipulations or extratraining changes. However, if extratraining manipulations are necessary, they must clearly be less than that of the direct intervention for generalization to have said to have occurred.

Several researchers have been interested in determining whether or not the behavior modification procedures previously taught to mediators would generalize beyond the training conditions. Three studies have demonstrated generalization across persons and behaviors, although none

of these has involved handicapped individuals as mediators. For example, Gladstone and Sherman (1975) demonstrated that "non-handicapped" high school students had established a repertoire of behavioral techniques sufficiently general so that, without benefit of further training, they could teach a second child with mental handicaps to follow different instructions. Koegel, Glahn, and Nieminen (1978) showed that when parents were taught the use of general behavior modification procedures they were able to teach new children and new target behaviors. Koegel et al. (1977) demonstrated that after training in behavior modification, teachers correctly used these procedures to train new target behaviors as well as new children.

Researchers interested in studying individuals with mental handicaps as mediators have failed to evaluate the generalizability (Hazel et al., 1985; Schumaker & Ellis, 1982; Deshler, Alley, Warner & Schumaker, 1981), the present investigation was designed to evaluate the extent to which the behavior modification skills acquired by the mediators generalized to the training of new skills, and to the training of another trainee.

Design Issues

Most of the research on the training of mediators has relied on single-subject research designs (Herson & Barlow, 1976; Johnson & Pennypacker, 1980), most notably the multiple-baseline design. Multiple-baseline designs involve systematically applying an independent variable first to one target, then to another, and another, and so on to determine whether there are changes in the target that are correlated with the time at which the independent variable was applied. Targets

may be different responses of a single person (cf. Adubato et al., 1981), different contexts in which the behavior might occur (Weinrott, 1974), or different persons (Schreibman et al., 1983). In each case, the design allows the experimenter to rule out the role of extraneous variables that may be correlated in time with the application of the independent variable (Herson & Barlow, 1976; Johnson & Pennypacker, 1980).

The multiple-baseline design is the single-subjects design of choice in research on the training of mediators because the effect of their training is anticipated to be relatively permanent. That is, because there is not likely to be a reversability of mediator behaviors in the absence of training once training is given, a reversal (or ABAB) design is not suitable.

Summary

Research on training mediators in behavior modification principles still remains limited. There are but a handful of studies involving the training of individuals with mental handicaps as mediators. As previously argued, adolescents with learning and behavioral handicaps are an untapped resource that needs to be investigated. Successful results of the research conducted in this area so far suggested pursuing training adolescents with mental handicaps in behavior modification principles. This training will be especially interesting if it demonstrates that persons with mental handicaps can play an extended role as behavior modifiers. Finally, it was seen as essential to evaluate the generalizability of behavioral skills actually acquired by the mediators.

Chapter III

Research Design and Methodology

Subjects

Mediators. Three adolescents were recruited from the 24 students attending a nonpublic, special education school that contracts with its local school districts to provide educational programs and related services pursuant to Public Law 94:142. In the California educational system these students would typically although not necessarily be given Severely Handicapped (SH) labels. When these students make contact with the mental health system, their DSM-III diagnosis would most likely be Atypical Pervasive Development Disorder.

The adolescents in attendance at this school can be described as having the following general characteristics: (a) They do not, at first glance, appear to be persons who are typically thought of as being handicapped. One must observe their interactions with others or actually interact with them to recognize their intellectual limitations and/or their interactional excesses and deficits. (b) They are substantially below their age-mates in academic skills, in general knowledge, and in their facility with the semantic and pragmatic aspects of the language. (c) They do tend to follow simple directions and very few are noncompliant as defined by Englemann and Colvin (1984). They are also responsive to direct instruction (Becker, 1986). (d) They have difficulty obtaining and maintaining friendships. They tend to

participate in transient alliances for relatively momentary kinds of issues (e.g., one student may have an audio tape that another student desires to hear). Rarely, if ever, do they compliment other people or make a positive self-statement. As such, they are considered to have a low self-esteem. (e) They do tend to be somewhat streetwise; however, they have a tendency to become followers or victims. (f) These adolescents are known to have been aggressive to authority figures and to their peers, and they display an especially high frequency of inappropriate verbalizations, threats and other anti-social behaviors. (g) Finally, these adolesents also lack persistence, tending to give up on a task at early signs of difficulty.

The three adolescents chosen for training as mediators were among those students who had shown an interest in working with younger children, had a record of attendance that suggested they could be worked with reliably, and presented no serious problems of noncompliance.

Mediator #1 was a 15.6 year-old black female who was functioning academically at approximately the third-grade level. She had a history of aggressive behaviors, so that, in the four years prior to this study, Mediator #1 had attended several schools in her school district. She continuously received referrals and suspensions for aggressive behaviors towards her peers and teachers, and, as a result, she had come to be enrolled in the nonpublic school. This occurred approximately six months prior to the present investigation.

Mediator #2 was a 16.3 year-old white male who was functioning academically at approximately the third- to fourth-grade level, and who had a history of aggressive behaviors. Mediator #2 had been in and out of 24-hour school/hospital settings which serve children and adolescents

with severe learning and behavioral handicaps. He was last discharged from a 24-hour school/hospital setting approximately three months before the present study and had been attending the nonpublic school since that time.

Mediator #3 was a 16.5 year-old Spanish/English bilingual male who was functioning academically at approximately the first to second grade level. Mediator #3 had a history of immature, impulsive, aggressive behaviors and he displayed inappropriate sexual behaviors. He also had severe communication difficulties. He had been attending the nonpublic school for approximately one year prior to this study.

Trainees. Three preschoolers with learning and behavioral handicaps were selected from a possible eleven students attending the same nonpublic school as the adolescents. These preschoolers were selected to work with the mediators because the tasks were appropriate for their developmental levels and they attended school regularly. These students displayed a variety of developmental delays, especially in attention to task and in language skills. They also had several social-interactional problems, including the tendency to tantrum when their requests were not met.

Trainee #1 was a 6.7 year-old girl who had significant delays in communication and in gross-motor and fine-motor skills. She was functioning at approximately the three- to four-year-old level in most skills, and at approximately the two-year-old level in communication. Trainee #1 displayed noncompliant, resistive behaviors (e.g., refusing to do her work, leaving chair and work area, and whining), especially with new instructors. She had been attending the nonpublic school for 13 months prior to the study. Trainee #1 was assigned to Mediator #1.

Trainee #2 was a 4.11 year-old boy who was functioning at the three-year-old level in most areas. His primary language was Spanish, but his severe language delays occurred both in Spanish and English. Trainee #2 was easily distracted and had difficulty getting along with his peers. He often hit his classmates and/or grabbed things away from them. Trainee #2 had been attending the nonpublic school for approximately four months prior to this study. Trainee #2 was assigned to Mediator #2.

Trainee #3 was a 6.5 year-old boy who was functioning at about the three- to four-year-old level. He had particular difficulty in language development and was also highly distractible. Trainee #3 engaged in numerous inappropriate activities as a way of getting attention from his peers and teachers (e.g., pounding on the table, writing on the walls, hitting, and throwing himself or materials on the floor). Trainee #3 was assigned to Mediator #3.

Three adolescent peers were chosen who had not previously participated in the social skills game that was selected to evaluate peer generalization. Mediator #1 was assigned to Peer #1, Mediator #2 was assigned to Peer #2, and Mediator #3 was assigned to Peer #3.

Supervisor. The supervisor of training was the investigator. She had previous experience with children who have handicaps both as a special education teacher and as a school counselor. She was the Program Director of the nonpublic school where the study took place, and, as such, was responsible for supervising all direct-service staff members and integrating professional services for each student's Individualized Educational Plan. Although she frequently interacted

with the students at the school, her direct-service activities were minimal.

Instrumentation

Test of verbal knowledge. A behavior modification test (see Appendix A) was designed by the researcher to be administered to the mediators both prior to and following their behavior modification training. The test consisted of fourteen hypothetical instructional situations, each of which was followed by a four-alternative multiple-choice question. The test was designed to evaluate the verbal knowledge that the mediators would acquire during their training about the following behavior modification skills: verbal prompts, physical prompts, reinforcement and ignoring. The instrument was field tested with the staff at the nonpublic school, with applicants for various direct-service positions at the school, and with two nonhandicapped high school students. The staff at the nonpublic school, which had been trained in behavior modification principles through in-services and direct supervision, scored 90% or better on the test. Staff members not yet trained at the school in behavior modification skills, the applicants for positions at the school and the two non-handicapped high school students scored 43-71%. These data suggested that the test is a valid measure of the verbal knowledge gained through training in behavior modification.

Training task. A classification task was designed consisting of 10 exemplars from each of three conceptual categories. The academic instructor had evaluated the preschoolers' classification skills and determined which categories the students were unable to classify

correctly. As a result, for Trainees #1 and #2, the categories represented were food, furniture, and toys, and for Trainee #3, the categories represented were furniture, toys, and people. Each category exemplars were represented by a line drawing on an 8-cm by 8-cm card. Trainees learned how to sort these cards into three bins according to the conceptual category represented by the drawing. None of the trainees performed better than chance (33%) on this task when assessed by the classroom teacher before training began.

Trainee generalization task. Trainees were taught to point to the part of their body that was named by the mediator. At least three body parts were identified for each trainee based on a formal assessment by the school's occupational therapist.

Peer generalization task. Peers #1 and #2 were taught a modified version of "Stacking the Deck" (Foxx and Martin, 1983), a board game that helps students acquire verbal knowledge about what to do in a variety of social situations. The modifications were entirely in terms of what should be done when another person says something or otherwise behaves unacceptably. The policy of the nonpublic school in which the study was conducted was to teach its students to ignore all such behaviors.

Alternate peer generalization task. Mediator #3 was not able to read the situation cards of the "Stacking the Deck" game, so he taught Peer #3 a similarities task, in which the peer was taught to say the way in which pairs of line drawings were similar. As with the classification task described above, drawings were presented on small cards. One pair of cards was presented at a time.

Design

A multiple baseline design (Baer, Wolf, & Risley, 1968; Herson & Barlow, 1976) across mediators was used to assess the mediator's training in terms of their acquisition and generalization of behavior modification skills. Behaviors of the mediators were monitored continuously, during baseline, training, and generalization, making it possible for each mediator to serve as his/her own control. The multiple baseline design dictated that the training program be introduced at a different time for each mediator in order to control for potentially influential but extraneous variables that might be correlated with time.

