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THE EFFECTS OF SELF-MANAGEMENT STRATEGIES ON THE WEAK RULE GOVERNED BEHAVIOR OF PARENTS OF HANDICAPPED PRESCHOOLERS

The Ohio State University

Ph.D. 1985

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THE EFFECTS OF SELF-MANAGEMENT STRATEGIES
ON THE WEAK RULE GOVERNED BEHAVIOR OF
PARENTS OF HANDICAPPED PRESCHOOLERS

Dissertation

Presented in Partial Fulfillment of the Requirements
for the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Vikki Faith Howard, B.S., M.S.

* * * *

The Ohio State University
1985

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ACKNOWLEDGEMENTS

Completion of a dissertation is undoubtedly the result of weak rule governed behavior -- behavior which may be controlled by the threat of aversive consequences. In my research, I was motivated by the threat of disappointing those who were significant to me. Now, I would like to thank those who helped to establish such conditions. On my dissertation committee were Dr. Stephens, who provided many meaningful learning opportunities and Dr. Orlansky who modeled an unflagging positive outlook and high ethical standards. Dr. Cooper, for whom I have the greatest respect, was an inspiration to me throughout my program. My advisor and friend, Dr. Ward, challenged and supported me. I offer my sincere gratitude to this exceptional woman.

I would like to acknowledge the support provided by my parents and brothers throughout my life. I only wish that everyone had a family as special as mine.

Finally, I would like to express an appreciation for my friends and colleagues who helped give meaning to my efforts.
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CHAPTER I
INTRODUCTION

There are at least two reasons for transferring behavior control from a behavior change agent to a client. It is both unrealistic and undesirable to have an interloper present for the extended period of time necessary to make a difference in the behavior of individuals. Malott (1981) estimates that it would take several years of behavior modification by a live-in therapist to change some behaviors. Such a protracted intervention is not only costly, but perhaps counterproductive. Clients may begin to rely heavily on the change agent to arrange the contingencies of that client's environment. As a result, the ability of such a client to adapt to continuous changes in the environment would become limited.

A solution to prolonged intensive behavioral intervention is self-management. Researchers, recognizing the problems associated with external behavioral control, have recently focused on methods of teaching individuals
greater self-management skills (Billingsley, Haring, Liberty, Weisenstein & White, 1984).

Skinner (1953) defined self-management as the ability of a behaver "to do something about the variables affecting him (p.228)." However, according to Skinner, the behavior of that individual must eventually be explained by events outside the behaver. Behavers can control themselves when multiple variables functionally controlling their behavior are conflicting or dichotomous. That is, a behavior which may result in both positive reinforcement and punishment provides the behaver with a "choice." If the behavior has been punished in the past or there is a threat of punishment, the individual will experience conditioned aversive responses (e.g. guilt, fear, anxiety) in the early stages of the behavior. By altering the variables, and making the punishing responses less probable (terminating the behavior), individuals will be exerting self-control.

Parents of handicapped infants and preschoolers are often called upon to provide extensive intervention of one form or another for their children. The intervention might be education, medical attention, or simply transportation. Whatever the need, professionals have found that some parents are more compliant than others in following through on schedules of intervention (Kroth, 1980; Billingsley, Haring, Liberty, Weisenstein, White, 1984). For whatever
reason, some parents refuse to follow consistently a home program that might ensure future benefits for their children. Parents who fail to comply with schedules of intervention may need greater self-control skills.

One way that human behavior is controlled is through immediate consequences. The probability that strong reinforcement or strong punishment will immediately follow the emission of a behavior in the presence of certain discriminative stimuli is functionally related to the way in which humans behave. If that consequence becomes weaker, either as punishment or reinforcement, then the control which it has over our behavior diminishes, depending upon the current state of deprivation. Also, if the delay between the emission of a behavior and the contingent consequence increases, then the control of the punishment or reinforcement declines. Finally, there may be a reduction in the probability that the consequence will be delivered. If the likelihood that the consequence will be delivered becomes too improbable, then that consequence will exert very little control over behavior.

If the consequences of behavior are too delayed, too improbable, and/or of only cumulative significance, then verbal rules must mediate the behavior (Malott, 1984a). Rule control refers to the operant control of instructions over behavior (Skinner, 1969). Humans can learn behavior
never emitted before by following vocal and nonvocal verbal instructions. Rather than being shaped by environmental contingencies, the mand (stated rule) becomes an instructional discriminative stimulus for a behavior.

"Weak rules are guidelines or directions that specify a relationship that is weak and will not involve effective reinforcement or punishment because the outcome of the action is too delayed." (Malott, 1982) Weak rule governed behavior is under a different type of operant control than contingency controlled behavior. According to Malott (1982), the latter refers to "behavior which is controlled by the natural behavioral consequences, rewarding and aversive stimuli, contingent on that behavior (p.4)." The contingencies are generally so subtle that individuals are unaware that their behavior is functionally related to those contingencies. Even behavior which was once under the control of strong rules, but gradually became contingency controlled, probably did so because the reinforcers were immediate and likely to be presented. For example, handwriting is typically learned through instruction with immediate feedback for appropriate and inappropriate writing responses. Later, those reinforcers are removed and individuals continue to perform the skills without apparently being aware of the contingencies.
According to Malott, weak rules control behavior through aversive stimuli. Since the ultimate reinforcement is too delayed, too weak and/or too improbable, there must be some other variable which is controlling the behavior. Logan (1976) suggested that the controlling variable is fear — fear may be an establishing stimulus (Michael, 1982) to occasion responses consistent with socially defined rules. Malott, however, stated that the rule becomes the controlling variable. Skinner theorized that the rule becomes a discriminative stimulus for a behavior chain. Once the rule is stated, it becomes a discriminative stimulus for the behavior, which reinforces the rule statement.

Malott has argued that rules, in addition to setting the occasion for a response, cause conditioned aversive responses in individuals. These conditioned aversive responses and private events affect behavior, just as covert verbal behavior affects future verbal and nonverbal behavior (Skinner, 1957). These aversive stimuli, referred to by Malott as guilt, can be removed by following the stated rule. The rule may explicitly or implicitly establish a threat of punishment, again aversive, which may also be removed only by following the rule. Negative
reinforcement, then, is the principle by which weak rule governed behavior can be explained.

Though the presence or absence of weak rule control is not an all or nothing phenomenon, but exists in varying degrees in all individuals, there are some who exhibit so little weak rule control that they do not function adequately in their environment. Persons who have limited weak rule control either do not know the rules, or the rules fail to exert functional control over their behaviors (the individuals do not feel guilty when the rule is stated and not followed). A parent of a handicapped child may not realize that daily intervention with that child might lead to greater functional competency in later life. On the other hand, that same parent may be aware of the rule, but simply stating the rule does not set the occasion for her to follow the rule.

Weak rule control is learned. Malott (1984) explains that behaviors can come under the control of weak rules because individuals have been consistently reinforced for following weak rules, and have learned to state, evaluate, and reinforce themselves for following weak rules. In addition, weak rule behavior may be reinforced when significant others provide appropriate modeling of weak rules.
The essential ingredients then of a self-control package that would lead to weak rule governed control are rule stating, self-evaluation of rule following, and self-reinforcement or self-correction/reprimands for following or not following the rule. In 1981, Malott stated that there was a deficit in the literature and application of such a comprehensive self-control technology. He also said, "There has been little, if any, research on the conditions needed for the statement of such rules to produce an aversive situation which can be escaped by rule compliance. This also raises the question of the training needed to ensure the person will state such rules, a difficult problem because the aversive thoughts that follow tend to punish (suppress) such statements (1982 p. 2)."

Thus, the purpose of this research project is to determine if self-control training, including rule stating and restating, self-evaluation, and self-reinforcement, will be effective in increasing the compliance of parents of handicapped infants.
RESEARCH QUESTIONS

1. Will parents verbally state weak rules, including the behavior and the consequences for following the rules, for working with their handicapped children?

2. Will parents follow weak rules in working with their handicapped children in the absence of self-management strategies?

3. Will stating and restating weak rules, including the consequences for following or not following the rules, result in greater weak rule governed behavior?

4. Will parents use self-praise statements to evaluate their work with their handicapped child?

5. Will the use of self-praise have an effect on weak rule governed behavior in parents?
CHAPTER II
REVIEW OF LITERATURE

The following review has been ordered systematically to allow a smooth transition through each facet of literature relevant to this research. Included in this chapter are a review of the following areas: parent training, compliance, generalization, and self control strategies (self-reinforcement, self-evaluation, and behavioral antecedents). Though additional areas of research might be tangentially related, the areas mentioned above are deemed to be most important since they represent either independent or dependent variables investigated in this research.

Parent Training

In recent years there has been an increase in interest and consequently an increase in research in the area of early intervention for developmentally delayed children. Because there is a disruption in the contingent reciprocity of normal parent-child relationships, developmentally delayed children need greater amounts of environmental stimulation (Allen, 1978; Goldberg, 1977). Early intervention programs are aimed at facilitating this dyadic cycle by increasing the quantity (Starr, Pallas, Whitten,
and Read, 1975) and quality (Pueschel, 1978) of environmental stimulation. Starr, Pallas, Whitten, and Read (1975) have demonstrated that a lack of frequency and/or variety of experiences provided by a caretaker may result in a child with social or mental retardation. An abundance of research concerned with the results of early intervention programs for handicapped preschoolers has clearly indicated that early intervention can enhance development (Denhoff & Hyman, 1976; Hanson & Schwartz, 1978; Shearer & Shearer, 1976; Wachs, 1976; Breedlove & Schweinhart, 1982; Thomas, 1982).

Bricker and Bricker (1977) stated that intense individualized training for parents may be as important to the success of early intervention programs as is early childhood training. Karnes, Teska, Hodgins, and Badger (1970) noted several reasons why parents should be the primary intervening agent for handicapped children. First, parents are with their preschoolers more and have greater opportunity for interaction and instruction than someone outside the home. Second, parents are more able to provide the necessary one-to-one training for their developmentally delayed child than an individual with less contact would be able to provide. Finally, parents have the greatest potential to give social reinforcement to their children.
Evidence to support these assumptions can be found in a recent study conducted by Gross, Eudy and Drabman (1982). In this study parents were trained to implement physical therapy training with their cerebral palsied children. During baseline, range of movement remained stable even though the children received regularly delivered physical therapy by professionals. After parents were trained to work with their children, the range of movement in the arms of these cerebral palsied children increased significantly for all three children involved in the multiple baseline study. As illustrated by this study, the important role that parents play in the physical, social, and cognitive development of their children cannot be overemphasized.

The general tendency in past research in early childhood intervention was to focus on the behavior of children rather than the behavior of parents (O'Dell, 1974). However, from this review, it seems evident that parent intervention must be maximized in order to have the greatest effect on the developmental rate of handicapped children. An effort must be made to determine the variables which will facilitate parental effectiveness.

Compliance

Compliance refers to the correspondence between the directions of the trainer and the behavior of the trainee.
For purposes of this study, compliance refers to the extent to which parents of handicapped preschoolers follow the training program prescribed by the teacher/trainer.

Inducing parents to comply with a prescribed home regimen of activities is a critical concern of many teachers. Fleischman (1979) notes that a major difficulty encountered in using parents as behavior change agents is their resistance to systematic application of skills and techniques. Mira (1970) found that only 39% of those parents who completed parent training continued to execute skills on a long term basis.

Home treatment programs for children may be time consuming and complex and often require modification in life-styles of parents (Moxley-Haegert & Serbin, 1983). As a result, compliance by parents on intervention programs for children with developmental delays is consistently low (Finnerty, Shaw, & Himmelsback, 1973).

Ferber, Keeley and Shemberg (1974) studied the long term carryover of parent training and found that, though families complied on a short term basis, they did not follow through on a long term basis. Ferber et al. also discovered that parents may need extended training over time in order to learn and use intervention tactics.

Baker, Heifetz and Murphy (1980) investigated the variables that affect whether or not parents comply with
training programs. They found that perceived lack of time was the most frequently noted excuse for failure to comply. Parents who responded to the questionnaire felt that the second most deterring factor to compliance was the delayed or slow improvement of their child's development. This second factor is directly related to the topic of this investigation. The inability to follow those weak rules that would mediate the delayed consequences of intervention may often deter parents from providing consistent programming.

The findings of Baker, Heifetz, and Murphy (1980) are consistent with those of Rosenburg (1977), who found that commitment of parents to a specific long range goal was the major factor relating to compliance with training schedules. Rosenburg also found that there was a strong relationship between parental commitment and the rate of child development. This latter discovery, though not conclusive, supports the idea that parents of preschoolers can be most successful as the primary intervening agent with their child.

Some effort has been made to investigate those variables which might lead to greater compliance in parents. In an attempt to create more incentive to low income families for more consistent and systematic cooperation, Fleischman (1979) paid parents a weekly cash
salary. His findings indicated that external tangible reinforcers may be useful for low-income and single parent families. Both the proportion of days in which the parents were "cooperative" and the overall attrition rate of salaried parents were significantly better than the nonsalaried parents.

Another strategy used to gain parental cooperation was a type of response cost program (Eyberg and Johnson, 1974). Parents were required to make a cash deposit before they entered a program designed to train them to treat their aggressive children. Money was returned to the parents contingent upon compliance with prescribed home activities with their children. Parents who made cash deposits had significantly lower drop-out rates and were more consistent in completing assigned tasks than parents who made no cash deposit.

Recognizing the limitations which exist when professionals must monitor and reinforce parental participation in home programs, Moxley-Haegert and Serbin (1983) attempted a different approach. They trained parents to recognize small changes in their children's targeted behavior by educating them in child development. Moxley-Haegert and Serbin found that parents who had been educated accordingly, not only became better at recognizing change, but also participated more often and longer in
their child's training. These authors attributed the gains to an increase in "intrinsic" motivation, since they were more reinforced for their participation by recognized changes in their child's behavior.

If educators hold to the premise that parents of developmentally delayed children are the most likely candidates for behavior change agents, then it is important to find ways to help parents be consistent. Several approaches have been discussed above which indicate potential means of attaining that end. However, the problem recognized by Moxley-Haegert and Serbin of finding an unintrusive strategy to mediate between the demands placed on the parent and the educational needs of their children begs a solution.

Generalization

Since the landmark article "An Implicit Technology of Generalization" by Stokes and Baer was published in 1977, there has been a tremendous emphasis on the development of a technology to facilitate generalization of treatment effects on human behavior. Stokes and Baer have defined the term generality as:

"...the occurrence of relevant behavior under different nontraining conditions (i.e. across subjects, settings, people, behaviors, and/or time) without the scheduling of the same events in those
conditions. Thus generalization may be claimed when no extratraining manipulations are needed for extratraining changes; or may be claimed when some extra manipulations are necessary, but their cost is clearly less than that of the direct intervention. (p. 350)

O'Dell (1974), in a review of parent training programs, found that research in the area of generalization was badly neglected. It seems that even though the occurrence of generalization is highly valued (Stokes and Baer, 1977), very little effort has been directed toward evaluating its occurrence and building a technology for facilitating generalization in these parent programs. It is unlikely that a handicapped child's need will suddenly disappear upon termination of a research study. Further, parents of these children will need to intervene over a period of many years in many different situations and places.

Baer and Fowler (1984) contended that self-control techniques hold promise for mediating generalization of behavior change across time. Since it is clearly impossible for change agents to follow their clients around from setting to setting, at all times, to arrange the appropriate antecedents, and to provide schedules of reinforcement, it is critical to plan for generalization.
As Stokes and Baer (1977) pointed out, it is unlikely that generalization will take place without intentionally planning for it. However, just as self-management may be a means of furthering generalization, it may also create additional concerns. Baer and Fowler (1984) propose that just as behavior analysts provide the antecedents and consequents for direct instruction, so must they teach individuals to prompt themselves and provide themselves with appropriate reinforcement (self-control). If self-management procedures are too complex, they might be as difficult to maintain as other weak rule governed behaviors.

In some cases, self-management strategies have been shown to be effective in enhancing stimulus generalization. For example, Drabman, Spitalnik, and O'Leary (1973) investigated the impact of self-evaluation strategies on generalization across different settings. They found that after being taught to self-evaluate, disruptive children became significantly less disruptive than before they were taught to evaluate their own behavior. Further, Drabman, Spitalnik and O'Leary discovered that decreases in frequency of disruptive behavior were occurring in a classroom where subjects were not trained to self-monitor, nor were they given external rewards.
In a study conducted with parents of handicapped infants, Howard (1981) found that self-recording was effective in facilitating the maintenance and stimulus generalization of behavioral techniques.

Other researchers have failed to observe maintenance of skills or stimulus generalization when subjects were no longer encouraged to self-manage. Turkewitz, O'Leary, and Ironsmith (1975) discovered that the positive gains made when disruptive junior high and high school students were self-evaluating did not generalize to the regular classroom after students returned. Maletzky (1974) also found that when clients stopped self-recording, rates of disruptive behavior returned to pre-intervention levels. The small number of researchers who have addressed the critical issues of maintenance across time and generalization across settings and content areas have been disappointed by the results of self-instructional strategies. Generalization of effects was limited and temporary in a study conducted by Lloyd and Kneedler (1979). Similarly, Kosiewicz, Hallahan, Lloyd and Graves (1979) reported dramatic loss of effect when strategy training was terminated.

In part, the failure of self-management strategies to successfully mediate time and place was explained by Baer and Fowler (1984). These authors warn that training for
self-control does not guarantee that the procedures will be used. In other words, clients will be expected to learn and maintain two responses (self-control strategies and target behaviors) rather than just the target behavior. For example, Robin, Armel and O'Leary (1975) found that after training, students did not verbalize academic rules as they had done during treatment. Another study which illustrates this point was conducted by Moss, Prue, Lomax and Martin (1982). These authors investigated the differential use of self monitoring techniques based upon the effort required by the client to complete the self-management component. There were no significant differences between self-managers and control subjects on rates of smoking. Smokers who were asked to report the most descriptive data were most likely to drop out of the program and were least compliant in keeping data. Those smokers who were asked to record the least information regarding their smoking behavior had the second highest drop-out rate and also ranked second in compliance. The subjects who were asked to use self management strategies with an intermediate degree of complexity had the lowest attrition and the highest degree of compliance. All self-recording groups had a higher attrition rate than the control group. The results of the Moss et.al. study illustrate the potential danger of asking subjects to do
too much in the way of self-management. Even so, these authors recommended that self-control procedures become a major area of analysis as a possible solution to many of the applied problems of education.

Koegel, Glahn, and Nieminen (1978) found that parents had to be taught comprehensive general behavior modification strategies before they were able to apply specific intervention techniques to new behaviors of their autistic children. Training by brief demonstrations did not facilitate generalization across time for these parents. Thus, it seems apparent that if self-management techniques are to be useful to parents, then parent trainers must plan and implement intensive training programs.

Self-Management Strategies

Much of the literature which discusses procedures that will be covered in this section labeled such procedures "self-control." In fact, the term self-control might not be the most appropriate or descriptive tact. A leading behavior analyst (Baer, 1984) suggested to researchers that they use a more functional label such as self-management for the procedures used in the past, and that they derive a functional definition for self-control procedures to be used in the future. Baer delineated the following components of what could be self-control procedures.
1. Individuals identify their own problem;
2. They identify a set of behaviors relative to the problem;
3. They identify existing punishers and reinforcers which would aid in changing those behaviors;
4. They arrange their environment so that those contingencies act to change the behavior; and
5. They record the entire process.

Baer concluded that since most research hence conducted did not conform to the specifications of such a definition, then self-management, not self-control, would more accurately represent such procedures. Further, Baer stated that conclusive functional analyses have not been conducted to determine the efficacy of self-management procedures such as self-monitoring, self-evaluation, and self-instruction. He gave the following reasons for this failure:

1. It is difficult to determine if a behavior which was previously under the control of external contingencies comes under the control of self-management strategies or if the behavior is simply resistant to extinction.
2. It is difficult to separate maintenance of behavior under self-management conditions from
learning that takes place during instruction of the target behavior.

3. It may be difficult to determine if the self-management procedures are mediating inefficient contingencies or if the behavior and the self-management contingencies are controlled by discriminative stimuli common to both behaviors.

Baer warns behavior analysts to be more careful in the functional analysis of self-management procedures in order to determine definitively their usefulness in mediating delayed, cumulative, and/or improbable outcomes to behavior.

Another behavior analyst recently voiced his displeasure over the vogue use of the tact self-control (Brigham, 1980).

"...the term self-control is inherently misleading and should be replaced with some other less value laden term (perhaps self-management)."

