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**An application of cognitive-behavioral self control procedures
with hospitalized adolescents**

Elias, Dennis Charles, Ph.D.

The University of Arizona, 1987

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AN APPLICATION OF COGNITIVE-BEHAVIORAL SELF CONTROL
PROCEDURES WITH HOSPITALIZED ADOLESCENTS

by

Dennis Charles Elias

A Dissertation Submitted to the Faculty of the
DEPARTMENT OF COUNSELING AND GUIDANCE
In Partial Fulfillment of the Requirements
For the Degree of
DOCTOR OF PHILOSOPHY
In the Graduate College
THE UNIVERSITY OF ARIZONA

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THE UNIVERSITY OF ARIZONA
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Procedures With Hospitalized Adolescents

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ABSTRACT

This study assessed the efficacy of the application of cognitive-behavioral self control therapy with a sample of psychiatrically impaired adolescents. Ten adolescent inpatients (5 male/5 female), residing within the Adolescent Unit of the State Hospital of a Southwestern state, were selected as subjects. Subjects ranged in age from 12 to 17 years and were paid volunteers. Subjects were assessed pretreatment for non self controlled behavior via the teacher rated Self Control Rating Scale (Kendall & Wilcox, 1979). This measure also served as the blocking variable utilized for random assignment to treatment or control group. Five adolescents were assigned to each group. Pretreatment measures of social perspective taking (Chandler Bystander Cartoons; Chandler, 1973) and social problem solving (Means-Ends Problem Solving test: Platt & Spivack, 1975) were taken additionally. All three measures were repeated at posttreatment and at 4 week follow-up. Treatment consisted of twelve 60-minute sessions held 3 times a week over the period of 4 weeks.

The treatment consisted of a group application of Kendall's (1980) Cognitive-Behavioral Self Control therapy. The main treatment strategies included (1) a problem solving approach, (2) self instructional training, (3) behavioral contingencies, (4) modeling, (5) affective education, and (6) role play exercises. The separate strategies were essentially interwoven. Except for the cognitive-

behavioral self control training proper, subjects in both treatment and control groups were given similar tasks, task instructions, and performance feedback.

Results found a range of behavioral self control skills distributed among the subjects but failed to support the hypothesis of associated poor social perspective taking and social problem solving skills. Treatment failed to improve teacher ratings of behavioral self control at posttreatment and at follow-up. Likewise, no significant improvement was found in social problem solving skills at posttreatment or follow-up, although a trend toward improvement was suggested. A significant improvement in social perspective taking skills was found in the treatment group at posttreatment. The improvement was maintained at 4 week follow-up. The results are interpreted as suggesting that cognitive-behavioral self control training can be useful in facilitating the further development and enhancement of previously inadequate cognitive capacities in psychiatrically impaired, non self controlled adolescents. Certain suggestions for enhancing the effectiveness and generalization of the treatment approach are discussed.

CHAPTER 1

INTRODUCTION

In the 1960's, child behavior therapist began to explore the role of cognitive processes in changing and establishing control over children's behavior. Prior to that time, clinicians and researchers focused primarily on behavior change through manipulation of the environment, attempting to bring behavior under the control of external influences. Recognizing the formidable obstacles encountered when attempting to arrange environmental contingencies outside of the laboratory or clinical setting, interest surged in ways to enhance generalization and maintenance of treatment effects through enlisting target children as agents of their own change (Kendall & Braswell, 1985). Instead of constant and actual external environmental manipulation, the implementation of which was seldom realized except in cases of tedious and sustained effort, the idea to effect more durable and prolonged change through manipulation of children's mediational cognitions emerged. Thus, a major impetus for the augmented status of cognitive-behavioral therapy was the disappointing realization that treatment changes were oftentimes temporary, dissipating in the absence of continued external manipulation. The goal of therapy being permanent change, researchers turned to cognitive-behavioral strategies in hopes of maintaining treatment effects outside the experimental setting and for longer periods of time (Kazdin, 1985).

In the context of intensive, residential treatment, as in the psychiatric hospital setting, these same concerns have provoked treatment professionals to consider the efficacy of cognitive-behavioral interventions (Oas, 1985). With an eye to the dismaying destabilization that too often occurs after the child's return to the community and the almost predictable regression to less functional behavior that emerges in response to this stressful re-entry, treatment professionals have actively sought procedures that will facilitate the internalization and generalization of the therapeutic gains made within the protective, structured environment of the hospital ward (Rinsley, 1983).

Teaching Thinking Processes

Perhaps the most distinguishing characteristic of cognitive-behavioral approaches with children is the therapeutic emphasis on teaching thinking processes (Urbain & Kendall, 1980). This emphasis is in contrast to an emphasis on relieving internal conflicts, as in the psychodynamic approach, or to the training of specific behaviors, as in the behavioral approaches. These thinking processes are seen as cognitive-behavioral in that they are the cognitions involved in behavioral adjustment. In stressing the need to modify thinking processes, cognitive-behavioral child therapists teach strategies that are appropriate aids to end products that are shaped and rewarded throughout treatment, but an essential characteristic of the model is the belief that training at the level of the cognitive processes that

mediate competent adjustment across situations will, as an inherent agent of treatment, build in generalizable skills.

Process Distinctions: Adults vs. Children

In addition to the more delimited description of cognitive-behavioral treatments for children, these procedures also differ somewhat from the cognitive-behavioral strategies used with adult clients. It should be noted at the outset that cognitive-behavioral interventions with children are not merely the downward simplification of the approaches used with adults. Rather, children differ from adults in important ways, and these differences require alteration in the manner with which the therapist treats the client (Kendall, 1981a).

First, the nature of the cognitive problem requiring treatment differs for adults and children. The targets of adult cognitive-behavioral therapies are typically cognitive errors (e.g., distortions): irrational beliefs, faulty cognitive processes, inaccurate internal dialogues (Ellis, 1962; Beck, 1976). The adult's cognitive errors can also be described as illogical interpretations of the environment, exceedingly high standards for personal performance, and inaccurate perceptions of life's routine demands. Thought processes exist and are active, but the outcomes are faulty. In children, the cognitive problems that treatment is designed for are cognitive absences (e.g., deficiencies): the child seemingly fails to engage in the information processing activities of an effective problem solver and fails to initiate the reflective thinking process that can govern behavior (Urbain & Kendall, 1980). In this instance references is made

to the type of children for whom cognitive-behavioral treatments have been designed: impulsive, non self controlled, aggressive, and/or attention disordered children. Other types of childhood maladjustments, such as isolation, withdrawal, and depression, may involve cognitive errors (Meador & Ollendick, 1984).

Thinking Deficits and Behavioral Disorders

The problems associated with these cognitive ~~absences~~ have been associated with continuing behavioral disorders. The significance of adequate social interaction in learning mature patterns of aggression of control and sexual behavior in adulthood has been the subject of continuing discussion (Asher, 1980; Hartup, 1980; Kazdin, 1985). The importance of adequate peer relations in childhood and adolescence for later adult social adjustment is also suggested by retrospective studies of disturbed adults. It appears that poor peer relations, as typified by impulsive and aggressive behavior, are associated with a variety of adult behavioral disturbances including psychosis, delinquency, alcoholism, drug abuse, poor vocational achievement, criminal activity, and bad conduct discharges from the armed services (Kohlberg, LaCrosse & Ricks, 1972). Longitudinal predictive studies also provide evidence of the stability of certain deviant patterns of interpersonal behavior from childhood into adulthood, particularly with regard to the more severe forms of aggressive and undersocialized behavior (Robins, 1966).

Implications for Treatment

The distinction between adult cognitive distortions and children's cognitive deficiencies has a direct implication for treatment. Unlike therapy with adult clients, where the therapist has to identify faulty and maladaptive cognitive processes, remove the dysfunctional thinking style, and teach a more adaptive thinking style, the cognitive-behavioral therapist working with impulsive children can proceed more directly to identifying the cognitive absences and teaching the cognitive skills that will help remedy the problem in adjustment.

Child and adult clients also differ in their level of cognitive development. Many of the cognitive strategies that are appropriate with adult clients cannot be fully understood by children. Some adequately adjusted adolescents may be cognitively prepared for more adultlike interventions, but the problem is a genuine one for youngsters and problem behaved adolescents. For instance, the confrontation of irrational beliefs, as in Rational Emotive Therapy (Ellis, 1962), would likely be perceived by a cognitively delayed adolescent or child as a scolding. Not only would the reason for the scolding be unclear, but the intended outcome--philosophical change--would be somewhat foreign.

Theoretical Premises

Several premises are held in common by the cognitive-behavioral approaches. While different authors have focused on different themes, there appear to be a number of principles that parsimoniously capture

the basic tenets of cognitive-behavioral interventions. The following points are adapted from Kendall and Hollon (1979), Mahoney (1977), and Mahoney and Arnkoff (1978):

1. The human organism responds primarily to cognitive representations of its environment rather than to these environments per se.
2. Most human learning is cognitively mediated.
3. Thoughts, feelings, and behaviors are causally interrelated.
4. Attitudes, expectancies, attributions, and other cognitive activities are central to producing, predicting, and understanding psychopathological behavior and the effects of therapeutic interventions.
5. Cognitive processes can be cast into testable formulations that are easily integrated with behavioral paradigms, and it is possible and desirable to combine cognitive treatment strategies with enactive techniques and behavioral contingency management.
6. The task of the cognitive-behavioral therapist is to act as a diagnostician, educator, and technical consultant who assesses maladaptive cognitive processes and works with the client to design learning experiences that may remediate these dysfunctional cognitions and the behavioral and affective patterns with which they correlate.

Within the boundaries of these fundamental principles, there is room for a great deal of variability in the actual implementation of cognitive-behavioral interventions.

Variations in Emphasis

Many specific definitions of the cognitive-behavioral perspective abound. Unfortunately definitional consensus is more difficult to locate, for definitions appear to vary in the extent to which they emphasize the cognitive versus behavioral aspects of this approach. At one extreme, Ledwidge (1978), in his often criticized review (Meichenbaum, 1979a; Locke, 1979), offered a definition of cognitive-behavioral therapy when he suggested that such approaches are "cognitive therapy with a behavioral twist" (p. 354). Ledwidge argued that the primary focus of these approaches is change in patterns of thought, not change in behavior. Hobbs, Moquin, Tyroler, and Lahey (1980) also offered a definition of cognitive-behavioral therapy by suggesting that the essential feature of this approach is the teaching of mediation responses that constitute a general strategy for directing or controlling behavior in diverse situations. Urbain and Kendall (1980) proposed that the emphasis on thinking processes is the distinguishing feature of cognitive-behavioral approaches with children, but were quick to add that changes in behavior were the desired outcome. Kendall and Hollon (1979) suggested a balanced emphasis in conceiving the cognitive-behavioral approach as "a purposeful attempt to preserve the demonstrated efficiencies of behavior modification within a less doctrinaire context and to

incorporate the cognitive activities of the client in the effort to produce therapeutic change" (p. 1).

The cognitive-behavioral perspective is presented by Wilson (1978) who, in examining the same techniques considered by Ledwidge (1978), suggested that there is no need for the term "cognitive-behavioral therapy," as these procedures fall within the realm of behavior therapy. Wilson views cognitive-behavioral approaches as mere elaborations of a mediational theme initially introduced in the context of social learning theory. At the present juncture, the cognitive-behavioral approach does appear to be chiefly distinguished from the behavioral perspective by the emphasis on cognitive activities, such as beliefs, expectancies, self statements, and problem solving; yet concern with overt behavior, both in treatment and as an indication of outcome (whether manifested in the use of behavioral contingencies or in explicit skills training), differentiates it from cognitive and insight oriented approaches.

Historical Antecedents

The definitional variations in emphasis on the cognitive versus behavioral aspects of the cognitive-behavioral perspective grew out of two major historical antecedents: (1) the development of behavioristic interest in the phenomenon of self control, and (2) the emergence of cognitive learning theories of psychotherapy. As noted by Mahoney and Arnkoff (1978), Skinner had written a chapter on self control, in 1953, yet behaviorists displayed very little interest in the topic until the mid-1960's. Stuart (1967), building on the work of Ferster,

Nurnberger, and Levitt (1962), employed self regulatory processes in a weight loss program. Within a few years, Bandura (1969, 1971) and Kanfer (1970) were exploring behavioral self control in a series of laboratory studies. In the area of interventions with children, the shift from external to self regulation was explored with a variety of disorders, but most attention focused on self regulation of disruptive classroom behavior (e.g., Bolstad & Johnson, 1972; Broden, Hall & Mitts, 1971; Drabman, Spitalnik, & O'Leary, 1973; Turkewitz, O'Leary, & Ironsmith, 1975). During this transition period, behaviorists became desensitized to concepts that acknowledge the complex interrelationship of the organism and its environment, such as reciprocal determinism (Bandura, 1969). The notion of "coverant control" (Homme, 1965) also became acceptable and enabled behaviorists to study and manipulate long neglected "private events," such as thoughts, feelings, and images. This shift away from strict S-R formulations of human behavior was made explicit in Bandura's (1969) Principles of Behavior Modification. In this work, Bandura argued for a cognitive symbolic mechanism governing the basic processes of behavior change. As Mahoney and Arnkoff (1978) summarized:

Within a very short period of time cognitive terms and theses became a major aspect of behavioral research. Thus earlier conditioning analyses of self control began to replace by more mediational accounts, and behavior therapists began exploring the relevance of social and cognitive psychology for their clinical endeavors (p. 692).