Baseline data on Mediator #1's attempts to teach her trainee the classification task and the body parts task, and on her attempts to teach her peer the social skills game were taken until they were stable. At this time Mediator #1 was taught behavior modification skills by the supervisor and continued attempting to train her trainee in the classification skill. Training continued until Trainee #1 achieved 90% accuracy on the classification task. Once this criterion was achieved, Mediator #1 was asked to teach her trainee to point to selected body parts and she was asked to teach her peer the social skills game. She was given no instruction or feedback during these tasks. This pattern of baseline, intervention, and generalization was essentially the same for Mediators #2 and #3; however, the start of their programs was staggered in time, so that Mediator #2 began baseline, intervention, and generalization after Mediator #1, and Mediator #3 began after Mediator #2.

Procedures

General. All sessions in which the mediator attempted to instruct either a trainee or a peer were held in the same office at the nonpublic school. Many of the sessions in which the supervisor trained the mediators were also held in this office, but many others were held in various other offices and classrooms in the school, on the grounds of the school, and off campus. Sessions in which the mediators attempted to instruct their trainees or their peers were videotaped. The supervisor was present in the room during almost all sessions, operated the video equipment, and told the mediators when to begin. A timer was used that told the mediators when to stop instructing, but, at no time, did the supervisor intervene to prompt or give feedback to the mediators. Although it was necessary during one of the sessions for the supervisor to restrain a trainee because of an assaultive act, the supervisor was typically able to conduct some of her duties as the school's program director during the session (e.g., prepare meeting agendas, respond to memos, etc.), and probably did not influence the proceedings greatly. There was no noticeable difference in the mediators' or trainees' behaviors on the videotape when the supervisor was not present.

Each of the sessions in which mediators attempted to teach their trainees or their peers began with the supervisor and mediator going to the student's classroom to escort the student to the training room. The mediators were given primary responsibility for this process as soon as possible. Trainees (or peers) were brought to the training room and shown where to sit. Training was designed to take place at a table with the mediator sitting at one end and the trainee sitting at one side and

near the mediator. This proved successful with Mediator #1 and her trainee, but Mediator #2 was unable to sustain his trainee's attention to task using this configuration. After baseline sessions, Mediator #2 suggested that he would like to have his trainee sit between him and the desk, thus making it difficult for him to run from the task or slide out of the chair. The strategy was adopted and was successful. Mediator #3 had similar trouble with his trainee, so it was decided that he would sit beside and slightly behind his trainee, which also proved to be an effective strategy.

Once a session was over, the mediator and trainee would typically spend a brief, "fun" period with the supervisor, taking a walk, listening to a story, and so on. Supervisor and mediator would then escort the trainee back to his/her classroom. Mediator and supervisor would then meet to enable the supervisor to give feedback concerning the mediator's performance.

Baseline procedures. Baseline measures (rate of behavior prior to the training) were obtained for both training and generalization tasks, for each mediator and trainee. During these sessions, the mediator was instructed to attempt to teach the trainee a task that was determined by the trainee's classroom instructor as not in the trainee's repertoire. Each baseline session with the preschool trainees lasted for three minutes. The length of baseline sessions with the mediators' peers did not depend on time. Those with Mediator #3 lasted as long as it took his peer to respond to fifteen different similarities; and those with Mediators #1 and #2 lasted as long as it took their peers to respond to twelve different social situations.

Mediator training procedures. There were two phases of mediator training that occurred after baseline sessions. First, there was training of the mediators in behavior modification procedures prior to their work with the trainees. Second, there was training of the mediators following each of the trainee training sessions. The second phase involved much less intensive and extensive training than the first, and might be referred to as "fine tuning."

In the first phase of mediator training, each of the mediators received from 5 to 9.5 hours of individual training from the supervisor. This training was given prior to any further attempts by the mediators to instruct the trainees. Each mediator was trained in how and under what conditions (a) to administer simple verbal instructions, (b) to deliver reinforcement, (c) to perform physical and corrective prompts, and (d) to ignore. Direct instruction, role playing, analysis of videotaped role plays, and praise and corrective feedback statements were involved.

The general training procedures were as follows. A "model, lead, test," format, used extensively in direct instruction teaching (Becker, 1986; Engelmann and Carnine, 1982) was used to teach the mediator the behavior modification procedures. This format consisted of first "modeling" the correct response to the mediator, followed by "leading" the mediator through the correct response (i.e., both the supervisor and mediator responded together), and finally, "testing" the mediator by having him/her respond without assistance from the supervisor. Mediator #1, for example, had special difficulty in her voice level when delivering praise statements. She had no trouble saying statements like, "good job," "terrific," "wonderful," and she knew to praise only

correct responding. Her problem was a lack of inflection in her voice so that her statements of praise were not likely to be reinforcing. The supervisor "modeled" for Mediator #1 a praise statement using a positively reflected voice, suggestive of a high level of praise. Next, the supervisor "led" her through praise statements using a positively inflected voice. Finally, Mediator #1 made the positive statements using the positively inflected voice by herself (the "test").

Role playing was also an important instructional strategy. The mediator practiced using the behavior modification principles with the supervisor and with other staff members at the school. The majority of "practice teaching" was devoted to teaching classification skills, because these were the skills that the mediators were to teach to their trainees. However, in keeping with general case programming concerns (Engelmann & Carnine, 1982), the mediators also practiced teaching the supervisor and other staff members such skills as puzzle construction, block building, pointing to pictures, playing ball, picking up trash, and so on. During this role play time, the mediator received frequent feedback and guided practice. Most of the role play sessions were videotaped and reviewed with the mediator.

Corrective feedback and praise was another training procedure used with the mediators. During the first phase of training, such corrective feedback and praise statements were given frequently before, during and following the practice sessions. The attempt was to focus in on one specific behavior modification strategy for either praise or corrective feedback at one time. There was also more praise given than corrective feedback. In Phase Two of training, such corrective feedback and praise was given only after each session was completed.

The supervisor taught the behavior modification procedures by building one upon one another. For example, the mediators were first taught how and when to give praise statements. Only after the supervisor determined that a mediator was firm in administering praise in an isolated situation was the next skill, corrective prompting, introduced. Following the mediator's learning how to give corrective prompts, physical prompts were introduced, and so on. The mediator was taught to "ignore" after he/she gained success in teaching the entire instructional sequence to the supervisor. The supervisor set up many different situations that were appropriate to ignore, given the mediator lots of "ignoring" practice. At this point, additional staff members were introduced to "act" as trainees for the mediator. Different tasks were also introduced for the mediators to practice their newly acquired behavior modification skills. Once it was determined that the mediator effectively used the five behavior modification procedures in teaching at least three different staff members at least three different tasks (including classification, but excluding pointing to body parts), the first phase of training was complete.

The length of each session during the second phase of training was the same as it was during baseline, three minutes per session. The training sessions continued until the trainee achieved a minimum score of 90% on at least three occasions on the classification task.

Generalization procedures. Once the mediators were able to evoke 90% success from their trainees on the classification task, they were instructed to teach the second skill to their trainees (i.e., to point to body parts upon request). The instructional sessions lasted a total

of three minutes. This phase was terminated when the trainee pointed to a minimum of three new body parts on request.

Each mediator also taught a peer either the social skills game or the identification of similarities to determine generalization of the mediator's training to his or her peers. Sessions lasted as long as it took to complete one social skills game, which requires the trainee to solve twelve social situation problems, or they lasted long enough to complete one set of similarity cards. This phase was determined to be successful when the peers reached the 90% criterion on at least three occasions on either the social skills game or the similarities task.

Dependent Measures

Mediators. From the videotaped records of each baseline, training, and generalization session, an analysis was conducted of the mediators' use of behavior modification procedures and of the trainees' responses. The analysis of mediators' behavior modification practices concentrated on five dependent measures, instructional prompts, corrective prompts, physical prompts, reinforcement, and the completion of entire instructional sequences. Each of these measures is defined below in terms of a four-cell matrix that delineates (a) whether or not there was an opportunity to perform the behavioral skill and (b) whether or not the skill was performed correctly. The special concern in this study is in comparing one of the four cells "opportunity/correct performance," against two others, "opportunity/incorrect performance" and "non-opportunity/correct performance."

1. Instructional prompts: Opportunities for instructional prompts occurred when the materials were appropriately arrayed and the trainee was attentive to the mediator, giving the impression of anticipating the next direction. Other trainee behaviors, including questions about the task, were not regarded as opportunities for instructional prompts so instructions given at these times were scored as inappropriate. This was in keeping with the model presented above which prescribed an instructor-driven lesson as opposed to a student-driven lesson. Given that there was an opportunity to instruct, the mediators were scored as having given an instructional prompt correctly when they gave clear, direct and uninterrupted directions for a response in language that the trainee could understand. For example, while proffering one of the classification cards to the trainee, the mediator might say: "Put this one in the right group." After training had proceeded long enough so that the mediator could be relatively certain that the trainee would place each card in a bin, the mediator was scored as having given a correct instructional prompt if s/he merely proffered the card at an appropriate time, because the verbal direction was regarded as redundant at this time. It was not necessary that the instructional prompt be successful in leading to correct trainee behavior for the prompt to be scored as correctly given.

2. Corrective prompts: Opportunities came for corrective prompts either when the trainee made an incorrect response, such as placing the card in the wrong bin, or when three seconds passed without a trainee response. A mediator was scored as having given a corrective prompt correctly if, at these times, the trainee was not off task and the mediator gave a verbal direction that was more specific than the

instructional prompt concerning the correct trainee response. For example, mediators were scored as having given a corrective prompt correctly if they said: "Put it in the furniture group." Pointing to the correct bin at this time would have been regarded as incorrect because only verbal cues were allowed. Corrective prompts did not have to be effective in generating the desirable trainee response in order to be regarded as correct.

The model dictates that off-task behavior on the part of the trainees was to be ignored. Another way of looking at such off-task responding is that it is a nonopportunity to prompt the trainee's correct responding. Consequently, "ignoring" was not scored as a separate category of mediator responding; rather, it was evaluated as a special case of the four-cell matrix for corrective prompting. Ignoring was recorded when the trainee was behaving inappropriately and the mediator gave neither verbal nor physical attention to the trainee. At the same time, the mediator was to adopt a posture displaying readiness to interact with the trainee as soon as the trainee was ready. The supervisor was to intervene if the trainee became physically aggressive towards the mediator.

3. Physical prompts: According to the model, opportunities for physical prompts came after one corrective prompt, which either generated an incorrect response or which was followed by a three-second period in which the trainee failed to respond. Included in the category of acceptable physical prompts were points or gestures, models of the correct response, and assists in making the correct response. The motivation for physical prompts was to ensure that the trainee performed the correct response, even if it required an assist; consequently,

physical prompts always ended in a correct trainee response. This is not to say that brute force was allowed: if the trainee resisted the attempt by the mediator to provide an assist, the mediator was to regard the trainee as off task and was to ignore.