Brigham goes on to say:

"Much of the self-control literature constitutes a major threat to the future development of behavior analysis."
Brigham stated that literature on self-control focuses on cognitive control of behavior, not environment/behavior relations, and implicitly acknowledges the "self" as an entity separate from the environment. He reminded his readers that Skinner, though recognizing that there was such a thing as self-control was explicit in recognizing that environmental variables were ultimately responsible for behavior change.

The reader who accepts the advice of Baer and the warnings of Brigham can clearly see that there is some controversy related to research on self-control. For this reason, the term self-management shall be used throughout this paper unless authors whose works have been reviewed specifically used the term self-control.

Kanfer (1970) described self-control as a process whereby individuals attempt to alter the last link in a behavior chain. They do so when a behavior is followed by either reinforcement or punishment but both consequences are of equal strength. Individuals exert self control by changing the likelihood that the behavior will be performed either by decreasing the probability that punishment will be delivered, or increasing the probability that reinforcement will follow.
D'Zurilla and Goldfried (1971) claimed that self-control in individuals includes problem solving strategies. In exerting self-control, individuals alter or manipulate behaviors which are under strong stimulus control to change or regulate other behaviors which lack complete stimulus control. Problem solving, according to D'Zurilla and Goldfried, is a procedure that people might use to improve their effectiveness in situations where self-control is necessary. Individuals who are better problem solvers are those who act with less impulsive, impatient, or reactive behavior. D'Zurilla and Goldfried used the term "inhibitory set" to refer to the ability to act with more patience and care. This problem solving technique is not unrelated to rule governed behavior, where one weighs the delayed consequences of behavior. Conversely, individuals who act rashly, impatiently, or reactively might be said to be contingency controlled.

Research in the area of self-management has focused on three major areas: 1) the evaluation or assessment of one's own behavior; 2) the contingent delivery of reinforcers to one's self; and 3) the antecedent to behavior or self instruction. Each of these self-management strategies are discussed independently in the following review.
Self-Reinforcement

Self-reinforcement refers to the contingent delivery of a stimulus by individuals to themselves which is then followed by an increase in the rate of the target behavior (Skinner, 1953; Goldiamond, 1976a; Goldiamond, 1976b; Mahoney, 1976; Thorensen & Wilbur, 1976; Malott, 1984a). There has been much controversy over procedures which have been termed self-reinforcement. Bandura (1976) stated that, in fact, a self delivered reward could strengthen a behavior. Conversely, Skinner (1953) and Goldiamond (1976a) argued that self-reinforcement technically can not exist. These authors insisted that, even though individuals can arrange for rewards to be delivered contingent upon the emission of the target behavior, there is always the option of "cheating" or delivering the reinforcer even though the behavior has not been emitted.

An interesting study conducted by Castro and Rachlin (1980) attempted to determine the efficacy of self-rewards as a functional positive reinforcer. They found that individuals in a weight loss program did not vary significantly in the amount of weight lost, whether in the self-reinforcement, self-evaluation, or self-punishment experimental groups. Thus, self-reinforcement did not seem to be more useful than simply self-evaluating, although it was more effective than no treatment.
Kanfer, Koroly, and Newman (1975) also found that self-praise statements were more effective than neutral statements in fostering tolerance to the dark in children. Kindergarten aged children were taught to verbalize either weak rules, positive statements, or unrelated statements when placed in the dark. Neutral statements (e.g. "Mary had a little lamb.") had little effect on the children's tolerance. Though both positive statements (stimulus group) and statements of competence (self-praise) positively affected tolerance to the dark, self-praise, such as, "If I stay in the dark I will be a brave girl.", had a greater effect.

Though self-reinforcement may be an effective self-management technique by itself, it is perhaps more effectively used in combination with other self-management procedures. Ballard and Glynn (1975) systematically added self-reinforcement to a writing skills task which already included self-recording. The self-reinforcement improved children's writing skills as well as the accuracy of their self-recording.

Recognizing the problems associated with self-delivery of consequences, O'Leary and O'Leary (1976) wrote that "self-reinforcement" might be most successful when individuals are taught to make positive statements to themselves. These authors offered the opinion that self
delivery of tangibles might be too tempting to individuals to avoid "cheating," whereas covert praise statements would eliminate that temptation. O'Leary and O'Leary contended that the self-delivery of covert positive statements can potentially be a powerful behavior change strategy. This notion was consistent with the view held by Kanfer (1970) where he stated in his review that the effectiveness of a self-monitoring process is essentially linked to an individual's ability to self-praise. Stunkard and Mahoney (1976), in agreement, suggested that self-delivery of behavioral consequences shows considerable promise of mediating generalization of behavior gains across time.

With considerably less optimism, Brigham (1980) wrote,

"To date, unequivocal empirical evidence to support the notion of self-reinforcement as an effective applied procedure is almost nonexistent and certainly does not justify the major role it is given in most treatments of self-control. (p. 29)"

From this review it seems clear that further research is needed to analyze the efficacy of procedures which call for the contingent self-delivery of behavioral consequences. Since many studies which use self-management procedures include what is called self-reinforcement, it is
critical to a science and technology of human behavior to determine if such a strategy is functional.

Self-evaluation

Because the terms are often used interchangably, O'Leary and O'Leary (1976) made the distinction between self-evaluation and self-recording, though at some point discrimination becomes arbitrary. Self-recording is said to refer to objective measurement of one's own behavior; counting discreet occurrences of a person's own behavior would be self-recording, while a rating scale might be one type of self-evaluation device since individuals are making subjective judgments about themselves. In self-evaluating individuals observe their own overt or covert performance and compare that to some relative standard. Upon comparison, the observer makes the determination as to the "correctness" or "incorrectness" of the behavior performed. The ability to evaluate one's own behavior with as little bias as possible is critical to any program of self-control.

Because self-evaluation involves some subjective judgment on the part of individuals, bias is always a concern. Deliberate "cheating" in self-evaluation is of equal concern. In a study conducted by Santogrossi, O'Leary, Romanczyk and Kaufman (1973) students who
self-reported cheated frequently in order to receive reinforcers. When Santogrossi et al. attempted to reduce cheating by instituting a cost-response system, the students in the study rebelled and emitted a high rate of disruptive behaviors. In an attempt to avoid the cheating that occurred in the Santogrossi et al. study, Drabman, Spitalnik and O'Leary (1973) taught children to self-evaluate honestly and accurately from the outset of the study. Students in the Drabman et al. study who cheated were not allowed to receive bonus points, as opposed to losing already earned points. Turkewitz, O'Leary, & Ironsmith (1975) described a similar approach to teaching disruptive children accurate self-evaluation. Using a system of matching students' self-evaluation (rating scale) of disruptive behavior, to teacher behavior Turkewitz, O'Leary and Ironsmith observed significant decreases in disruptive behavior in junior high and high school students. The purpose of the matching strategy was to fade external evaluation, while reinforcing students for accurate self-evaluation. This purpose was accomplished when students continued to self-evaluate accurately and maintain low rates of disruptive behavior. As O'Leary and O'Leary point out, the amount of cheating in self-evaluation may be positively related to the immediate consequences of behavior. In other words, individuals may
be more inclined to cheat while self-evaluating if the consequences are public, or if they are tangible. Like self-delivery of consequences, if evaluation is private and intangible, there is less temptation to cheat.

In 1970 self-monitoring was still a relatively new strategy to the field of applied behavior therapy; thus it seemed important to delineate the limitations and applications of self-monitoring (Kanfer, 1970). One concern centered around reliability of self-monitoring or self-recording; how accurate are the recorders? For example, Broden, Hall and Mitts (1971) reported that, while there was a wide variation in session-by-session reliability of self-recording by one of the students, an overall comparison of percentage of time on-task by the student and independent observer was very close (76% to 78% for baseline, 80 to 81% during one intervention, and for a second intervention 88% to 89% student to observer respectively). The results of the Broden, Hall and Mitts study reflect the concern which Kanfer has addressed over accuracy of self-recording.

Kanfer suggested two strategies which might be employed to evaluate the reliability of self-recorded data. First is a strategy used often in applied behavior analysis, that of having an independent observer record emissions of target behaviors and compare those data to the
data of the self-recorder. Obviously, this strategy is less than perfect when 1) the behavior is inaccessible to the independent observer because of logistical reasons; 2) the behavior is a private event; and 3) the independent observer causes a reactive effect on the behavior of the self-recorder. To overcome these concerns mentioned above, Kanfer proposed that the experimenter conduct an analysis of the behavior's product(s). Examples of products of behaviors which might be inaccessible to an independent observer might be heart rate recovery for an exercise program, blood sugar levels for an insulin injection program, or increased assignment completion for an on-task behavior program. However, if there is no residual product available for analysis, as is the case with many important behaviors, this second strategy is not a viable alternative.

Baer (1975) stated that there are certain responses that, although available for change, are not a complete solution to the total problem. He claimed that it may be possible to conduct an analysis of related but subordinate problems. Changes in subordinate or related behaviors would indicate changes in the superordinate behavior. From this proposed analysis, a solution to inaccessible behavior observation can be deduced. There may be subordinate behaviors which indicate changes in the behavior subjected
to self-management strategies. A change in these behaviors would be incompatible with nonoccurrence of the target responses. For example, a physical therapist might note an improvement in a child's muscle tone; where the target behavior is parents' execution of range of motion exercises. If the parents were not performing the range of motion exercises, there would be no positive change in the child's muscle tone, in fact there would be a negative change. Thus, reliability of self-monitored behaviors might be established if an independent observer noted changes in related responses, even though accurate and frequent observation of the target behavior is not possible.

There is a noted and problematic concern over the reactivity of self-evaluation on observed responses (Kanfer, 1970). In other words, the acts of self-observation and self-recording may by themselves cause changes in the dependent variable. Such was the case in a recent study conducted by Propp (1985), where self-charting was used as the sole intervention for encopresis. For the two boys participating in this study, soiling incidents were eliminated within 11 weeks. Though the experimenter failed to show a functional relationship because he used only an AB design (Tawney & Gast, 1984) with one replication, the changes in behavior were both immediate
and dramatic. Furthermore, six months after the study there was no relapse of the encopresis.

It may be that self-observation calls attention to target responses. If observers note that they are about to emit an inappropriate response then, as Malott (1982) proposed, an aversive private condition might result. If in fact this does occur, these unpleasant symptoms could be relieved by responding appropriately, thus resulting in a clear change in the dependent measure. In order to avoid confounding the reactive effect of self-observation and the actual independent variable, Kanfer suggested that self-recording take place after the opportunity to respond, thus eliminating the possibility that the recording act serve as a functional antecedent to the desired response.

Broden, Hall and Mitts (1971) investigated the effect of self-recording on the talk-out behavior of an eight year old child. Self recording as a singular intervention was found to be significantly related to a reduction in talking out behavior for one secondary level student and functionally related to an increase in on-task behavior in another secondary level student. They found that even though the rate of talking out decreased initially when the child self-recorded, the same effect did not result after a return to baseline condition and a reinstatement of self-recording. In a related study, Maletzky (1974)
observed a functional relationship between self-recording and changes in behaviors in five subjects (nail biting, persistent scratching, serious disruptive behavior, facial tics, and out-of-seat behavior). In each of the cases, there was a significant reduction in the patient's behavior. However, the undesirable behavior returned when patients discontinued self-recording. The Maletzky and Broden, Hall and Mitts studies may illustrate a reactive effect of self-recording since, there was no maintenance of effect once subjects stopped recording their own behavior.

Just as Baer (1984) warned researchers against careless analysis of self-management strategies, Kanfer highlighted several potential pitfalls in the investigation of self-monitoring. It is important to keep these limitations in mind while reading the following review.

In two related studies (Bryant & Budd, 1982; and Friedling & O'Leary, 1979), children who had been taught self-instruction were also taught to evaluate their academic and social performance. In both of these studies, subjects stated evaluative remarks regarding the accuracy of academic tasks or the appropriateness of social behavior. It is difficult to tell the contribution of these self-evaluation procedures since they were used in combination with other self control techniques.
Rhode, Morgan and Young (1983) taught behaviorally handicapped children to evaluate their own disruptive behavior both in the resource room and in the regular classroom. By shifting from external reinforcement to self-evaluation, students gradually became less dependent upon external reinforcers, as their rates of disruptive behavior decreased in both settings.

O'Brien, Riner, and Budd (1983) also investigated the effect of self-evaluation on disruptive behavior. The subject was a non-compliant kindergarten age boy, who was reinforced for correctly assessing his behavior. There was generally an increase in compliant behavior and a decrease in the child's inappropriate behavior when he used self-evaluation strategies. It was noted, however, that the changes seen tended to diminish over time.

In a study conducted outside the realm of education, Schafer, Glasgow and McCaul (1982) taught diabetic adolescents to self-monitor compliance with insulin-injection regimens. They found that two of three subjects improved in compliance with schedules for injection when they began to self-monitor. The third subject's behavior did not change after being taught to self-monitor.
In their review of self-evaluation, O'Leary and O'Leary (1976) concluded that by itself self-evaluation may not be effective in reducing disruptive classroom behavior. Similarly, Stunkard and Mahoney (1976), in a review of self-management techniques used in the treatment of eating disorders, concluded that self-recording of eating may not be sufficient to cause reductions in weight. However, when combined with other behavioral strategies self-recording was found to augment weight control procedures. Though research is far from conclusive regarding the singular value of self-evaluation in changing behavior, the literature does suggest that an important ingredient of self-management is correct assessment of one's own ability to follow a stated rule.

The Antecedent

A behavioral antecedent is a stimulus or event that occurs immediately before a behavior and sets the occasion for that behavior to occur. So, for operant behavior (behavior controlled by the consequences due to a history of reinforcement under certain antecedent conditions), antecedents do not have functional control. Rule statements are verbal antecedents of behavior which specify the behavior to be performed and either explicitly or implicitly specify what the consequences to that behavior
will be. Those consequences may be immediate and probable, or they may be delayed and improbable. Only a consequence which is immediate is able to serve as reinforcement for behavior. Such an immediate reinforcement which is very likely to occur is called a direct-acting outcome (Malott, 1984a). Outcomes which are delayed are called indirect-acting outcomes (Malott, 1984a). Rule statements which specify or imply immediate direct-acting outcomes have been referred to as self-instructions. The self-instruction or rule statement serves as a setting event for the behavior to follow. Brigham (1980) stated that in order to be useful, "private events must tact or be discriminative for behavior/environment interactions." In other words, the private events are not in themselves the cause of subsequent behavior but, describe, or tact the relationship between one's behavior and environmental stimuli.

Self-instruction in academic tasks represents a link in a behavior chain. Once the link (the rule statement) is learned, it reinforces recognition of the problem and becomes a discriminative stimulus for the correct response. The results of self-instruction research for motor behaviors (Meichenbaum & Goodman, 1969, 1971) demonstrated complete and incomplete stimulus control of self-instructions. When self-instruction is seldom
followed by the specified response, then stimulus control is absent. On the other hand, if there is a high probability that the verbalized response will follow self-instructions then it may be said that stimulus control exists.

Though human behavior is, to a large extent, shaped by direct acting contingencies (contingency controlled behavior), it is also possible to evoke behaviors which have never been exposed to immediate reinforcers. These behaviors may be a result of following rules (instructions), as mentioned above, and are said to be rule governed. In a laboratory study, Galizio (1979) provided some evidence for the operant development of instructional control or rule governed behavior. In fact, Galizio demonstrated that behavior which had previously been under the control of immediate consequences could be changed by introducing rules which were incompatible with previous response patterns. This research indicates that where there is a failure to reinforce following instructions, the probability that an instruction will set the occasion for a behavior decreases. If rule following can be extinguished, as it was in Galizio's research, then it follows that rule following behavior is learned when expected outcomes follow emissions of appropriate behaviors.
As stated earlier, rule statements include the behavior to be performed (or avoided) and the consequences which are likely to occur when the behavior is either emitted or omitted. In the case of weak rule governed behavior, consequences to behaviors would be in the form of indirect acting outcomes. This strategy of stating the behavior and probable consequences as a component of self-management has been discussed by others. According to D'Zurilla and Goldfried (1971), problem solving includes two critical steps which can be directly translated into the components of rule statements. First, the behavior must be defined operationally, and secondly, individuals must identify the primary goal (identify the likely outcome of the behavior).

Justin Aronfreed (1968) contemplated the role of self verbalizations in the control of one's own behavior. According to Aronfreed, verbal representations allow individuals to anticipate the outcome of their action and thus govern actions (intention). The process of projecting outcomes allows individuals to operate independently of immediate outcomes of behavior. Aronfreed delineated three levels of behavioral control and suggested that their appearance in one's repertoire is not only hierarchical, but developmental. Initially, behavior is controlled by
immediate consequences -- individuals are unable to anticipate delayed outcomes. Later, individual behavior is controlled by verbal mediation, which represents concrete stimuli, i.e. tangible stimuli. Finally, human behavior can be controlled by cognitive or verbal mediation which represents abstract or symbolic concepts, i.e. delayed, of cumulative importance, improbable. Individuals must be able to verbalize delayed outcomes, according to Aronfreed, in order to "attain some freedom from immediate concrete stimulus events." (p. 69) Further, verbalizations allow behavior to be regulated (governed) with a certain amount of consistency, which would not be possible if human responses were solely under the control of immediate consequences.

Aronfreed thought that verbal behavior was critically important to the development of social behavior. "It may be that the most crucial function of cognitive representations in the socialization process is the mediation of the temporal gap between the child's behavior and its rewarding or punitive consequences." (p. 72) As identified by Aronfreed, the temporal gap may be bridged by making more salient signals or markers which are correlates of the final outcome(s) of behavior. Aronfreed believed that those who are able to delay gratification are better at recognizing those signals and use them to cue behaviors.
which will lead to delayed outcomes. In other words, when individuals are presented with discriminative stimuli for weak rule governed behavior, they are more likely to follow the rule, probably after the mediating weak rule has been verbalized.

Much research has been conducted to determine the role of antecedent verbal behavior as a means of increasing the effectiveness of direct or indirect acting reinforcers of behavior. In two early studies, Lovaas (1961; 1964) attempted to determine the relationship between antecedent verbal behavior and concurrent or subsequent behavior. In laboratory controlled experiments, he found that verbal statements made by children affected the rate, latency and choices of responses.

In a study which is frequently referred to in self-management literature, Masters and Santrock (1976) asked children to verbalize evaluative statements about problem solving tasks being performed. The dependent measure (persistence to task) varied differentially, depending upon the type of evaluative statements the children used. Factors which were related to task persistence were general positive statements, positive affect of unrelated verbalizations, statements that the task was "easy", statements of personal pride, and affective tone of task evaluation. Although Masters and
Santrock did not refer to the verbal behavior as self-instruction, and technically it was not, the results of their study indicated the importance of verbal behavior as antecedent conditions to operant responses.

The observed effects of instruction on moral behavior suggest that antecedent training may be useful in self-management training. Much of this research, however, rests on the premise that self-instruction serves as a discriminative stimulus for a response. Michael (1982) would argue that self-instruction or rule-stating serves as an establishing condition or motivating stimulus rather than a discriminative stimulus. An establishing condition increases the effectiveness of the reinforcer, and is only useful under conditions where the response can be emitted. An aversive state or state of deprivation is established which increases the effectiveness of the reinforcer.

Self-instruction procedures have focused on the covert or overt statement of a rule to serve as an instructional discriminative stimulus for a specific behavior. Meichenbaum and Goodman (1969, 1971) recognized a deficit in such research and studied the relationship between verbal self-instructions and compliance with those instructions by kindergarten and first grade students. They found that children who overtly verbalized the instructions followed the self-instructions no more often
than those who covertly verbalized instructions.

Patterson and Mischel (1976) compared two types of self-instruction in an attempt to determine which was more effective in facilitating resistance to temptation in preschoolers. One type of self-instruction directed the children back to a task whenever they were distracted. The other type of self-instruction strategy directed the children away from the distraction, but did not redirect the children to the task. While neither type of self-instruction included a statement of probable outcome of a rule, both forms included the rule itself. Patterson and Mischel found that rules which directed children away from the distraction were generally more effective at facilitating on-task behavior than the rule which directed attention back to the task. It may be that the temptation inhibiting strategy (away from distraction) set up a slightly aversive condition in the children, from which they could escape by returning to the task.