The second major historical antecedent, the development of cognitive learning models of psychotherapy, occurred largely outside the domain of strict behavioristic psychology. Two examples of these

models are Ellis's (1962) rational emotive therapy and Beck's (1970, 1976) cognitive therapy. According to Ellis, psychological disturbances are largely the result of illogical, irrational thinking. Such disturbances can be ended if the individual learns to increase rational and to decrease irrational thought. This view assumes that thinking and emotion are integrally related and cannot be entirely separated from each other. In a similar vein, Beck's cognitive therapy, as applied to depression, posits that depression is the result of a negative cognitive set that includes negative beliefs about the self, the world, and the future. The maintenance of these beliefs is the result of distortions in information processing, such as arbitrary inferences or overgeneralizations. Cognitive therapy treats these distortions by assisting the client in testing his/her distorted beliefs. The theories of Ellis and Beck and the procedures following from these theories have had a tremendous impact on the field of clinical/counseling psychology. Clearly, both views stress the crucial role of the individual's thoughts or beliefs in the determination of behavior and consider change in these thoughts or beliefs as a necessary step in achieving and/or maintaining behavioral change.

Contribution of Developmental Theory

Continuing, but with a focus on children, other streams of influence relevant to the emergence of cognitive-behavioral procedures can be found within the developmental literature. For instance, developmental psychologists have devoted increasing amounts of attention to the study of the development of social cognition (Shantz,

1975; Rosen, 1985), "social cognition" designating the internal events that are believed to mediate actions related to other people and their affairs as the topics for research inquiry. The currently intensifying study of social cognition is in contrast to the concern with physical and logical mathematical cognitive events that had dominated prior cognitive developmental research (Urbain & Kendall, 1980).

Social perspective taking represents an active research domain that is accompanied by general theories to explain the development and functional role of skills in social perspective taking (Piaget, 1926). For example, Piaget (1926) described the young child as egocentric, operating from a personal perspective, and both ignorant of and unconcerned about the perspectives of others. Role taking (decentering) skills are believed to develop through a maturational process that results from the child's active involvement with the environment, particularly peer social exchanges. Although the unitary nature of the egocentric concept has been questioned (Ford, 1979; Hudson, 1978; Kurdek, 1977; Shantz, 1975), reasonable consensus exists about the stagelike sequence one moves through in the process of acquiring social perspective taking abilities.

Four basic levels have been described (Selman, 1980; Selman & Byrne, 1974; Shantz, 1975). First, the child lacks social perspective taking and simply does not consider the point of view of the other person. Next, the child can consider another's ideas and realize that these thought may be different from his/her own; however, the child has only rudimentary awareness of the other perspectives and has difficulty

taking another's role. In the next level the child continues to have difficulty considering different perspectives simultaneously but can sequentially consider his/her own perspective and then consider the perspective of another. In the final level, the child has developed social perspective taking skills and now has the ability to take both perspective as well as taking what Selman (1980) calls the "third person" perspective in social interaction.

Research with samples of children displaying maladaptive behavior patterns has often revealed perspective taking deficits (Chandler, 1973; Little, 1979; Urbain & Kendall, 1980), and, of relevance to the concern of this research, some investigators have seized upon the implications for intervention suggested by these theories and the deficits observed in certain children. Perspective taking intervention programs emerged from developmental psychology but nevertheless have a number of similarities with other cognitive-behavioral treatments, particularly in their emphasis on the generation of alternatives, role taking practice, and some form of affective education.

Soviet developmentalists Luria (1961) and Vygotsky (1962) also contributed substantially to the study of children's self talk and subsequently to the emergence and refinement of self instruction training procedures. Vygotsky (1962), for example, described a progression from audible talking to "internalized" talking, and finally to silence, where internalization of self talk is fully accomplished.

Vygotsky underscored that the content of the self talk was important because its primary function was self guidance.

Luria (1961) took an experimental approach to the descriptive writings of others such as Vygotsky. Luria provided children with verbal self instructions while they performed laboratory tasks and thereby explored the effects of specific self talk. Luria identified an important developmental influence: With increasing age, children were able to inhibit behavior not only following adult instructions, but also in response to their own self directed instructions. Though not the sole influences, developmental topics such as social cognition and self verbalization contributed to the emergence of the cognitive-behavioral treatment strategies for children.

Significance of the Problem

This study was designed to extend the findings in the literature of cognitive-behavioral self control procedures to the population of hospitalized, psychiatrically impaired adolescents.

A review of the cognitive-behavioral literature, addressing the needs of children, indicates that the bulk of the research has been done with primarily younger children (age 12 and under) who have been selected from a non-clinical population (Copeland 1981, 1982; Copeland & Hammel, 1981; Kazdin, 1985; Kendall & Braswell, 1985). Of those children selected for impulsive, non self controlled, or problem behavior, the majority have been identified by test score or teacher referral only. Typically these children have been selected from grade school classrooms. Seldom have institutionalized, psychiatrically

disturbed adolescents been the focus of inquiry. While cognitive-behavioral self control techniques such as Urbain & Kendall's (1980) have proven to be effective in modifying the cognitive and social impulsivity of the aforementioned younger population, there has been, to date, a general absence of research in applying these techniques to an institutionalized sample of non self controlled adolescents (Kazdin, 1985; personal communication). Much has been made of this void in recommendations for further research (Kendall & Braswell, 1985; Kazdin, 1985).

The research described here was designed to contribute to the advancement of knowledge in clinical/counseling psychology by providing information about the impact of cognitive-behavioral self control procedures on just such a population sample of adolescents. Study of this population may serve to establish and extend the efficacy of cognitive-behavioral interventions to the seriously impaired adolescent. Production of significant changes not only in measures that reflect cognitive style but also in generation of appropriate overt social behavior will support and extend our knowledge of the clinical efficacy of cognitive-behavioral procedures with children overall. If effective, cognitive-behavioral procedures may provide a useful tool for teaching troubled adolescents how to think before they act and how to generate and select more functional behavior.

Statement of the Problem

This study was designed to evaluate the effects of cognitive-behavioral training for self control on a group of hospitalized,

psychiatrically impaired adolescents who had been evaluated and identified as manifesting impulsive/non self controlled behavior. For the purposes of this study, the range of cognitive-behavioral interventions known as self instructional training was the primary focus (Kendall & Braswell, 1985). Self instructional training is an intervention strategy; although the application of self instructional training to the specific population with which it is most often used does have a clear conceptual basis, the general model is not itself associated with a comprehensive theoretical system. Self instructional training is at present the most widely studied cognitive-behavioral strategy employed with impulsive, hyperactive, and problem behavior children (Kazdin, 1985).

The techniques utilized within the context of self instructional training include an array of behavioral interventions such as modeling, rehearsal, role playing, response cost, reinforcement, self evaluation, fading, shaping and homework. These techniques were administered according to the developmental progression hypothesized by Luria (1961) and Vygotsky (1962), operationalized by Meichenbaum and Goodman (1971), and elaborated by Kendall and Finch (1979b). This study was designed to answer the following questions:

Problem 1: From a sample of psychiatrically hospitalized adolescents; Do non self controlled adolescents (prior to intervention) demonstrate a degree of deficit relative to self controlled adolescents in the areas of social problem solving and perspective taking? In the event that non self controlled

adolescents do not appear to be deficient in their capacity for social problem solving and social perspective taking does the cognitive-behavioral training program produce an increase in the application of social problem solving and social perspective taking by the non self controlled adolescents?

Problem 2: Does cognitive-behavioral self control training of non self controlled, psychiatrically impaired adolescents lead to their improved performance on the measures of social perspective taking, and social problem solving?

Problem 3: Does cognitive-behavioral self control training of non self controlled, psychiatrically impaired adolescents lead to increases in teacher ratings of self controlled behavior?

Problem 4: Does cognitive-behavioral self control training of non self controlled psychiatrically impaired adolescents facilitate changes that generalize beyond the time of immediate training?

The following hypotheses were tested:

Hypothesis 1: Non self controlled, psychiatrically impaired adolescents do manifest deficits in the areas of social problem solving and social perspective taking relative to self controlled, psychiatrically impaired adolescents.

Hypothesis 2: Cognitive-behavioral self control training of non self controlled, psychiatrically impaired adolescents will lead to improved performance on the measures of social perspective taking and social problem solving.

Hypothesis 3: Cognitive-behavioral self control training of non self controlled, psychiatrically impaired adolescents will lead to increases in their self controlled behavior as evidenced by teacher ratings.

Hypothesis 4: Cognitive-behavioral self control training of non self controlled, psychiatrically impaired adolescents will facilitate changes that generalize beyond the time of immediate training as evidenced by performance on measures of social perspective taking, social problem solving and teacher ratings.

Assumptions Underlying This Study

For the purposes of this study, it was assumed that:

1. The constructs studied are real aspects of human behavior, and the instruments used to measure them are sufficiently valid and reliable to produce meaningful data.
2. The hospital environment, including psychotherapeutic and educational regimen, account for identical variance among the adolescent participants.
3. The cognitive deficits or absences manifest by the participating adolescents are isomorphic regardless of diagnostic categorization.

Limitations

This study was limited to the psychiatrically impaired adolescents hospitalized within the Adolescent Treatment Unit of Arizona State Hospital, Phoenix, Arizona.

Definition of Terms

Cognitive Absence: Deficiencies in thinking that suggest a failure to develop and/or engage in adequate information processing and reflection.

Cognitive-Behavioral Therapy: A psychotherapeutic intervention that emphasizes the learning or modification of thinking processes with a change in behavior as the desired outcome.

Egocentrism: A lack of social perspective taking where an individual does not consider the point of view of the other person.

Impulsivity: Non self controlled behavior that suggests an absence of reflection upon planning and consequences.

Self Control: The ability of an individual to modulate his/her behavior in order to effect the accomplishment of self derived goals/needs with a minimum of personal and social consequences.

Self Instructional Training: The imparting of cognitive schemata that are capable of guiding, directing, and coordinating other aspects of self regulatory behavior.

Self Verbalization: Vocal or sub-vocal verbalization (self talk) intended to guide, direct, and coordinate behavior.

Social Perspective Taking: The ability to assume the role of another (de-centering) in order to consider their "point of view" and to evaluate one's own perspective vis a vis the other.

Social Problem Solving: A thinking process which makes available a variety of potentially effective response alternatives for

dealing with the problematic interpersonal situation and increases the probability of selecting the most effective response from among the various alternatives.

CHAPTER 2

REVIEW OF THE LITERATURE

There have been a number of excellent reviews of cognitive-behavioral approaches with children published to date (e.g., Abikoff, 1979; Craighead, Craighead, & Meyers, 1978; Gresham & Lemanek, 1983; Hobbs, et al., 1980; Kendall, 1981a; Kendall & Finch, 1979b; Meador & Ollendick, 1984; Pressley, Reynolds, Stark, & Gettinger, 1983; Reynolds & Stark, 1983; Urbain & Kendall, 1980). In addition, there have been special issues of journals devoted to the topic (e.g., School Psychology Review, 1982; Exceptional Education Quarterly, 1980) and several chapters in which the authors discuss various topics in reference to cognitive-behavioral interventions with children. For instance, Bobbitt and Keating (1983) take a cognitive developmental perspective, Copeland (1983) examines the theoretical role ascribed to and the methods for the measurement of children's self verbalizations, and Meichenbaum and Asarnow (1979) bring the issues of metacognitive development to bear on cognitive-behavioral training.

There have been several specific influences on the cognitive-behavioral literature dealing with children. First came self instructional training, which emerged on the scene under the auspices of Meichenbaum and Goodman (1971). Accordingly, the factors that led to the self instructional procedures are seminal factors in the

development of cognitive-behavioral training in general. Second, the focus on problem solving as a form of prevention and treatment made an impressive dent on the field of child psychology (Shure & Spivack, 1970, D'Zurilla & Goldfried, 1971). The antecedents of problem solving are therefore also relevant to the development of cognitive-behavioral procedures with children. Therefore the following review shall be divided into two major sections:

1. A review of self instructional training that will discuss both the theoretical and research underpinnings and major antecedent events. Primary emphasis, within the review, will be upon the type of self instructional training that emphasizes training in general cognitive strategies. Subject and treatment variables effecting treatment outcome will also be discussed;
2. A review of problem solving approaches. This major class of interventions within the cognitive-behavioral realm emphasizes a problem solving approach to social and interpersonal difficulties. Self instructional training has a problem solving focus, but problem solving approaches that make up this second class of cognitive-behavioral interventions do not emphasize self instructions. The impact of a variety of problem solving interventions upon children's interpersonal behavior (with an eye on treatment and prevention) will be discussed. Again, the section will end with a review covering the subject and treatment variables that have been found to affect treatment outcome.