4. Reinforcement: The occasion for a praise statement was the correct response of the trainee. In order to have been credited as having given a reinforcing statement, the mediators must have responded within two seconds of the trainee's correct response and must have made a short, positive statement in an inflection characteristic of excitement. A flat "good" did not qualify. However, "good" stated as though the mediator was genuinely pleased by the performance was considered a correct response. Notice that praise statements were not actually tested for their reinforcing effectiveness with the particular trainees. Instead, the supervisor relied on the recommendation of the trainees' classroom teacher that such statements would be effective.

5. Instructional sequences: To complete an instructional sequence as dictated by the model, mediators must have started each trial with an instructional prompt and they must have finished the trial with a correct response that was praised. How they got from start to finish was assumed to vary from trial to trial, but always it was necessary for the mediators to follow one of the paths of the model in order to be given credit for completing an instructional sequence.

Trainees. The trainee behaviors that were recorded each session included correct and incorrect responses to the task, and inappropriate or disruptive behaviors. Task related responses were recorded immediately after each session ended, and these were validated

subsequently by the videotape analysis. Disruptive behaviors were determined by analysis of the videotape.

Reliability

Reliability of rating the mediator dependent measures was assessed by comparing the ratings of the investigator with those of a second observer who viewed fourteen videotaped sessions. This permitted an evaluation of rater reliability on the basis of 1000 rater decisions. The second rater's judgments were based on an understanding of the training and generalization tasks, a familiarity with the trainees, and the investigator's definitions of the dependent measures. However, the rater was not otherwise trained to rate the videotapes. The sessions on which the rater agreement was evaluated were selected by stratified random sampling, such that sessions depicting each of the mediators in each of the training and testing conditions were represented.

Reliability for each dependent measure within each session was calculated by dividing the number of agreements by the number of agreements plus the number of disagreements, and multiplying by 100. This mean per cent agreement scores for each of the five dependent measures were as follows: (a) reinforcement (based on 243 ratings): 95%; (b) corrective prompts (based on 77 ratings): 91%; (c) physical prompts (based on 113 ratings): 92%; (d) instructional prompts (based on 282 ratings): 94%; and (e) instructional sequences (based on 285 ratings): 92%.

Data Analysis

Data were derived from a coding of the videotapes for each of the dependent measures, as described above. For each of the measures, the number of correct behavioral displays during a single, three-minute session was then calculated as a percentage of the number of opportunities to display the behavior.

Chapter IV

Results

Mediator Behaviors

The mediators' correct use of each of the four behavior modification procedures (instructional prompts, corrective prompts, physical prompts, and reinforcement) and their tendency to complete entire instructional sequences are given separate presentations below. Data are reported as a percentage of opportunities to perform each skill, as defined previously. However, during some sessions and for some skills (especially physical prompts) there were fewer than six opportunities in a session to perform the skill. Data from these sessions are charted in the accompanying figures as open characters if there was at least one opportunity to perform the skill, and they are charted as a hypen at the baseline if there were no opportunities to perform the skill. In addition, these data were not included in calculations to determine the mean percentages that are reported below because the possibility for measurement error was felt to be too great. (The reader will note that the major outcomes of the study would not have been affected had these data been included.)

Instructional Prompts. Instructional prompts were clear, specific directions for a response. Figure 2 displays the data for instructional prompts during baseline, training and generalization sessions, respectively, for Mediator #1, #2, and #3. Mediator #1 failed to use

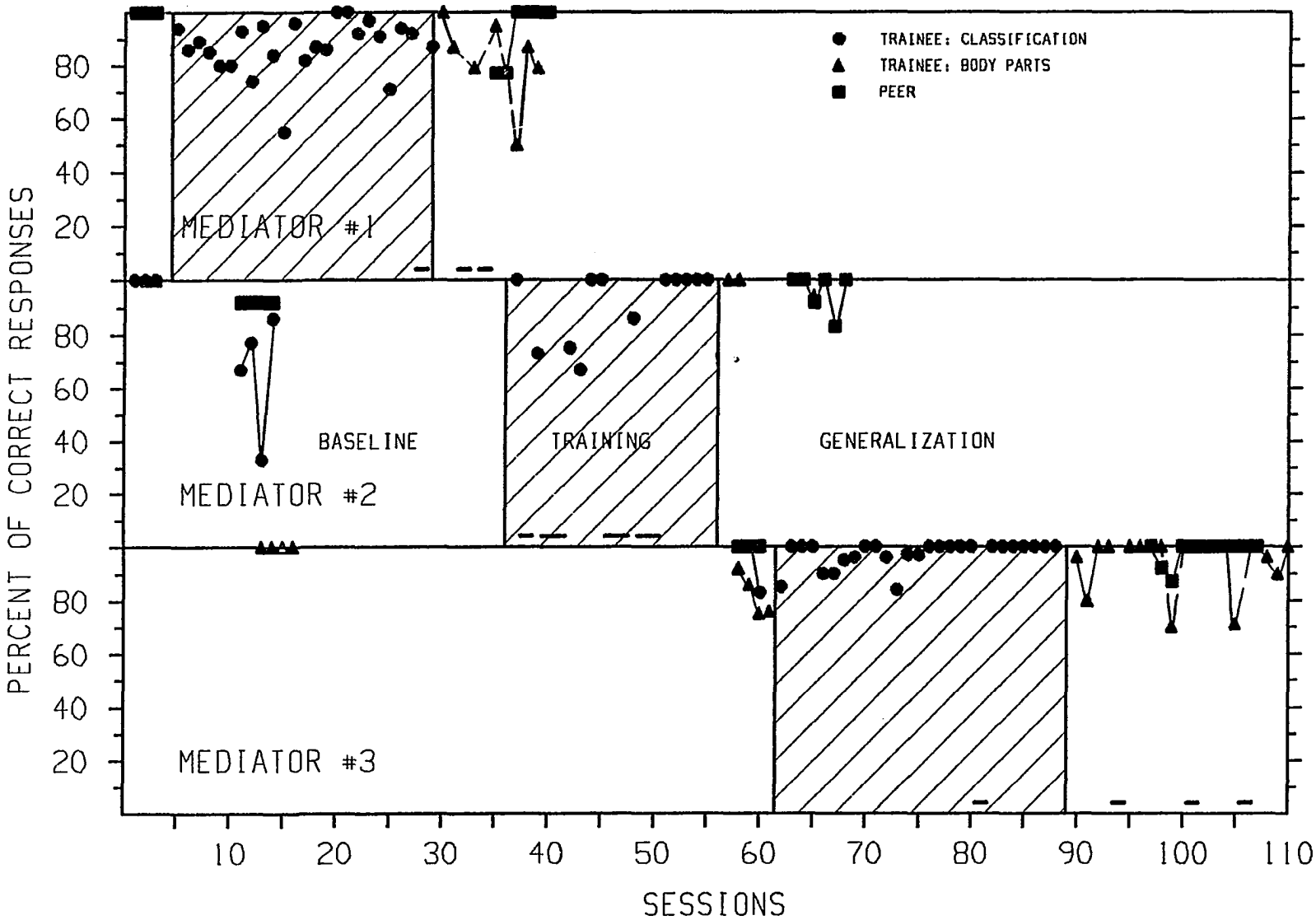
instructional prompts either in the training task or in the trainee-generalization task during baseline sessions. Following training, however, she used instructional prompts a mean of 87% of occasions in teaching the classification task. While teaching the trainee-generalization task, Mediator #1 used instructional prompts a mean of 82% of occasions. With her peer, Mediator #1 used instructional prompts on 100% of occasions during baseline and, after an initial drop during early generalization sessions, she returned to using instructional prompts on 100% of the occasions.

Mediator #2 used instructional prompts a mean of 66% of occasions in the training task during baseline and increased to a mean of 92% of occasions following training. He failed to use instructional prompts in his attempts during baseline to teach the trainee-generalization task; however, during generalization, he used instructional prompts on a mean of 95% of occasions. With his peer, Mediator #2 used instructional prompts a mean of 92% of occasions during baseline and 96% of occasions during generalization.

Mediator #3 used instructional prompts a mean of 94% of occasions during baseline and 97% of occasions following training. He performed instructional prompts on 82% of occasions during baseline of the trainee-generalization task and on 95% of occasions during generalization. With his peer, Mediator #3 performed instructional prompts on 100% of occasions during baseline and on 98% of occasions during generalization.

All three mediators displayed consistent use of instructional prompts (i.e., 92% to 100%) so long as they were teaching their peers. In addition, Mediator #3 also used instructional prompts with his

Figure 2. Percent of correct instructional prompts during baseline, training, and generalization sessions, for Mediators #1, #2, and #3 respectively.



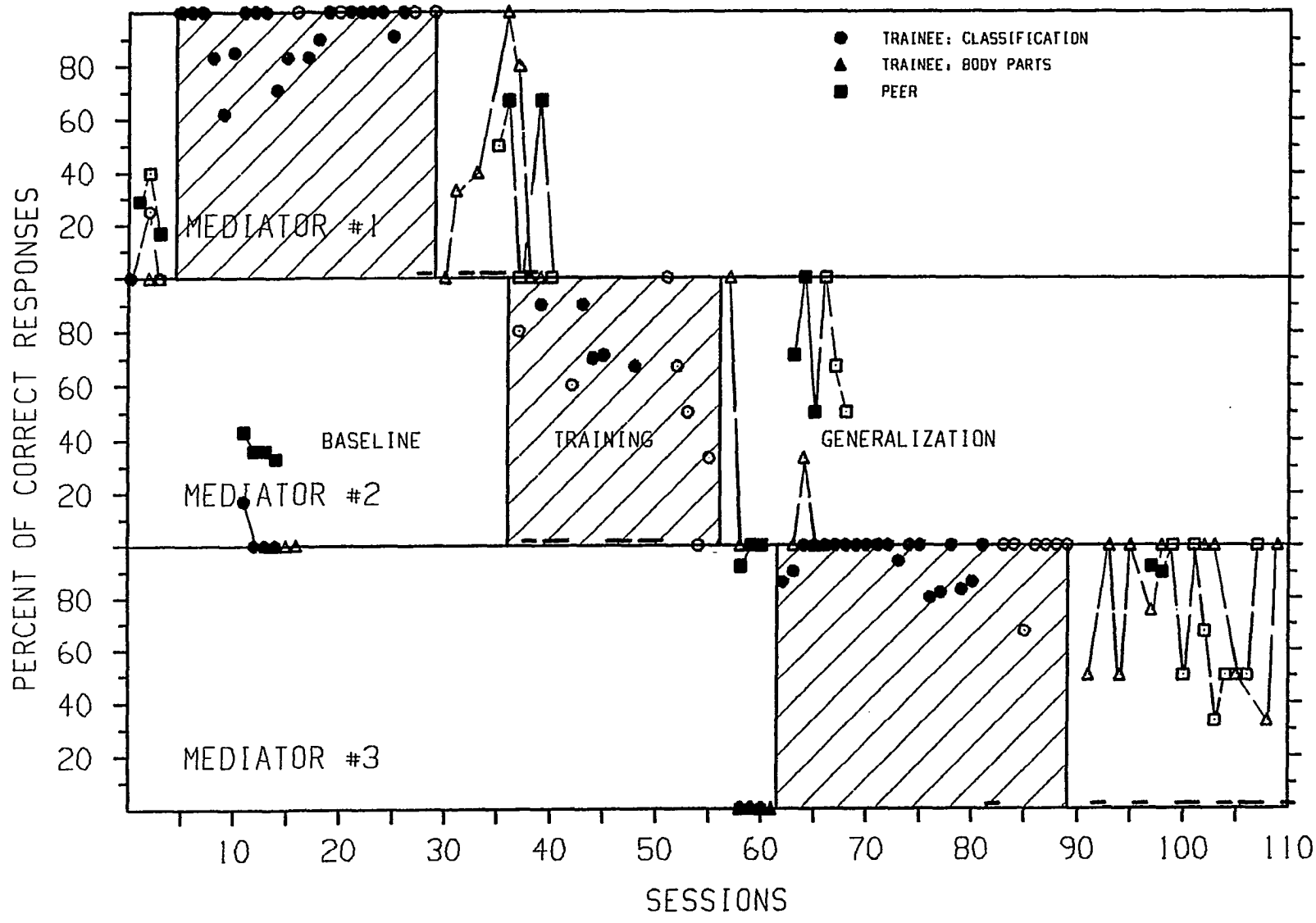
trainee. On this skill, he apparently had little to learn from the training.