O'Leary (1968) was interested in the relationship between verbalized self-instruction of rules and whether students followed or broke those rules. O'Leary defined immorality as the emission of a behavior which children had learned was 'wrong.' The results of this study and its replication (Monahan & O'Leary, 1971) indicated that, for
first grade boys, rule following was more often associated with overt verbalization of rules than it was with no overt self-instruction. Monahan & O'Leary also studied the temporal relationship between self-instruction and non-verbal behavior and observed that, at least for short intervals (10-20 seconds), where there was a deliberate delay between self-instruction and emission of behavior compliance was not less than when immediately following self-instruction.

Friedling and O'Leary (1979) studied the use of covert self-instructions with elementary school children. Subjects in this study were required to state the problem and rehearse the rule and then the instructions for following the rule. These researchers did not find that self-instruction training was effective in improving on-task and academic accuracy.

In a similar study, Bryant and Budd (1982) examined the use of self-instructions with preschoolers. The researchers used academic tasks as the dependent measure and taught the children to state the problem, the rule and the instructions. Unlike the subjects in the Friedling and O'Leary study, these children were trained to state the instructions overtly. Bryant and Budd observed increased accuracy of academic behavior and percentage of on-task behavior of the children after self-instruction training.
A related line of research which had been receiving considerable attention in recent years is that of Cognitive Behavior Modification (CBM). Though functionally very similar, the theoretical explanations for rule governed behavior and CBM are very different. The basic premise behind CBM is that changes in overt behavior (verbalizations) cause changes in covert functioning (thinking) which in turn result in changes in overt behaviors (motor behaviors as well as academic and social behaviors). Brigham (1980) described CBM in this way:

"In this approach, self-control, interpreted as the individual's thoughts, perceptions, and standards, mediates between the environmental contingencies and the individual's behavior." (p. 28)

It is recognized that a variety of approaches fall under the auspice of CBM, but Lloyd (1980) delineated five common characteristics:

1. Self-management (self-reinforcement, self-instruction, self-recording, self-evaluation)
2. Self-verbalizations (covert or overt)
3. modeling
4. task-analysis/rules/strategies/problem solving
5. teaching individuals to delay responses when presented with a stimulus (reflective rather than impulsive)
The majority of research which has been called cognitive behavior modification has centered around academic skills. Academic strategy training (one branch of CBM) was described by Lloyd and deBettencourt (1982) as a procedure where academic tasks are broken down into subcomponents for which specific problem solving strategies can then be applied. Such strategies were effective in improving performance in math skills (Lloyd, Salzman & Kaufman, 1981) and in solving reading comprehension problems (Kameenui, Carnine & Maggs, 1980). Alley and Deshler (1979) suggested a similar learning strategies model in which tasks are broken down into specific rules or steps. The rules are learned and then applied to new problems. This strategy was used effectively by Smith and Alley (1981) in teaching adolescent learning disabled LD students mathematics problem solving. Meichenbaum (1975) referred to a problem solving approach involving verbal antecedents as self-instruction. Through the mediation of verbalizations which state rules or strategies, students may learn to generalize problem solving skills to similar but new stimuli. Self-instructional strategies were used by junior high school LD students (Lee and Alley, 1981) to improve test taking. In this study, it was found that after students were taught to make self-statements, their
test scores improved and the improvement was general across different settings and content areas.

Some research has been conducted using "cognitive behavioral" approaches to change the social behaviors of children (Blackwood, 1970; MacPherson, Candee, and Hohman, 1974). In a review of cognitive behavior change strategies, Kneedler (1980) concluded that, while the research that has been conducted is exciting and holds much promise, there exists a great need for further study.

The results of self-instruction research have not been definitive and have led researchers to puzzle and speculate as to the functional significance of such procedures. O'Leary and Dubey (1979) have enumerated four possible reasons for inconsistency of findings.

1. The steadfastness with which one states the rule may be variant and difficult to monitor, particularly when the rule is stated covertly. Mischel and Patterson (1976) suggest that many times the findings of self-instruction training is suspect since it cannot be determined if the subjects persisted in stating the instructions.

2. The capabilities that individuals have to follow the instructions may vary. Higa, Thorpe, and Caulkins (1978) proposed that self-instructions would only work to improve behavior if that
behavior is part of an individual's repertoire.

3. The history of individuals in following instructions will have an impact on the effectiveness of self-instruction training. Monahan & O'Leary (1971) found a relationship between the number of correct self-instructions and the following of moral rules in kindergarten and first graders. Burron & Bucher (1978) have suggested that individuals are more likely to follow instructions if they have a history of being reinforced for following instructions.

4. The type of instructions used may affect their usefulness in self-instruction training.

To this point, the review of research on behavior antecedents has presented only those studies whose authors have not investigated the role of behavioral outcomes on behavior change. The next part of this chapter will focus on those studies which included some statement of behavior outcome for rule following as part of self-management strategies involving behavioral antecedents.

Kanfer and Zich (1974) looked at two types of self-instruction in a study using verbal recordings to prompt elementary aged children to resist the temptation to "look" at a group of forbidden toys. They found that the
children resisted the temptation to look longer when recorded prompts were of their own voice rather than that of the experimenter. The verbalization recorded were statements which included the behavior to be avoided and an abstract indirect acting outcome (e.g. "If I do not turn around and look at the toys, I will be a very, very good girl.").

In a very similar study, Hartig and Kanfer (1973) investigated the differential effect of the verbalizations of positive or negative outcomes for resistance to temptation. Children in this study were also resisting the temptation to turn around and look at toys while they verbalized statements which included vague outcomes to resistance. Hartig and Kanfer found that, although there was no difference in resistance latency between groups who verbalized different outcomes, there were differences between verbalizers and nonverbalizers. Children who verbalized outcomes tended to resist temptation longer than those children who did not verbalize outcomes.

In several important studies, children with behavior problems were taught to state the behavior and consequences for following or not following a specific rule. An early series of research studies by Ralph Blackwood (1970, 1971) included an investigation of the role of verbal mediation on the disruptive behavior of elementary school children.
It was Blackwood's contention that children who are disruptive do not covertly verbalize the consequences to their actions, or they verbalize inaccurate consequences. In his studies, Blackwood compared the effectiveness of written essays regarding the outcomes of misbehavior to punishment involving the transcription of written essays unrelated to the misbehavior in question. In the verbal mediation written-essay group, students were asked to write the inappropriate act, what the appropriate behavior would have been, and what the outcomes of appropriate behavior would have been. It was discovered in these studies that children who wrote essays projecting expected consequences for their behavior emitted fewer disruptive behaviors than children who wrote unrelated essays and children who were in control groups. Even though the generalizability of the results of Blackwood's study are compromised by acknowledged methodological errors including lack of random assignment to treatment groups and lack of experimenter control over consistent applications of the independent variables by teachers, these early studies indicate the potential strength of verbal mediation as a technique for self-management.

The positive impact of rule statements including expected outcomes for behavior found by Blackwood was also demonstrated in later studies. MacPherson, Candee, and
Hohman (1974) studied the use of rule statements with elementary school children in a lunchroom setting. In this study, as well as Blackwood's, children were taught to state the direct acting consequences of following and not following the lunchroom rules along with a statement of the target behavior. MacPherson, Candee and Hohman found that when the children in the study used rule statements there was a decrease in inappropriate lunchroom behavior. In this study, children were taught only to state immediate behavioral consequences; the next step is to teach them to state long term behavioral outcomes.

An attempt to take the next step and teach individuals to verbalize long term behavioral consequences was made by Snyder and White in 1979. These researchers taught institutionalized behaviorally disturbed adolescents to verbalize covertly contingencies to three target behaviors (school attendance, disruptive behaviors, and daily living requirements). They found that these youth were better able to reduce impulsive behavior when they stated short or long term consequences to their behavior after they were taught to state rules. In this study, the behavior and the direct and indirect acting outcomes were stated in the covert verbalizations. The Blackwood studies, the MacPherson, Candee & Hohman (1974) study and the Snyder and White (1979) study are important since they highlight the
potential that rule statements, including verbalization of contingent behavioral outcomes, may have in improving the effectiveness of self-management packages.

It can be seen from this review that self-instructional procedures hold promise for usefulness in mediating temporal delays for children. Few studies that have been conducted with adults outside an educational setting explore the usefulness of verbal mediation. In one study (Ottens, 1982), a procedure was used to teach trichotillomanics (compulsive hair pullers) to reduce this undesirable behavior through self-management. Ottens reported teaching students to self-monitor (record), relax, and self-instruct. This "cognitive behavior modification" program also attended to covert statements regarding self-worth. In his article, Ottens reported that the techniques were useful and recommended their use with individuals who are trichotillomanical, but he presented no empirical evidence regarding the results of his investigation.

Although research investigating the use of self-instruction is scanty, considerable interest has been shown in the use of other self-management strategies to foster change in behaviors with indirect acting behaviors with parents. As mentioned in a previous component of this review (Moss, Prue, Lomax & Martin, 1982), self-evaluation
strategies were useful in helping smokers to decrease their rate of smoking. Others have studied the effect of changing behavioral antecedents on subsequent weak rule governed behavior.

Grady (1984) identified an error in reasoning in attempts to increase compliance in breast self-examination (BSE) in women. A prevalent assumption existing prior to Grady's study was that women, properly trained and motivated, would learn to practice BSE by "habit." On the contrary, according to Grady, the practice of BSE can never become habit since the stimulus conditions are temporally removed from the behavior and the reinforcer is indirect acting. In other words, since the reinforcer (early identification of cancer and possible prevention of its spread) is delayed and somewhat improbable each act of BSE is usually neutral. In an attempt to mediate the temporal gap between the establishing stimulus (onset of menstrual period) and the optimum time for BSE (one week later) Grady implemented two strategies. One strategy was a self-management program where subjects were given a calendar and stickers to mark the days when they should conduct BSE. Those subjects who were not self-managing were sent monthly postcards to prompt them to conduct BSE. The results indicated that self-management strategies were more useful for women with irregular menstrual cycles and
external cues (postcards) were most effective in promoting BSE in women who were noncyclic and women with regular cycles. Although there exists a possibility of multiple treatment interference, the results of this study indicate the potential usefulness of self-management strategies in following weak rules.

In a study similar to the Grady study (Ossip-Klein, Vanlandingham, Prue & Rychtarik, 1984) attendance to alcohol aftercare sessions was increased by using coded calendars as prompts for a system of self-monitoring. Although the focus of investigation was on efficacy of calendar prompts, a behavior contract was also employed either between the client and a significant other or a self-contract. Use of contracts in this study prevented analysis of the singular effect of calendar cues.

Investigation of self-instructions or behavioral antecedents is mainly limited to those behaviors which have a direct-acting consequence (Malott, 1984a). In other words, the outcome of the behavior is immediate, highly probable, and the results are noncumulative. Missing is a body of research that investigates behaviors which have indirect-acting consequences, or are mediated by weak rules.

The purpose of this research project is to determine if self-management strategies that include rule-stating,
self-evaluation, and self-delivery of behavioral consequences will be effective in increasing the compliance (weak rule governed behavior) of parents of handicapped infants on programs selected for their children.
DEFINITION OF TERMS

Behavioral Control: The effect exerted by environmental conditions upon the behavior of an organism (Johnson & Pennypacker, 1980).

Compliance: The degree to which an individual conforms to advice, orders or instructions.

Functional Relation: An orderly relationship between a behavior and the controlling conditions. State of behavior changes in systematic response to variations in environmental conditions (Sidman, 1960).

Guilt: Aversive private events. Aversive responses of the autonomic nervous system, contingent upon the emission of a response which has previously been punished or for which there has been a threat of punishment (Skinner, 1953).

Mand: Verbal operant which specifies its own reinforcement. The controlling variable for a mand is a state of deprivation or aversive conditions (Skinner, 1957). An example of a mand would be "Get me the newspaper." The motivation is a state of relative
deprivation i.e. lack of newspaper, and the reinforcer specified in the mand is the newspaper.

Negative Reinforcement: The emission of a response is immediately followed by the removal of an aversive stimulus and increases the probability that the behavior will occur again under similar stimulus conditions.

Parent: Primary caregiver of child involved in this study.

Punishment: The immediate delivery of an aversive stimulus contingent upon the emission of a response which decreases the probability that the response will be emitted again under similar antecedent conditions.

Reinforcement: Stimulus occurs immediately as a consequent to or is contingent upon a response, and increases the probability that the behavior will occur again under the same or similar stimulus conditions.

Self-Instruction: The use of self-initiated mand for a response by an individual which serves as a stimulus for a chained response. For example, a child is presented with a math problem which sets the occasion for the self-instruction, "add the right column first and carry the
ten." This self-instruction is a stimulus for the addition response, which is part of a behavior chain.

**Self-Reinforcement:** Delivery of a consequent by a subject contingent upon the emission of her own behavior, which strengthens the probability of the behavior occurring under similar conditions (Skinner, 1953).

**Stimulus:** Any event that may affect the behavior of an individual. Stimulus may be external to the individual or a private event (Sulzer-Azaroff & Mayer, 1977).

**Rule governed behavior:** Behavior which is under the stimulus control of verbal stimuli in the form of instructions or commands (Skinner, 1969).

**Stimulus Generalization:** Stimulus generalization is said to take place when the target behavior is emitted under conditions where the critical stimuli are the same but other conditions have changed (Sidman, 1960). Generalization for the purposes of this research shall refer to the emission of the target behavior under conditions which differ from the training conditions (setting, individuals, time, behaviors, or subjects) (Stokes & Baer, 1977).
**Tact**: A verbal operant which is under the stimulus control of some environmental condition. Reinforcement for tacting is given when the topography of the tact corresponds to that which is acceptable to the culture or subculture of the listener (Skinner, 1957). An example of a tact would be if a child, seeing a canine, vocally said, "dog."

**Verbal Behavior**: Any social behavior which effects the behavior of another individual e.g. gesture, sign language, vocal communiqué (Skinner, 1957).

**Weak Rule Governed Behavior**: Rule or guidelines that specify a relationship that is weak and will not involve effective reinforcement or punishment because the outcome of the action is too delayed (Malott, 1982).
CHAPTER III

METHOD

The following chapter is a description of the methods used in the analysis of self-management strategies for parents of handicapped infants and their effectiveness in fostering compliance with weak rules. It is important to consider that a single subject analysis of behavior was employed in this research study.

Experimental Design

A multiple baseline design (Baer, Wolf & Risley, 1968) was used across the parents who served as subjects for this study.

"In the multiple baseline technique a number of responses are measured over time to provide baselines against which changes can be evaluated. With these baselines established, the experimenter then applies an experimental variable to one of the behaviors, produces a change in it, and perhaps notes little or no change in the other baselines." (p. 94)

The experimenter then applies the independent variable to the subsequent tiers sequentially, each time noting a
change in the behavior of the parent exposed to the independent variable before introducing the treatment to the parent in the next tier. If the independent variable (self-management strategies in this case) has a general effect across all tiers simultaneously, then experimental control will not be established. If there is a change in the dependent variable upon introduction of the independent variable, but not until that point in each tier, then it can be inferred that it was the independent variable and not some extraneous variable or artifact that caused the change in the rule following behavior (Hersen & Barlow, 1976).

The multiple baseline design was chosen over the more powerful reversal design since it was predicted that the change in behavior would not reverse after intervention was withdrawn. Though less convincing, a functional analysis between the independent and dependent variables can be inferred using the multiple baseline design. If changes occur in the dependent variable simultaneously with the introduction of the independent variable, and concomittantly, untreated baseline remain stable, then there is evidence that it was the independent variable and not extraneous variables that made the difference in the observed behaviors.
In this study, three subjects made up the tiers of the multiple baseline. Each parent involved in the study was independent of the other parents, since they were from different schools, and different classes in each school. During baseline, parents were asked to report on the emission or omission of the targeted tasks for each day. Once a stable baseline was reached with Parent 1 (P1) she was trained to state weak rules and self-praise. At the same time P2-P3 remained under baseline conditions. Following a change in the target behavior of P1, P2 was trained to state weak rules and self-praise while P3 remained under baseline conditions.

Once a change was noted in the rule following behavior at each tier, there was a withdrawal of the written rule-statements and written self-evaluation statements to determine if there was a generalization of compliant behavior across time. If it was noted that compliance on rule-following behavior remained at the same level when treatment was withdrawn, then there was evidence of the generalization of that behavior across time.

Subjects

Four primary caregivers of children with moderate to severe handicaps served as the subjects for this study. The Franklin County Board of Mental Retardation and Developmental Disabilities (MR/DD) Early Childhood Program
was one source of subjects for this study. This program currently serves the families of infants (0-2 years of age) who have an identified handicap or are at risk. Children enrolled in this program either did not attend school at all (received homebased services), or attended school two to three days per week for half the day with or without their mothers.

The Nisonger Center Early Childhood Program served as the other source of subjects for this study. The Nisonger Center is a University Affiliated Facility (UAF), but the early childhood education program is technically under the auspices of the Franklin County Board of MR/DD. The program at the Nisonger Center serves handicapped children integrated with normal children from ages 18 months to 6 years. All children enrolled in the program attend school 1/2 day, five days per week.

The Franklin County Board of MR/DD reviewed the proposal for this study and decided to grant permission to the experimenter to conduct this research, after four recommended changes were made in the proposal (Appendix A). Following the approval of the Franklin County Board, the experimenter wrote an abstract of the purpose of the study and a list of criteria for parent referrals (Appendix A) to be circulated among teachers of the early childhood
programs. The criteria used for referral of parents for the study were as follows:

1. The parent has a child enrolled in the Franklin County Early Childhood program or Nisonger Early Childhood program;
2. The parent's child demonstrates a significant developmental delay;
3. The parent is inconsistent in providing training to their child on the behavioral objectives specifically delineated for their child; and
4. The parent's child is expected to require special educational services for many years.

Parents were not selected on the basis of demographic characteristics, but self-selected from the pool identified by teachers of the early childhood program based upon the criteria established above. After the teachers matched their client list to the referral criteria, they then contacted each potential subject and asked if they would be willing to serve as subjects in this study. The teachers contacted several parents and, after gaining an initial commitment, forwarded the list to the experimenter. Once the teachers identified the pool of potential subjects, the investigator called each parent on the list by phone (see Appendix A for telephone dialogue). Parents were told:
1. Identification of investigator;
2. Purpose of the study;
3. Requirements of participants;
4. Rights of parents as subject;

Parents were then asked to participate in the study. No incentive other than the benefit of the independent variable was offered to the parents. In addition, there were no aversive consequences to those parents who chose not to participate in the study, and parents were assured that if they decided at any point that they could not continue in the study, they had that right.

As mentioned, parents were identified based, in part, upon the severity of their child's handicap. Since there is no categorization of infants by degree of delay as there is for school age children, a moderate to severe delay was established as significant for the purposes of this study. The school psychologists for the Franklin County Early Intervention Program and Nisonger Early Childhood program established the severity of each infant's delay a priori. The Adaptive Behavior Scale (ABS), which is used for all children in both programs, was used to evaluate the developmental level of children in this study by the school psychologist. Although the ABS does not reveal a developmental quotient, it was deemed adequate since
currently developed preschool psychometric devices cannot predict later achievement.

Parent 1

Parent 1 was a white female, in her twenties. She was married with three children, including a 5 1/2 month old son who was microcephalic with severe physical involvement. The husband of PI spent much of the time away from the home due to vocational obligations, but was supportive and often worked on educational activities with their handicapped child when he was home. The socioeconomic status of this family was lower income. PI went to class with her son two mornings each week, and while in class interacted frequently with other parents and the teacher, went to parent meetings, and worked intensively with her child.

Parent 2

This was a white female in her thirties. She was married, was mother to three children and worked part time. This family belonged to a middle income group. This mother had two children enrolled in the Early Childhood program at Nisonger Center. The oldest child was a nonhandicapped boy, who was mainstreamed into a class with handicapped preschoolers. The younger child was a 23 month old boy with Down Syndrome. This mother transported both boys to school each weekday afternoon. She was very actively
involved in the education of her child and special activities for parents of handicapped children.

Parent 3

This parent was a white female in her twenties. She was married and the mother of three children and worked part-time. The socioeconomic status of this family was middle income. Her five year old daughter was born with Down Syndrome, and was a student of the Nisonger Early Childhood program. This mother was active in her child's education and activities for parents of handicapped children.

Parent 4

Parent 4 was a white female in her twenties. The socioeconomic status of this family was lower income. This woman was also the mother of a four year old boy. She is the single parent of a 19 month old Down Syndrome boy, who had been enrolled in the Franklin County program for less than six months. P4 worked a night shift and came to class with her son very seldom. When she did attend class, she worked independently, talked seldom to other parents or the teacher, and responded to interactions with very brief remarks.