Self Instructional Training

In addition to the historical theoretical underpinnings of cognitive-behavioral approaches cited in Chapter 1, Meichenbaum (1979b) and Craighead (1982) have highlighted areas of theorizing and research that contributed specifically to the development of self instructional training. Namely, the study of the functional relationship between language and behavior that occurred within the field of child development. The most frequently cited examples are the theories of Soviet psychologists Luria (1959, 1961) and Vygotsky (1962). Vygotsky proposed that internalization of verbal commands is the crucial step in a child's establishment of voluntary control over behavior. Luria, Vygotsky's student, elaborated a developmental theory of verbal control that focuses on two interrelated developmental shifts. One shift concerns the origin and nature of the speech that does the controlling. Luria suggested a sequence in which the child's behavior is initially controlled by the verbalizations of other, usually adults (other-external). In the next stage, the child's own overt verbalizations direct his/her behavior is controlled by his/her own covert self verbalizations (self-internal). The second type of shift or change concerns the type of control provided by these verbalizations. Luria theorized that during the other-external and self-external phases verbal control is primarily impulsive rather than semantic. Impulsive control refers to speech as a physical stimulus that can inhibit or disinhibit responses. As the child develops, the type of control shifts to semantic, with the child learning to respond to speech as a

carrier of specific symbolic meaning. As a result of these two shifts, by approximately age 6, the normally developing child acquires self-internal regulation speech and is responsive to the content of verbalizations. Mussen (1963) has also argued for a sequential model of development of verbal control of behavior that is very similar to that of Luria. In addition, other investigators such as Lovaas (1964) and Bem (1967) obtained results supportive of such a developmental progression. This work, along with that of Meachem (1978) and Rondal (1976), does suggest that the age ranges in which the different types of verbal control are demonstrated may vary with the nature of the behavioral task. In a review of theories and studies of private speech, Kohlberg, Yaeger, and Hjentholm (1968) emphasized the importance of private speech in self initiated regulation and direction of ongoing overt motor behavior. However, this view of the role of private speech is not without its critics. Flavell (1977) objected to interpreting the source of self control as exclusively verbal, pointing to the importance of nonverbal control via gestures and environmental manipulations. In the applied sector, however, practitioners have typically ignored any shortcomings in the Lurian formulation of verbal self regulation and have used such formulations as the theoretical bases for self instructional interventions. A book by Zivin (1979) and a chapter by Copeland (1983) provide reviews of the developmental significance of children's talking to themselves.

The second influence noted by Meichenbaum was research on the child's self mediated cognitive strategies, such as the work of Mischel

and his colleagues on delay of gratification. In a 1974 review, Mischel summarized evidence that self generated strategies, such as self instructions and self praise, helped children reduce frustration during delay of gratification tasks. In this type of research, the "training" in self instruction is very brief; in fact, it usually involves the experimenter simply instructing the child to say a particular sentence or think a particular thought. Patterson and Mischel also examined verbal self control in a series of studies on verbal strategies for resisting distraction (Mischel & Patterson, 1976; Patterson & Mischel, 1976). The findings suggested that preschoolers did not spontaneously produce self instructions to help them cope with highly distracting stimuli, but when provided with a specific cognitive plan the children were able to work longer in the distracting situation. Very similar research strategies have also been utilized in studies of rule following behavior (Monohan & O'Leary, 1971; O'Leary, 1968), with results suggesting verbalization of simple self instructions can reduce rule breaking in children.

While the findings of these two different areas of research are basically complementary, different styles or methods of training in self instructions have followed from these approaches. In an effort to organize this body of research, studies are grouped for discussion according to the particular type of self instructional training being implemented. Studies in which training resembles that employed in delay of gratification and resistance to distraction research are termed noninteractive, for training involves the experimenter's merely

telling the child what to do or say. A review of these studies will be excluded in that the following research proposal derives mainly from studies that place emphasis on training in general cognitive strategies for approaching problem situations, rather than from studies that emphasize training in specific observable behaviors or recipes per se. The reader is referred to Combs and Slaby (1978) for a review of these noninteractive studies.

Studies that reflect more of the influence of Luria's stage theory approach are labeled interactive, for training involves more child-experimenter exchange. Within the interactive category, further subgroups can be distinguished. One group refers to self instructions as self directed verbal commands. Training in this group of studies is more involved than training provided in the noninteractive studies, but it is still relatively simple and unelaborated. This subgroup within the interactive class also employs the self instructional procedures but the training is provided within the context of more operant formulations of self control. In these studies self instructions are taught as a skill on par with self monitoring, self evaluation, and self reinforcement. The third and largest group of studies employs a version of training that is designed to more closely imitate the hypothesized processes in Luria's stage theory. This is accomplished by having the trainer first model the desired actions while speaking the self instructions. The trainer then says the self instructions with the child as the child carries out the actions. Finally, the child states the self instructions while accomplishing the task

activities. Within each class and subgrouping studies are organized by the disorder or problem of the sample.

Operant Formulations of Self Control

Neilans and Israel (1981) studied the impact of a self regulation package containing self monitoring, self goal setting, self evaluation, and self reinforcement skills. In addition, this package incorporated the use of self statements. Six residents of a group home for problem behavioed children, age 7 to 13, were the subjects (two female, four male). The conventional token economy decreased disruptive behavior and increased on task behavior, but these changes did not maintain after the withdrawal of the system. On the other hand, the self regulation system produced greater positive changes in behavior and academic performance, and these improvements were obtained during the withdrawal of teacher control. Self statements introduced a dramatic drop in disruptive behavior. These results are qualified by the small sample size. The inclusion of an attention control group would have been desirable, but the residential treatment status of these subjects that their behavior difficulties were greater than those of children selected from normal classroom, so the impact of this intervention is impressive. The effects are, however, due to a combined cognitive-behavioral program so it is not possible to isolate the effects of the self instructions.

Varni and Henker (1979) examined the effects of the sequential application of self instructions, self monitoring, and self reinforcement procedures on the academic performance and behavior patterns of

hyperactive children. The subjects were three 8- to 10- year old males diagnosed as hyperactive and enrolled in a school for learning disabled children. The academic performance of the children was assessed using their programmed reading and math texts. A count of the number of items completed and the percent correct was made after each session. Hyperactive behavior was assessed via behavioral observations in the training room and in the classroom. Both gross motor behavior and off task responses were recorded. In addition, a "hyperactivity index" for each child was calculated per interval of observation. The three children experienced 10 to 19 baseline sessions (35 minutes) in the training room and 21 to 30 sessions in the classroom. During the baseline sessions, the child was presented with academic materials and given the choice of whether or not to work on the academic materials. Following this session, each subject was given three sessions of self instructional training using materials such as the Matching Familiar Figures (MFF; Kagan, 1966), Porteus Mazes (Porteus, 1955), and the programmed reading text. The impact of this training was then assessed in posttraining sessions. Next, self monitoring was introduced. In this phase, the child was provided a wrist counter and a clock and was instructed in how to use the counter to keep track of points earned by number of minutes worked. At the end of the last self monitoring session, the therapist explained the rate of exchange of points for prizes. In subsequent sessions, the child continued to self monitor but was also responsible for self reinforcement. The entire self regulation package was applied first with reading and then with math.

The authors report that self instructional training had no significant impact on the children's academic or behavioral performance. The introduction of self monitoring yielded minor, but consistent positive effects, and self reinforcement resulted in increased academic performance and decreased hyperactive responding. Thus, the major effects appeared to be specific to self reinforcement.

A number of factors could explain the absence of effects following self instructional training. First, self instructional training as applied in other studies typically includes a self reinforcement component as a part of training, rather than separate as in this instance. Also, the detailed description of the self instructional training provided in this study suggests that the training was conducted in a somewhat non interactive or rigid manner. The authors did require a criterion level of performance in terms of correct problem solutions, but there was no attempt to directly assess the child's knowledge of the self instructions. Nevertheless, his study offers some interesting information about the relative effectiveness of the various self regulation components, and requires that attention be given to self reinforcement.

A training program that emphasized both self instructional procedures and other self management strategies was evaluated by Cameron and Robinson (1980). The subjects were four 7- to 8- year old children selected by their teachers as demonstrating academic and behavior problems. Using a multiple baseline, across individuals design, the authors assessed on task behavior during math class, math

performance in terms of percent accurate, and self correction rate in reading. Each child received 12 individual 30-minute sessions over 3 weeks. Self instructional training procedures were applied to math problems and additional training was provided in self monitoring and self reinforcement for correct performance. The training resulted in significant increases in on task behavior for two of the three children, and all three showed gains in math accuracy. Training did seem to generalize to reading, but the authors cautioned that factors such as the nature of the reading program and simple maturation might also explain the improved reading. These findings provide support for self instructional plus other self regulation skills as a method of improving on task behavior and academic performance in specific subject areas, but the absence of a control group does make it difficult to successfully rule out other reasons for the improvements.

Elaborated Self Instructional Training

The second line of research on interactive self instructional training considers self instructions as cognitive schemata that are capable of guiding, directing, and coordinating other aspects of self regulatory behavior. Research with this conceptualization of self instructions provides the most elaborate versions of training. The majority of the studies reviewed employed self instructional training in which the child is taught a series of self statements to aid in task performance, with the therapist serving as a model for thinking through problems.

The prototype for these studies was conducted by Meichenbaum and Goodman (1971) and elaborated by Kendall and Finch (1979b). As described by Meichenbaum (1975, 1977), in the first stage of training the therapist or tutor models the behaviors associated with successful task performance while talking to himself/herself out loud. These verbalizations of self instructions relate to the specifics of the task and include statements of problem definition (i.e., clarifying and understanding the exact requirements of the task at hand), problem approach (planning a general strategy for solving the problem), focusing attention, selecting an answer, and self reinforcing for correct performance or using a coping statement for incorrect performance. After observing the therapist perform several items, children then perform the task while talking to themselves out loud. Usually at this point the therapist assists the child in remembering to employ the modeled sequenced of self verbalizations. The therapist and child typically alternate performing task items, and as they proceed through the task, the therapist gradually fades these verbalizations to a whisper and encourages the child to do the same. Eventually, the therapist and child self instruct covertly, using the internalized statements to control and direct task performance. Thus, self instructional procedures include training in the use of task directing verbalizations, self reinforcing statements, and modeling of task appropriate behavior. The effectiveness of this approach has been evaluated with cognitively impulsive children, as well as with aggressive, hyperactive, non self controlled, and problem behaved children.

Some self instructional intervention studies have identified their samples solely on the basis of cognitive impulsivity as defined as task performance on a measure such as the MFF. This measure is a match to sample task in which the child's latency to first response and number of incorrect responses are recorded. Typically a child is judged impulsive if his/her latency is below and response errors above the respective medians of a same aged sample. The MFF is also frequently used as an outcome measure, and some evidence for a relationship between cognitive and behavioral impulsivity does exist (see review by Messer, 1976; Block, Block, & Harrington, 1974; Kagan & Messer, 1975; Messer, 1976). Given this controversy, studies using only the MFF or similar measures of cognitive impulsivity for case identification will be discussed separately from investigations using more "clinical" criteria such as parent or teacher referral.

Test Selected Subjects

Meichenbaum and Goodman's prototype self instructional training (1971, Study II) used MFF selected kindergarten and first grade subjects in an examination of the efficacy of the cognitive self instructional training relative to a modeling only and control group. The self instructional training condition employed the procedures just described; the modeling condition was identical to the self instructional condition except for the absence of any verbal self instructions. Relative to the control group, both treatment groups demonstrated significant increases in response latency following four 30-minute training sessions, but only the self instructional group

obtained a decrease in errors. This finding suggests that self instructions do have an impact beyond that obtained by simply modeling successful task behavior. Abikoff (1979) has suggested that the results of this study are qualified by the high degree of overlap between the test, the MFF, and the picture matching materials used in training. This critique does have relevance for evaluating the overall level of improved performance, but the overlap between training and test materials does not necessarily qualify the contrast between the self instructional and modeling conditions.

Although Cullinan, Epstein, and Silver (1977) also compared the impact of modeling and modeling-plus-self-verbalization of MFF performance, their results require cautious consideration. From a population of learning-disabled children, 33 impulsive males (aged 9 to 12) were selected on the basis of their MFF scores. Subjects were then randomly assigned to the modeling, modeling-plus-self-verbalization, or control conditions. In both the modeling conditions, subjects observed a video tape of a boy solving MFF problems reflectively. In this tape, the model overtly verbalized self instructions to delay selecting an answer until he/she had carefully checked each possibility. Subjects in the modeling-plus-self-verbalization condition not only watched the video tape but were also required to repeat the model's reflective self instructions as soon as they were spoken. The control group observed a video tape of MFF items but no model was shown. Immediately after exposure to the video tapes, all subjects were readministered the MFF and a follow-up administration occurred 3 weeks later. At immediate

posttest, both modeling conditions performed significantly better than the control group in terms of MFF errors, with no significant group differences observed for MFF latencies. At follow-up, there were no significant group differences on either errors or latency. While these results are not encouraging and suggest at best the equivalence of self instructions and modeling procedures, the study is different from other self instructional interventions in several important respects. First, the models were video taped rather than live. The absence of a one to one learning relationship may have been crucial. Second, the subjects were never required to use the self instructions while actually solving problems. Also, even in a field where brief treatments are the norm, this intervention was unusually short-lived. Thus, the absence of interactive feature seems to be related to less impressive results.

Data presented by Bender (1976) included a contrast of tutor verbalized versus self verbalized strategies and this comparison lends support to the need for interactive training with participatory subjects. Controlling for sex, Bender randomly assigned 70 impulsive first graders to verbal self instructional strategy training, tutor verbalized strategy training, verbal self instruction without explicit strategy training, attentional materials control, and in class control conditions. While all the outcomes were not consistent, the results of the immediate posttests indicated self verbalization was more effective than tutor verbalization in terms both of decreasing MFF errors and of increasing response time. A comparison of the strategy versus nonstrategy self verbalization conditions revealed that strategy

training was more effective in increasing response time. These results tentatively suggest that self verbalization of explicit strategies may be the most effective of these methods in modifying cognitive impulsivity in first graders.