Corrective prompts. Corrective prompts were verbal directions that were more specific than the instructional prompts concerning the correct trainee response. Figure 3 displays the data for corrective prompts during baseline, training and generalization sessions, respectively, for Mediators #1, #2, and #3. Mediator #1 used corrective prompts on a mean of only 8% of occasions during baseline on the training task and improved to a mean of 94% of occasions during training. On the trainee-generalization task, she failed to use corrective prompts during baseline, but during generalization she used corrective prompts on a mean of 36% of occasions. With her peer, Mediator #1 used corrective prompts on a mean of 29% occasions during baseline and improved to a mean of 37% of occasions during generalization.

Mediator #2 used corrective prompts on an average of 4% of occasions during baseline of the training task and improved to a mean of 65% of occasions following training. On the trainee-generalization task, he failed to use corrective prompts during baseline, but during generalization he used corrective prompts on a mean of 19% of occasions. With his peer, Mediator #2 used corrective prompts on a mean of 37% of occasions during baseline and he improved to a mean of 64% of occasions during generalization.

Mediator #3 failed to use corrective prompts during baseline of the training task, but following training, he used corrective prompts on a mean of 95% of occasions. On the trainee-generalization task, Mediator #3 failed to use corrective prompts during baseline, but during generalization he used corrective prompts on 80% of occasions. With his

Figure 3. Percent of correct corrective prompts during baseline, training, and generalization sessions for Mediators #1, #2, and #3 respectively.



peer, Mediator #3 used corrective prompts on a mean of 97% of occasions during baseline, and this tendency to use corrective prompts decreased to a mean of 71% of occasions during generalization.

In summary, the tendency for the mediators to use corrective prompts before training was slight. Except for Mediator #3, this was true even when the mediators were teaching their peers. Training improved their skills dramatically when the classification task is considered. The gains, however, were less dramatic on the generalization tasks, with Mediator #3 displaying what appears to be a decrease in his tendency to use corrective prompts with his peer.

Ignoring. Ignoring was a brief withdrawal of verbal and physical attention given to a person. The ignoring data were evaluated as a special case of the four-cell matrix for corrective prompting and, as such, the data were also reported under the corrective prompts category. There were a few extended periods of inappropriate behaviors on the part of the trainees, sometimes lasting the entire three-minute session. These were counted as a single ignore, thus deflating the percentage scores of the mediator's performance.

Mediator #1 had no opportunities to ignore her trainee during baseline sessions. She did, however, ignore her trainee's inappropriate behaviors a mean of 86% of occasions during training and generalization sessions. The trainee's inappropriate behaviors included making faces, lying on the table, snapping her fingers, and moving the table.

Mediator #2 did not ignore his trainee's inappropriate behaviors during baseline sessions, but during training and generalization, he ignored on a mean of 80% of occasions. The supervisor needed to intervene on one occasion when the trainee was hitting Mediator #2 in

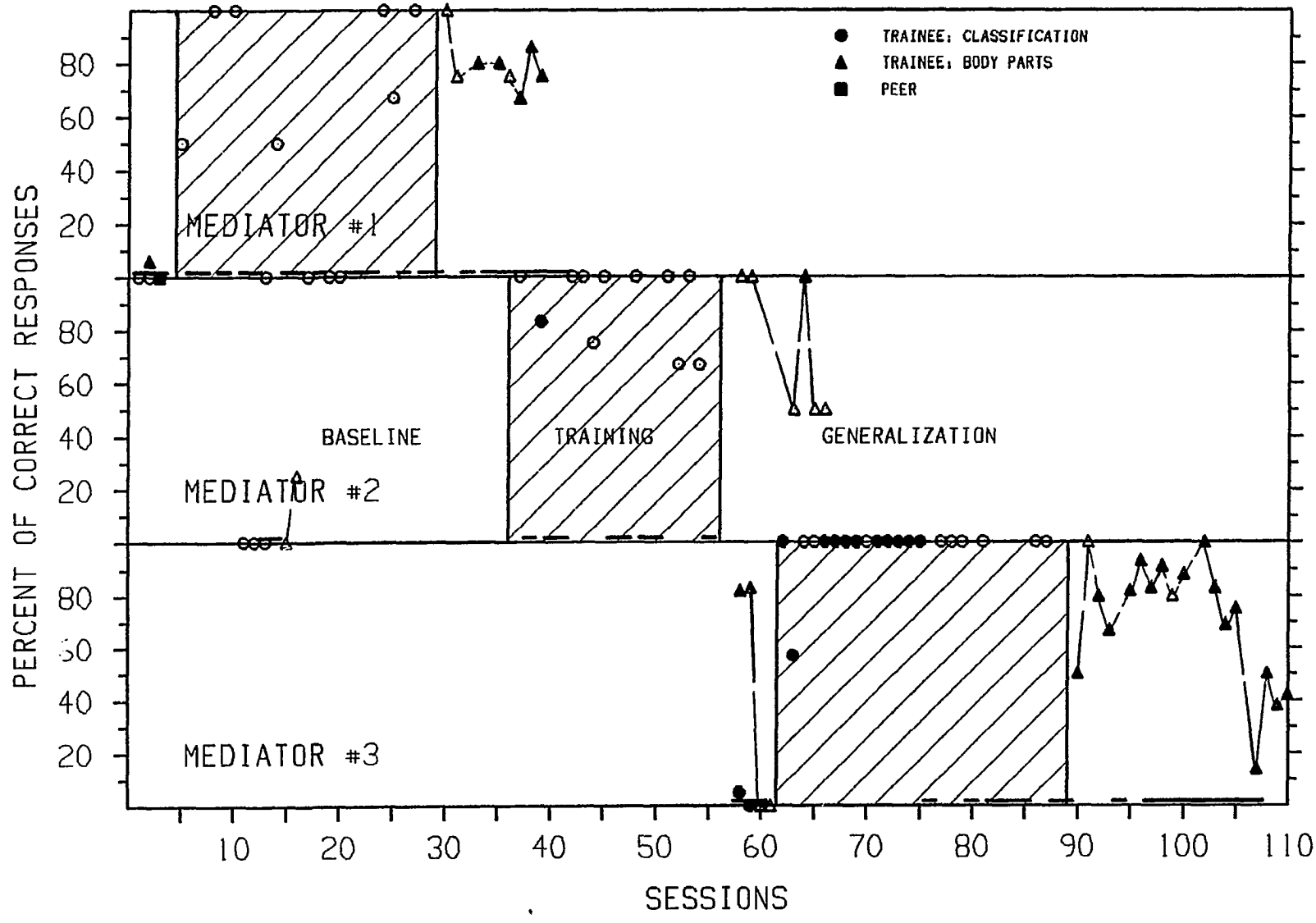
the face repeatedly. The trainee's inappropriate behaviors included playing with the card containers on his head, hitting and poking the mediator, running around the room, and yelling.

Mediator #3 ignored his trainee's inappropriate behaviors a mean of 76% of occasions during training and generalization sessions. The trainee's inappropriate behaviors included pounding on the table, asking irrelevant questions, singing, running around the room, lying his head down on the table, and falling off his chair.

In summary, all three mediators ignored their trainee's inappropriate behaviors on at least 75% of occasions after training ensued. They were also able to give their attention to the trainee as soon as the trainee demonstrated (by looking at the mediator and sitting appropriately) that h/she was again ready to learn after these inappropriate episodes.

Physical prompts. Physical prompts modeled a correct response and/or motored the trainee through the given task. Figure 4 displays the data for physical prompts during baseline, training, and generalization sessons, respectively, for Mediator #1, #2, and #3. Due to the relatively few occasions for using physical prompts, percentages of correct use were not calculated for each session as with other measures. Instead, the following procedures were employed with each task: (a) all baseline sessions were collapsed to derive one mean, (b) all training sessions were collapsed to derive the second mean, and (c) all generalization sessions were collapsed to derive a third mean. This proved to be satisfactory for all tasks except the peer generalization tasks where there were no occasions to use physical prompts.

Figure 4. Percent of correct physical prompts during baseline, training, and generalization sessions, for Mediators #1, #2, and #3 respectively.



Mediator #1 failed to use physical prompts during baseline of the training task. Following training, she used physical prompts on a mean of 65% of occasions. While teaching the trainee-generalization task, Mediator #1 used physical prompts on a mean of 3% of occasions during baseline and on a mean of 79% of occasions during generalization.

Mediator #2 also failed to use physical prompts during baseline of the training task. Following training, however, he used physical prompts on a mean of 84% of occasions. On the trainee-generalization task, Mediator #2 used physical prompts on a mean of 13% of occasions during baseline and on a mean of 82% of occasions during generalization.

Mediator #3 used physical prompts on a mean of only 2% of occasions during baseline of the training task and he improved to a mean of 99% of occasions following training. On the trainee-generalization task, Mediator #3 used physical prompts on a mean of 41% of occasions during baseline and on a mean of 72% of occasions during generalization.