Setting

The data collection and instructional sessions took place in the homes of the caregivers or in the respective
schools of the children. Depending upon the target behaviors selected, intervention could took place in a variety of rooms within the home.

Target Behaviors

For children who were enrolled in Franklin County's program, a list of educational activities prescribed by the teacher and parent in an IEP process were reviewed by the investigator, teacher and parent. To identify a target task for parents of children at Nisonger, the parent and the investigator reviewed their child's IEP and decided upon an appropriate activity. Only those activities which required daily implementation by a parent were subject to review. Activities which were consistently implemented by parents were eliminated from consideration as target tasks. Those activities not eliminated were potential target tasks. From the completed list of educational activities which were carried out on an inconsistent schedule by the parent, the investigator and parent (and teacher) selected one essential activity. This activity was agreed upon by both the teacher and the parent (for parents in Franklin County program) as critical to the development of the handicapped child. Target behaviors selected by each parent are delineated below.
Parent 1

The child in this dyad was severely motorically involved; thus, the major emphasis in his program was gross motor activities. This mother felt that she needed to do more gross motor exercises with her son, even though she was already doing some. P1 indicated that she often did only the "fun" exercises, and avoided the more rigorous gross motor activities. The teacher and investigator agreed upon this target task, but suggested that P1 determine how long she wanted to work with her child on the gross motor activities each day. P1 decided that she would like to work a total of 45 minutes each day with her son on this task.

Parent 2

Because there was an emphasis on cognitive, social, and language skills in the classroom, P2 decided to focus on gross motor activities for the purpose of this study. C2 received physical therapy only once per week at school. It was decided that shoulder stability exercises, such as "wheelbarrel walk", would be the target task for this dyad.

Parent 3

At the point of time in which this study was being conducted, P4 was primarily concerned about speech and language activities for her daughter. Because she did not want to do the same activities each day, P3 and the
investigator settled upon a very general target task -- speech and language activities for 15 minutes each day.

**Parent 4**

P1 was most concerned about her son's delays in language and gross motor development. Her teacher suggested that of the two priority areas, language activities might be the easiest for this mother to do at home, as the gross motor activities required the assistance of a physical therapist. Of the three language activities listed on the child's IEP, P4, the teacher and investigator decided upon turn-taking as the target task. Turn-taking is an activity where parent and child react to the other's verbal or motor actions by imitation. Each individual in the turn-taking dyad takes a turn before the other individual gets a turn.

Target behaviors varied from high frequency (several times a day) to low frequency (one time per day) responses. To summarize, there were four criteria for selection of target tasks:

1. The task was an activity on the child's IEP;
2. It was important that a parent provide consistent training on the task;
3. There should be at least one occasion per day for the activity to occur; and
4. The activity was one which was thought to be
critical in the development of competent functioning of the child in later years.

Data Collection

It was considered possible that contact with the investigator during baseline and intervention phases might inadvertently reinforce parents for compliance with the selected tasks. To prevent unintentional delivery of reinforcement through telephone or personal contact, data collection sheets were placed in the subjects' mailboxes (with permission from subjects). Data collection sheets were delivered daily by the investigator (5 weekdays). These data sheets served as a prompt to subjects to state rules, self-evaluate and self-monitor. The following section discusses the procedures used in data collection of rule-statements, self-evaluation, and rule-following, as well as interobserver agreement procedures.

Rule Stating

Each day parents dated and returned a self addressed, stamped envelope that included a written statement of the weak rule and the probable delayed consequences for following the rule. Daily analysis of written rule statements entailed a comparison of the rule to established criteria. The criteria used to evaluate correct written rule statements are as follows:
1. the rule statement must include a description of the behavior (what action must be followed by the parent to constitute rule-following);

2. the rule statement must include the indirect-acting outcome (what the long-term outcome of rule following might be) of rule following;

The unit of analysis for rule statements was total number of times that the rule was stated correctly. This allowed for a comparison to the total number of opportunities to state rules. For example, the subject might have the opportunity to write the rule 60 times, but failed to do so 6 times. The reported value for rule stating would be 54/60.

Rule Evaluation

Along with the daily written statements, caregivers wrote a self-praise statement for rule following (if the rule had been followed) on the previous day. Daily analysis of self-evaluation statements by the investigator entailed comparison of the written self-praise to the criteria established a priori. Those criteria were:

1. Must state what behavior was done or was not done;

2. Must make a positive statement about themselves (must not be a restatement of the rule).
The unit of analysis for rule evaluation was the total number of times that the rule was correctly evaluated with a self-praise. This allowed for a comparison to the total number of opportunities to self-evaluate during the study. For example, the subject might have a total of 50 opportunities to write a self-evaluation statement, but only writes 35 correctly. The reported value for rule statements for this subject would be 35/50.

Rule Following

There were two discrete measures of rule following: 1) Reports of caregivers and 2) probes of the dependent variable or related behaviors by independent observers (discussed later). The parents reported whether the task was completed on the previous day. If the task was completed on the previous day, the parent marked "yes" on the data collection sheet under "yes" for the prompt, "Did you do this task yesterday?". If the task was not completed on the day prior to data recording, the parent marked "no" on the data collection sheet under "no" for the prompt, "Did you do this task yesterday?". These responses were mailed to the experimenter daily along with the rule statements and praise statements.

Interobserver agreement of rule following

The dependent measure, frequency of rule following, was sometimes difficult for an independent observer to
access. For example, a parent might perform the task when everyone in the family was away from the home. Because of the probable inaccessibility of parent behaviors to independent observers, it was difficult to verify the accuracy of self-reported rule following through direct observation. Lack of verification of the accuracy of parent reporting could compromise the believability of the results, and severely limit the findings of this research. If the dependent variable were accessible to an independent observer, and the independent observer's data agreed with those of the parent, then there would be increased confidence in the accuracy of parent data (Johnson & Pennypacker, 1980).

Probes were conducted in two ways. Direct observation by the spouses of participating parents was the primary means of independent observation. When it was necessary, indirect observation by the child's teacher was the means of obtaining independent observation data.

The child's teacher or another family member was asked to observe emissions of the target responses. Since the teacher was in frequent contact (2-5 times per week) with the subjects, the teacher was likely to have the opportunity to observe whether or not the parent was following the rules. The investigator called the teacher every three days and asked for a report on observed rule
following by parents. Sometimes, another family member was asked to report on observed rule following. If a family member agreed to be an independent observer, that person was contacted every week and asked to report on the observed rule following by the intervening parent. The following formula was used to calculate interobserver agreement.

\[
\text{agreements} \times 100 = \% \text{ agreement}
\]

agreements + disagreements

An agreement was established if both the independent observer and subject agreed that the rule had either been followed or not followed on the same day. A disagreement was established if the subject reported that the rule had not been followed and the independent observer reported that the rule had been followed for the same day.

Teachers and other family members who agreed to participate as independent observers of rule-following behavior by the subjects received training on observation techniques. Training included:

1. Examples of rule-following behavior by investigator;
2. Non-examples of rule-following behavior by investigator;
3. instruction on event recording;
4. demonstration on completing data forms.
Other family members who agreed to participate as independent observers were trained on the first home visit with the parent. During the training session, the parent-subjects modeled examples of rule-following behavior. The independent observers were asked to indicate whether or not the modeled behavior was an example or nonexample of rule-following. Training for teachers and other family members as independent observers was completed when they were able to recognize rule following two out of two examples.

Independent observation by this method was conducted for the following parents.

Parent 1. Since P1 indicated that she always did the gross motor activities when she came to class (two mornings per week), the teacher would not be able to determine a difference in the frequency with which P1 executed the target task. Therefore, the husband of P1 was asked to be an independent observer for the gross motor activities that P1 did with C1. When contacted for verification of P1's self report, the husband was asked if he had observed P1 working with C1 on the target task that day. A report that he had seen her performing the target task would support P1's claim that she had complied. However, if the husband reported that he had not observed P1 doing the exercises, this would not be a disagreement with P1's claim that she
had performed the task, since she might have done so when he was not at home. A disagreement could only occur if the mother said that she had not performed the activities and the husband reported that she had.

**Parent 2.** P2 did all her activities with C2 in the home since the child attended school daily. She informed the investigator that either her husband or her four year old son would be able to report on the accuracy of her reports. When this family was contacted, the investigator talked to the husband in all cases. The investigator contacted this family by phone once per week to obtain interobserver data.

**Parent 3.** Parent 3 also did all her activities with her handicapped child in the home. Thus, her husband was selected as the interobserver. Again, he was contacted by telephone on a weekly basis to report whether or not he had observed P3 conducting speech activities.

As mentioned previously, the behavior of interest was sometimes not accessible to independent observers for consistent or accurate reporting because of logistical or pragmatic reasons. If this was the case with target behaviors selected by parents involved in the study, it was not possible for independent observers to report instances of rule following as described above. A reasonable solution proposed by Johnson & Pennypacker (1980) was to
select behavior which was compatible with rule following or incompatible with rule-following, which could be used for verification of parent reports.

"The tactic ... in which either environmental or response events were inaccessible was to make them public by applying measurement technology or by selecting other stimulus or response events whose correlations with the private events are either known or can be clearly demonstrated." (p. 177)

The latter strategy of selecting a correlated response event was also inferred by Baer (1975). He suggested that an analysis of related but subordinate behaviors be analyzed when the targeted behavior solved only part of an applied problem. In this study, the observation of a subordinate behavior was conducted when the targeted behavior was unavailable for independent analysis. As mentioned by Johnson and Pennypacker, a danger inherent in the strategy proposed above is possible when the selected indicator behavior is not truly correlated with the target behavior. There must be a verifiable correlation between the target behavior and the behavior selected for independent observation. The observation of related behaviors by independent observers was conducted in the following cases.
Parent 1. As indicated earlier, the husband of P1 was selected as the independent observer and was called throughout the study for reports on P1's compliance with the stated rule. However, each time this husband was contacted, he had to report that he had had no opportunity to observe his wife working with their child on the specified activities. In order to have some measure of verification of P1's self-reports this mother's teacher was contacted by phone during the return to baseline phase. She was asked if she had observed a change in C1 that might reflect intensive intervention by this mother, and she was asked what those observed changes were.

Parent 4. Since P4 was a single parent and came to class very seldom, it was very difficult to collect data on the accuracy of her self-reporting. The teacher agreed to observe C4 (who came to class 3 mornings each week) to determine if his turn-taking improved over time. Also, the teacher observed P4 each time she came to class to see if turn-taking skills improved in the mother-child dyad. It was determined that if P4 increased the amount of time spent "turn-taking" with C4 at home, C4 would be more likely to take turns at school, and P4 would be more spontaneous and proficient at turn taking in the classroom than if the two did not do turn taking.
Interobserver agreement of rule and praise statements

Independent observers were also trained to evaluate the appropriateness of written rule statements and written self-praise statements by parents on the daily data sheets. A doctoral level graduate student was asked to assist with the analysis of the written permanent product. Training of independent observers for written statements included verbal instruction of the criteria established for rule-statements and self-evaluation statements. Once the criteria were explained, several examples of written rules and evaluation statements were given. The graduate student was asked to evaluate the rules and evaluation statements for conformity to the established criteria. When the trainee had accurately analyzed five out of five examples of rules and five out of five examples of self-evaluation statements, then training was completed.

Procedure

In order to achieve a functional analysis of the variables studied in this research, it was necessary to have a baseline condition and a treatment condition. The baseline, which established what the frequency of the target behavior (dependent variable) looked like before treatment was introduced, served as a prediction of future rates of the target behavior if no treatment were
introduced. Once a prediction trend was established, then the treatment was introduced in the intervention phase. There is clearly a difference in the purpose and activities for both the baseline and intervention phases. Thus, the procedures used in this research have been systematically delineated into baseline and intervention phases.

Baseline

After parents agreed to participate in the study, the investigator visited the home or respective school (see Appendix A for agenda). On the first visit, the parents were asked to complete the following forms (Appendix A):

1. Informed Consent Form
2. Agreement To Participate (non-binding contract)

Parents then went over the child's IEP with the investigator (and teacher) to select a target task. Parents were then asked to sign a sheet (Appendix A) confirming that they agreed to the importance of the selected tasks to their child's future development. This completed, the teacher then modeled the target behavior (if the task was new to the parent) and also provided verbal instructions. After the demonstration, parents were given the opportunity to perform the task. Parents demonstrated competency in performing the new task when they correctly executed it three consecutive times. While parents performed the tasks, the teacher verbally prompted,
praised, and gave corrective feedback if appropriate. If it was determined by the teacher that parents were unable to perform the tasks to criterion within 5 attempts, the teacher again modeled the correct execution of the task, and the parents were given another opportunity to complete the task. This process was continued until the parent met criterion.

**Parent 1.** P1 needed no demonstration in the gross motor activities with C1. She completed correctly three consecutive trials without prompts or modeling.

**Parent 2.** This mother needed no instruction on the target task since, it had been on C2's IEP for several months.

**Parent 3.** Parent 3 was under the direction of a speech therapist and varied her activities from day to day -- always focusing activities on speech. Since the target task was so general and she had been working on these activities for many years P3 needed no instruction on the target tasks.

**Parent 4.** P4 required a modeling demonstration of the turn-taking activity by the teacher before attempting the task. After the model, P4 completed three consecutive trials correctly turn taking with her son.

Once it was determined that the parents knew how to perform the target tasks, the experimenter explained the
purpose and features of the Daily Data Collection Form (Appendix B). The experimenter modeled filling out the data collection form and then allowed the parent an opportunity to practice the skill. The experimenter gave the parent a verbal cue to which they responded by filling out the data sheet. For example the experimenter might have said, "If you did the task yesterday, show me how you would fill in the data sheet." If the parent marked the correct responses to the experimenter's cues twice consecutively, then training on self-evaluation was completed. If the parent failed to correctly record following the experimenter's cue, the experimenter would prompt or model the correct self-evaluation procedure. Following each correct trial, the experimenter praised the parent (Appendix A).

At the end of the visit, parents were asked permission for the investigator to place a daily data sheet in their mailbox. They were told that daily delivery of the data sheet was necessary to prompt them to complete the data sheet every day. If use of the mailbox was not acceptable or possible, then the parent was asked to suggest an alternative location for daily placement of the data sheet where it was likely to be retrieved on a daily basis.

During baseline, an envelope was placed daily in each subject's mailbox. This envelope included a data sheet
which asked the parents to report the frequency of the target behavior on the previous day. When the parents completed the forms, they then placed them in addressed and stamped envelopes and returned them to the experimenter on a daily basis.

**Self-management strategies**

When a stable baseline rate was achieved for each subject, the investigator called or contacted the parents through the mail and requested an appointment to instruct parents on the second part of the study. A stable baseline was established when there was a relatively steady state of responding by the subject. According to Johnson and Pennypacker (1980), a steady state was reached when "responding is characterized by a relative absence of consistent changes in the data in either a generally increasing or decreasing direction." (p. 230) The criteria used to establish a steady state was based upon inspection of the data visually without statistical or temporal requirements (Johnson & Pennypacker, 1980). When a linear trend is established in the data over at least seven days, it was established that there was a stable baseline trend. It was predicted that a slight increase in the rate of compliant behavior on the part of the parent would take place when data collection began (during baseline). When it looked like there was a reactive effect to
self-monitoring (Kanfer, 1970), the investigator extended baseline until a clear trend was established.

Once the appointment was set, the investigator visited the parent either at home or at school (that which was most convenient for the parent). During the intervention training visit the investigator explained the criteria to be followed in order to write a rule statement correctly (Appendix C). Then the investigator read five examples and four nonexamples of weak rule statements (Appendix C). The experimenter did not use an activity from the child's IEP as an example for rule stating. Included in the examples were a description of the behavior that was to be performed to follow the rule, and the delayed, cumulatively important consequences for following the rule. The caregiver was then asked to state the rule for their targeted task two different and correct ways, each time receiving feedback from the experimenter on the appropriateness and completeness of the rule statement. For a correct rule statement, the experimenter might have said, "That rule was absolutely correct, including when the rule should be followed, what the behavior was, and what will happen if the rule is followed or not followed." Feedback was also given for incorrect rule statements, e.g. "You stated the rule right by stating the behavior and the delayed outcome for following the rule." Parents were informed by the
experimenter that they could either write the same rule each day or generate variations of the rule on different days.

Again, the experimenter explained the criteria to be followed in correctly writing self-praise statements (Appendix C). The experimenter then demonstrated two examples and four nonexamples of self praise statements for following the rule (Appendix C). An example of a self-praise statement is, "It was great that I did five minutes of exercises with Craig every time I changed his diaper, and it will probably help him to walk at an earlier age." After the experimenter modeled self-praises, caregivers were asked to verbalize two new self-praise statements. Again, parents were told that they could write the same self-praise statement each day it was appropriate to do so, or they could generate different self-praise statements if they wished.

After the training session, caregivers received an envelope daily in their mailbox. Included in the envelope was a data sheet (Appendix B) which asked the caregiver to report the emission or omission of the target behavior on the previous day. Mailbox delivery of data sheets was the modus operandi so that inadvertent reinforcement was not given to the caregiver by the experimenter for either rule stating or rule following. It was predicted that social
contact with a professional might serve as a mild reinforcer for rule compliance or set the occasion for the experimenter to verbally praise parents for their compliance. Parents were required to write the weak rule each day. An example of a weak rule is, "If I work on self-feeding with Darlene, then she will be an independent eater sooner than if I feed her myself." If it was determined at any point that weak rules were not being stated correctly (according to the criteria established a priori for correct rule statements) with appropriate identification of delayed consequences, retraining took place. After two (2) cumulative days where rules had been incorrectly written, the investigator immediately (on the day of the second infraction) contacted the parent by telephone. The parent was told that she was not writing the rules according to the criteria established in the initial training session, and a meeting was arranged for retraining. Before proceeding with data collection, a home visit was made by the investigator. Parents were re-trained according to the same regimen used during the first training visit of intervention.

In addition to writing the rule statements daily, the caregiver was required to write self-evaluation statements if they followed the rule the previous day. If the rule had been followed, then the caregiver wrote a self-praise
statement according to the criteria established earlier. For example, "Yesterday, I really worked hard to help Darlene with her independent feeding skills, and it will probably help her be a better eater in the months to come."

The data sheet was then be placed in an addressed and stamped envelope and returned daily to the investigator. If the data collection sheets were not returned to the investigator on a daily basis, the investigator prepared a written message to include with the daily data sheet, prompting parents to return the data sheets. If parents continued to be delinquent in returning data sheets, the investigator then called and asked parents to return the data sheets.

**Intervention Phase II**

Because there was no change in the frequency of rule compliance over eight days of treatment, the investigator added an additional self-management strategy to those already required of P2 (self-recording, written weak rule statements and self-praise statements). The experimenter contacted P2 by phone and asked her to fill out a data record sheet (to be provided by the experimenter) and keep the data sheet posted on her refrigerator door (see Appendix B). She was also asked to continue filling out the daily data sheets with rule statements and self-praise statements and return them to the investigator. On the
personal data record P2 was told to indicate "yes" or "no" whether she had followed the rule on that particular day. She also reported the total length of time that she spent working with her daughter on the target task.

The day after P2 agreed to fill out the additional data sheet, the investigator placed 1) the daily data sheet, 2) the personal data record, and 3) a magnetic device to attach the data record to the refrigerator to the door in P2's mailbox. For the remainder of the study, the investigator continued to place just the Daily Data Sheet in P2's mailbox.

Data Analysis

Data were collected on one behavior by each parent. Occurrences or nonoccurrences of the targeted behaviors were recorded by parents, and reported on the daily data sheets. Frequency of responses were then plotted by the investigator on a cumulative graph for visual inspection and analysis (Parsonson & Baer, 1978). Intrasubject variability was noted across phases as an indication of the effectiveness of the independent variable. "Determination of change is dependent on the change being of sufficient magnitude to be apparent to the eye." (p. 111.) A change in trends from one experimental phase to the next was analyzed according to the differences in slope and variability of data points in adjacent phases.
Follow-up

Following completion of the study, the investigator visited each parent at home or school for a debriefing. The theory behind the research was explained to the parents, as well as the expected and actual results. A summary of the research report was provided for each parent (Appendix D). Each parent was told how the procedures learned could be applied to other activities which might be important to them (Appendix D). They were also assured that confidentiality would be maintained, and at no time would their names or identification be mentioned in written or verbal reports.