Kendall and Finch (1978) compared self instructional procedures combined with a response cost contingency with an attention control. Twenty impulsive emotionally disturbed children (16 males, 4 females) served as subjects. The treatment group received six 20-minute sessions in self instructional training accompanied by a response cost procedure contingent upon errors. The control group was exposed to the same materials, psychoeducational tasks, for six sessions and given non contingent rewards. The treatment group demonstrated increased MFF latencies and decreased MFF errors at posttest and 3-month follow-up. No group differences were observed on two self report measures of impulsivity. The treated children were rated by teachers blind to conditions as significantly less impulsive at follow-up on the Impulsive Classroom Behavior Scale (ICBS; Weinreich, 1975), suggesting the treatment had generalized to classroom behavior. It was later recognized, however (Abikoff & Ramsey, 1979; Kendall & Finch, 1979c), that the treatment and control groups differed significantly on this measure prior to treatment. While the intervention was successful in improving task performance, the psychoeducational focus of the training materials and, perhaps, the limited amount of instruction were less than maximal. The pretreatment group differences detracts from conclusions regarding the generalization of treatment effects.

In a series of studies conducted by Meyers, Cohen, Schlessner, and colleagues (1981), children identified as cognitively impulsive and stratified according to Piagetian stage of cognitive development (preoperational vs. concrete operations) have been studied to determine how best to enhance generalization of treatment effects. In a recent study (Cohen, Meyers, Schlessner, & Rodick, 1982) the cognitive level of the children was found to interact with different types of training. Importantly, some interesting findings emerged regarding generalization: only the concrete operational children who received a "directed discovery" type of training demonstrated significant generalization of this training to other cognitive tasks. Children in the directed discovery training were led by their therapist to "discover" the self instructional statements that would guide problem solving. A series of prepared questions were employed to facilitate each child's discovery. An apparent conclusion is that an active involved training, with cognitively prepared children, is most likely to produce generalization.

A few studies have examined the relative contributions of certain features of the self instructional training approach. The effects of self reinforcing self statements and of explicit response cost contingencies have been investigated. Speculating on the special role of the self reinforcement component in self instructional procedures, Nelson and Birkimer (1978) compared the effects of self instructions alone with self instructions plus self reinforcement. Forty eight black, cognitively impulsive second and third graders were randomly assigned to one of four conditions: (1) self instructional

training; (2) self instructional training with self reinforcement; (3) attentional control; and (4) assessment control. At posttest assessment, only the self instructional training with self reinforcement resulted in significant improvement on the MFF, with change occurring in both the response latency and the number of errors. Apparently, the self reinforcement component adds meaningfully to the training procedures.

A different match to sample task, the Kansas Reflection-Impulsivity Scale for Preschoolers (KRISP; Wright, 1973) was used to select 32 impulsive 4- and 5-year-olds out of a population of low income preschoolers. Arnold and Forehand (1978) then compared the effectiveness of cognitive self-control training and response cost procedures by randomly assigning subjects to conditions (cognitive training, response cost, cognitive training and response cost, or placebo control). The response cost procedures, for some reason, were executed only during the post- and follow-up assessment. Training involved four 20- to 30-minute sessions conducted over a 2-week period. Dependent measures included to KRISP and a group administered classroom matching test. On the KRISP, all groups, including the placebo control, showed improvement with repeated administration. On the classroom test, however, only the two cognitive training groups showed significant improvement. These results suggest that cognitive training can improve the impulsive response style of preschool children in the immediate training situation and in the classroom, whereas response cost enhances task performance only in the immediate situation.

On the whole, interventions with test selected samples of cognitively impulsive children tend to be briefer and more circumscribed than interventions with subjects selected for their social problem behavior, as will be seen when the latter studies are considered. Research with cognitively impulsive children, however, has provided some information about the relative effectiveness of various treatment components, and has been fairly consistent when examined in the following light--interventions where the procedures are interactive and involving for the child and/or where behavioral contingencies are systematically applied produce more gains than when these conditions are absent. The studies reviewed thus far are limited by the manner of selecting subjects and by the lack of extensive assessment of generalization.

Clinical Samples

In addition to the studies of procedures to help cognitively impulsive children, a large number of studies have utilized variation of self instructional training with children who have difficulty controlling their social behavior. These children have been described with various labels including impulsive, hyperactive, non self controlled, or behavior problem. Generally, children such as these are selected for participation in research on the basis of social, rather than test performance, criteria. Undoubtedly, some important differences exist among the various subject samples considered in this section; however, the focus on behavior as the selection criterion makes it reasonable to group these studies together.

As previously stated, Meichenbaum and Goodman's (1971) research was one of the earlier studies in this area--a study that stimulated many later investigations. In Study I, the subjects were second grade children who were teacher identified as hyperactive or lacking in self control and randomly assigned to cognitive training, attention control, or assessment control conditions. Subjects in the experimental and attention control groups received four 30-minute training sessions with both group's using the same training tasks but only the experimental group being taught self instructions. Two types of dependent measures were employed. Task performance measures included the Porteus Maze Test, the MFF, and the Picture Arrangement (PA), Block Design (BD), and Coding subtests of the Wechsler Intelligence Scale for Children (WISC; Wechsler, 1949). Measures of classroom behavior included behavioral observations and a teacher questionnaire designed to assess the child's level of self control. Posttesting indicated the self instructional group improved significantly more than the two control groups on MFF latency and WISC PA and Coding subtests. Both the self instructional and attention control groups made significantly fewer qualitative errors on the Porteus than did the assessment control group. The pattern of relatively positive results was basically maintained at 4-week follow-up. However, the classroom measures revealed no significant group differences for the behavioral observations or teacher ratings of classroom behavior. Self instructions seems to improve task performance on certain tests, but, perhaps because of the

limited number of sessions or the nature of the training materials, generalization to classroom behavior did not occur.

Bornstein and Quevillon (1976) employed self instructional training with three hyperactive preschool children enrolled in a Head Start program. This intervention also included self reinforcement paired with external reinforcement (candy) that was faded over the course of the training. The treatment emphasized teaching the children to complete tasks assigned by the teacher. The intervention involved only one 2-hour session, and training materials focused on sensorimotor skills such as drawing figures, block design tasks, and conceptual grouping problems. Behavioral observations indicated a dramatic increase in on task behavior in the classroom, and this improvement was maintained at 5-month follow-up. The impact of these findings is qualified by the lack of a control group.

Friedling and O'Leary (1979) attempted to replicate the findings of Bornstein and Quevillon (1976) with nonmedicated second and third grade hyperactive children (seven male, one female). Children were assigned to either self instructional training or attention control conditions. The intervention was applied in two "doses." Initially, one 90-minute session of self instructional training was conducted, as was done in Bornstein and Quevillon. The children's behavior was then observed for 10 days. Observers recorded on task behavior, academic behavior (percent accurate, quantity completed, percent skipped), and teacher attention. Next, self instructional training was repeated in two 40-minute sessions on consecutive days,

and observations were repeated for another 10-day period. Unlike Bornstein and Quevillon, no change in on task behavior was obtained. The general lack of impact of the training provides little support for the self instructional intervention; however, several differences between this study, the Bornstein and Quevillon effort, and the other case studies noted earlier are worth considering. From the authors' description of their training procedures, it seems possible that Friedling and O'Leary administered the self instructional training in a very rote, structured, and noninteractive manner, thus allowing little opportunity for tailoring the instructions and statements to the level of the child. If one assumes that this potential shortcoming does not explain the results, then one must look elsewhere. One apparent possibility concerns the lack of behavioral contingencies. Bornstein and Quevillon (1976) used a behavioral contingency with the self instructional training, as did Kendall and colleagues, so that the different results obtained by Friedling and O'Leary might be caused by their omission of the behavioral contingency component of the training.

A case reported by Kendall and Finch (1976) combined self instructional training with a response cost contingency and, via a multiple baseline design, demonstrated that the changes in rates of switching behavior were associated with implementation of the cognitive-behavioral training. Generalization probes, as well as a serendipitous report from the school teacher, provided some data on the generalization of the effects of the training program.

In another case report, Kendall and Urbain (1981) employed the combined cognitive-behavioral training procedures (self instructions and response cost contingencies) but added a more direct focus on problem solving and perspective taking training. The client was a 7-year-old hyperactive girl. The training in this case was more extensive than that typically reported in the literature. Initial training lasted 3 months (weekly meetings) with therapeutic contact continuing for 1 year. Self evaluation and role plays in which the child taught the therapist how to use the self talk were also part of the intervention package. Desired gains were evident in a reduction of disruptive behaviors and, to a lesser extent, in the rating of home and school behavior. Although this single subject design did not permit clear-cut conclusions, the data suggest that the inclusion of the response cost component of the training was an important factor in the achievement of behavioral control.

Thus far, small-n or single case studies of a reasonable degree of experimental rigor have been reviewed. The effects of well elaborated, interactive self instructional training have also been examined in group treatment studies. As was the case with the research just reviewed, these group outcome studies have typically been concerned with identifying factors associated with treatment generalization as well as with the production of treatment effects.

The contribution of different types of self instructional training to the attainment of generalized change was examined in a study by Kendall and Wilcox (1980). The study compared self instructional

training that focuses on the specific training task (concrete labeling) with training that was relevant to the task but was also general and could thus be applied to other situations (conceptual labeling). The 33 8- to 12-year-old subjects were referred for treatment by their teachers owing to a problematic lack of self control (using the Self Control Rating Scale--SCRS; Kendall and Wilcox, 1979) that interfered with both academic performance and classroom deportment. Using a randomized block procedure, with teacher blind SCRS ratings as the blocking factor, the subjects were assigned to one of the two treatment conditions or an attention control group. All subjects were seen for six 40-minute sessions, but only the two treatment groups received self instructional training with modeling and a response cost contingency. The training materials for sessions 1 through 4 were psychoeducational tasks, and in sessions 5 and 6 training focused on interpersonal play situations that required cooperation. At posttest hyperactivity evidenced significant change due to treatment, with the treatment effects stronger for the conceptual labeling group. Thus, generalization of treatment effects to the classroom was found. A self report measure of impulsivity showed no change, and all three groups improved on the MFF and Porteus Mazes. In addition, Kendall and Wilcox provided data on the self control ratings of nonreferred children to give some guidelines or norms for assessing treatment impact (see Kendall & Norton-Ford, 1982b, for more detailed discussion). At posttreatment and follow-up, the conceptual treatment group fell within one standard deviation of the mean for the nonreferred children.

At 1-year follow-up (Kendall, 1981b), numerous improvements were found for subjects in all treatment groups--perhaps due to increased age. Teacher ratings showed differences favoring the conceptually trained children, but with a small number of children available, the differences did not reach statistical significance. However, it was found that conceptually trained children showed significantly better recall of the material they had learned than either the concrete or the control group. Conceptually trained children were rated by their new classroom teachers as not sufficiently lacking in self control to warrant referral. Although the documentation of long-term effects was not compelling, there was a suggestive pattern of relationships between the age of the subject and long-term maintenance of gains.

In a study of the relative effectiveness of individual and group application of the cognitive-behavioral intervention procedures, Kendall and Zupan (1981) employed twice as many treatment sessions (12) as had Kendall and Wilcox (1980). Would the provision of the treatment in settings similar to the settings in which generalization is desired (i.e., groups of children) enhance the attainment of generalized behavior change? In the small group setting the children see others learning similar skills and are exposed to multiple peer models. In contrast, the individual attention and the additional time allowed for rehearsal provided in a one-to-one therapy might more effectively facilitate desirable behavior change.

In order to compare individual versus group application of the cognitive-behavioral procedures, 30 teacher referred, non self controlled classroom problem children from grades 3 to 5 were assigned according to a randomized block procedure to either the individual treatment condition, the group treatment condition, or a nonspecified group treatment (control) condition. All children received twelve 45- to 55-minute sessions, averaging twice a week for 6 weeks. Except for the instructions relating to the cognitive-behavioral self control training proper, children in all three conditions were given similar tasks, task instructions, and performance feedback. However, only the children in either the individual or group self control conditions received training in the cognitive-behavioral strategies.

Multiple method assessments were used to evaluate the treatment procedures, including measures of children's task performance and cognitive skills and two teacher ratings (teachers blind to treatment conditions) of classroom behavior. In addition to children's performance (latencies and errors) on the MFT, two tasks for assessing cognitive interpersonal skills were utilized: Means-Ends Problem Solving (MEPS) task (Shure & Spivack, 1972) and Chandler's (1973) bystander cartoons (measure of social perspective taking). Teachers who were blind to subjects' conditions completed the SCRS and Conners Hyperactivity index. Each of these assessment measures was administered pretreatment, posttreatment, and at 2-month follow-up. The Peabody Picture Vocabulary Test (PPVT; Dunn, 1965) was administered

pretreatment to acquire a general index of each child's intellectual abilities.

The most striking gains were seen in pretreatment to posttreatment changes on the teachers' blind ratings (i.e., SCRS and hyperactivity). Analysis of the teachers' blind ratings of self control indicated that the children in the group and individual treatment conditions demonstrated significant improvements that were significantly superior to the changes in the nonspecific treatment condition. These findings provide evidence of the generalized effects of the treatment to classroom behavior. The changes in teachers' ratings of hyperactivity parallel somewhat the self control ratings; however, the changes were significant for all three treatment conditions. Analysis of maintenance effects indicated that both self control and hyperactivity ratings showed significant improvements, but that the improvement at follow-up was independent of the child's treatment condition.