In summary, the data show that the mediators did not use physical prompts before training, but, once trained, their use of such prompts improved dramatically, even in teaching the trainee-generalization task.

Reinforcement. Reinforcement was scored when the mediator made a praising remark after the trainee made a correct response. Figure 5 displays the data for reinforcement during baseline, training, and generalization sessions, respectively, for Mediator #1, #2, and #3. Mediator #1 failed to use reinforcement at all during the three baseline sessions in which she attempted to teach the classification task and the trainee-generalization task to her trainee. Following training, however, Mediator #1 reinforced her trainee's correct responses on a mean of 94% of occasions. During the peer generalization task baseline,

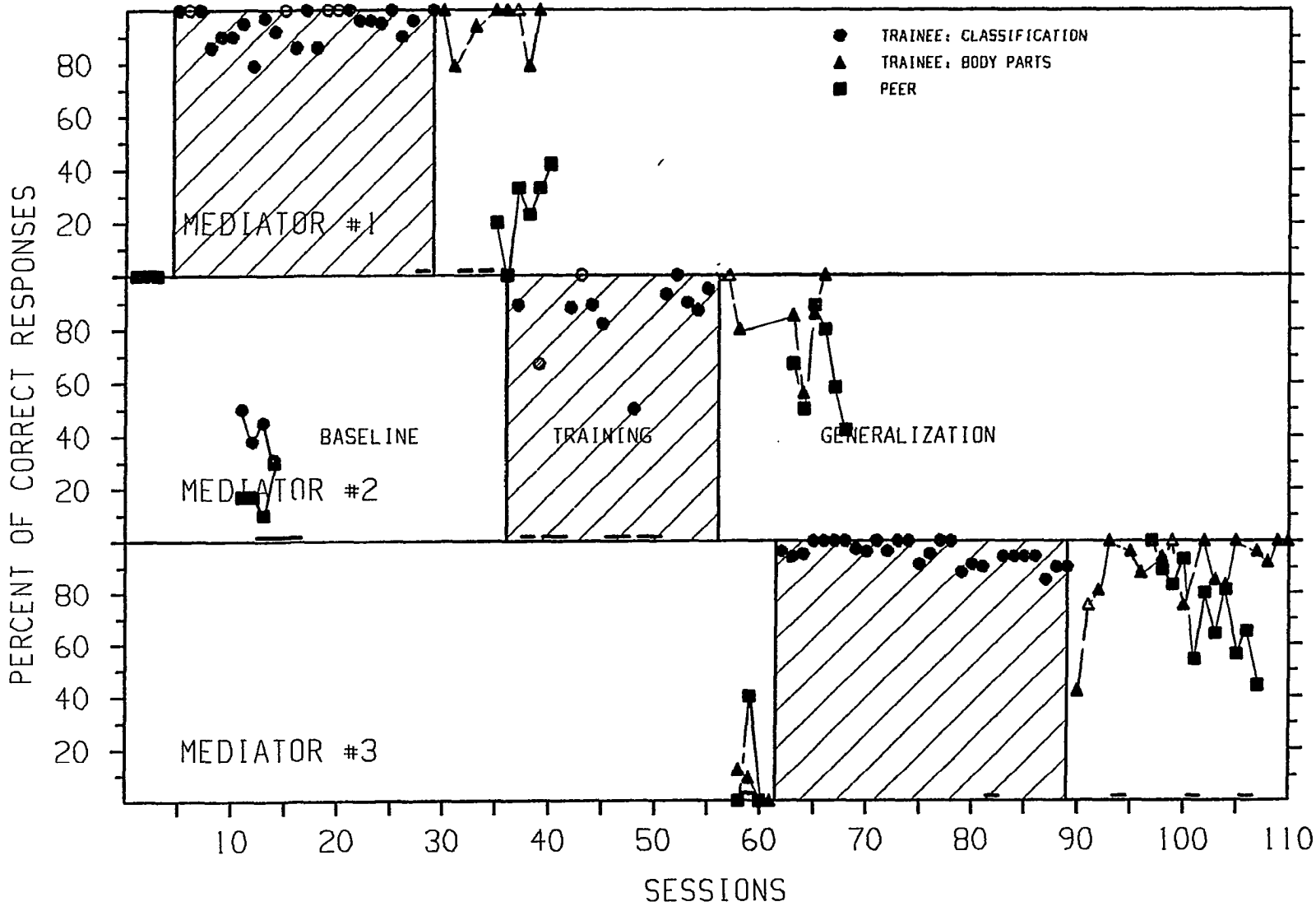
Mediator #1 did not reinforce her peer's correct responses at all; whereas during generalization sessions, she reinforced her peer's correct responses a mean of 25% of occasions.

Mediator #2 reinforced his trainee's correct classifications a mean of 41% of occasions during baseline. Following training, the trainee's correct classifications were reinforced by Mediator #2 on a mean of 86% of occasions. Mediator #2 had no opportunities to use reinforcement during baseline of the trainee-generalization task because his trainee failed to make a correct response. However, during the trainee-generalization test, Mediator #2 reinforced his trainee's correct pointing to named body parts a mean of 87% of occasions. During generalization testing, however, he reinforced her correct responses a mean of 64% of occasions.

Mediator #3 reinforced his trainee's correct classification responses on only 1% of occasions during baseline for the training but, following training, he reinforced his trainee's responses on a mean of 95% of occasions. On the trainee-generalization task, Mediator #3 reinforced correct points to his trainee's body parts on a mean of 5% of occasions during baseline and on a mean of 89% of occasions during generalization. Mediator #1 reinforced his trainee's correct responses in the social skills game a mean of 13% of occasions during baseline and a mean of 74% of occasions during generalization.

In general, the tendency for mediators to reinforce correct responses by their trainees or by their peers was slight prior to training. Following training, the tendency to reinforce correct responses increased substantially and it was consistently displayed in both generalization tests.

Figure 5. Percent of correct reinforcement during baseline, training, and generalization sessions, for Mediators #1, #2, and #3 respectively.

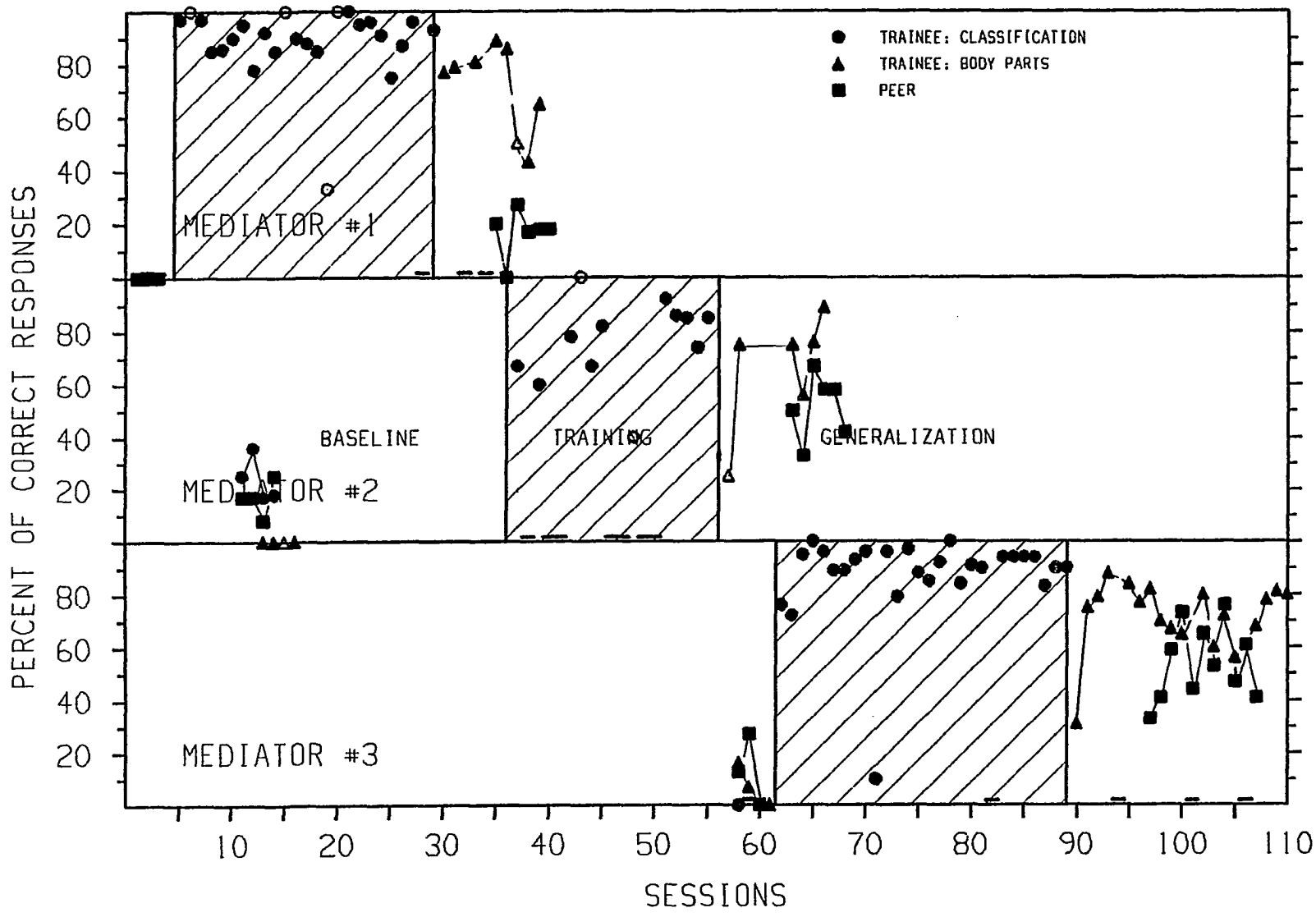


Instructional Sequences. A correct instructional sequence must have followed the course of one of the sequences described by the model, starting with an instructional prompt and ending with a correct response that was praised. Figure 6 displays the data for instructional sequences during baseline, training, and generalization sessions, respectively, for Mediator #1, #2, and #3. Mediator #1 failed to complete any instructional sequences during baseline of the training task; however, following training, she did complete such sequences on a mean of 89% of occasions. Mediator #1 had no opportunity to complete an instructional sequence during baseline of the trainee-generalization task but, during the trainee-generalization testing, she completed a mean of 71% of the possible instructional sequences. With her peer, Mediator #1 failed to complete any instructional sequences.

Mediator #2 completed a mean of 24% of possible instructional sequences during baseline of the training task. However, after training, he was able to complete a mean of 76% of possible instructional sequences. During baseline of the trainee-generalization task, Mediator #2 failed to complete any instructional sequences, but he did complete a mean of 61% of possible sequences during testing of trainee-generalization. With his peer, Mediator #2 completed a mean of 17% of instructional sequences during baseline and he completed 51% of such sequences during testing for generalization.