Social Validation

A social validation questionnaire (Wolf, 1978) was given to participating parents upon completion of the study (Appendix E). According to Wolf, the purpose of subjective information is to bring to "bring to the consumer, that is society, into our science, soften our image, and make more sure our purpose of social relevance." Wolf contended that there is a need to evaluate our work through social validation, on the following three levels:

1. the social significance of the work;
2. the social justification for the procedures and;
3. the consumer satisfaction with the results.
In this study, all levels of social importance mentioned above were evaluated. Questions were phrased so that the required response was either "yes" or "no". In addition, parents were given the opportunity to comment on each question if they so desired. The first concept of social significance was determined by asking parent-subjects to answer questions related to the importance of compliance with weak rules for working with their developmentally delayed children. There were five items on the questionnaire to investigate how parents felt about the social significance of this research.

Social justification for the procedures used was evaluated by asking parents if the requirements of the study were valid in terms of usefulness, and time and effort costs. Also considered here was the question of whether or not the parent experienced excessive guilt when she was unable to carry out the targeted task. The questionnaire included six questions to probe parental perceptions of social justification for experimental requirements.

Finally, consumer satisfaction was probed by asking parents to respond to questions related to gains made by participating in the study -- whether the self-management procedures helped her and/or her child to attain objectives important to both of them. Related questions probed the
perspective that parents would continue to use such procedures in the future. Eight items on the questionnaire addressed the issue of consumer satisfaction.

Significance of Research

If self-management procedures, including rule-stating and self-reinforcement, are effective in promoting greater compliance on intervention regimens by parents of handicapped children, then perhaps the overall effectiveness of early childhood intervention will be improved.

If self-management procedures, including rule-stating and self-reinforcement are effective with parents of handicapped children, they may be effective as techniques to be used in other areas which are deemed to be important to society.
CHAPTER IV
RESULTS

The following chapter provides a description of the results of this study. These results are divided into three areas. First, there is a description of the dependent variables (rule following, rule stating, and self-praising). This section is followed by a report on interobserver agreement. Finally, results of the social validity questionnaire are described.

Dependent Variable

Three discrete dependent variables were used to answer the research questions of this study. Those dependent variables were rule following or compliance in carrying out a home education regimen; rule stating or the accuracy with which parents wrote weak rule statements; and self-praise or the correctness with which parents wrote statements to praise themselves for rule following.

Rule Following

Rule following refers to the compliance of parents who participated in this study in completing the targeted activity with their handicapped child. Compliance was

93
determined by asking parents to self-record whether they had or had not completed the task on a given day. The data from this dichotomous measure were plotted on a cumulative graph showing trends in consistency of rule following within and between experimental phases. A multiple baseline design provided the basis for a functional analysis of the effects of rule-stating and self-praising on frequency of rule following. During baseline, parents recorded whether or not they had followed the rule. Parents were taught to write weak rule statements and self-praise statements during intervention. The results of this analysis are presented in the following section and are visually displayed in Figure 1 and summarized in Table 1.

**Parent 1.** A steady state of responding was established by P1 during a 12-day baseline period. Out of the 12 days that P1 self-recorded rule following, the target task was completed seven times. During baseline, P1 reported no more than two consecutive days of rule following. After P1 began writing weak rule statements and self-praise statements during the intervention phase she reported following the rule on 13 of 16 days. At one point, P1 reported following the rule six consecutive days, and at another point reported five consecutive days of rule following. In the middle of the intervention phase there
Figure 1. Multiple baseline analysis across three subjects of cumulative number of days that weak rules were followed. Baseline phase was self-recording and intervention phase was written rule statements and self-praise. A second intervention phase for Parent 2 included charting while follow-up for Parent 1 was self-recording only.
<table>
<thead>
<tr>
<th></th>
<th>BASELINE</th>
<th>% INTERVENTION</th>
<th>% INTERVENTION 2</th>
<th>% FOLLOW-UP</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>7/12</td>
<td>58%</td>
<td>13/16</td>
<td>81%</td>
<td>---</td>
</tr>
<tr>
<td>P2</td>
<td>3/11</td>
<td>27%</td>
<td>1/6</td>
<td>17%</td>
<td>3/12</td>
</tr>
<tr>
<td>P3</td>
<td>13/19</td>
<td>68%</td>
<td>13/16</td>
<td>81%</td>
<td>---</td>
</tr>
<tr>
<td>TOTAL</td>
<td>23/42</td>
<td>55%</td>
<td>27/38</td>
<td>71%</td>
<td>3/12</td>
</tr>
</tbody>
</table>
was a period where P1 reported not following the rule three out of five days. This mother complied with the rule on 58% of the days during baseline and 81% of the days during intervention. A visual analysis of trends reveals a distinct difference in slopes between baseline and intervention.

**Parent 2.** During baseline, P2 reported following the rule three times out of 11 days. This consistently low frequency of responding constituted a steady state over those 11 days. When P2 began writing weak rule statements and self-praise statements, no changes were seen in the frequency of rule following. During this intervention phase P2 followed the rule only once out of six opportunities or 17% of the time.

During a second intervention phase, implemented especially for Parent 2, daily charting of rule following used. P2 charted whether or not she had followed the rule that day and the length of time that she had worked with her daughter. During this second intervention phase, P2 did not comply more often than during the previous two phases. She reported that she had worked with her daughter on four different days, but followed the weak rule only three out of twelve days or 33% of the time (Figure 2). The number of days that P2 charted compliance was higher than the number of days that she wrote rule statements and
Please fill out two items on this data sheet. First, write in the blank how long (in minutes) you spent working with Lynsey. Then circle the 'y' if you worked with her for at least 15 minutes or 'n' if you did not work with her or if you worked with her for less than 15 minutes. Please continue to fill out the other data sheet and return that to me.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time spent with</th>
<th>Followed Rule Today</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/18/85</td>
<td>10 min</td>
<td>Y yes</td>
</tr>
<tr>
<td>4/19/85</td>
<td>20 min</td>
<td>Y yes</td>
</tr>
<tr>
<td>4/20/85</td>
<td>30 min</td>
<td>Y yes</td>
</tr>
<tr>
<td>4/21/85</td>
<td>0</td>
<td>Y yes</td>
</tr>
<tr>
<td>4/22/85</td>
<td>0</td>
<td>Y yes</td>
</tr>
<tr>
<td>4/23/85</td>
<td>0</td>
<td>Y yes</td>
</tr>
<tr>
<td>4/24/85</td>
<td>0</td>
<td>Y yes</td>
</tr>
<tr>
<td>4/25/85</td>
<td>20 min</td>
<td>Y yes</td>
</tr>
<tr>
<td>4/26/85</td>
<td>0</td>
<td>Y yes</td>
</tr>
<tr>
<td>4/27/85</td>
<td>0</td>
<td>Y yes</td>
</tr>
<tr>
<td>4/28/85</td>
<td>0</td>
<td>Y yes</td>
</tr>
<tr>
<td>4/29/85</td>
<td>0</td>
<td>Y yes</td>
</tr>
<tr>
<td>4/30/85</td>
<td>0</td>
<td>Y/N</td>
</tr>
</tbody>
</table>

Place this on the front of your refrigerator and mark on it each day.

Figure 2. Home chart used by Parent 2 during Intervention II phase. On a daily basis Parent 2 reported duration of time spent on the target task and if the rule was followed.
self-praise statements since she included data from weekend days on the chart.

**Parent 3.** Parent 3 reported a high steady frequency of responding on the target behavior during baseline. This mother completed the target task 13 times out of 19 baseline days (68% of the time). A visual inspection of baseline and intervention trends reveals a cycle in the pattern of responding. Several consecutive days of rule following are found between a short period of not following the rule. This pattern did not vary systematically with days of the week. Baseline was extended for this mother to determine if rate of rule following would decrease as participation in the study became less novel. Rather, the rate of responding continued high and steady throughout baseline.

After this mother began writing weak rule statements and self-praise statements there was a slight overall increase in the relative number of days that she was compliant. On 13 out of a total 16 (81% of the days) intervention days, P3 reported following the rule.

**Parent 4.** On every data sheet returned by this parent, it was reported that the rule had been followed. However, this mother completed and returned only seven out of 20 data sheets. P4 dropped out of the study prior to entering intervention phase of the study. Because she
dropped from the study, and because the accuracy of her data was highly suspect it was evident that the data were not representative. Johnston and Pennypacker (1980) made very clear the tactic which should be used in the case of contaminated data:

"Investigators have a solemn obligation to themselves and to their discipline to ensure that their interpretations reflect the real state of nature with as little error as possible. In all decisions made throughout the conduct of the research, they should act to eliminate as many distracting, extraneous influences on interpretations as possible; this principle is not excepted at the stage of data display and analysis. Thus irregular data can and should be discarded, provided the researcher does so with the conviction that nothing of potential value is thereby lost and the decision is reported and explained" (pp. 334-335).

The experimenter concluded that, because of the reasons mentioned above, the data for P4 were aberrant and should be discarded. Therefore, no data were displayed for P4, either in graphic or tabular form, nor will they be mentioned further of the narrative in this chapter.
Rule Statements

Rule statements or weak rule statements were written during the intervention phase of this study. These weak rule statements were to be written each day during intervention phase by parents regardless of whether they had followed the rule on the previous day. Written rules were mailed on a daily basis back to the experimenter. The rules written by each parent have been compiled and are presented in Appendix F.

The data presented in this section provided the basis for answering the research question, "Will parents write weak rule statements." To determine this, the investigator and an independent observer scored each written rule according to the criteria established in Chapter III (description of the target behavior and statement of the probable positive delayed outcomes for the child). If both scorers evaluated the rule statement identically, then the rule was scored as correct or incorrect accordingly. If the independent observers disagreed upon the correctness of the rule statement, they simultaneously reviewed the criteria and reevaluated the rule statement. Once a consensus was reached, the rule statement was scored correct or incorrect. A summary of correctly and incorrectly written rule statements can be found in Table 2.
<table>
<thead>
<tr>
<th></th>
<th>Correct</th>
<th>Incorrect</th>
<th>Total</th>
<th>% Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>15</td>
<td>1</td>
<td>16</td>
<td>93%</td>
</tr>
<tr>
<td>P2</td>
<td>16</td>
<td>0</td>
<td>16</td>
<td>100%</td>
</tr>
<tr>
<td>P3</td>
<td>16</td>
<td>0</td>
<td>16</td>
<td>100%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>47</td>
<td>1</td>
<td>48</td>
<td>98%</td>
</tr>
</tbody>
</table>
Parent 1 wrote correct rule statements on 15 out of 16 days of intervention. The ratio of correctly written weak rules for P2 was six out of six opportunities during the first intervention phase, and 10 out of 10 days when P2 began keeping her own data. Parent 3 wrote 16 correct weak rule statements for 16 intervention days. The individual percentages for correctly written rule statements were 94% for P1, 100% for P2 and 100% for P3. Overall, parents correctly wrote weak rule statements 47 out of 48 opportunities or 97.7% of the time.

Self-Praise Statement

Parents were instructed to write self-praise statements only when they had completed the target task on the previous day. If they wrote "yes" in response to the prompt "did you do this task yesterday?" then they should have written a self-praise statement. The self-praise statements written by each of the parents who participated are compiled in Appendix F.

The criteria used to evaluate whether or not parents correctly wrote self-praises were, 1) specification of the target behavior; and 2) positive comment made about the parent/subject for following the rule. Two independent observers scored each self-praise statement to determine if the criteria delineated above were met. If both scorers
evaluated the praise statement identically, then the statement was scored as either correct or incorrect depending upon conformity to the criteria. If the independent scorers disagreed on the correctness of the self-praise statement then the criteria were reviewed simultaneously and the statement was reevaluated. Once a consensus was reached on the correctness of the self-praise statement it was scored as either correct or incorrect accordingly.

Table 3 is a summary of correctly and incorrectly written self-praise statement. Parent 1 wrote 12 correct self-praise statements for 13 days that she followed the weak rule. It was found that P2 wrote three correct self-praise statements out of three opportunities. Finally, P3 wrote 12 correct self-praise statements for 13 days in which she followed the rule. Individual percentages for correctly written self-praise statements were 92% for P1, 100% for P2, and 92% for P3. Overall, parents correctly wrote self-praise statements 27 out of 29 opportunities or 96% of the time. On no occasion did any of the parents in the study write a self-praise statement when they should not have (if they failed to follow the rule on the previous day). As well, all parents wrote self-praise statements 100% of the time when they reported following the rule on the previous day.
<table>
<thead>
<tr>
<th></th>
<th>Correct</th>
<th>Incorrect</th>
<th>Omission</th>
<th>Total</th>
<th>% Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>12</td>
<td>1</td>
<td>3</td>
<td>16</td>
<td>92.3%</td>
</tr>
<tr>
<td>P2</td>
<td>3</td>
<td>0</td>
<td>13</td>
<td>16</td>
<td>100%</td>
</tr>
<tr>
<td>P3</td>
<td>12</td>
<td>1</td>
<td>3</td>
<td>16</td>
<td>92.3%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>27</td>
<td>2</td>
<td>19</td>
<td>48</td>
<td>96%</td>
</tr>
</tbody>
</table>
Interobserver Agreement

Two types of interobserver agreement are discussed in this section. First, the agreement between the self-reports of parents and independent observers on rule following is calculated. Secondly, the results of interobserver agreement on the accuracy of written rule statements and self-praise statements are presented.

Rule Following

Interobserver agreement on rule following was conducted to improve the believability of the subject/parents' self-reports. This was done by contacting the husbands in these cases and asking if they had observed the subject working with their child on the target task. This report was then compared to the self-report of the subject for that particular day. Table 4 summarizes the interobserver agreement between parent/subjects and independent observers on rule following.

Parent 1. The husband of P1 was contacted six times for a report on whether he had observed P1 executing the target task. He reported that he had not observed her following the rule on any of the six days that he was contacted, even though P1 reported that she had been compliant. The latter reports do not constitute a disagreement, since P1's behavior was not accessible to observation by the husband much of the time.
**TABLE 4. PERCENTAGES FOR INTEROBSERVER AGREEMENT OF RULE FOLLOWING**

<table>
<thead>
<tr>
<th></th>
<th>Agreed That Rule Had Been</th>
<th>Agreed That Rule Had Not Been Followed</th>
<th>Disagreed That Rule Had Been Followed</th>
<th>Neutral</th>
<th>% Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>100%</td>
</tr>
<tr>
<td>P2</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>P3</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5</strong></td>
<td><strong>4</strong></td>
<td><strong>0</strong></td>
<td><strong>7</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
During the reversal to baseline condition, the investigator called Cl's teacher for verification of P1's self-reports since the husband had not had the opportunity to observe her in the course of the study. The teacher reported that observable changes had taken place since the beginning of the study in the child's range of motion and flexibility which would not have occurred if consistent intervention had not been provided. The teacher also noted that there were developmental advances in social behaviors in the classroom.

**Parent 2.** The husband of P2 was contacted five times to report whether he had observed P2 executing the target task. His reports that P2 had followed the rule agreed with the self-reports of this mother on five out of five opportunities. On four occasions when P2's husband was called, he reported that he had not had the opportunity to observe her that day. All four of these observations coincided with days that P2 reported noncompliance. On one occasion when P2 reported that she had followed the rule, her husband confirmed that he had observed her working with their child. An agreement did occur when both the observer and the subject reported that the behavior did not occur.

**Parent 3.** The investigator contacted the husband of P3 six times to obtain his report on P3's rule following behavior. On four of these occasions, this independent
observer reported that he had observed her executing the
target tasks. These report observations were in agreement
with the self-reports of P3. On two of the days that this
observer was contacted, he reported that he had not seen P3
working with their son on the target activity when the
mother's self-report indicated that she had.

Using the formula below interobserver agreement
percentages were derived:

\[
\frac{\text{agreements}}{\text{agreements + disagreements}} \times 100 = \% \text{ agreement}
\]

Individual interobserver agreements are found in Table
4. There was 100% interobserver agreement that the
parent/subject had followed the rule for P2 and P3.
However, since the husband of P1 had never had the
opportunity to observe P1 during the study, it was not
possible to calculate an agreement percentage. The overall
agreement for rule following between subject self-reports
and interobservers was 100%.

**Rule Statements**

In calculating independent observer agreement on
written rule statements the following formula was used:
agreements
------------------------------------- x 100 = % agreement
agreements + disagreements

An agreement was scored if both observers indicated that the criteria for correct rule statements were followed or if both observers indicated that the criteria for correct rule statements had not been followed. A disagreement occurred if one observer indicated that the rule statement was correct and the other indicated that the rule statement was incorrect.

Interobserver agreement data on correctly and incorrectly written rule statements are summarized in Table 5. The interobserver agreement on correct rule statements was 100% for P1, 100% for P2, and 100% for P3. The overall interobserver agreement for written rule statements was 100%.

Self-Praise statements

To calculate interobserver agreement the same formula was used as for rule statements and self-praise statements. As well, the same formula was used to determine agreements and disagreements.

Table 6 provides a summary of interobserver agreement on written self-praise statements. The individual interobserver agreement on correct self-praise statements
<table>
<thead>
<tr>
<th>AGREEMENTS</th>
<th>DISAGREEMENTS</th>
<th>% AGREEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>P2</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>P3</td>
<td>16</td>
<td>0</td>
</tr>
</tbody>
</table>

TOTAL  48  0  100%
<table>
<thead>
<tr>
<th>AGREEMENTS</th>
<th>DISAGREEMENTS</th>
<th>% AGREEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>P2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>P3</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td>2</td>
</tr>
</tbody>
</table>
was 87% for P1, 100% for P2, and 100% for P3. The overall interobserver agreement for written self-praise statements was 93.5%.

Generalization

Generalization of treatment effects across time was evaluated by removing intervention phase treatment for P1 and returning to baseline condition. During this reversal, P1 simply reported whether she had completed the target task on the previous day and no longer wrote weak rule statements and self-praise statements. The trend line for this reversal phase was then compared to those of the previous two phases to analyze changes that may have occurred.

It can be seen (Figure 1 and Table 1) that P1 followed the weak rule nine times out of 11 days during the generalization phase. This 82% compliance was unchanged from intervention rates and was substantially higher than baseline rates.

Social Validation

Each subject was given the opportunity to respond to the social validation scale (Appendix E) upon completion of the final data sheet. While visiting the parents to debrief them, the investigator requested that the participants fill out the 18 item questionnaire.
The social validation scale was evaluated in two ways. Each question asked for a dichotomous response (either "yes" or "no") and then gave the parents the option of responding qualitatively. Table 7 is a summary of parents' responses on the dichotomous analysis of social validation, while Table 8 is a summary of the qualitative responses to the questionnaire.

To summarize the data from this questionnaire the items were clustered into three groups which represented the purpose for conducting social validation. First, items 1-8 ask for responses to the question of perceived effects of different components (self-recording, weak rule statements, self-praise statements etc.) of the research on the rule following behavior of participants. On five out of eight of these items P1 reported that there was some effect on her rule following behavior. Both P2 and P3 indicated on four of the eight items that there had been some effect on compliance.

Items 9-12 and 16 were designed to assess the perceived justification for components of the study in terms of psychological and physical costs to the parents and child. On four of the six items P1 reported justification for experimental procedures. P2 felt that five of six items represented justified components of the
Table 7. Individual responses by participants on "yes/no" measure of social validation.

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes</th>
<th>No</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Compliant before baseline?</td>
<td></td>
<td>P1, P2, P3</td>
<td></td>
</tr>
<tr>
<td>2. Did self-recording help?</td>
<td>P2</td>
<td>P1</td>
<td>P1</td>
</tr>
<tr>
<td>3. Encouragement from others?</td>
<td>P2</td>
<td>P1, P3</td>
<td></td>
</tr>
<tr>
<td>4. Guilt when writing rule?</td>
<td>P2</td>
<td>P1, P3</td>
<td></td>
</tr>
<tr>
<td>5. Relief after following rule?</td>
<td>P1, P2, P3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Guilt reporting &quot;no&quot;?</td>
<td>P1, P3</td>
<td>P2</td>
<td></td>
</tr>
<tr>
<td>7. Did rule stating help?</td>
<td>P1</td>
<td>P2, P3</td>
<td></td>
</tr>
<tr>
<td>8. Did self-praising help?</td>
<td>P1</td>
<td>P2, P3</td>
<td>P3</td>
</tr>
<tr>
<td>9. Discomfort writing praise?</td>
<td>P2</td>
<td>P1, P3</td>
<td></td>
</tr>
<tr>
<td>10. Too much time involved?</td>
<td>P1, P2, P3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11a. Would more data help?</td>
<td>P1, P2, P3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11b. Would less data help?</td>
<td>P3</td>
<td>P1, P2</td>
<td></td>
</tr>
<tr>
<td>12. Did procedures cause discomfort?</td>
<td>P3</td>
<td>P1, P2</td>
<td>P3</td>
</tr>
<tr>
<td>13. Use procedures in future?</td>
<td>P1, P3</td>
<td>P2</td>
<td>P3</td>
</tr>
<tr>
<td>14. Recommend use to others?</td>
<td>P1</td>
<td>P2, P3</td>
<td></td>
</tr>
<tr>
<td>15. Like more training?</td>
<td>P1, P3</td>
<td>P2</td>
<td>P3</td>
</tr>
<tr>
<td>16. Was participation a hinderance?</td>
<td></td>
<td>P1, P2, P3</td>
<td></td>
</tr>
<tr>
<td>17. Child receive education from school?</td>
<td>P2</td>
<td>P1, P3</td>
<td>P1, P3</td>
</tr>
<tr>
<td>18. Important child team member?</td>
<td>P1, P2, P3</td>
<td>P1, P3</td>
<td></td>
</tr>
</tbody>
</table>
**TABLE 8**

Comments made by participants on items of Social Validation Questionnaire.