Improvements that were independent of the child's treatment condition were seen in performance on the MFF. However, while changes in MFF latency scores were not maintained at follow-up, improvements in MFF scores were. That is, when MFF latencies and errors are considered together, the results indicated that children were performing in a somewhat fast and accurate manner, a style that is more desirable than either the fast inaccurate (impulsive) or slow accurate (reflective) styles. Changes in perspective taking at follow-up were positive. Both individual and group treatments produced lasting improvements; the

nonspecific control condition did not. Changes in MEPS test performance were in the opposite direction from what would be expected. This trend was likely the result of the use of the same test material for repeated administration and the tendency of the children to tell shorter stories on each administration. Shorter stories resulted in lower MEPS scores.

It should be noted that the significant improvements across the assessment periods for children in all three groups were not surprising. The nonspecific (group treatment) control condition was included to control for the effects of group participation; it was intended as an attention-placebo condition in a group context. Because of the problems that arose in the control group of non self controlled children, therapists eventually employed reprimands, forceful comments, and other group control techniques to maintain order. As a result of these procedures and the children's response to the training materials, some gains were to be expected.

In terms of normative comparisons using the teacher's blind ratings data, the mean SCRS scores of the cognitive-behavioral treatment conditions at posttreatment were within one standard deviation of the normative mean. Similarly, the hyperactivity ratings for the cognitive-behavioral treatment conditions were brought within the normative range. The normative comparisons suggest that the children receiving the cognitive-behavioral treatment (individually or in groups) evidence improvements that brought them (at posttreatment) within a normal range of self control and hyperactivity. These

improvements, resulting from lengthier treatments, were greater than those reported in Kendall and Wilcox (1980).

At 1-year follow-up (Kendall, 1982b), improvements were found for subjects across treatment conditions. Only the children receiving group treatment were not significantly different from nonproblem children on ratings of self control; only the children receiving individual treatment were not significantly different from nonproblem children on hyperactivity ratings. Structured interviews indicated that individually treated children showed significantly better recall of the ideas they had learned, and produced significantly more illustrations of the use of the ideas than children in either the group treatment or the non specific treatment conditions. Apparently, there is evidence for generalization to the classroom (as evident in the teachers' ratings) but an absence of compelling evidence for long-term maintenance.

Drummond (1976, cited in Meichenbaum, 1976a) employed training materials with a more social or interpersonal focus and compared the efficacy of self instructional training with discussion and assessment control groups in the reduction of disruptive classroom behavior among 30 third and fourth grade classroom problem children. Self instructional training focused on developing self talk that could be used in classroom problem situations, such as talking out, leaving the desk, hitting other children. In the discussion control the subjects talked about general issues such as school problems and getting along with other children. Both treatments were administered in two groups

of five, and each group met twice a week for 3 weeks. At posttreatment and 12-week follow-up, the self instructional groups showed improvement in behavioral observations of actual classroom behavior. Finer comparisons between the behavior of the two groups were not possible since the behaviors actually taught in the self instructional group were not included in the observational coding system (Urbain & Kendall, 1980). No group differences were found on the MFF or a self-esteem inventory. The comparability of the treatment and discussion control groups on the behavior ratings is puzzling in light of the differential teacher ratings. This pattern of results appears relatively consistent with the treatment's focus on changing problem behaviors rather than improving cognitive task performance, and points to the relevance of interpersonal training tasks.

Moore and Cole (1978) conducted self instructional training with 8 to 12-year old children in residential treatment. Training consisted of six 30-minute sessions that focused exclusively on the use of self instructions, with cognitive and visual-motor tasks such as mazes, dot connection, and hidden figures problems. Posttreatment assessment indicated that the self instructional group was significantly improved relative to attention and assessment controls on MFF latency, the Children's Embedded Figures Test (CEFT; Witkin, Oltman, Raskin, & Karp, 1971), and the WISC PA and Coding subtests. There was no reported change in classroom behavior as measured by the Conners Teaching Rating Scale (Conners, 1969). No follow-up was conducted. Again it appears that the exclusively cognitive nature of the training

materials did not encourage generalization of effects to classroom behavior.

In a comprehensive effort, Douglas, Parry, Marton, and Garson (1976) employed self instructional procedures with hyperactive boys. To be included in the study, both the child's parents and teacher had to agree that the child demonstrated symptoms of hyperactivity, such as attentional problems, excessive motor activity level, and impulsivity. In addition the child had to be rated above the cutoff score on the Conners Parent and Teacher Rating Scales for hyperactivity and demonstrate a mean latency of less than 10 seconds on the MFF. All subjects were from upper-lower-class or middle-class homes, and no child with an IQ below 80 was included. Subjects ranged in age from 6 years 1 month to 10 years 11 months. The experimental group included 18 subjects, and the control group contained 11, with groups not differing on age, IQ, and Conners score. Training involved two 1-hour sessions per week for 12 weeks. Self instructional procedures were applied to a broad range of training materials, including the child's actual homework and interpersonal problem situations. In addition, a minimum of 12 consultation sessions with each child's parents and six sessions with classroom teachers were held. These sessions explained the training to parents and teachers and provided instructions in the implementation of self instructional procedures at home and at school. On occasion, parents or teachers observed and participated in the child's training session.

Treatment impact was assessed via extensive test battery, included the MFF, Porteus Mazes, Story Completion Test (Parry, 1973), Bender Visual-Motor Gestalt Test (Bender, 1938), Memory tests from the Detroit Tests of Learning Aptitude (Baker & Leland, 1967), Durrell Analysis of Reading Difficulty (Durrell, 1955), The Wide Range Achievement Test (Jastak, Bijou, & Jastak, 1965), and the parent and teacher versions of the Conners. At posttest the treatment group showed significant improvement over its pretreatment performance on nine of ten task performances measures, whereas the control group showed significant improvement on only one measure. The treatment group did not show improvement on either the parent or teacher behavior ratings. At 3-month follow-up, the treatment group maintained its improved level on eight of ten measures, and the control group maintained its one improved score. As the authors point out, improvements were observed in the treatment group on measures that were not the specific focus of training, such as the reading and Story Completion Tests. The failure to obtain change on the Conners indicates a lack of generalization of treatment effects to the home or school setting. These data are particularly worrisome in light of the involvement of teachers and parents and the use of training material focusing on social interpersonal problems. On the other hand, there was no explicit program of behavioral contingencies to accompany the training of self instructional procedures. The Douglas et al. (1976) investigation can be credited for careful subject selection and thorough assessment of treatment effects. The lack of impact on home

or school behavior is disappointing, but the results do support the efficacy of self instructional training for producing lasting improvement in performance on certain cognitive and visual-motor tests.

As noted above, another feature of several of the self instructional studies that may be potentially beneficial in terms of generalization concerns the concurrent application of some form of behavior contingencies. Several studies, such as those reported by Kendall and colleagues, have used a response cost contingency along with social praise. Others have used variations of reward contingencies. It is worth noting in advance that authors reporting studies without systematic behavioral procedures often mention this in the discussion as a suggestion for inclusion in future research.

Considering the hypothesized importance of behavioral contingencies, Kendall and Braswell (1982b) compared the efficacy of an intervention involving self instructional training with response cost contingencies, role plays, and modeling with an intervention utilizing only the behavioral techniques. Twenty seven non self controlled problem children (8- to 12 years old) were randomly assigned to the cognitive-behavioral treatment, the behavioral-only treatment, or the attention control group. All children received 12 psychoeducational, play, and interpersonal tasks and situations. The children receiving the cognitive-behavioral intervention improved teacher's blind ratings of self control, and both the cognitive-behavioral and behavioral treatments improved teacher's blind ratings of hyperactivity. Parent ratings did not show that treatment produced behavioral improvement in

the home setting. Several performance measures (cognitive style, academic achievement) showed improvements for the cognitive-behavioral and behavioral conditions whereas only the cognitive-behavioral treatment improved children's self reported self concept. Naturalistic observations in the classroom showed significant variability, but off task verbal and off task physical behaviors showed some decrease in frequency as a result of both of the treatments. Some of these improvements were maintained at 10-week follow-up for the cognitive-behavioral condition; however, 1-year follow-up data did not show significant differences across conditions. These results argue for the effectiveness of the combined cognitive and behavioral components of the intervention.

At this juncture, it would be reasonable to draw a tentative conclusion that the available studies document the success of cognitive-behavioral procedures. It would also be reasonable to suggest that there is some consistency across types of studies: Treatment gains are greatest when cognitive training is combined with behavioral contingencies and when the cognitive training is conducted as an interactive process between the therapist and child. Recognizing that other studies have conclusions that further restrict the supporting evidence and have generally less favorable outcomes; these studies, nevertheless, offer interesting suggestions for pinpointing those clients most responsive to the intervention and identifying potential areas in need of improvement within the training format.

Self instructional procedures have been applied with children identified as a result of their aggressive behavior. Camp and her colleagues (Camp, Blom, Hebert, & van Doornick, 1977) developed the "Think Aloud" program in an effort to teach verbal mediation skills to aggressive second grade boys. Camp (1977) found that this group of subjects possessed some skills in verbal mediation but that they failed to use these skills in problematic situations. Accordingly, the treatment involved 30 half-hour sessions that focused on self instructional training with impersonal tasks and interpersonal problem situations. In addition, training in problem solving skills was also provided. Twelve treated subjects were compared with then who were untreated, and, as another control, Camp et al. (1977) also evaluated 12 "normal" boys selected from the same age group and geographical area. The dependent measures included teacher ratings of aggression and achievement; tests of intellectual ability, achievement, auditory perception, and interpersonal problem solving; and ratings of private speech during testing. At posttest, the treated group showed a significant increase in the teacher ratings of prosocial behavior relative to the control group but no decrease in aggressive behavior. Unfortunately the teachers were aware of which boys were receiving treatment, so they were not blind raters. The treated subjects showed an increase in the number of solutions provided on the measure of interpersonal problem solving, but these solutions were not of improved quality and frequently included aggressive responses. On the more cognitive measures the treated subjects showed a general pattern of

improvement relative to the aggressive control group. Thus, while the treatment program appeared to have some impact on the children's cognitive functioning, the behavioral effects were much less clear.

Coats (1979) applied self instructional procedures to the reduction of impulsive and disruptive classroom behavior based on teacher ratings of impulsive-aggressive behavior and poor self control and behavioral observations. Subjects in the treatment and attention control groups were equated on the frequency of aggressive and motor behavior, as indicated in the pretreatment observations. The children in both groups were seen for eight 30-minute sessions over a 2 week period. Training materials began with simple sensorimotor tasks, such as maze drawing, and gradually expanded to include reasoning tasks and interpersonal problem solving situations. The attention control group engaged in the same activities without self instructional training. The classroom behavior of the subjects was assessed via behavioral observations in the classroom, teacher ratings of classroom behavior, and behavioral observation of performance in a staged interpersonal conflict situation. The results indicated no group differences on behavioral observations in the classroom or on teacher ratings. In the staged situation, the treatment subjects demonstrated an increased frequency of appropriate waiting behavior and a decreased frequency of verbal aggression, but there were no differences in requests, negotiations, or physical aggression. Unfortunately, the subjects were not pretested in the staged problem situation, so these results are difficult to interpret in terms of the effects of intervention.

Considering all three measures, there is little support for the efficacy of the training in reducing impulsive-aggressive behavior, despite the inclusion of interpersonal problem situations in the training.

In a study conducted by Urbain and Kendall (1981), group training procedures were employed and social perspective taking and interpersonal problem solving training approaches were compared. Similar to the study by Coats (1979), the target children were aggressive. Both of the training procedures included behavioral contingencies within the group treatment and an emphasis on modeling, role playing, and self-instruction. A third treatment condition employed only the behavioral contingencies in groups without cognitive training. The behavioral contingencies in all three groups included the possibility of both earning reward chips for appropriate participation and losing chips for inappropriate behavior.

The target subjects were second and third grade impulsive-aggressive children selected according to teacher ratings of aggressive behavior. There were 44 target children and an additional 18 non problem children--included as peer models of adaptive social behavior--assigned to the training conditions. Treatments were provided for 12 45- to 50-minute sessions over a 6-week period to groups of three to six impulsive-aggressive subjects and two peer models. Children's performance on Chandler's bystander cartoons and the MEPS were recorded at pretreatment, posttreatment, and 2-month follow-up. Teachers, blind to specific children's assignment to

conditions, rated each subject on the Checklist of Socially Impulsive-Aggressive Behaviors (CSIAB) developed for the study.

Within the interpersonal problem solving training groups, children were exposed to structured lessons and activities designed to teach the following components of problem solving: (1) initial inhibition of impulsive responding--"stop and think"; (2) evaluating consequences--"think ahead"; (3) problem identification--ways to recognize problems were discussed and children shared problems within the group; (4) generating alternatives--"brainstorm"; and (5) making a plan. Within the social perspective taking training groups children were again exposed to structured lessons and activities, in these cases designed to teach the hypothesized components of social perspective taking: (1) awareness of feelings--a "feelings dictionary" of words; (2) social-causal reasoning--using role plays and pictures of interpersonal situations, children discussed the reasons and motives for different types of feelings; and (3) awareness of others (role switching). Different points of view and the fact that people are different were emphasized, and discussion centered on "fairness" and "putting yourself in the other guy's shoes." The reward and response cost contingencies (token program) used in the cognitive training groups were used alone in the behavioral contingencies groups. Children engaged in structured activities and group leaders provided solutions to interpersonal conflicts, but there was a minimal amount of discussion of the alternatives, consequences, or feelings involved.