Mediator #3 completed instructional sequences on a mean of only 1% of occasions during baseline of the training task. Following training however, Mediator #3 completed a mean of 91% of possible instructional sequences. During baseline of the trainee-generalization task, he completed a mean of 6% of possible instructional sequences and during

Figure 6. Percent of correct instructional sequences during baseline, training, and generalization sessions for Mediators #1, #2, and #3 respectively.



generalization testing of this task, he completed 72% of possible instructional sequences. With his peer, Mediator #3 completed instructional sequences on a mean of 13% of occasions during baseline and on 61% of occasions during generalization.

To summarize, all trainees showed substantial improvement in their ability to complete entire instructional sequences with training. This skill also generalized to the trainee-generalization task and to the training of their peers.

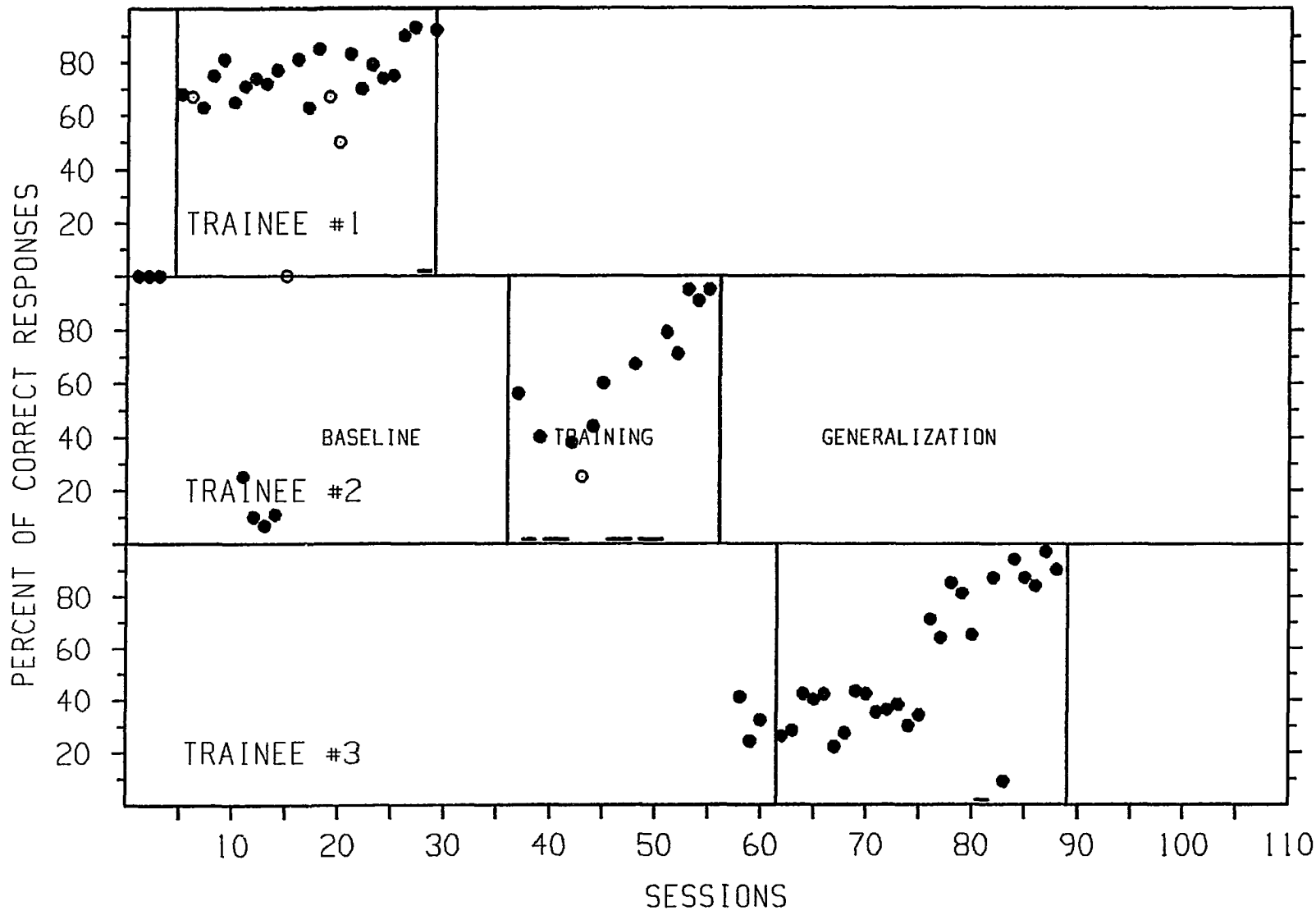
Trainee Behaviors

Training task. The percentage of possible correct category responses for each of the trainees is shown in Figure 7. These data reveal that the skills acquired by the mediators enabled them to teach their trainees the designated skills.

During baseline sessions, Trainee #1 failed to perform the task, Trainee #2 averaged 21% correct responses and Trainee #3 averaged 33%. A chance score on the classification task is 33% if the cards are actually placed in the containers. Mediator #1 was not successful in getting her trainee to perform this aspect of the task, thus accounting for Trainee #1's extremely low score. After the mediators' training, the percentage of correct responding increased substantially for all three trainees, and all three ultimately scored 90% or better on the classification task.

Trainee-generalization task. An informal evaluation on each of the trainee's receptive knowledge of their body parts was administered by a registered occupational therapist just prior to the start of this study. As stated previously, it was the results from this assessment which

Figure 7. Percent of correct classification responses during baseline and mediator training for Trainees #1, #2, and #3 respectively.



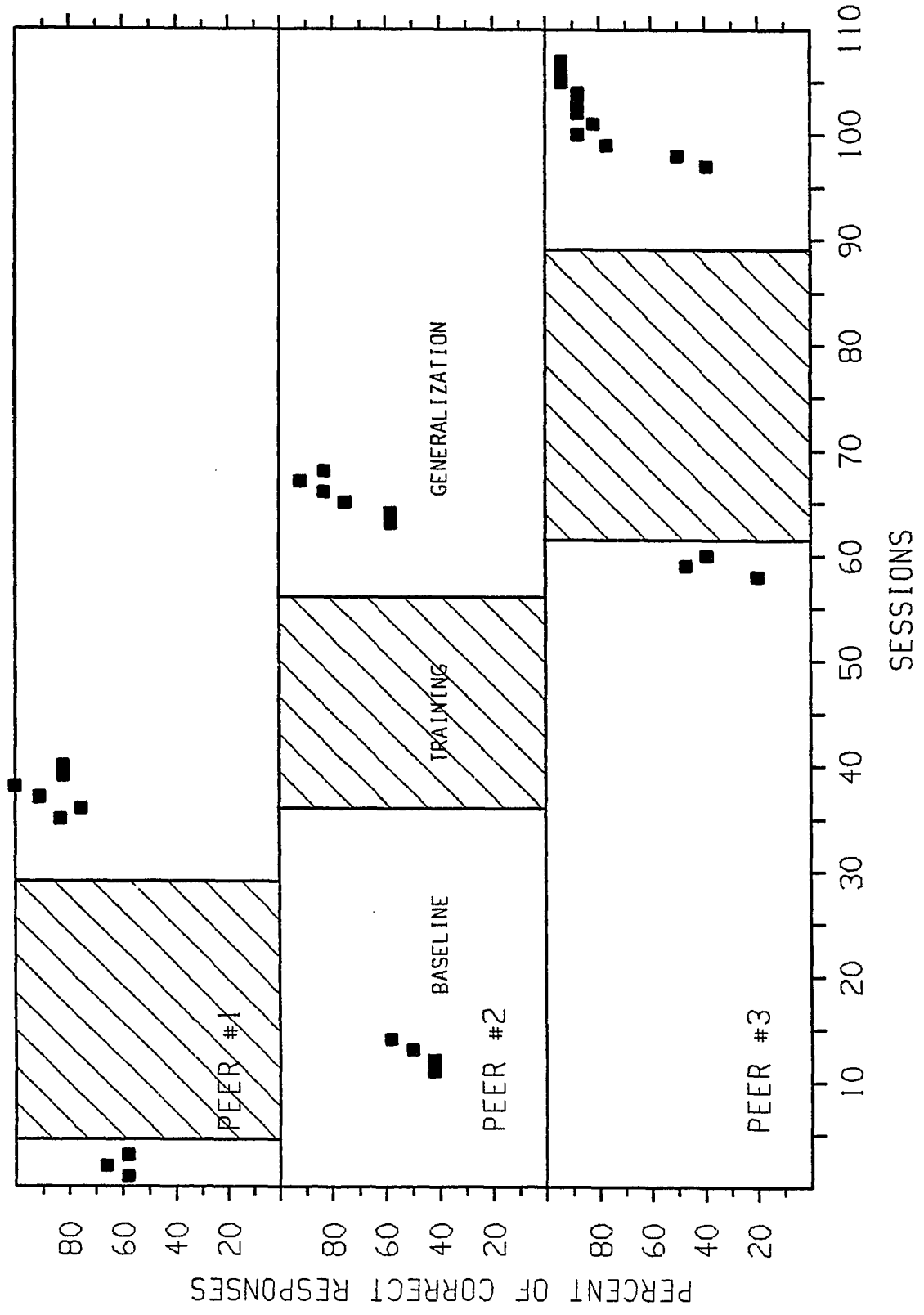
generated a list of body parts each of the trainees could not point to on request. Trainees #1 and #3 each learned to point to three body parts. Trainee #1 learned to point to her ankles, thumbs, and cheeks. Trainee #3 learned to point to his ankles, lips, and cheeks. Trainee #2 learned to point to five body parts, including his hair, feet, arms, fingers, and legs. No training on body parts other than that given by the mediators was conducted during the study. A retest was administered by the same occupational therapist 3-1/2 months later when the study was completed. The therapist found that Trainee #1 could point to her ankles, thumbs, and cheeks; Trainee #3 could point to his lips and cheeks; and Trainee #2 could point to his hair, feet, arms, and fingers. Only Trainee #2's ability to point to his legs and Trainee #3's ability to point to his ankles failed to appear on the retest.

Peer generalization task. The percentage of possible correct responses for each of the peers is shown in Figure 8. During the social skills baseline sessions, Peer #1 averaged 60% correct answers and peer #2 averaged 48%. Following training of the mediators, Peer #1 scored as high as 100%, and Peer #2 scored as high as 92%. Peer #3 was not taught the social skills game. Instead, he was taught to say what was similar about two drawings of common objects. During baseline Peer #3 averaged 35% correct answeres, and, following the mediator's training, he scored as high as 94%.