**Item 2.** Did you feel that filling in the data sheets during baseline helped you to be more consistent?

*P1.* "It was embarrassing to write "no!" I felt like a bad mother!"

**Item 8.** Did you feel that writing the self-praise statements helped you to be more consistent?

*P3.* "Too repetitive and time consuming."

**Item 12.** Did the requirements of this study make you feel uncomfortable at any time?

*P3.* "Writing rule and self-praise statement takes too long for the benefit."
Table 8 (cont.)

Item 13. Would you use variations of the procedures in the future to help you be a better self-manager?

P3. "An outside 'moderator' to report to and use as consultant support person. Simple graph type record showing tasks and results with only ' ' marks needed when task completed or result accomplished."

Item 15. Would you like further training on additional self-managing techniques?

P3. "If I could help design it to meet our own needs."

Item 17. Does your child receive most of her/his needed education from school?

P1. "Main instruction, but not necessarily the work itself."

P3. "I feel parents are primarily responsible for any child's education. The schools are tools we use to help accomplish desired education. However, I realize this is idealistic and I can never
Table 8 (cont.)
really teach him all he needs to know without the expertise of educators and availability of materials and situations available at school."

Item 18. Do you see yourself as a critical member of you child's educational team?

P1. "The most critical member - I spend the most time with ------ and I do the most work, etc. So I feel I'm his most important 'teacher'."
P3. "The most critical, but there is never enough of my time to do all I want to do."
research, while P3 reported justification for only two of the six items.

Finally, items 13-18 represented the participants' perceived importance of consistent parental intervention for their handicapped child. Parent 1 indicated on all five of the items that parental intervention was important and P3 indicated the importance of parental consistency in intervention on four of the five items. The parent (P2), who throughout the study had the lowest compliance, found only one of the five items on the importance of parental consistency in intervention to be important.
CHAPTER V
DISCUSSION

The purpose of this study was to analyze the effects of a self-management package on the weak rule governed behavior of parents of handicapped children. Of primary interest was the functional analysis of overtly verbalized weak rule statements which specified the indirect outcome of compliance with those weak rules. Outlined below are the research questions asked at the beginning of the study and a summary of the results which answered those questions.

1. Will parents verbally state weak rules, including the behavior and the consequences for following the rules, for working with their handicapped children?

It was found that parents did generate verbal weak rules which specified the delayed positive outcome for the work they did with their handicapped children. During intervention Parents 1 and 2 wrote different rules each day, while Parent 3 wrote essentially the same rule every day.
2. Will parents follow weak rules in working with their handicapped children in the absence of self-management strategies?

Parents indicated that they did not work with their children consistently on the selected task before they began using self-management strategies. So, in the absence of self-management strategies, they did not follow the weak rules. However, during baseline when they began using self-recording as a form of self-management, they reported that there were changes in the frequency with which they performed the task.

3. Will stating and restating weak rules, including the consequences for following the rules result in greater weak rule governed behavior?

There was some evidence to indicate that verbalization of weak rule statements will help parents to follow weak rules. However, the evidence is not definitive since there was high intersubject variability.

4. Will parents use self-praise statements to evaluate their work with their handicapped child?

Parents did write self-praise statements consistently and correctly during the intervention phase when they reported working with their child. However, they indicated that they experienced some discomfort in writing these statements.
5. Will the use of self-praise have an effect on weak rule governed behavior in parents of handicapped children?

Because self-praise statements were combined with the written rule statements as part of a self-management package, it was difficult to make an analysis of the functional effects of self-praise on rule following behavior. But, since parents reported that writing the self-praise statement was slightly aversive, it is unlikely that the verbalized praises were very reinforcing.

The following discussion is an interpretation of the results of this study which directly address the research questions asked above. These research questions were functionally analyzed through the use of a multiple baseline design. During the prediction phase (baseline) parents recorded their compliance with the rules. The frequency of compliance during baseline was then compared to the frequency of compliance after parents began writing weak rule statements and self-praise statements.

Functional Analysis

Self-Recording

The baseline condition in this study did not reveal a true frequency of the dependent measure (rule following)
since a new behavior, self-recording, was introduced. It did appear (as reported by parents) that, in at least two of the cases, parents were more compliant than before they began the study in carrying out the target tasks. In fact, both of these parents reported on the social validation questionnaire that they had not been compliant with targeted activity before participating in this research, but both followed the rule at least 50 per cent of the time during baseline. It is unlikely that the act of self-recording provided any sort of positive reinforcement for rule following since, 1) the self-report was delayed until the following day as recommended by Kanfer (1970), and; 2) there were no permanent product records that the parent could refer to since the data were mailed immediately back to the investigator. Rather, it is more likely that self-recording established a negatively reinforcing situation.

It may be that recording behavior was negatively reinforcing, in that the parents experienced a slightly aversive condition when they wrote that they had failed to complete the target task. As if to emphasize this point, Parent 1 wrote on her social validation questionnaire, "It was embarrassing to write 'no!' I felt like a bad mother." This comment lends credence to the notion that the mothers were covertly stating weak rules, even though they had not
yet been trained to do so and were not writing the rules down. Once the rule was stated, aversive stimuli could be avoided by performing the targeted task.

**Rule Stating**

Because verbalizations of weak rule statements are predominantly covert, they are within the realm of private events and, as such, are inaccessible to direct observation. Further, the hypothesized conditioned aversive stimuli (guilt, shame etc.) which are thought (Malott, 1982) to result from verbalization of weak rules are also private events. Though Malott may have been correct in stating that guilty feelings serve as establishing conditions for weak rule governed behavior, it is impossible to verify this through currently available technology. However, it is possible to convert the verbalizations of rules into public events, as was demonstrated in this study as well as in previous research (Blackwood, 1970; Snyder and White, 1979). By having parents verbalize textually weak rule statements, a private event was made observable and measurable, and therefore open for an analysis of functional relationships between verbalizations of weak rule statements and weak rule governed behavior. But, as mentioned earlier, the results of this analysis do little to further the hypothesis that aversive conditioned responses resulting from weak rule
statements actually occurred, and if those responses did occur that they increased the likelihood that the rule would be followed.

A visual analysis of the data presented in Chapter IV indicates that there may be at least a weak relationship between the statement of rules and the ability to follow those rules. Though parents did not follow the weak rules every day after they were asked to write them down, there were increases in the relative number of days that at least two parents followed rules once they began verbalizing the targeted behavior and the delayed, cumulative consequences of the behavior. No changes were seen in the frequency of compliance to weak rules during intervention for the third parent.

Since significant differences between phases were only apparent with one parent (Parent 1), there was, in essence, no replication of the treatment effects. Because of this failure to replicate, the observed changes are subject to many interpretations. The most apparent explanation would be that the behavior change was due to maturation (Campbell & Stanley, 1963; Tawney & Gast, 1984). The fact that this parent became more compliant after an initial baseline period may be due to the gradual development of a routine for daily intervention. It is plausible that she arranged her environment so that she eventually came under stimulus
control, thus developing greater rule governed control. It is unlikely, however, that this activity did or ever will come to be contingency controlled (Skinner, 1969) since the reinforcer is too delayed and the effect is only cumulatively significant.

Given that changes in behavior were not universal across all subjects, the results of this study lend only tenuous support to Malott's contention that stating weak rules establishes a slightly aversive condition in the parent which may be eliminated by following the rule. However, there is sufficient evidence to say that this negatively reinforcing condition helped some parents to become more compliant in providing their child with instruction and care which they deemed to be important for their child's future development.

**Variables to Consider**

*Units of analysis.* At this point it is appropriate to consider the relative insensitivity of the units of analysis used to measure behavior in this study. Given the gross nature of the units chosen, small changes in the dependent variable would not be apparent, but a very robust independent variable would be necessary to evoke changes. The fact that there did appear to be a functional relationship in some cases indicates that weak rule
Intersubject variability on weak rule control. It is necessary to note the heterogeneity of parents involved as subjects in this study in order to analyze the impact of the experimental procedures on these women. Teachers who selected parents for this research reported difficulty in selecting subjects according to the established criteria. The criteria specified that parents should be inconsistent in providing daily intervention to their children. The teachers found that they were only able to gain consent to participate from those parents who were likely to cooperate. In fact, those parents who were least compliant were systematically eliminated from participation because they refused to be subjects or because the teachers felt that they would not be cooperative. Of the four women who agreed to be subjects, three reported that a system which they could implement to help them become more consistent would be very helpful. The subject (Parent 4) who did not make this comment prior to the study dropped out before intervention phase. This subject also failed to send data sheets on time, missed appointments, and failed to return phone calls. It seems obvious that this parent who dropped out needed a more intrusive form of intervention to improve compliance than self-management strategies. Perhaps some
form of external reinforcement would be necessary to improve compliance in this mother. It is likely that this mother lacked enough weak rule governed control to make even a simple response on a data sheet each day and mail it back to the investigator.

On the other extreme was a parent (P3) who mailed in her data sheet daily and had a very high rate of compliance even during baseline. It seemed that for this parent very little intervention was necessary to evoke the desired response. Perhaps a self-recording procedure would have been sufficient to help this mother to remain compliant. It is evident that this parent was under fairly strong weak rule control before she entered the study.

Yet another subject (P2) participating in this research was very consistent in sending in her daily data sheets during baseline, but rarely complied with the regimen of home activities with her child. Simply filling in a data sheet and reporting to the investigator had little or no effect on her compliance. When this parent began writing weak rule and self-praise statements, there were still no observable change in her compliance. Apparently, though this mother had some weak rule control, she needed more intrusive intervention than that which was provided in this study to become a more consistent caregiver to her handicapped child.
Finally, there was Parent 1 who complied with the home regimen about 50% of the time during baseline, demonstrating some degree of weak rule control. After this mother learned to state weak rules and self-praise, her rate of compliance improve dramatically. Though the self-recording had some effect on compliant behavior, the introduction of written rule statements and self-praise statements appeared to have an even greater effect. It must be noted that this mother also had the most rigorous home program, but was also the only mother who did not work.

In summary, it seems clear that the intrusiveness of self-management or other programs designed to help parents become more compliant must be implemented according to the degree of weak rule control which exists for that parent. If the parent is under relatively strong weak rule control, then very little intervention will be needed to evoke the desired behavior. However, if parents are not under the control of weak rules, then it may be that self-management strategies will not be effective. This finding supports the contention by Malott that weak rule governed control is not an "all or nothing" phenomenon, but exists in different degrees in all individuals depending upon the history with which weak rule control has been reinforced.
Weak rule history. It did not appear that intersubject variability was due to differences in other commitments which parents had. Rather, patterns of compliance may have been due to differences in their histories of reinforcement for weak rule following. These findings raise the question as to the importance of a person's history of being reinforced for following weak rules. If there is a place for verbalization of weak rule statements in self-management packages, it will be important in the future to be able to determine a person's history of weak rule stating and following. This knowledge will assist researchers and clinicians in predicting the successfulness of antecedent verbal behavior on weak rule governed behavior.

Rigor of intervention. It might be argued that observed intersubject variability in the compliance of parents in this study was due to differences in demands of time and effort required of each parent to complete the targeted task. However, a post hoc analysis showed that Parent 1, who decided to work with her severely involved child for 45 minutes each day, was significantly more compliant than the mother who chose to work with her Down Syndrome child for just 15 minutes each day. More likely was the possibility that parents in this study perceived
their responsibilities to their child's education differently. For example, Parent 1 took her child to school and worked with him there just four hours each week; the rest of the time she was the sole intervening agent. Meanwhile, the Parent 2, who was least compliant, sent her child to a preschool program for 15 hours each week and employed a private speech therapist for her daughter. It could have been that the latter felt that it was the school's and speech therapist' responsibility to provide speech and language intervention. Thus, this mother might have felt less guilty when she failed to follow the rule since she could expect other professionals to provide speech services. This notion was supported by this mother's response to an item on the social validation questionnaire which asked if the she or her daughter's school was primarily responsible for educating the child. This parent felt that the school had the major responsibility, while the other two mothers felt that they, as parents, were the most important educator for their handicapped child.

Age of children. Another factor of consideration was the difference in ages of the subjects' children. The range was from five and a half months old to six years old. The fact that there were differences in the newness of their child's handicapping condition may have had something to do
with each parent's compliance. Parent 2, whose child was the oldest of the three, spent the least amount of time working with her daughter on the selected activity, while Parent 1, whose child was the youngest spent the most amount of time working on the target behavior. The novelty of activities which are under the control of weak rules may have something to do with compliance with those rules and the general effectiveness of verbal mediation and other self-management strategies. This may be an important consideration when investigating such self-management packages in applied settings.

Because early childhood intervention has been found to be so important to the development of children, it is critical that parents, as key behavior change agents, be consistent from the time the child is very young in providing that intervention. This period is perhaps an optimum time to shape patterns of consistency in parents of handicapped children. As seen above, Parent 1, whose behavior was the most pliable, was also the parent of the youngest child. Perhaps the rule statements were more effective in establishing stimuli for this mother than the other two because she had no history of noncompliance. This activity with her child quickly became a priority over other activities once she began stating rules which specified delayed outcomes for compliance.
Severity of child's handicap. A related factor which might help explain differential findings among parents was the severity of each child's handicap. In this study, Parent 1 was the mother of the child that was most severely handicapped was also the parent whose compliance improved to the greatest extent during the intervention phase. The other two mothers, one whose behavior changed minimally and the other whose behavior did not change, were parents of less severely handicapped children. Hence verbalizations of delayed outcomes are perhaps most effective when failure to follow the rule is likely to be very deleterious. With respect to this sample, if the parent of the severely handicapped child failed to provide intervention on a consistent basis, the child's prognosis would have been much more severe than that of the children who were less severely handicapped if their parents were noncompliant. The other two children could be expected to make substantial progress without intensive intervention, although the extent of progress would likely be enhanced through greater compliance.

The mother of the youngest child was also the mother of the most severely handicapped child. These factors may have combined to improve the functional effectiveness of the weak rule statements. It is not suggested that there is an additive effect, since this would assume some
cognitive structure. But, if the mother was experiencing guilt because her child was handicapped (more than the other mothers because the child was so young), stating the rule might be more aversive for her than for parents who had had more time to adjust. In addition, following the rule would be more negatively reinforcing since there was the threat of more deleterious consequences.

This analysis of the results supports Malott's contention that weak rule governed behavior is controlled through negative reinforcement. That is, Parent 1, whose behavior changed most visibly, appeared to be subject to more aversive consequences for failure to comply than the other mothers in the study.

Regimentation. One mother commented that it was easier to be consistent in working with her son if she kept the time slot the same from day to day. She set aside all other activities to work with her child from 11:00 a.m. to 12:00 p.m. as if she had an appointment. An interesting line of research might be to investigate the usefulness of a strategy of self-management, where individuals designate a time for some weak rule governed activity. Such a strategy might be useful since individuals tend to put off activities saying, "I will do that later today." The next thing they know the day is gone and the task is unfinished. If individuals set aside a specific time for activities,
then it is easier to schedule other activities around this already used time. Additionally, once that time is set aside, individuals might feel guilty in planning other activities during that period, hence making it more likely that they would follow the rule.

Specificity of target tasks. The cyclical pattern (Tawney & Gast, 1984) observed in the pattern of responding for Parent 3 was an interesting phenomenon. The mother reported following the rule for several days consecutively, and then reported two or three days of noncompliance. The cycle was then repeated several times. A cyclic pattern was observed in both baseline and intervention. Though it did not coincide with specific days of the week, this cycle was fairly regular. An anecdote reported by Parent 3 may be one explanation for this cyclic behavior. She stated that after several days of working on wheelbarrow exercises, both she and her son became bored with the activity. When her son became "bored," it became difficult to get him to comply with the requirements of the activity. Perhaps the point in the data pattern when this parent was noncompliant correlated with periods where her son was uncooperative. If so, it is likely that avoidance of the activity was more negatively reinforcing than were the feelings of guilt associated with failure to do the activity.
This cyclic pattern was not observed in the data of the other two parents. However, the activities selected by Parent 1 and Parent 2 were much more general in nature, and allowed the mothers to vary activities from day to day, hence avoiding boredom. Cyclic behavior may have been eliminated if the third parent had chosen a less specific rule to follow.

Intrasubject Stability

The results of this study lead one to suspect that a critical analysis of baseline trends may be a fairly accurate method of predicting the effectiveness of written rule statements on parental compliance. Though there seemed to be a functional relationship between rule statements and compliance for Parent 1 and Parent 2, there was no apparent effect on the third parent. The two parents whose behavior change correlated positively with introduction of the independent variable were compliant on at least 50% of the baseline days. The third parent had a very low baseline frequency of responding. Though generality is limited in this study, a fact to be discussed later, it can be seen that uniform intrasubject stability exists within phases and across phases. This lack of variability within subjects is a consistent pattern, and may be a key to future investigations of weak rule control and the prediction of weak rule governed behavior.
Ceiling effect. Although there was not a substantial change in the degree of compliance for Parent 3 between phases, she had already established a high steady pattern of rule following during baseline. This pattern was maintained after she began writing weak rule statements and self-praise statements. This observation raises perhaps an important applied question. Is it that at some arbitrary point a certain degree of noncompliance or failure to follow important weak rules is acceptable? Malott (1972) contended that there is no place for mediocrity, and that people are content to be less than totally compliant eventually slip into patterns of noncompliance. But, perhaps the goal of total compliance is not realistic or even desirable for all individuals within our society. If the latter is true, then it is possible that Parent 3 approximated or even surpassed that arbitrary minimally acceptable level of compliance with the weak rule she selected for the study. If so, then this may be one reason for failure to show significant improvement over baseline rates when she began stating weak rules. With her high level of compliance during baseline, it is likely that she was already stating the weak rule, though perhaps not aware of it.
Self-Praise

The effect of written self-praise statements on rule following is unclear in this study since they were introduced concurrently with written weak rule statements. Because applied research in the investigation of weak rule governed behavior has no precedent, it was perhaps premature to combine rule statements with self-praise statements as a self-management package. Hersen and Barlow (1976) wrote that a technology can only be developed after there has been a systematic functional analysis of the individual components of an intervention strategy. After these components have been determined to be effective singularly, then it is appropriate to investigate the optimum combination of techniques. In follow-up research, this author recommends that the use of self-praise statements be eliminated in investigating the singular value of weak rule statements on weak rule following. Not only do self-praise statements serve to contaminate the analysis of weak rule statements, but it is unlikely that they would have any real reinforcing effect since the temporal gap between emission of the behavior and praise is so delayed. The one effect of these statements might have been to briefly help parents feel good about themselves. However, even that might be untrue, since two (P1 and P3) of the three parents felt uncomfortable in writing
self-praises. In fact, writing self-praise statements was probably slightly aversive rather than reinforcing to parents who participated in this study.

**Generality of Findings**

Before looking at the generality of these results it is necessary to consider the nature of this study. The role of science of human behavior is to build a technology based upon observed behavior. It is the search for lawfulness and orderliness of behavior from which principles are derived (Skinner, 1953). Lawfulness can only be determined through systematic replication. When behavioral responses to certain stimulus conditions are observed to be consistent in many settings, across many individuals, and across different investigators, then generality has been established. Few researchers have attempted to investigate weak rule governed behavior and the applied use of verbal behavior to mediate delayed consequences to behavior. This study is one of the first in this area, severely limiting generality. Generality is further limited due to the high degree of intersubject variability with few direct replications. The self-management strategies had a differential effect on the women who participated in this study. Much more research is needed to determine generality of research findings.
External Validity

Aspects of generality that need to be considered are the threats to external validity (Campbell & Stanley, 1963) that occurred as a result of the research methods employed in this study. For several reasons which will be discussed, threats to external validity were well controlled in this study. Every effort was made by the experimenter to reduce experimental interference in the subjects' everyday lives. Because parents usually have many demands on their time in addition to those placed on them by their handicapped child, the experimenter realized that very rigorous experimental demands would likely require more effort than most parents were able to give for any extended period of time.