Analysis of the effects of treatment did not provide evidence for the superiority of either interpersonal problem solving, social perspective taking, or behavioral contingency procedures alone. All three training groups led equally to improved performance on the social cognitive tasks, but none led to significant behavioral change on teacher's ratings of impulsive-aggressive behavior. Improvements on the social cognitive tasks were significantly correlated with behavioral improvements.

The absence of change in the classroom--the lack of treatment generalization--appears to be a common finding in research in which the target children are identified as aggressive even when the treatment package includes behavioral contingencies. Such results are less encouraging than the work with non self controlled children. Although the exact features that distinguish aggressive children from children who manifest their lack of self control in other ways are as yet unknown to us, aggression does appear more resistant to treatment.

Other Variables Affecting Treatment Outcome

Several authors have called attention to the need for examining individual differences in the broad field of self management with children (Karoly, 1977) and the specific area of self instructional training (Kazdin, 1985; Kendall, 1977, 1982a; Kendall & Finch, 1979b). The most comprehensive review of subject variables in relation to self instructional training was compiled by Copeland (1981, 1982; Copeland & Hammel, 1981). In her review, Copeland examined not only the self instructional literature but also the research on other self control

intervention, delay of gratification studies, and resistance to temptation investigations.

Subject Variables

Age

Self instructional training has been most frequently employed with elementary school children, although there are examples of training with preschoolers (e.g., Bornstein & Quevillon, 1976) and less frequently adolescents (e.g., Williams & Akamatsu, 1978). Copeland concluded that a broad age range of children do appear to benefit from self instructional training, but also specified that younger children may require more structured and specific training than would be appropriate for older children. In a 1979 review, Pressley also discussed the need for more concrete training with younger children. In support of this view, Bender (1976) found explicit strategy training more effective than a more general type of training with a sample of impulsive first graders, whereas Kendall and Wilcox (1980) found conceptual training more effective than concrete training with an older group of children (non self controlled 8- to 12-year-olds). Kazdin (1985) asserts that cognitive-developmental level must be considered in designing effective interventions.

Sex

Unfortunately, this section is all too brief. In an amazingly high percentage of studies no analyses of possible sex differences are reported. In one treatment study where sex effects were examined

(Genshaft & Hirt, 1979), no sex differences were noted. The study of sex differences is somewhat hampered by the highly significant difference in the number of boys versus girls who are identified as in need of such intervention.

Race and Socioeconomic Status

As Copeland has indicated, given the confounding of race and socioeconomic status (SES) (and frequently geographic residence) in our culture, it is not always possible to consider these factors separately. The majority of self instructional training studies do not report the racial or SES makeup of their samples. Two studies on resistance to rule breaking provide potentially relevant information. Monohan and O'Leary (1971) found that self instructional training was effective in preventing rule breaking among rural Midwestern white children; however, in a second experiment such training was unsuccessful with urban, Northern black children. The role of SES in cognitive-behavioral training was addressed by Braswell, Kendall, and Urbain (1982b). The subjects of this study were homogeneous with respect to race (white), despite SES variation. Examining the results of three outcome studies involving 58 treated children, significant SES differences in some of the pre and posttreatment measures were found. Despite these differences in level of performance, there were no differences in the improvement and generalization rates of high- versus low-SES subjects, indicating that low SES did not interfere with or hinder treatment. Genshaft and Hirt (1979) examined the effects of race of subject and race of therapist with SES held constant (all

subjects were low SES). Both black and white children trained by white tutors improved on one task performance measure, but only children training by same-race models improved their scores on the other task performance measure. These findings tentatively suggest that race of subject (and therapist) may be an important mediating variable; however, it seems only logical that the effect of race on treatment outcome would depend on what particular type of outcome that is being measured. For example, one might hypothesize that subject-tutor racial similarity would affect improvement on self-esteem and self concept measures more than it would influence change on measures of academic achievement or other cognitive task performance measures.

Cognitive Level

Kendall (1977) has emphasized the importance of considering the cognitive capacity of the child when designing a self instructional training program. This is not to say that such training would not be reasonable and effective with retarded or learning-disabled children, for there are examples of its effectiveness with such population (e.g., Guralnick, 1976; Wagner, 1975). Cognitive capacity may operate much like the age factor, with lower-IQ children requiring more task specific and concrete training, and brighter children responding best to more abstract training. Research by Cohen et al. (1982) found that cognitive level, as assessed from a Piagetian stage perspective, interacts with type of training in predicting outcome, thus underscoring the role of level of cognitive development.

Attributional Style

Kopel and Arkowitz (1975) noted that a child's feeling of personal control over his/her life might influence his/her responsiveness to any type of self control intervention. This possibility was examined with respect to self instructional training by Bugental et al., (1977). Attributional and medication status were found to interact with treatment approach (self instruction vs. social reinforcement) on a task performance measure of impulsivity at posttest but not at 6-month follow-up. In addition, self instructional training produced more durable increases in perceived condition produced longer lasting improvement in teacher ratings of hyperactivity (Bugental et al., 1978). The finding that those high in personal control improved more with self instructional training is consistent with the work of Schallow (1975) who found that undergraduates high in internal orientation, as measured by Rotter's Locus of Control Scale (Rotter, 1966), were more successful in self modification of a number of behaviors. Braswell, Kendall, and Koehler (1982a) reported that children who tended to attribute positive behavior change to effort also tended to obtain positive change on the teacher's ratings of classroom behavior. Correspondingly, attributing positive behavior change to luck was negatively associated with change on teacher ratings.

Child Involvement

The importance of implementing self instructional training in an interactive format has been discussed, but what about the child's

level of interaction or involvement? Braswell, Kendall, Braith, Carey and Vye (1984b) addressed this issue in a study in which the therapist's and child's verbal behaviors were rated during self instructional training sessions. Those children who offered the most suggestions regarding what should happen during the training sessions and who might therefore be perceived as the most actively involved tended to display the great improvement on the teacher ratings of their classroom behavior. Child involvement was the best prediction to treatment gains from among the rated verbal behaviors.

Treatment Variables

The treatment programs that have been described include several distinguishable treatment components that could independently account for treatment effects. In addition to these specific components, treatments also vary in other actors that could influence the efficacy of the intervention.

Modeling

Cole and Kazdin (1980) speculated that the modeling component alone could account for treatment effects, and modeling is often considered an intervention in its own right (e.g., Rosenthal & Bandura, 1978). In recognition of this possibility, the Meichenbaum and Goodman study (1971, Study II) is recalled, in which the authors compared self instructional training and modeling alone. Both interventions produced increased MFF latencies, but only the self instructional training decreased MFF errors. Finch, Wilkenson, Nelson, and Montgomery (1975b)

obtained a very similar pattern of results. Cullinan et al. (1977) found no differences between a modeling and self instructional intervention, but their version of self instructional training applied in this study was somewhat atypical; in fact, it was little more than modeling itself. To some extent, many of the studies utilizing attention materials control groups may be controlling for the modeling of successful task performance and therefore imparting a "treatment." Modeling in such conditions may be particularly influential in the relatively longer interventions. Such an explanation would account for the improved task performance in the attention control groups as reported by Kendall and Zupan (1981) following a 12-session intervention. Thus, recognizing the impact of modeling is very important, even if it does not account for all the effects of the cognitive-behavioral training.

Self Reinforcement

The typical self instructional intervention incorporates a self reinforcement component. However, one investigation has specifically contrasted the effects of self instructional training with and without self reinforcement (Nelson & Birkimer, 1978) and reported that self instructions with self reinforcement produced improvement on the MFF, whereas self instructions alone did not. The general findings of the more operant self regulation studies also suggest that self instructions are most effective in achieving behavior change when the treatment package includes a self reinforcement component. These interventions, however, also included self monitoring and self evaluation

activities, so the specific effects of self instructions versus self reinforcement remain unclear. One might conceptualize the self reinforcement component as providing a specific goal toward which the child can direct his/her behavior. When self instructions are taught as a means of achieving this goal, they may be more effective than if presented in a more ambiguous or "goal-less" framework in which the advantage of using the self instructions is not obvious to the child.

Verbalization of Self Instructions

At least two studies have examined the importance of having the child actually verbalize the self instructions. Palkes et al. (1972) found that the verbalizing group obtained significantly better IQ scores on the Porteus Maze than a silent reading group. Bender (1976) found self verbalization more effective than tutor verbalization in improving performance on MFF-type tests given immediately after each session, but no effects were obtained on a final posttest administration of the MFF. Thus, both studies suggest that self verbalization is an important factor, but given the generally weak overall effects obtained in both studies, this conclusion must be guarded.

Type of Self Instructions

Studies of the effectiveness of different types of self instructions interacts with the age of the subject. Bender (1976) found that explicit rather than general strategies were more successful with impulsive first graders, while Kendall and Wilcox (1980) found conceptual rather than concrete self instructions most effective with

8- to 12-year olds. When one considers data presented by Schlessner, Meyers, and Cohen (1981) an important finding emerges. Schlessner et. al. provided a replication of some of the findings reported in Kendall and Wilcox (1980). Schlessner et al. found that a general self instructional approach was superior to an approach providing specific self instructions. Accordingly, unless the children are very young, conceptual (general) self instructions represent a procedural improvement within the self instructional paradigm that merits further research attention and clinical application.

Individual versus Group Interventions

Studies conducting both individual and group training in self instructional procedures have achieved some positive results, but only the Kendall and Zupan (1981) study specifically contrasted these two modes of training. Although the results indicated that relatively comparable change was achieved by both individual and group training, the "group" condition may not have maximized its potential. That is children in the group training "took turns" as opposed to engaging each other in the use of stop and think self talk.

Problem Solving Approaches

A second major class of interventions within the cognitive-behavioral realm emphasizes a problem solving approach to social and interpersonal difficulties. Self instructional training has a problem solving focus, but there are other problem solving interventions that do not emphasize self instructions but which constitute cognitive-

behavioral interventions. This portion of the review will examine the outcomes of problem solving training.

Jahoda (1953, 1958) is frequently cited as one of the first to suggest that the ability to solve real life interpersonal problems is one criterion of mental health. D'Zurilla and Goldfried (1971) defined problem solving within a behavioral framework as "a behavioral process . . . which (a) makes available a variety of potentially effective response alternatives for dealing with the problematic situation and (b) increases the probability of selecting the most effective response from among these various alternatives" (p. 108). D'Zurilla and Goldfried went on to outline five stages of problem solving, including general orientation, problem definition and formulation, generation of alternatives, decision making, and verification, Mahoney (1977) described a seven step problem solving sequence. The stages he elaborated include specification of problem, collection of information, identification of causes, examination of options, narrowing of options and experimentation, comparison of data, and extension, revision, or replacement of the solution. Spivack, Shure, Platt, and their associates at Hahnemann Community Mental Health Center (Shure & Spivack, 1978; Spivack, Platt, & Shure, 1976; Spivack & Shure, 1974) have theorized that effective interpersonal cognitive problem solving requires the subskills of sensitivity to human problems, the ability to generate alternative solutions, the conceptualization of the appropriate means to achieve a given solution, and a sensitivity to consequences and cause-effect relationships in human behavior. These

three systems evidence a high degree of similarity and, perhaps, reflect the beginnings of a consensus on the nature of interpersonal problem solving.

The Hahnemann research group has studied the nature of the relationship between these skills and overt social adjustment. Positive relationships between these Interpersonal Cognitive Problem Solving (ICPS) skills and adjustment have been demonstrated in 4- and 5-year-olds (Shure & Spivack, 1970; Shure, Spivack, & Jaeger, 1971; Spivack & Shure, 1974), 10-year-olds (Larcen, Spivack, & Shure, 1972), adolescents (Platt, Spivack, Altman, Altman, & Peizer, 1974; Spivack & Levine, 1963), and adults (Platt & Spivack, 1972a, 1972b, 1973). It should be noted, however, that negligible relationships with adjustment were reported from a study of 6- to 11-year-old children from a normal school and with IQ controlled (Kendall & Fischler, 1984). In the Kendall and Fischler (1984) study ICPS skills were scored quantitatively, as suggested by Spivack and Shure (1973). Significant relationships between problem solving and adjustment were found, however, when the skills were scored according to variations in the quality of the children's solutions (Fischler & Kendall, 1984). In relating their positive findings to the development of a training program, Spivack and Shure (1974) state their hypothesis as "one should be able to enhance the personal adjustment of young children if one can enhance their ability to see a human problem, their appreciation of different ways of handling it, and their sensitivity to the potential consequences of what they do" (p. 21).

Several studies have examined the impact of social problem solving training with a focus on prevention. In a recent example, Weissberg, Gesten, Rapkin, Cowen, Davids, de Apodaca, and McKim (1981) examined the effects of intensive social problem solving training with suburban and inner city third graders. The intervention was found to be effective with the suburban but not the urban children.

Problem Solving Interventions

The vast majority of the research in this area has been conducted since 1970; however, one investigator anticipated the interest in this topic by almost 30 years. Chittenden (1942) designed a training program to help children learn to analyze social situations objectively and select their responses on the basis of this careful analysis. Chittenden believed such training would decrease a child's attempts at domination of social activities and increase cooperative assertiveness. Using a special behavioral situation, Chittenden tested 71 3- to 6-year-olds and selected every child who was in the upper fifth of the sample in dominative initiations or responses and in the lower fifth in cooperative initiations or responses. Children were then matched on age and classroom teacher and assigned to the experimental or control group. Those in the experimental group attended individual sessions in which doll play was used to act out social problem situations. These sessions had three specific aims: (1) to teach the child to discriminate between situations in which satisfactory agreements had been reached and those involving no such agreement; (2) to teach the child ways to work out disagreements in

play situations, such as taking turns, common use, or cooperative use; and (3) to make the child aware of successful ways of approaching another in such play situations. The children were seen daily for approximately 15 minutes over 11 days. The control children were also periodically removed from the classroom to keep the teachers blind to condition assignments. At posttest, the trained children demonstrated significantly less dominant behavior than at pretest. There was also significantly more cooperative behavior in trained subjects at posttest. At 1-month follow-up, however, only the change in dominance persisted. Unfortunately, data on the control group were not presented for comparison with the experimental group. This intervention represents an interesting cross between traditional play therapy techniques and problem solving training. Despite its early appearance, it incorporates several methodological features, such as age matched groups, attention controls, and follow-up testing, which, unfortunately, are not always present in more recent studies. The method of subject selection, however, makes it unclear how impaired these children actually were and how many of them were in need of treatment.