Behavior Modification Pre- and Post-test

On the behavior modification pre-/post-test, the scores of all three mediators increased substantially. Mediator #1 received a pre-test score of six correct items (43%) and a post-test score of 13

Figure 8. Percent of correct social skills responses during baseline and generalization for Peers #1, #2, and percent of correct similarities during baseline and generalization for Peer #3.



correct items (93%). Mediator #2 received a pre-test score of four correct items (28%) and a post-test score of eight correct items (57%). Mediator #3 received a pre-test score of three correct items (21%) and a post-test score of nine correct items (64%). Because the test was four-alternative, forced choice, a chance score would be 25%, indicating that Mediators #2 and #3 were scoring at about chance levels on the pre-test. Further analysis of the individual test items showed that, of the total of 12 items missed on the post-test by all mediators, only one item had been answered correctly on the pre-test. This suggests that these pre-test items were answered correctly because they were relatively easy items as opposed to being mere guesses.

Chapter V

Discussion

Hypothesis I

Several different groups have served as mediators in the successful training of individuals with mental handicaps (Screibman et al., 1983; Milne, 1986; Blew et al., 1985), including individuals who themselves have mental handicaps (Wanger & Sternlicht, 1975; Craighead & Mercatoris, 1973). One "handicapped" population not heretofore studied consists of adolescents with learning and behavioral problems. This group seemed especially important to attempt to train as mediators for several reasons in addition to extending the previous work done in this area to a particularly difficult population. As argued above, the role of a mediator can be thought of as a complex set of social skills, the significance of which is that adolescents with learning and behavioral handicaps are known for their general lack of social skills (Goldstein et al., 1980; Walker et al., 1983). A demonstration that these adolescents could acquire the skills necessary to teach would provide validation of social skills training programs more generally (Goldstein et al., 1980; Walker et al., 1983). Despite their learning and behavioral handicaps, these individuals have the potential to become parents, at which time skills in behavior modification should serve them

well. With such skills, they may also be more readily employable, especially in certain industries like childcare.

In view of these concerns, the first hypothesis held that adolescents with learning and behavioral handicaps can be taught to use behavior modification procedures to teach a simple skill (i.e., a classification task) to preschoolers with learning and behavioral handicaps. The results gave this hypothesis impressive support in that the mediators showed substantial improvement from baseline on all five behavior modification measures during the training task. The mediators were able to provide the trainees with instructional prompts when the trainees were ready; they were able to use corrective prompts and physical prompts when necessary; they were able to ignore inappropriate trainee behaviors; and they were able to praise correct trainee responses. In terms of dependent measures commonly used to evaluate the training of mediators (Milne, 1986; Schreibman et al., 1983), these handicapped adolescents gave clear evidence of being trainable as mediators.

A review of available literature revealed that in the few attempts that have been made to train individuals with mental handicaps as mediators, there have been no attempts to have these individuals perform in anything but limited roles (Craighead & Mercatoris, 1973; Wagner & Sternlicht, 1975). Instead, individuals with handicaps have been asked to perform isolated skills, such as reinforcing appropriate trainee responses or observing trainee performance. Consequently, another aspect of the first hypothesis was that adolescents with mental and behavioral handicaps could perform the full set of behavior modification procedures.

The problem of what procedures constituted "the full set" was addressed in the development of a model depicting how mediators should train their trainees to perform the tasks used in the present investigation (see Figure 1). This model allowed for the definition of complete instructional sequences, discussed earlier as the "correct response loop," the "corrective prompt loop," and so on. The data from the present investigation revealed that the mediators were able to perform entire instructional sequences once they were trained. They were able to time their behaviors appropriately and they were able to perform entire instructional sequences even when these became fairly complex, involving the "ignore loop" and the "physical prompt loop." This is a very complex set of social skills for individuals known to have severe social skill deficits (Goldstein et al., 1980; Schumaker et al., 1983). Further attesting to their skill was the behavior of the trainees, each of whom met criterion in the classification skill which they could not perform before the mediators were trained. As such, data from the present investigation were highly supportive of the first hypothesis.

Hypothesis II and III

Previous researchers have not evaluated the extent to which mediator skills acquired by individuals with handicaps transfer to the training of new tasks or to new trainees (Craighead & Mercatoris, 1973; Wagner & Sternlicht, 1975). Because the social skills of individuals with mental handicaps are noteworthy for their relative lack of generalizability (Hazel et al., 1985; Schumaker & Ellis, 1982), an assessment of the extent to which such skills, if acquired by the

present mediators, would generalize was seen to be essential. Two of the types of generalization specified by Stokes and Baer (1977) were seen to be especially significant to the present concerns. First, it was important to evaluate whether the adolescents could, without benefit of any further training, teach the same preschoolers a second, somewhat different skill. They would, thereby, display evidence of task generalization.

The data on this test of generalization across skills, in which the mediators taught the preschool trainees to point to parts of their bodies as these were named, provided substantial support for the hypothesis. First, the trainees learned all the targeted body parts and retained what they had learned for as long as four weeks, when they were retested by the school's occupational therapist. More importantly, the mediators showed consistent improvement from baseline to generalization test sessions in all behavior modification measures, including the completion of entire instructional sequences. Finally, a comparison of the display of behavior modification skills during the training task with the display during the generalization task revealed some generalization decrement. This was especially noted in the case of corrective prompts for Mediator #1 (94% compared to 36%) and for Mediator #2 (65% compared to 19%), and somewhat less so in the case of instructional sequences for all mediators.

The third hypothesis was concerned with generalization across both skills and trainees. More specifically, it was evaluated whether adolescents with learning and behavioral handicaps can generalize behavior modification procedures to teach one of their peers to perform a skill different from the one they were taught to teach to their

preschool trainees. Generalization to peers has not been evaluated by any of the researchers involved in mediator training, and this test was seen as especially significant not only because it is a test of skill generalization, but also because it is a test of the extent to which social skills, more generally, might be expected to generalize to the peer interactions of these adolescents.

The data revealed noteworthy improvement in all the behavior modification measures from baseline to peer generalization, including completion of instructional sequences. Instructional prompts provided a notable exception. This skill was used at a relatively high rate with the peers even before training, so generalization was not possible to demonstrate. In addition, the peers also learned to perform the social skills game that they could not perform before the mediators were trained. Finally, the extent of generalization decrement with the peers was even greater than it was with the preschool trainees. This was especially true for all mediators in giving statements of praise and in completing instructional sequences.

Notwithstanding the observed generalization decrement, the present findings are clearly in support of the present hypothesis. Indeed, adolescents with learning and behavioral handicaps can be taught sophisticated procedures of behavior modificaion, and they can use this complex social skill effectively. They can teach preschoolers with handicaps and they can teach their peers who, like them, have learning and behavioral handicaps. In this last respect, the present investigation extends previous research on the training and generalization of social skills to situations in which adolesents with learning and behavioral handicaps must act in the role of a teacher.

Verbal Skills and Other Findings

In addition to findings concerning the principal dependent measures, there was anecdotal and other evidence in support of the hypothesis. The results from the multiple-choice test of knowledge about behavior modification procedures showed a consistent improvement for all mediators. It is possible, of course, that this result was due to regression to the mean and does not imply that the mediators became more knowledgeable. However, in keeping with the methods of Schreibman et al. (1983), the investigator kept an anecdotal record of the statements and other actions of the mediators while they were in training. The record generally supports the conclusion that the mediators' verbal knowledge about behavioral procedures increased. For example, after the first training session with Mediator #1, who had special difficulty acquiring a positive inflection in making praising comments, she said to the supervisor, "[Trainee #1] did much better, she likes the positive statements. Remember how I used to didn't do them (sic)." It is also noteworthy that some of Mediator #1's behaviors changed during the study even though they were not directly being trained. From the time Mediator #1 learned she was going to be a "teacher," her grooming improved dramatically. She started bathing regularly, began wearing make-up, and began dressing very nicely, as she said, "like a teacher."

Mediator #2 also became more knowledgeable about the skills he was learning. for instance, during the training on how to deliver praise statements, Mediator #2 commented, "this is sorta like training my dog, I guess people are sorta like animals. My dog likes it when I scratch him." Throughout the study, Mediator #2 would repeatedly state,

"[Trainee #2's] really learning this stuff," and "[Trainee #2] hasn't tried to hit me or do as many bad things, I guess ignoring works." Finally, Mediator #2 generated a particularly effective plan a few sessions into the training when he was having great difficulty getting his trainee to stay sitting at the table. Mediator #2 asked the supervisor, "Can I sit behind [Trainee#3] so he won't get away from me?" Then, when teaching his trainee to point to his body parts, Mediator #2 decided on his own to have his trainee sit in his lap during instruction, again so he would not run away from Mediator #2 like he had during baseline sessions.

Mediator #3 displayed his new knowledge in still other ways. He requested to continue using the table and chairs when he began teaching his trainee to point to various body parts. In addition, during generalization sessions with his peer, Mediator #3 kept track of the number of correct and incorrect responses made by his peer by putting the corrects in one pile and the incorrects in another pile. After all fifteen cards were presented Mediator #3 would give feedback to his peer as to how many he got "right" and how many he got "wrong." Neither the supervisor nor his classroom teacher had taught Mediator #3 to do this.

Finally, it is also noteworthy that both mediators and the trainees were eager to come to the sessions. The mediators consistently arrived at the supervisor's office on time, and they wanted to go get their trainee as soon as possible. The trainees went willingly and enthusiastically with their mediators. In fact, disappointment was evident when sessions were cancelled because either the mediator or the trainee was absent or because the supervisor had to attend a meeting.

There was also some anecdotal evidence contrary to the generalization of the behavior modification skills gained by the mediators. For example, in classroom settings, both Mediators #2 and #3 continued to attend quite frequently to the inappropriate behaviors of their peers. The mediators would laugh or join in with inappropriate behaviors of their own. Instead of ignoring him, Mediator #1 punched a smaller classmate who stared at her once too often. Ignoring the inappropriate behaviors of their peers has continued to be difficult for these students. In addition, since the study, Mediator #2 has returned to a hospital setting because of continued unacceptable behaviors at home.

Implications for Systematic Replication

Although the present findings were clear cut in their demonstration that adolescents with learning and behavioral handicaps can play an extensive role as mediators, several pertinent questions remain. Systematic replication of previous research is generally taken to be the way in which a science accures its body of facts (Herson & Barlow, 1976; Johnson & Pennypacker, 1980), and systematic replication will be needed to answer the questions arising in the context of the present findings. These questions fall into three general categories: (a) characteristics of the individuals who participated in the present investigation as supervisor, mediators, and trainees; (b) a definition of mediator training by the supervisor; and (c) the general utility of instructional models.