This is supported by the findings of Moss, Prue, Lomax, and Martin (1982), who found that when subjects were asked to perform very complex self-management activities, there was a high drop out rate and low compliance. Therefore, the simplicity of the self-management responses required of subjects in this study, to some extent, increases external validity.

In addition, the tasks performed by the subjects were also very realistic. In fact, parents themselves identified the target activity that they worked on with
their child. This fact increases the external validity, since an applied problem is being addressed. Further, two parents selected very general task areas which allowed them to vary the activity from day to day. To put this in perspective, it is important to understand that parents need to work with their children in all developmental areas rather than a single activity. So the goal of self-management training should be to help parents to be more compliant in carrying out general educational intervention with their child, understanding that some activities will usually hold a greater priority than others. Since Parent 3 did the same activity every day for the duration of the study, generality is limited for the reasons stated above.

Though the "yes/no" response requirement on parent self-reports limited the interpretation of the data, it added credibility to experimental generality. Because the response was so simple, it was easy for parents to execute and increased the likelihood that they would self-record. Since it is probable that self-monitoring procedure would be standard in any self-management activity it is necessary to use a system which is pragmatic.

One threat to external validity was the daily delivery of data sheets. This prompt, though considered necessary to insure that parents would remember to fill out and
return these sheets, would not be a realistic procedure under normal circumstances of self-management. Daily delivery of data sheets reduced the management responsibilities of parents because its presence served as a prompt to both self-record and follow the weak rule.

Another threat to external validity was the requirement that parents mail the data sheets to the experimenter daily. As mentioned earlier in this discussion, the fact that someone was checking what they were doing, at least slightly, negatively reinforced compliance. Normally, parents would not be reporting to someone else (at least on a daily basis), but the self-recording would be more of a private event. This added condition poses as a threat to external validity.

Value of Verbalization of Weak Rules

It would be premature to suggest that verbalization of weak rules along with other self-management strategies is a viable strategy to use with parents of handicapped children to help them to be more compliant in carrying out certain home regimens. However, the findings are sufficiently promising to warrant further research. It may be that these self-management strategies can be useful for non-compliant parents as well as for individuals who are not compliant with other types of weak rule governed
behavior such as smoking, dieting, energy consumption, or dissertation writing.

The investigation of weak rule governed behavior may be critical to our society. Skinner eluded to this need in 1953 when he wrote, "Man's power appears to have increased out of all proportion to his wisdom." (p. 4) Malott elaborated, pointing out that our rate of technological development has far outpaced our ability to cope with these changes behaviorally. As technology advances further, the delayed outcomes will become more difficult to project and their effect will be more subtle because of the imperceptible cumulative effect. Historically, it has been less important to develop weak rules or weak rule governed behavior since survival of the species rested primarily with human's ability to respond to stimuli in such a way that the outcome was immediate and probable. In recent generations, it has become more important to respond to stimuli in such a way that the outcomes are more delayed. In order for our species to survive this rapid change in technology, humans must develop the ability to forsee the delayed outcomes of their behavior and act accordingly. Behavioral responses to such stimuli as nuclear power, industrial waste, energy resources and computer technology must be governed by rules which project the long term outcome of their use and abuse. In The Year Ahead (1984),
a sequel to his popular book *Megatrends* (1982), John Naisbitt delineated ten weak rules based upon rapidly changing variables in our society. Stating weak rules is only part of the task ahead; the other part of the task is to follow weak rules. It is the role of researchers to find effective and efficient ways to help society state and follow weak rules which will enhance the survival of the human species as well as infraspecies. This study is merely a beginning of that investigation, but does seem to indicate that the verbalization of weak rules may have an effect on rule following. Further research in this area should focus on those elements of our society which are "at risk" of jeopardizing its survival.

**Limitations**

**Length of Intervention**

In order to determine maintenance of the target behavior over time, the length of intervention should have been extended over a much longer period of time. The real promise of self-management strategies lies in their potential for increasing maintenance and generalization of behavior (Baer and Fowler, 1984). In this case, interest lay in their ability to mediate generality across time for weak rule governed behavior. This study is limited in its investigation of generality due to the abbreviated length of intervention. In order to analyze generality adequately
it would have been necessary to extend this study for several months.

Units of Analysis

In an attempt to insure that self-monitoring did not interfere with the analysis of weak rule governed behavior, the investigator sought to simplify the self-recording process. As Baer and Fowler pointed out, use of self-management strategies (including self-recording) are behaviors which themselves must maintain and generalize. Unless the self-management strategies facilitate generality, they cannot be useful in mediating generality of weak rule governed behavior. In addition, Moss, Prue, Lomax, and Martin (1982) found that very complex self-recording procedures may actually inhibit individuals from recording their own behavior. A reduction in the required self-recording responses was accomplished in this study by limiting the possible daily frequency to one. That is, the dependent measure was dichotomous, since parents reported either "yes" or "no" for rule following independent of the length or intervention or daily frequency.

By reducing the dependent measure to such a low frequency, the analysis of behavior and behavior change was necessarily compromised. For those behaviors investigated in this study, a single instance of rule following could
represent one or just a few actual responses, or many responses could be represented in that data point. Johnston and Pennypacker (1980) identified the jeopardy involved, 

"...too large a slice <of behavior> may mask potentially important sources of variability."

Using a dichotomous measure such as "yes" or "no" rather than using smaller units of analysis limits the representativeness of the data to the behavior and the investigative nature of the study. A dimension of behavior which would have added to analysis of weak rule following might have been duration of the responding (Johnston & Pennypacker, 1980; Cooper, 1981). In two cases, duration as a dimension of the weak rule might have been artifically built in, since parents stated a minimum length of time for intervention (i.e. working on speech/language activities for 15 minutes). However, there is no way to know if or when parents exceeded the designated minimum time. Also, when parents responded that they had not followed the rule, it is not known if they worked with the child at all or if they simply failed to work for the length of time established in the weak rule statement.

Using frequency measures only in this study unquestionably resulted in an underestimation of
intrasubject variability. This measure might also have resulted in an overestimation of magnitude of change once parents began writing weak rule statements if increased frequency resulted in decreased duration of the behavior on each day. Thus, an important consideration in reviewing this research is the lack of sensitivity of the dependent measure on changes or patterns of behavior.

Independent Observers

It must be noted that the independent observers for rule following were often not available for observation when the mothers in this study were carrying out the targeted activities. As a result, there was very little evidence as to the accuracy of the parents' reports. In studies where the target behavior is inaccessible to an independent observer and when there is no permanent product, it may be impossible to verify the accuracy of self-managed behavior to the extent that has been possible in the research of logistically accessible behaviors. However, to increase the believeability in the reported data, every attempt must be made to insure that the data reported are accurate. In this study, the author felt that this limitation was one that could not be avoided and did not seriously jeopardize the interpretation of results.
Data Sheets as Prompts

Data collection sheets were placed in each parent's mailbox on a daily basis by the experimenter. To help insure that parents would not forget to fill out the data sheets, they were prompted by the daily delivery of the data sheets. Also, the data sheets were returned by mail to the investigator every day so that trends in the data could be closely monitored. This was particularly necessary since the experimenter made no contact with the parents except to change phases and to obtain interobserver agreement from other family members. It is likely however that if the self-records had been private and collected on some variable schedule (rather than continuous), the frequency of compliance might have been somewhat different. This is again related to the issue addressed earlier regarding the subjects' felt guilt when they had to report to another individual on rule compliance. If, in fact, parents had not had to report to the investigator, a more accurate functional analysis of the relationship between weak rule statements and rule following might have been possible. However, in a repeated measures analysis such as the one conducted in this study, private data collection could not be afforded.
Frequency and Timing of Rule Stating

Parents in this study were asked to state the weak rule only once per day. This restriction limited the probability of repeated verbalizations. It is likely that the effectiveness of verbal statements would be increased by repeating the rule several times. Repeated rule statements might increase the negatively reinforcing control over rule governed behavior. In addition, that one opportunity to write the weak rule may not have coincided with an opportunity to follow the rule. For example, if the parent wrote the rule in the morning, but did not have a chance to work with her child until evening, then any aversive responses associated with rule statements would be replaced by more immediate and stronger behavioral contingencies. Similarly, if the parent did not write the rule statement until after the children were put to bed, then they would have no opportunity to respond until the next day. Hence, the effectiveness of written or stated rules might have been enhanced in this study if parents were required to state the rules often and if better control had been exerted over the time of day in which rules were stated.

Experimental Replication

The final limitation discussed has to do with the number of experimental replications conducted in this
study. There were only two intersubject attempts at replication, again limiting interpretation of the results. This limitation was compounded by high intersubject variability in response to the independent variable. Two factors combined to limit the number of replications possible. First, as mentioned earlier, teachers had difficulty in identifying subjects who fit the criteria for participation and who would cooperate with the investigator. Second, one subject dropped out of the study before its completion, leaving the experimenter with only three subjects. Though three subjects are normally sufficient for a multiple baseline analysis, replications across more subjects would have enhanced the interpretation and generality of the results.

**Implications for Further Research**

As mentioned earlier, this study can only be important in the context of a body of research that will follow. An effort must be made to further the knowledge gained in this study to build a technology based upon self-management strategies.

**Self-Reprimands**

The Franklin County Board requested that parents involved in this study not be asked to write self-reprimands since parents of young handicapped children are often emotionally hypersensitive. These parents may
already be experiencing a certain amount of guilt, perhaps from blaming themselves for their child's handicap (Pueschel, 1978, Bavin, 1975). Writing self-reprimands for failure to comply with rules which they have designated to be important to their child's development might compound these feelings of guilt.

However, it might be interesting to investigate the impact that self-reprimand statements might have on compliance with weak rules (Grusec, 1966). This author hypothesizes that self-reprimands would have a greater effect on rule following than self-praise statements since it seems likely that self-reprimands would evoke greater feelings of guilt. The investigation of such a hypothesis would not be recommended in cases where there is a risk of evoking excessive feelings of guilt.

Negatively Stated Weak Rules

A related line of research would also involve the investigation of negative verbalizations. One of the criteria for correctly writing weak rule statements was that the outcome be stated positively. In other words, parents were asked to project the probable outcome for their child if parents remained consistent in following the rules. Again, to avoid the possibility of inducing anxiety in the subjects who were parents of handicapped children, negative statements of indirect outcomes were
avoided. However, it may be interesting and important to
the literature to do a systematic analysis of the
differential effects of positively stated and negatively
stated weak rules. If verbalizations of weak rules do
stimulate aversive conditioned responses that we sometimes
label guilt, then it is likely that negatively stated
outcomes would be related to greater feelings of guilt than
positively stated rules. On the other hand, it may be that
even though parents in this study were not asked to write
the outcome for failure to follow weak rules, they covertly
verbalized a negative indirect acting outcome, while
writing the positive outcome. If the latter is true, then
writing negatively phrased rules would probably have no
greater effect on rule following than if parents phrased
the rule positively.

Graphing and Charting

In an attempt to reduce/eliminate his consumption of
refined sugar Malott (1984a) charted daily whether or not
he had followed the weak rule, "If I do not eat refined
sugar I will live a longer healthier life." Malott
continued to chart this behavior for a year, especially
noting when he had had a perfect week (seven consecutive
days without consuming refined sugar). After keeping data
for a year and successfully reducing his refined sugar
intake to what he considered to be an acceptable level,
Malott discontinued self-recording. When he stopped charting, sugar consumption gradually increased again. Only after he was successful in completely eliminating sugar from his diet for a full year was Malott able to stop charting his behavior and maintain his refined sugar-free diet.

The point to be made from the anecdote above is that graphing behavior seemed to reinforce Malott for following the weak rule and to generate for him a certain amount of pride in the fact that he was managing his behavior so well. Further, he reported that it was slightly aversive to chart a failure to follow the rule, especially after he had accumulated several perfect weeks of rule following. It may be that charting can be a useful self-management tool in providing punishing and reinforcing consequences, which may help to mediate generalization across time for some weak rule governed behaviors.

Self-Reporting

Parents in this study were not asked to chart or graph rule following, again because of a decided effort to delimit the time required of them as participants in this study. However, it may be that such a strategy would be more effective than the self-recording strategy which was employed. It is also likely that such charting behaviors
would be essential in mediating generality over a long period of time.

Malott (1982) described a self-management strategy where he deliberately established a negatively reinforcing contingency for weak rule following. He contracted with his secretary to complete four hours of professional writing each day. He reported daily to her either in person or by calling into the office whether or not he had completed the four hours of writing. Malott then paid his secretary each day that he failed to follow the rule. He contended that, even though a dollar was not a huge amount of money, the threat of giving it away was substantial enough to be aversive. In this study, loss of a dollar was not a contingency place on the parents for failure to follow the weak rules, but they did report their compliance to the investigator on a daily basis as Malott had to his secretary. Two of the parents remarked that it became very aversive to write "no" on the data sheets because they knew that someone else was going to know of their failure. Additionally, they commented that feelings of guilt accompanied a "no" response. These comments support the notion that weak rule governed behavior may be controlled by negative reinforcement (Malott, 1981). Further, it is conceivable that, in some cases, social contingencies may be as effective as contrived contingencies in changing or
reinforcing weak rule governed behavior. In other words, the threat of disapproval by one's peers or others held in esteem might be just as negatively reinforcing as the threat of having to give away money. If this is the case, then it would be consistent with the philosophy of applied behavior analysis to use the least intrusive intervention when possible in planning a behavior change program -- in this case social reinforcement.

Conclusion

The purpose of this study was to evaluate the effects of verbalizations of weak rules and self-praise on the weak rule governed behavior of parents of handicapped children. A single subject analysis of this research question failed to demonstrate complete functional control of the independent variables mentioned above over compliant behavior in three parents of handicapped preschoolers.

The results presented in Chapter IV are not definitive regarding the functional effect of rule statements on weak rule governed behavior. Though there did appear to be a significant effect with one parent, the changes in behavior were less observable in the other two subjects. A fourth subject dropped out of the study before she was trained to state weak rules and self-praise. Thus, the results of this study suggest that verbalization of
indirect acting outcomes may be helpful in mediating delayed outcomes.

As a singular intervention, it is likely that stating weak rules might only be an effective mediator for individuals who are already under some strong, yet unspecified, weak rule governed control. It may also be that verbalization of weak rules will have their greatest impact when combined with other self-management strategies such as self-delivery of contingent reinforcers, self-recording and/or self-evaluation.

This research sets the occasion for further analysis of verbal mediation on weak rule governed behavior. The value of this study may lie not in the results, although they are important, but in directing further research which will help develop a technology of self-management procedures, including statements of weak rules, for weak rule governed behavior.


Appendix A
Baseline Training
SUMMARY OF CHANGES TO DISSERTATION
AS SUGGESTED BY FRANKLIN COUNTY BOARD MR/DD

1. Eliminate the condition for self-reprimand statements when parents fail to follow the rule. This was suggested because reviewers felt that self-reprimands could cause potentially harmful feelings of guilt or anxiety.

2. Use the Adaptive Behavior Scale rather than the Bayley Developmental Scale. Franklin County programs already tested children using the Adaptive Behavior Scale.

3. Use parents of infants under 24 months. Infants over two years were usually enrolled in a preschool class and the mothers had less responsibility for IEP activities.

4. Conduct a multiple baseline across subjects rather than tasks. The committee felt that it was asking too much of parents to work on three activities a day.
The Effects of Self Management Strategies
On Parents of Handicapped Infants

The purpose of this study is to attempt to improve the consistency with which parents (the most constant interventionists in an infant's life) follow through with activities which are important to the development of their child. Parents will select an activity to be carried out daily with their child which will result in delayed positive outcomes. For example, range of motion exercises, done consistently should result in improved motor control as the child grows older. Conversely, there is not likely to be an immediate visible change in the child's behavior which would reinforce the parent for performing the exercises. For this reason, parents will be asked to self-record, self-praise, and write a statement which will specify the delayed outcome of their activity with their child. The time requirements for the parents will be about 5-10 minutes daily (to fill out the data sheet) for about 10 to 12 weeks. This does not include the time spent on the activity which parents will be doing with their child, which will vary depending upon the activity.

Criteria for referral:

1. Parents of infants under 24 months;
2. Parents of infants with moderate to severe delays/involvement;
3. Parents of infants who are relatively free of chronic medical problems;
4. Parents who consistently provide less than minimal intervention relative to other family obligations;
5. Parents of infants who are likely to have a prolonged need for educational intervention.

If there are any questions please contact Vikki Howard; Human Services Education (OSU) 422-8787 or 488-4048
Telephone Dialogue
Teacher/Parent Introduction

Person: Vikki Howard
-PhD Student at Ohio State University
-University requirement to conduct research study as part of PhD program
-Area of expertise is early childhood and parent training
-Special interest is the behavior of parents of handicapped infants
-Spent two years working with parents of handicapped infants

Study: Research was to be with parents of handicapped infants
-Goal was to help parents to be more consistent caretakers
*Asked teachers to identify those parents who are having problems in following through on daily IEP task responsibilities
*Asked teachers for names and phone numbers of parents
- Parents were asked to keep data on three tasks
- Parents would be involved in the study for 10-12 weeks
- Parent participation would not take more than 5-10 minutes per day

Rights:
- Parents had the right to refuse to participate
- Parent and child data was confidential - no names or identifying data were to be revealed in the final report
- Parents and teachers would receive a summary of the final report

Participation:
- Parents were asked to participate in the study
- If they agreed, a time and date was set up for the initial visit
Initial Visit

Agenda

1. Introduction

2. Review of purpose of study

3. Paper Work
   a. informed consent
   b. confidentiality
   c. contract to complete study

4. Identification of three IEP tasks

5. Training on IEP tasks
   a. Observe parent
   b. Instruction (if necessary)
   c. Data collection (criterion = 3)

6. Training on Data Collection
   a. Explain Data sheet
   b. Show how to report data
   c. Parent practice (criterion = 2)
   d. Ask permission to use mailbox
CONSENT FOR PARTICIPATION IN
SOCIAL AND BEHAVIORAL RESEARCH

I consent to participating in research entitled:

THE USE OF SELF-MANAGEMENT STRATEGIES WITH PARENTS OF
HANDICAPPED CHILDREN

_Vikki Howard____ has explained the purpose of the
study, the procedures to be followed, and the expected
duration of my participation. Possible benefits of the
study have been described as have alternative procedures,
if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain
additional information regarding the study and that any
questions I have raised have been answered to my full
satisfaction. Further, I understand that I am free to
withdraw consent at any time and to discontinue
participation in the study without prejudice against me.
The information obtained from me will remain confidential
unless I specifically agree otherwise by placing my
initials here__________________.

Finally, I acknowledge that I have read and fully
understand the consent form. I sign freely and
voluntarily. A copy has been given to me.

Date: ___________________________
Signed: _________________________
(principle investigator)
Signed: _________________________
(participant)
Witness: ________________________
CONTRACT

WHO: Vikki Howard

WHAT: Will provide daily data collection sheets. Will maintain confidentiality regarding you and your family. Will provide you with a copy of the results of this study.

WHEN: Beginning today___________ and completing the study within three months.

WHERE: All contacts will be made at your home or at school.

Signed____________________________________
CONTRACT

WHO: ________________________________

WHAT: Will fill in daily data sheets and will mail them daily to the experimenter.

WHEN: Beginning today ______________ and terminating within three months.

WHERE: In my home.