In an effort to apply their theoretical formulation, Spivack and Shure (1974) developed a training program to be used by preschool teachers for instructing children in ICPS skills. The program included dialogues, games, and activities for the teacher to use with the children in a series of 46 daily lessons, each lesson lasting approximately 20 minutes. The early sessions focused on developing what Spivack and Shure believe to be prerequisites for problem solving

skills, such as the ability to identify and discriminate emotions. Later sessions teach alternative, consequential, and means-ends thinking as applied to interpersonal problem situations. This intervention was implemented with 113 preschool children who had been teacher classified as impulsive, inhibited, or adjusted. At posttreatment these children were compared with no treatment controls. The experimental subjects demonstrated significant improvement in generation of alternative solutions and consequential thinking. Improvement on the teacher ratings of behavior was also noted, but the teachers were not blind to the treatment status of the children. Certain subgroups within the treated sample demonstrated improvement on particular measures. For example, the children rated as inhibited improved on behavioral ratings on concern for others, and females improved in ratings of popularity with peers. At 1-year follow-up, teachers who were not informed of the children's treatment status also rated the trained subjects as better adjusted than the controls. These results are extremely interesting, but the absence of an attention control group, particularly given the lengthy nature of treatment, makes it difficult to rule out alternative explanations of change.

Pitkanen (1974) tested the effectiveness of a form of problem solving training as a means of helping aggressive children recognize behavioral alternatives. Twenty four aggressive boys (mean age of 8.4 years) were the subjects, and 12 extroverted, well controlled boys were selected as a criterion group. The 24 subjects were assigned to experimental and control groups, with the experimental group receiving

eight training sessions over a 4-week period. Training included three phases: (1) recognition of the factors causing a situation, generation of alternative actions, and examination of the consequences of these actions; (2) discussions of pictorial presentations of conflict situations; and (3) role play of conflict situations using the discussed problem solving strategies. The impact of the intervention was assessed via behavioral observations of the subjects performing a series of tasks in a group context. Both aggressive and constructive behaviors were rated. At posttest the experimental group demonstrated a significant reduction in aggression relative to the control group, although the rate of aggression in the experimental group still exceeded that of the criterion group. Significant increases in the use of strategies in the experimental group were also noted. The use of special behavioral situations as a dependent measure is an interesting assessment method; however, in this study the same situations were not used at both pre- and posttesting, so the actual effects of the intervention are more difficult to interpret.

The use of problem solving training with severely hyperactive boys was examined by Kirmil-Gray, Duckham-Shoor, and Thoresen (1980). Eight hyperactive boys, aged 7 to 10 years, currently on stimulant medication, were selected to participate in this intervention. Subject selection included screening interviews with parents, teachers, and physicians, as well as double blind placebo trials to ensure that medication was effective in controlling the behavior of these children. The intervention had two components; problem solving training for the

children, and behavior management training for the parents. The problem solving training involved 48 sessions designed to teach social problem solving as well as motor inhibition, attending behavior, and self direction skills. Each 45-minute session included explanation, modeling, role playing, and game playing. During training a reinforcement system was operational in order to reward the child for appropriate behavior and use of new skills. The parent training in behavior management involved eight 2- to 3-hour sessions in which parents received instruction in implementing behavior techniques with their children. The children's teachers were also provided consultation of the behavioral management of hyperactive children. Four subjects received both the problem solving and parent training intervention; two received only parent training, and the remaining two were assessment controls. An individualized medication reduction schedule was developed for each of the six treatment subjects, with the goal for all being complete medication withdrawal by the end of training. All subjects were observed over an 18-week period, including 3 to 4 weeks of baseline, 12 weeks of treatment, and 2 weeks of follow-up. Both disruptive behavior and social interactions were observed. Teachers and parents also completed daily reports on the child's behavior. In addition, these children were assessed with a number of task performance measures of intelligence, school achievement, impulsivity, and self-esteem. Measures of each child's interactions with the teacher and classmates were also obtained.

The basic findings from these multiple outcome measures indicated that acceptable behavior was maintained with the complete withdrawal or significant reduction of medications in all six treated subjects; however, there was no indication that the problem solving training with the children added to the effects of the behavior management classes for parents. There were not noteworthy pre-post differences on the academic measures or the measures of social interaction. On the whole, the authors noted that the children tended to respond in a highly individualized manner. For example, the subjects for whom behavioral management was most effective in controlling behavior at school were not necessarily those who demonstrated the greatest behavior change at home. Given the length of the problem solving intervention and the use of behavioral techniques to reward demonstration of new problem solving skills, it is particularly puzzling that no effects of the intervention were obtained. The small number of children involved certainly qualify the strength of the findings, but the failure of the intervention to produce effects on any of the multiple outcome measures is striking.

The "turtle technique" (Robin & Schneider, 1974; Robin, Schneider, & Dolnick, 1976; Schneider & Robin, 1976) is another type of problem solving approach developed to help emotionally disturbed children inhibit aggressive or impulsive responding in social situations and generate alternative responses. This training is presented on four phases. First the children are taught the "turtle response" of pulling in one's limbs and lowering the head to withdraw from a provoking

situation. Next, the children are instructed in relaxation skills they can utilize while "doing the turtle." This program was designed to require 15 minutes of instruction per day for 3 weeks. At the end of the 3-week period, sessions can be reduced to twice a week and then gradually phased. Robin and Schneider (1974) evaluated this procedure by teaching the turtle technique to 15 emotionally disturbed children in three special education classes. Behavioral observations in two of the classrooms indicated significant reductions in aggressive behavior, with aggressive incidents reduced 46 to 54% from baseline levels. The technique was introduced later in the third classroom, and the authors stated that apparently it was too late in the semester to provide meaningful results. These findings are encouraging, but given the absence of controls and the strong possibility that the observers were not blind to the treatment status of each child (for "doing the turtle" is a very noticeable activity), this report provides little more than anecdotal support for the effectiveness of the technique.

Robin et al. (1976) also evaluated this procedure with 11 children from two primary level classrooms for emotionally disturbed children. These subjects were selected on the basis of teacher reports or aggressive behavior. The training was introduced to the two classrooms in a multiple-baseline design. Classroom A experienced 2 weeks of baseline and 8 weeks of treatment; classroom B underwent 7 weeks of baseline and 3 weeks of treatment. The chief dependent measure was the observation of aggressive behavior. With the implementation of treatment, classroom A showed a 41% decrement in aggressive behavior, and

classroom B obtained a 45% decrement. All target children decreased their aggressive behavior, with rates of decrease ranging from 34% to 70%. These results are certainly consistent with those obtained by Robin and Schneider (1974). The multiple-baseline design of this study adds support to the contention that it was the training that reduced aggressive behavior, yet the addition of some type of attention control group would have strengthened the study. Again, it seems unlikely that the observers were truly blind to the identities of the target children. Neither of these two studies included follow-up assessments. Finally, it is impossible to discern the actual effect of the problem solving component of training, especially since the dependent measure concerned rate of aggressive behavior and change in this rate could easily be explained by use of the turtle response alone to simply inhibit such behaviors.

A small number of investigators have employed problem solving techniques with children and adolescents in institutional settings. Russell and Thoreson (1976) described a program for teaching problem solving skills and used this program with 8- to 12-year-old children in a behaviorally oriented residential treatment setting. Residents of this setting are typically neglected, acting out children. This training uses a workbook format to teach problem solving components such as identifying this problem, generating choices, collecting information, recognizing personal values, selecting the best choice, and then reviewing the decision at a later time. The workbook is organized into six sections, each section requiring about 30 to 45 minutes to

complete. The success of the intervention has been evaluated in terms of the child's knowledge of the workbook content and the child's ability to generate choices and examined the consequences of each choice in a simulated problem situation. By the author's own admission, no controlled comparisons have been conducted, but anecdotal evidence suggest that children using the workbook have made significant improvements in the number of alternatives generated and the valuation of consequences. Additional research on this technique is clearly needed, but the combination of problem solving training in the context of an ongoing behavioral program would appear to be a potentially powerful intervention.

Giebink, Stover, and Fahl (1968) attempted to increase the number of alternative responses that emotionally disturbed children could generate in response to a potentially frustrating situation. Four of the six subjects (boys aged 10 to 12) were diagnosed neurotic, and the other two were diagnosed schizophrenic. Problem solving training involved meeting four times to play a board game that fostered generation of alternative responses to provoking situations. The problem situations used in training were randomly selected from a group of eight frustrating situations that occurred regularly in the residential setting. Four other situations were not used as training examples but were used to assess treatment generalization. The subjects were also assessed via a "frustration questionnaire" consisting of 14 problematic situations. Following treatment the authors reported an increase in the number of acceptable alternatives on the "frustration

questionnaire." Slight behavioral improvement in the experimental situations was also noted, but there was no generalization of effects to the nontrained situations. The absence of any type of control group limits the conclusions that can be drawn from these findings. Given the severe impairment of this sample, as suggested by their presence in residential treatment and their diagnoses (at least in the case of the two schizophrenic children), it seems improbable that any four session intervention, problem solving or otherwise, would produce behaviorally significant effects.

Sarason (1968) and Sarason and Ganzer (1973) conducted problem solving training with institutionalized delinquents. In his pilot work, Sarason (1968) found that a program emphasizing a problem solving approach to problematic situations via modeling and role playing was effective in producing improved staff ratings of behavior. Sarason and Ganzer (1973) examined the effectiveness of this same program in a more extensive investigation. The subjects were 192 male first offenders ranging in age from 15 to 18 years. Subjects were matched for age, IQ, diagnostic classification, and severity of delinquent behavior, and were then randomly assigned to one of two treatment or a no treatment control condition. The modeling condition, as the authors labeled it, emphasized a practical approach to social problems. The subjects met in groups of four, with two models or tutors per group. The models demonstrated positive and negative approaches to certain problem situations and then the subjects would role play the same situations. These role plays were taped and played back for discussion. The

discussion treatment condition covered the same content as the modeling group but no role play was involved. Both treatment groups met for 16 1-hour sessions over 5 weeks, and within each treatment, half the groups received audio taped and half video taped feedback of their group behavior. The results indicated that significantly more subjects in the audio taped modeling group received favorable case dispositions than all other groups. Those in either the audio- or video taped modeling groups were significantly more likely to evaluate their institutional experience as positive. Also, modeling subjects were more likely to recall the content and goals of treatment compared to the discussion group (79% vs. 38%) when asked 18 months following treatments. In terms of recidivism, significantly more recidivists were in the control group than were present in either treatment group.

In addition to treatment results, this study yielded some interesting subject by treatment interactions. The test anxiety of all subjects had been assessed, and it was hypothesized that high test anxious subjects would be upset by televised feedback of their role playing performance. In support of this hypothesis, only one of 15 high test anxious subjects in the televised modeling group received positive behavior ratings, whereas 14 of the 19 high test anxious subjects in the nontelevised modeling group received positive ratings. The authors also noted that subjects who improved in the modeling condition tended to be diagnosed neurotic or passive-dependent personality, whereas those improving in the discussion group condition tended to have the diagnosis of passive-aggressive or sociopathic

personality. These results indicate that subject participation in the modeling or discussion groups produced more positive concurrent and long-term effect than did the institutional program alone. In addition, the results suggest that the two treatments had different impacts on subgroups within the sample.

Sarason and Sarason (1981) examined how effective a cognitive-behavioral problem solving intervention could be in teaching more adaptive problem approaches to high school students at high risk for dropout and delinquency. The intervention was presented as a special unit within a regularly required course and involved 13 class sessions, with the first and last sessions devoted primarily to assessment. The training procedure involved the modeling of both the overt behaviors and the cognitive antecedents of adaptive problem solving in both social and cognitive problem situations. These modeled behaviors were then rehearsed. In one condition subjects viewed live models; in the other treatment condition subjects observed video taped models. A control group received no problem solving training. At posttest, the treated subjects were able to generate more adaptive alternatives for approaching problematic situations and were able to make more effective self presentations in a job interview situation than the controls. In addition, at 1-year follow-up the treated students tended to have fewer absences, less tardiness, and fewer referrals for misbehavior. These results are of special interest for they suggest that the intervention was effective at the level of the subjects' cognitive processes and at the level of specific behaviors in real life problem situations.

Other Variables Affecting Treatment Outcome

Given the small number of studies in this area, relative to the self instructional training literature, the available data on variables that mediate outcome are necessarily more limited. In addition, some of these interventions were conducted with very small samples. The current summary considered only the studies just reviewed, but the literature on problem solving training with "normal" children is another source of data. The interested reader is referred to the research with non problem samples (e.g., D'Zurilla & Nezu, 1982; Fischler, 1984).