Characteristics of the Participants. The present investigation was conducted in a nonpublic school for students with learning and behavioral problems that employs a rigorous program of behavior management under the immediate direction of the investigator. The school has a record of success in providing academic, daily living and social skills instruction for its adolescent and its preschool students; hence, the very participation of the mediators and trainees as students in the school may have contributed to the success of the present study in ways that are difficult to evaluate. These factors are among those that may be important concerning the characteristics of the study's participants.

Needing further investigation is an analysis of the supervisor's training. As Milne (1986) has argued, "clear specifications of supervisor training and experience (i.e., their relevant learning history) would be...valuable to our understanding of training outcomes" (p. 252). The present supervisor had credentials in special education and in counseling, but had received no formal training in behavioral strategies and techniques until her employment at the nonpublic school, approximately three years before this study was begun. This is not to say that the supervisor's prior training was irrelevant to her training of the mediators, but not having training in behavior modification makes the search for relevant variables rather difficult.

Subsequent to employment at the nonpublic school, the supervisor was trained in behavior management during regular inservices and in direct supervision of teaching and counseling activities by the schools' director, a behavioral psychologist who had conducted research and training in applied settings for at least 15 years prior to this

investigation. This description can not pass as a "clear specification" of the supervisor's history in Milne's sense, but it does help to clarify who might be able to operate successfully as a supervisor. Just as research over the past 20 years has come to specify who can successfully act as a mediator, research efforts of the next several years might well be devoted to who can act in the role of supervisor.

Subsequent systematic replication of the present research will also be essential to firming up the conclusion that adolescents with learning and behavioral handicaps can serve as mediators. All mediators had a history of behavioral excesses and deficits that allowed them to be classified as having learning and behavioral handicaps. However, it is an issue whether they are prototypical of the adolescents who are given this classification. A number of variables are relevant to this concern, including their enrollment in a nonpublic school, which implies that the adolescents had an extended history of failure in the public school. Another factor is their exposure to a program of behavior management, which may have provided for them a successful model of "how to teach," at least once they were thrust into the role of teacher. Mitigating against this conclusion, of course, is that these adolescents were not able to teach successfully during baseline conditions. Still, it might be that they were able to acquire the behavior management skills more readily once training began because their own classroom teachers provided highly skilled models for them.

Training of the preschoolers by the adolescent mediators may also have been facilitated by the level of familiarity shared by these two groups in their school program. Their classrooms are situated in the same building. (The elementary school students are located elsewhere.)

They ride the same school busses to and from school. And, even though the programs for preschoolers and adolescents are in different parts of the building, the student know each other and, with a few exceptions, generally respond to each other in friendly ways. How these factors influenced the success of the present study can only be guessed without additional study of the variables that make up the history of such preschoolers and adolescents with respect to each other.

Toward a definition of mediator training. Several authors (Gladstone & Sherman, 1975; Keogel, et a., 1977; Milne, 1986; Weinrott, 1974) have called for greater specification of the way in which mediators are trained. After all, it is difficult to compare investigations of the effects of mediator training if the mediator training programs are inadequately defined. The attempt in the present investigation was to provide a description of mediator training that was sufficient to characterize the training program in general terms while allowing for the needs of the individual mediators. Because some groups of potential mediators, like the adolescents with learning and behavioral problems studied in this investigation, vary greatly in their needs and sophistication, it may prove difficult to define a training program that is suitable for all mediators.

Another set of concerns that requires greater definition of mediator training has to do with the question of what works. Which of the various training techniques are necessary and which are most effective in the training of individuals as behavior modifiers? Would it have been enough to have just used the model-lead-test instructional strategy, or was it necessary to include role playing? Was it essential to provide feedback following sessions in which the mediators actually

trained their trainees or might they have acquired the necessary skills if left to their own devices following their initial training? How important were the videotaped feedback sessions? An analysis of the training programs necessary to teach individuals to become mediators seems in order. This analysis will require researchers to define their training programs so that they lend themselves to systematic replication. Developing models of such programs may prove as effective in this analysis as it seems to have in the present investigation with respect to how mediators should train their trainees.

Developing models of how to train. Previous researchers have evaluated the effectiveness of their mediator training programs in terms of whether the mediators actually used behavioral techniques in their teaching of the trainees (in keeping with the "list method" described above), and whether the trainees actually learned the skill they were being taught (Gladstone & Sherman, 1975; Koegel et al., 1977; Schreibman et al., 1983). It is possible, of course, that, in the successful cases, the trainees learned the skills being taught to them for reasons other than the mediators' use of behavioral techniques. Even though this does not seem to be likely, no researcher, including the present one, has investigated whether the trainees might have learned because of mediator activities not specifically trained or not generally defined as behavioral strategies. Only systematic replication of previous research that more carefully assesses the activities of mediators before and after their training will answer this question.

This problem was lessened in the present investigation because of the model that was developed to describe how the mediators should teach their trainees (see Figure 1). As the mediators became proficient in

their completion of entire instructional sequences as specified by the model, not only did their trainees learn but the mediators were doing little other than the behavioral techniques specified by the model. Consequently, the specification of teaching activities by a model of how the skill should be taught has the effect of increasing the validity of a successful outcome.

The notion of an instructional sequence as defined by the present model is not entirely novel (Koegel et al., 1977; Whalen & Henker, 1971), but previous researchers have not used such a model to guide the training of their mediators or to measure the skill of their mediators. As such, "instructional sequence" has not been used by other researchers° as a dependent measure of mediator training. This measure appears to have special value because it is a more valid reflection of actual teaching practices than, say, whether the mediator uses corrective prompts. Future investigators might improve upon present efforts by developing models of other ways to teach skills and then comparing the relative effectiveness and generalizability of various teaching models.

One model of special significance would depict how a lesson should proceed. It might very well incorporate the model developed in this investigation as the way in which a trial-within-a-lesson should proceed, but, in addition, it would specify how the mediator's behavior should change over trials as the trainee's behavior changed. Lastly, it seems clear that such a model is as applicable to the training of mediators and supervisors as it is to trainees. Their use in these latter domains remains to be tested.

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BEHAVIOR MODIFICATION PRE/POST ASSESSMENT

NAME: _____

DATE: _____

1) Kathy is a new student in the preschool. She is 4 years old. The teacher directs her to pick up the picture on the table. Kathy does nothing. What should the teacher do next?

   A. Tell Kathy to get moving.

   B. Repeat the direction to Kathy.

   C. Tell Kathy that if she doesn't do as she is told, she will owe time.

   D. Help Kathy pick up the picture.

2) The teacher asks Charles to pick up the ball and bring it to her. Charles goes to the ball and picks it up and then just looks at the teacher. What should the teacher do?

   A. Tell Charles he did not follow the direction.

   B. Tell Charles "now bring the ball to me."

   C. Go over to Charles, take the ball from him and try again.

   D. Ignore Charles until he brings the ball.

3) The teacher has asked Jessica to clean up her mess. Jessica calls the teacher a bitch as she begins to clean up. What should the teacher do?

   A. Punish Jessica for not following directions.
   B. The teacher should do nothing until Jessica finishes cleaning up.
   C. Send Jessica to the office.
   D. None of the above.

4) A student named Fred starts to cry for no good reason and says he does not want to work. What should the teacher do?

   A. Tell Fred that he is just going to be ignored.
   B. Tell Fred he needs to act like a big boy and stop crying.
   C. Tell Fred he will owe time if he does not finish his work.
   D. Ignore Fred until he stops crying and then help him when he shows he is ready.

5) The teacher asks Terry to point to his nose. Terry says "nose." The teacher says "that's right, point to your nose." Terry says "nose" again. What should the teacher do?

   A. Tell Terry to point to his nose until he does so.
   B. Since Terry does not touch his nose she should begin the next task.
   C. Take Terry's finger and touch his nose with it while saying "point to your nose."
   D. Praise Terry for nice talking.

6) Amanda was being taught by the teacher to put the pictures into 3 different stacks according to their category. Amanda put a picture in the wrong category. What should the teacher do?

   A. Ignore the mistake.

   B. Tell Amanda that she is wrong and to try again.

   C. Praise Amanda for trying.

   D. Tell Amanda "that picture belongs in this group."

7) Amanda picked up another picture to put in its category. This time she was correct. What should the teacher do?

   A. Tell Amanda "at last, you got one right."

   B. Tell Amanda that she's working so nice and hard and to keep up the good work.

   C. Do not say anything.

   D. Ask her if she likes doing this task.

8) The teacher asks Annie to put the picture of a ball with the pictures of the other toys. Annie lies down on the floor and starts banging her arms and legs on the ground and crying. What should the teacher do?

   A. Tell Annie that the pictures will have to be put away if she is not quiet.

   B. Wait until Annie is quiet and ready to work.

   C. Talk to Annie quietly and tell her not to worry, that you will help her.

   D. Tell Annie if she puts the picture where you asked her to, you will give her a sticker.

9) The teacher asks Mike to put the picture of a horse in the stack with the other animals. Mike does so. What should the teacher do?

   A. Tell Mike, "good, you put the horse with the other animals."
   B. Tell Mike, "good job."
   C. Give Mike a nice pat on the back.
   D. All of the above.

10) Alex instructed his friend, Max, to group foods according to the four basic groups. Max didn't know in which group to put cheese. What should Alex do?

   A. Tell him he is not trying very hard if he can't figure out in which group cheese belongs.
   B. The teacher should just go ahead and put it in the correct group for Max.
   C. Tell him to guess if he doesn't know the right answer.
   D. Tell him cheese is a milk product.

11) Max still is not sure where to put cheese. He does not know which group is the milk products group. What should Alex do?

   A. Point to the group in which the cheese belongs.
   B. Tell Max he's acting like a lazy student.
   C. Repeat "cheese belongs under the milk products."
   D. All of the above.

12) The teacher instructs Pat to put the picture in the first group. Pat sees another student playing ball outside and says, "Look, Wendy is playing ball with Cindy." What should the teacher do?

A. Tell Pat, "Yes, Cindy and Wendy are playing ball."

B. Tell Pat he can play ball after he finishes his work.

C. Tell Pat that he needs to ignore the activities outside since he can't play ball now.

D. None of the above.

13) The teacher asks Mary to "come here." Mary runs across the room away from the teacher. What should the teacher do?

A. Chase and catch Mary.

B. Tell Mary not to run away from you.

C. Yell for Mary to "come back here now."

D. Wait for Mary to follow your direction, but make sure she is not somewhere where she could hurt herself.

14) The teacher sees that another student is teasing Sara. Sara ignores the student and continues doing her writing assignment. What should the teacher do?

A. Tell the student to quit bothering Sara.

B. Tell Sara to tell the student to stop bothering her.

C. Tell Sara that she is "working nicely."

D. All of the above.