Signed ________________________________
IEP TASK SELECTION

Task:

I agree that the task selected above is important to the development of my child:

Signature ________________________________

IEP TASK TRAINING FORM

Parent _____________________________

Task ___________________________

<table>
<thead>
<tr>
<th></th>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Trial 3</th>
<th>Trial 4</th>
<th>Trial 5</th>
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<tr>
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<tr>
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<td>Y____ N____</td>
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</tr>
<tr>
<td>Modeling</td>
<td>Y____ N____</td>
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<tr>
<td>3</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
DATA COLLECTION TRAINING FORM (PARENTS)

Parent __________________________
Date___________________________

A. Explain Data Collection Purpose
   Y_____ N_____ 

B. Show Data Collection Form to be placed daily in mailbox.
   Y_____ N_____ 

C. Demonstrate filling out Data Collection Form by modeling.
   Y_____ N_____ 

D. Observe Parent filling out Data Collection Form for rule following.
   Trial 1  +_____ -_____ 
   Prompt _____
   Praise _____
   Model _____
   Trial 2  +_____ -_____ 
   Prompt _____
   Praise _____
   Model _____
   Trial 3  +_____ -_____ 
   Prompt _____
   Praise _____
   Model _____
Appendix B
Daily Data Forms
DAILY DATA SHEET
(Baseline and Follow-up)

Name: __________ Parent 1 __________

Date: __________________________

Task: Gross motor activities for 45 minutes per day

Y/N

Did you do this task yesterday? _____
DAILY DATA SHEETS
(Baseline)

Name:_________Parent 2_________

Date:____________________________

Task: Speech/Language activities for 15 minutes

Y/N

Did you do this task yesterday? _____
Name: Parent 3

Date: ____________________________

Task: Working on shoulder stability -- wheelbarrow exercises

Y/N

Did you do this task yesterday? _____
Daily Data Sheet  
(Baseline)

Name _______ Parent 4 _________________

Date _________________________________

Task: Turn Taking (my turn - your turn)

Y/N

Did you do this task yesterday? ______
DAILY DATA SHEET
(Intervention)

Name: _______ Parent 1 _______

Date: __________________________

Task: Gross motor activities for 45 minutes per day

Y/N

Did you do this task yesterday? ______

Write self-praise statement if you followed the rule yesterday:

State the rule for gross motor activities:
DAILY DATA SHEETS
(Intervention)

Name: Parent 2

Date:

Task: Speech/Language activities for 15 minutes

Y/N Did you do this task yesterday? _____

Write a self-praise statement if you followed the rule yesterday:

State the rule for your Speech/Language activities:
Name: Parent 3

Date:

Task: Working on shoulder stability -- wheelbarrow exercises

Y/N

Did you do this task yesterday? 

Write a self-praise statement if you followed the rule yesterday:

State the rule for shoulder stability exercises:
Daily Record

Parent 2

Please fill out two items on this data sheet. First, write in the blank how long (in minutes) you spent working with _______. Then circle the 'y' if you worked with her for at least 15 minutes or 'n' if you did not work with her or if you worked with her for less than 15 minutes. Please continue to fill out the other data sheet and return that to me.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time spent with _______</th>
<th>Followed Rule Today Y/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/18/85</td>
<td></td>
<td>Y/N</td>
</tr>
<tr>
<td>4/19/85</td>
<td></td>
<td>Y/N</td>
</tr>
<tr>
<td>4/20/85</td>
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<td>Y/N</td>
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<tr>
<td>4/21/85</td>
<td></td>
<td>Y/N</td>
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<tr>
<td>4/22/85</td>
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<td>Y/N</td>
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<tr>
<td>4/23/85</td>
<td></td>
<td>Y/N</td>
</tr>
<tr>
<td>4/24/85</td>
<td></td>
<td>Y/N</td>
</tr>
<tr>
<td>4/25/85</td>
<td></td>
<td>Y/N</td>
</tr>
<tr>
<td>4/26/85</td>
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<td>Y/N</td>
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<td>4/27/85</td>
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<td>Y/N</td>
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<tr>
<td>4/28/85</td>
<td></td>
<td>Y/N</td>
</tr>
<tr>
<td>4/29/85</td>
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<td>Y/N</td>
</tr>
<tr>
<td>4/30/85</td>
<td></td>
<td>Y/N</td>
</tr>
</tbody>
</table>

Place this on the front of your refrigerator and mark on it each day.
Appendix C
Intervention Training
RULES
EXAMPLES AND NONEXAMPLES

Examples

1. If I read to Janie today, her language skills will probably be better when she is older than if I do not read to her.

2. If I make Jimmy take his own socks off today he will probably learn to dress and undress himself more quickly than if I take his socks off for him.

3. When I clap, smile, touch or talk to Sara for doing well on certain skills, she will probably improve at a faster rate than if I do not try to reinforce her.

4. Working with Erin each day on his crawling exercises will probably help him to crawl sooner than if I don't work with him.

5. Each time I play a game with Rita it helps her to become more social and will probably help her when she gets older in communicating with others.

Nonexamples

1. I should read to Janie.

2. It would be good to read to Janie.

3. Sara likes it when I read to her.

4. Sara will not talk if I don't help her.
SELF-REINFORCING STATEMENTS
EXAMPLES AND NONEXAMPLES

Examples
1. That was really good to take the time to read to Elizabeth now I have read to her three days in a row.
2. I helped Jimmy take his own socks off rather than doing it myself yesterday, I am getting better at waiting for him, even though it is easier for me to do it myself.

Nonexamples
1. I did a good job following the rules.
2. I worked with Jill on her sounds yesterday.
3. Talking to Billy will really help his speech.
4. Doing the exercises yesterday will keep Sara's muscles from being tight when she is older so she can walk better.
SELF-REPRIMAND STATEMENTS
EXAMPLES AND NONEXAMPLES

Examples

1. Yesterday I failed to reinforce Billy very often, and if I continue to fail he will probably not learn as quickly as if I do reinforce him for learning.

2. I did not work with Fredda on her physical therapy exercises yesterday and if I don't help her in the future she will probably not get stronger as quickly and she might walk later than if I do work with her.

Nonexamples

1. I didn't help Margaret yesterday with her sitting and that was bad.

2. I should have reinforced Billy more often yesterday.
Appendix D
Social Validation Questionnaire
SOCIAL VALIDATION

Name __________________________
Date __________________________

Please respond to the following questions by circling "yes" or "no." Though elaboration is not required, you may feel free to comment further on any or all the questions below.

1. Were you consistent in conducting the targeted tasks before the study? Yes/No
Comment:

2. Did you feel that filling in the data sheets during baseline helped you to be more consistent? Yes/No
Comment:

3. Did you receive feedback/encouragement from some source other than yourself during the study? Yes/No
Comment:

4. Did you feel slightly guilty when you wrote the weak rule? Yes/No
Comment:

5. Did you feel better after you had followed the written rule? Yes/No
Comment:

6. Did you feel guilty reporting to the experimenter that you had failed to follow the rule? Yes/No
Comment:

7. Did you feel that writing weak rule statements helped you to be more consistent? Yes/No
Comment:
8. Did you feel that writing the self-praise statements helped you to be more consistent? Yes/No
Comment:

9. Did you feel comfortable writing the self-praise statements? Yes/No
Comment:

10. Did the requirements of the study take too much of your time? Yes/No
Comment:

11. Would it have been more helpful to keep more data? Yes/No; Less data? Yes/No
Comment:

12. Did the requirements of this study make you feel uncomfortable at any time? Yes/No
Comment:

13. Would you use variations of the procedures in the future to help you be a better self-manager? Yes/No
Comment:

14. Would you recommend these procedures to someone else who would like to be a better self-manager? Yes/No
Comment:

15. Would you like further training on additional self-managing techniques? Yes/No
Comment:

16. Did participation in this study in any way limit activity with your child on task other than those selected for the study? Yes/No
Comment:
17. Does your child receive most of her/his needed education from school? Yes/No

Comment:

18. Do you see yourself as a critical member of your child's educational team? Yes/No

Comment:
Social Validation Summary

Area A: The perceived effects of the components of this study -- self-recording, written weak rule statements and written self-praise statements.

Area B: The efficacy of the strategies in terms of effort time and psychological costs.

Area C: The perceived importance of consistent parental intervention.

A: 1, 2, 3, 4, 5, 6, 7, 8
B: 9, 10, 11, 12, 16
C: 13, 14, 15, 17, 18
Appendix E
Follow-up Summary for Parents
SELF MANAGEMENT STRATEGIES FOR PARENTS
OF HANDICAPPED PRESCHOOLERS

Summary

Rational

Early childhood is considered to be an important, if not the most important, period of learning for handicapped children. Research has demonstrated the effectiveness of early childhood educational programs in improving children's rates of learning. Because parents usually spend the most time with their children and because they are generally better able to provide reinforcement, they are typically considered to be the most important educator in that child's environment.

Because of this critical role that parents hold, it is important that they provide consistent care for their child. However, professionals have found that very often parents do not provide adequate intervention. Several reasons may account for this finding, including lack of time, insufficient training, and a misunderstanding as to the importance of their role. Whatever the reason, it is generally thought that the most enduring way to change the behavior of parents is to teach them to control their own
behaviors since professionals have only limited access to parents.

So, even though parents may be aware of the value of consistent intervention, they may lack the self-control to be able to provide such care regularly. The reason for this lack of control may be that the consequences are often very delayed and the effect of their efforts may be cumulative. Hence, from day to day, the outcome is not obvious and therefore not reinforcing. The purpose of this study was to investigate the effectiveness of certain self-management strategies on parents' compliance with activities which they deemed to be important to their child.

The self-management strategy of greatest interest in this study was written statement of rules which specified the behavior and the delayed outcome for executing that behavior. The rational behind using written rule statements rests with the notion that when individuals state rules, they are reminded of the delayed consequences for following or not following the rule. It is thought that when individuals are aware of the consequences but have not followed the rule, they feel guilty until the behavior is evoked. For example, a rule might be stated, "If I am nice to my neighbor, she will like me and think that I am a good person." Failure to follow this rule will
cause feelings of anxiety until the rule is followed. Thus, following the rule can alleviate feelings of guilt. In other words, the reason we do things which are not immediately reinforcing is because we avoid or escape aversive feelings and can then feel good about ourselves.

The same types of rules can be applied to global social issues. For example, a society or subculture within a society might adopt the rule, "If we stop building nuclear bombs, we will reduce the probability that some day they will be used to destroy humankind." A failure of individuals and society to derive and follow rules for behaviors which have delayed outcomes is considered by some to be a major problem in our rapidly changing culture.

Individuals ability to follow rules for behaviors with delayed outcomes ranges considerably. The capacity to exert such self-control may be accounted for by a persons early education. First, parents must provide reinforcement to children for following rules which have delayed outcomes. Secondly, parents, peers, and others must model behavior which demonstrates good self-control.

Results

During the first part of the study parents reported whether or not they had worked on the chosen task with their child. Then parents were taught to write rules which
specified the long term outcome of their activity and praise statements for themselves when they followed the rule. Trends from both these phases were compared to each other to see if there were any differences between phases of the study.

In making this comparison, it appeared that there were some changes in the number of days which one parent followed the stated rule, a slight difference in the compliance of another parent, and no observable differences in the behavior of the third mother.

**Conclusion**

It was concluded that written rule statements, as a form of self-management, were not a very effective strategy for changing behavior with delayed consequences. This is considered to be especially true for parents who have a low rate of compliance or who demonstrate little self-control. In this study parents were selected, not because they were totally noncompliant, but because they were likely to be cooperative. Though all individuals can improve their self-control, those parents whom professionals are most concerned about in terms of adherence to recommended home educational programs are not represented in this study.
With that in mind, it seems probable that the procedures used in this study would be ineffective in changing the behavior of very noncompliant mothers.
SUGGESTED SELF-MANAGEMENT STRATEGIES
FOR PARENTS

1. Identify activities in your life which you consider important in improving yourself and/or society.

2. Prioritize activities so that you don't try to change too many behaviors at once.

3. Specify clearly what the behavior is so that you will be able to discriminate between the occurrence and nonoccurrence of that behavior.

4. Keep records of your behavior. Graph or chart the behavior in a visible or accessible place. Be sure to chart the behavior consistently.

5. Choose a measurement which will tell you what you have done. You can chart such things as:
   - Yes or no (occurrence or nonoccurrence)
   - Time that you worked on the task
   - Number of times that you worked on something
   - Number of times that you did something per unit of time (rate)
   - Percentage of times that you did something correct

6. State the rule for the activity. Identify a prompt which will cue you to state the long term outcome for your behavior. For example, place your chart on the
refrigerator. Each time you see the graph it will cue you to state the rule.

7. Establish a written contract with a friend, child or spouse. Choose someone who you will have an opportunity to talk to almost every day. Agree to do the activity which you have identified in exchange for something they will do for you. Report to that person on a daily basis whether you were compliant or not. Don't make the contract loose if you really want to change your behavior. If simply reporting to someone else does not work, agree to work for some tangible reward. If that doesn't work, set up a contract where you will deliver something to someone else if you fail to meet the contract. This can be a contract for money (suggest no more than $1), or activity (taking out the garbage).

8. Set up a contract for yourself, where you will deliver some reinforcer contingent upon performing the behavior to be changed. (If I work with -------- every day, I will go see a movie on Friday.)

9. Use as few strategies as you need to keep your behavior going. Discontinue the most intrusive techniques as soon as possible, until you no longer need the self-management -- then shift to another behavior. If
you discontinue a strategy such as self-recording and the behavior change does not maintain, reinstate the strategy again.
Appendix F
Written Rules and Self-Praise Statements
WRITTEN WEAK RULES BY PARENT 1

1. By working with ---- on his range of motion exercises, we may be able to teach him to do these on his own, therefore keeping the muscles moving to prevent shortening.

2. When I work with ---- on better head control exercises, the end result will be not only better head control, but also may keep his visual progress because he can see better and more, if his head is in the right position.

3. If ---- and I do more turntaking things, they will help ---- to communicate.

4. When feeding ---- with a spoon - if I let him take the food off the spoon, instead of wiping it on his lips he will gain much better oral control - furthering his ability to communicate.

5. By working with ---- on cooing and turntaking sounds he'll eventually start doing them without my prompting.

6. By feeding ---- his cereal by spoon instead of the bottle, it will help him to learn better oral muscle skills.
7. Trying to expose ------ to various new foods and textures with the spoon – this will help him to adapt more easily to new and different foods etc.

8. Still concentrating on various areas of feeding and foods. ------ is showing great improvement in his reaction to these new textures and tastes.

9. Continuing to work with ------'s object holding and putting things up to and into his mouth. We're all noticing significant coordination improvement already and are hoping for more.

10. By putting little, easy to hold, chewable toys in ------'s hands he will learn better control of the toy and be able to reach it to his mouth unassisted.

11. By spending extra time and effort with ------, we'd like to help him develop better coordination from hand to mouth. (Usually with toys, cloths, bottle, or pacifier.)

12. When I do several leg exercises with ------ with each diaper change – it helps him to move his legs more freely, because he's hopefully getting used to the movements.

13. Continuing to work with ------ on his range of motion exercises will eventually increase his ability to move about freely and easily.
14. By working with ------ on his physical therapy exercises, it will eventually help him to move more easily.

15. Working with ------ on his range of motion exercises will help to reduce the tension in his muscles and will help him to relax more.
1. If I work on object flashcards with ------ each day, her pronunciation of these things will be more clear.
2. If I work on the "F" sounds with ------ today, she will be able to say many words more clearly.
3. If I work with ------ daily on the "F" and "P" speech sounds, she will be able to speak many words more clearly.
4. If ------ and I work on her speech concept cards daily, it will help improve her cognitive skills as well as speech skills.
5. I know that if ------ and I work on speech sounds she will be able to speak more clearly.
6. I know it will help ------'s speech skills improve if we go over the object flash cards daily.
7. If ------ and I work on speech activities daily, it will help her cognitive skills for next year's school.
8. I know ------'s speech will be more understandable if we work on specific speech sounds daily.
9. If we work on ------'s speech activities daily, her speech will become more understandable.
10. Each time ------ and I practice speech sounds, her pronunciation becomes clearer and she will be easier to
If ------ and I work on speech flash cards daily, it will help her pronunciation of many words.

If ------ and I work daily on speech sounds "F" and "P" it will help her pronounce many words more clearly.

If I work with ------- on her speech concept cards, she will better understand and use words such as "in, out, under, over."

-------'s speech will improve if we work daily on speech flash cards.

-------'s speech will be better understood if we work daily on the consonant sounds.

If ------- and I work on consonant sounds, her speech will be easier to understand.
WRITTEN RULE STATEMENTS BY PARENT 3

1. Working with ----- every day doing wheelbarrow exercises will help his shoulder stability.

2. If I help ------- with the wheelbarrow exercise everyday, it will help his shoulder stability develop faster, thus leading to better gross motor and fine motor control.

3. If I help ------- with the wheelbarrow exercise everyday, it will help his shoulder stability develop faster, thus leading to better gross motor and fine motor control.

4. Helping ------- with the wheelbarrow exercise everyday will help develop his shoulder stability faster, thus leading to better gross motor and fine motor control of his upper extremities.

5. Helping ------- with his wheelbarrow exercises everyday will help develop his shoulder stability faster, thus leading to better gross motor and fine motor control of his upper extremities.

6. Helping ------- with the wheelbarrow exercises every day will help develop his shoulder stability faster, thus leading to better gross motor and fine motor control of his upper extremities.
7. Helping ______ with the wheelbarrow exercise everyday will help develop his shoulder stability faster, thus leading to better gross motor and fine motor control of his upper extremities.

8. Helping ______ with his wheelbarrow exercises everyday will help his shoulder stability faster.

9. Helping ______ with his wheelbarrow exercise daily everyday will help his shoulder stability faster.

10. Helping ______ with his wheelbarrow exercise everyday will help to improve his shoulder stability faster.

11. Helping ______ work on his wheelbarrow exercises will help him to improve his gross and fine motor skills.

12. Helping ______ with his wheelbarrow exercises everyday will help develop his shoulder stability faster.

13. Helping ______ with his wheelbarrow exercises will help his shoulder stability develop better and faster.

14. Helping ______ with the wheelbarrow exercise everyday will help his shoulder stability faster, thus leading to better gross motor and fine motor control of upper extremities.

15. Helping ______ with his wheelbarrow exercises everyday will help develop his shoulder stability better and faster.

16. Helping ______ with the wheelbarrow exercises daily helps develop shoulder stability faster and better.
WRITTEN SELF-PRAISE STATEMENTS BY PARENT 1

1. I worked more than 45 minutes with ------ yesterday on the range of motion exercises. Yea for me!
2. I helped ------ on his control exercises and I think we're developing a kind of team work together!
3. We played games and cooed back and forth with each other and I feel I'm accomplishing a lot with him!
4. I have worked for at least five days straight with ------ on his gross motor activities!
5. I can see my efforts are paying off ------ has been cooing and smiling at random - instead of just with my sound first.
6. I'm hardly ever giving ------ cereal by bottle anymore and its helping him a lot and he enjoys eating by spoon.
7. We're doing great with our spoon feedings - it's really helping ------ to get used to new things. We have fun at feeding time!
8. Several times a day I'm spending time helping ------ with toy holding. He's really showing progress.
9. We're seeing fantastic results so far with our work with ------ on his coordination from hand to mouth. By working with him regularly - we're seeing his efforts
to do things without our assistance.

10. I did -----'s leg exercises at each diaper change yesterday and I can see a little more freedom in his legs already.

11. We worked on the range of motion exercises with ------- and 2 times he rolled his arm without my help! We're definitely making progress by being consistent every day.

12. Yesterday we worked hard on reaching exercises and we had a lot of fun, and I am helping ------- so much!

13. I'm being very consistent in working with ------- on his range of motion exercises and I know it will really help him.
WRITTEN SELF-PRAISE STATEMENTS BY PARENT 2

1. I did a good job making time to work on flash cards with ------.

2. I'm glad I found time to work with ------ on consonant sounds.

3. I am happy I found time to work on ------'s speech sounds.
WRITTEN SELF-PRAISE STATEMENTS BY PARENT 3

1. Helping ---- play "wheelbarrow" was good for him. It helps stabilize shoulders and build muscles.
2. It was good that we worked on wheelbarrowing to help -----'s shoulder stability today.
3. It was great that we worked on wheelbarrow exercises yesterday because it helped on -----'s shoulder stability.
4. Yea for us! I helped ---- do the wheelbarrow exercise several times yesterday and that was good.
5. It was great that I helped ---- with wheelbarrow yesterday. I know it helps his shoulder stability.
6. By helping ---- with his wheelbarrow exercises I helped his developing shoulder stability. Good for me!
7. I helped ---- with his wheelbarrow exercise yesterday!
8. It's good that I helped ---- with his wheelbarrow exercises.
9. It was good that I helped ---- with his wheelbarrow exercises.
10. It was good that I helped ---- with his wheelbarrow exercises yesterday.
11. It was great that I helped ----- with his wheelbarrow exercises yesterday.
12. Yea for me, I helped ----- with his wheelbarrow exercises.
13. It was good that I helped ----- with his wheelbarrow exercises yesterday.