Subject Variables

As was the case with self instructional training, subject characteristics constitute a meaningful class of potential moderator variables.

Age

Problem solving interventions have been conducted with a wide age range of children and adolescents. If one groups these studies into four age categories (preschool children, elementary school children, preteens and early adolescents, and adolescents), there appear to be studies obtaining positive and not so positive results in each age category. Developmental features seem to have been ignored, as no study has directly addressed the issue of age effects on treatment outcome (see also Kendall, 1984). Spivack, Shure, and colleagues have suggested that the various components of problem solving may vary

in their significance for social adjustment depending on the age or developmental level of the child; however, while some differences in component skills over the years have been found, the data are far from clear-cut (Kendall & Fischler, 1984). A recognition of the child's developmental level would be particularly important if a given intervention requires certain prerequisite skills. Spivack and colleagues, in their work with preschoolers, assume that such skills must be trained prior to the formal intervention, but other investigators working with older samples typically assume the existence of skills such as affective identification and differentiation.

Nature of the Disorder

An interesting relationship occurs between age and nature of disorder. Within each age category, children were selected as requiring treatment for demonstrating their developmental level's version of acting out behavior or conflict with authority. Preschoolers and elementary school children were treated for overly aggressive and impulsive behavior, as typically judged by their classroom teacher. Preteens and early adolescents were selected for intervention on the basis of parent-child conflict, and the adolescent samples were receiving treatment by virtue of being delinquent. Interestingly, even when the subjects were diagnosed as neurotic or schizophrenic, as in Giebink et al. (1968), training was forced on the inhibition of aggressive responses to frustrating situations. The only exception to this pattern was Spivack and Shure's surprising inclusion of overly inhibited children in the treatment sample. While a number of more

behavioral social skills training programs have been implemented with the inhibited or socially isolated child (see Combs & Slaby, 1977) problem solving approaches have generally not been applied with this group.

The problem solving literature did yield a few specific treatment by disorder interactions. For example, Spivack and Shure (1974) found that overly inhibited children tended to improve on ratings of concern for others following interpersonal problem solving training, while the impulsive and adjusted children did not improve on this measure. Sarason and Ganzer (1973) found that their modeling intervention (that emphasized role playing) tended to produce improvement in delinquents diagnosed as neurotic or passive-dependent personality disorder, and that the discussion treatment group resulted in improvement in those diagnosed as sociopathic or passive-aggressive personality disorder.

Sex

Few of the problem solving interventions considered the possible influence of the child's gender on treatment outcome. In fact, only Spivack and associates regularly analyzed for sex differences. The only notable difference these investigators obtained was a tendency for female preschoolers to improve on ratings of popularity with peers while males did not. The importance of gender differences deserves closer scrutiny from future researchers.

Race and Socioeconomic Status

This review included reports of treatment success with racially and economically diverse samples, although no intervention actually included upper--SES subjects. The impact of these variables on outcome, however, is not clearly understood. For example, Spivack and Shure's investigations all involve predominantly black, inner city samples of preschool children and positive results are typically reported, but Weissberg et al. (1981) reported improvement in suburban but not inner city third grade children following a training program highly similar to the Spivack and Shure intervention. Again, the issue of higher order interactions appears relevant, with race and SES influences possibly related to factors such as age of subject, as well as features of the intervention.

Intelligence

While studies typically describe their samples as being of average intelligence, few other data on the intellectual level of the child are presented. Perhaps in the effort to distinguish interpersonal cognitive problem solving from impersonal problem solving, investigators have tended to forsake assessment of the child's intellectual level. Whether or not the two domains are independent, however, the child's intellectual levels, like his/her age level, is bound to affect his or her ability to comprehend the training--whatever the focus of the training.

Treatment Variables

As was the case with subject variables, the relatively small number of studies limits the number and strength of conclusions that can be drawn regarding various treatment components. In addition, the problem solving approach has not been subject to the kinds of "dismantling" studies found in the self instructional training literature. The following discussions represent a brief attempt at "comparative dismantling."

Training Skills

The most common focus of problem solving training was teaching children to generate behavioral alternatives to problem situations. Several interventions (Giebink et al., 1968; Sarason & Sarason, 1981; Spivack & Shure, 1974; Shure & Spivack, 1979) explicitly assessed this skill at pre- and posttreatment, and all three studies reported increased generation of alternatives following treatment. Spivack and Shure took the next step of ascertaining whether or not the individual children improving in generation of alternatives were also demonstrating behavioral improvements. These authors found that children improving in generation of alternatives were also more likely to be rated as behaviorally adjusted following treatment.

Role Play

Most of the interventions in this section included role play of problem situations or simulated problem discussions. As noted above, Sarason and Ganzer's (1973) was the only study to examine the effects

of the role play variable specifically. The results of this study indicated that subjects in the role playing condition were more likely to evaluate their institutional experience as positive and recall the content and goals of treatment when asked 18 months later. The role play group was, however, comparable to the other treatment group in rates of recidivism.

Game Format

Several investigators provided problem solving training in a game format (Blechman et al. 1976a, 1976b; Giebink et al., 1968). Interestingly, only in the Blechman et al. (1976b) case study were there any significant indications of generalization of problem solving skills to nontraining settings. These findings suggest that a brief, game format intervention alone may not build in the components necessary for generalization of treatment effects, and that the game format intervention should be coupled with other strategies. Indeed, a game format might enhance the involvement of the child in the treatment, a factor that Braswell (1984b) found related to degree of improvement.

Therapist or Tutor

Typically special experimental personnel provide the problem solving training. Robin and Schneider (1974), however, used the classroom teacher to successfully train emotionally disturbed children in the use to the "turtle technique." The efforts of Spivack and Shure also suggest that both teachers and mothers can be successfully trained

to impart interpersonal cognitive problem solving skills. The use of parents as trainers for their own children is an interesting approach worthy of further research. At present, results are not tied to the type of trainer.

Use of Explicit Behavioral Contingencies

The use of explicit behavior contingencies is not as common in the problem solving training literature as it is in the self instructional training literature, but a few examples do exist. Kirmil-Gray, Duckham-Shoor, and Thoreson (1980) incorporated rewards for the use of problem solving skills, yet their results indicated that problem solving training added nothing to the effects achieved via parental use of behavioral management techniques. Robin et al. (1976) trained their subjects to provide each other with peer reinforcement for the appropriate use of the turtle technique. This intervention did obtain positive effects. However, in the absence of any follow-up data it is impossible to know if the peer reinforcement actually helped maintain the desired response. To the extent that such contingencies did help maintain appropriate problem solving behavior, they would constitute useful additions to a training program. The research is incomplete, but it seems that behavioral contingencies are a valuable facet of any program designed to teach interpersonal problem solving skills.

Summary and Conclusions

Research to date has generally adopted the view that children with problems of adjustment, broadly conceived, have cognitive

deficiencies; however, there is no consensus relating specific cognitive deficiencies to particular types of clinical dysfunction. Presumably maladaptive or deficient cognitions vary among clinical problems and populations. It is possible that a nonspecific pattern of cognitive deficiencies underlies multiple childhood dysfunctions. These deficiencies may be highly interrelated, so that a deficiency in one process is likely to be associated with deficiencies in others. However, work to date indicates that different problem solving skills are intercorrelated in the low to moderate range, suggesting that there is some overlap but also points of distinction between cognitive skills. Hence, even if specific cognitive deficiencies or patterns of deficiencies were identified, it might be difficult to focus treatment uniquely on these processes. Thusly, the "broad brush" combined cognitive-behavioral interventions, where the content of the sessions dictates the areas of performance affected by treatment, continue to be the most promising therapeutic venue (Kendall & Wilcox, 1980).

Despite the diversity of the interventions that teach self control abilities to children, some points of similarity do exist in the training programs when one examines how they are put into actual practice. While differing in specific training content, the studies usually involve one or more of the following instructional methods: (a) direct verbal instruction to the child, (b) modeling, (c) environmental reinforcement (material rewards, social praise, response cost), (d) role play and behavior rehearsal, (e) feedback and group

discussion. Most of the studies reviewed utilize a combination of these methods, particularly modeling and role playing.

Evaluating the clinical efficacy of cognitive-behavioral therapy is impeded by the frequent failure of outcome studies to delineate the treated population (Abikoff, 1979). Most of the outcome studies have focused on school children who are identified as impulsive. In some cases, when clinical samples were used, they were still selected because of their impulsiveness on laboratory tasks, rather than because of the clinical dysfunction (e.g., Kendall & Finch, 1978). Few studies have described the sample well enough to instill confidence that the children were severely impaired and that the application of treatment was related to the nature of the impairment.

The relative paucity of studies with clinical populations has implications for interpreting the evidence. Possibly, the changes consistently obtained with cognitive-behavioral therapy result from the fact that the children are usually not seriously disturbed to begin with. Cognitive-behavioral therapy, even if provided very briefly or in weak doses, might produce change in populations with little disturbance (e.g., Zahavi & Asher, 1978).

Research has attested to the ability of cognitive-behavioral therapy to produce change in diverse cognitive processes and on academic tasks among children and adolescents in school, outpatient, and institutional settings. Various forms of cognitive-behavioral therapy can produce relatively consistent changes on a variety of measures that reflect cognitive style, thought processes, perception,

aspects of intelligence, and academic performance. Although impulsive cognitive style is associated with many different childhood disorders, its relationship to overt behavior outside of the laboratory is weak (Abikoff, 1979; Cole & Kazdin, 1980). To date, cognitive-behavioral therapy has not been shown to be effective in attenuating impulsive "acting out" behavior. Few studies attest to the efficacy of cognitive-behavioral therapy in altering performance in everyday situations in the classroom, community, or at home. In many studies, changes in cognitive skills are altered but similar changes are not reflected on measures of everyday performance. The fact that some change is demonstrated indicates that treatment is having an effect, but perhaps the effect is not strong enough to alter deviant behavior. This and future research should help us determine the factors operative in generalization to behavior change.

Nevertheless, there are several features of the work in this area that make it one of the more promising psychosocial approaches to the problem. First, cognitive-behavioral therapy is tied to theory and research in developmental psychology. Theory and research on the emergence of evolution of cognitive processes and the relationship of these processes to adjustment provide an important foundation for generating and testing treatment techniques. Also, research on the development of maladaptive cognitive processes has been shown to relate to other variables (e.g., parent's child rearing practices) that are correlated with the development and maintenance of impulsive behavior (Shure & Spivack, 1978). A major problem in the development of

treatment techniques is a sound basis in theory and basic research. Cognitive-behavioral therapy, of alternative approaches, is relatively strong on this dimension.

Second, variations of cognitive-behavioral therapy consider developmental differences that may need to be taken into account in designing effective treatments. For example, the investigations of Spivack and Shure, as already noted, have shown that different problem solving skills relate to behavioral adjustment at different points in development. Processes highly significant to one age may not be critical to other ages. Treatment directed to particular clinical problems may need to emphasize processes as a function of developmental level.

Third, rigorous evidence attests to the fact that cognitive-behavioral therapies can produce change in children with mild adjustment problems or clinical impairment. The types of changes demonstrated to date leave a great deal to be desired. Yet, that change is achieved at all and that these changes cannot be attributed to such influences as participation in training sessions, exposure to specific tasks or stimulus materials, discussion of interpersonal situations, and other factors that are ruled out by various control groups should not be treated lightly.

The literature cannot be dismissed as indicating that the treatment is incapable of producing clinically relevant change. Different characteristics of outcome research have made it difficult to evaluate the full clinical potential of cognitive-behavioral therapy.

Often few treatment sessions are provided and the focus is not directed at the children's clinical problems (e.g., peer interaction, antisocial behavior). Significant changes on clinically important behavior have been evident (e.g., Chandler, 1973), but attempts to study such changes are rare. Additional work on altering specific clinical problems is needed before the efficacy of cognitive-behavioral therapies for childhood disorders can be evaluated (Kazdin, 1985).

Fourth, a major feature of cognitive-behavioral therapy for both clinical application and research is that the techniques are available in manual form (e.g., Camp & Bash, 1981; Kendall et al., 1980; Spivack et al., 1976; Weissberg et al., 1980). The advantage is that treatment can be disseminated systematically. Also, the knowledge accumulated by research and clinical experience can be incorporated into revisions of the manuals. Specification of treatment procedures in manual form helps promote further research on the efficacy of treatment and on the components of treatment that are necessary, sufficient, or facilitative of therapeutic change.

CHAPTER 3

METHODS AND PROCEDURES

Subjects

The experimental subjects consisted of 10 adolescent patients selected from the Adolescent Treatment Unit (ATU) of Arizona State Hospital (ASH) located in Phoenix, Arizona. The ATU is a locked-ward, comprehensive residential treatment unit with a population of 12-30 adolescents. The unit is self-contained and includes its own school, cafeteria, treatment rooms, recreational facilities, dorms and administrative offices. The program is staffed with its own psychiatrist, psychologist, teachers, social workers, psychiatric nurses and para-professional psychiatric technicians.

The subjects ranged in age from 12 to 17 years. The ATU is coeducational, typically with an equal distribution of males and females. A functional mastery of English was a prerequisite for participation, but English need not be the subject's primary language.

The patients of ATU are predominantly from low- to middle-income families from both rural and urban segments of the state's population. Racial/ethnic make-up of the ATU population typically is representative of the state as a whole, with Whites (82.4%), Hispanics (16.2%), Native Americans (5.6%), Blacks (2.8%), and Asian/Pacific Islanders (> 1.%) (United States Bureau of Census, 1982). Racial/

ethnic make-up of the actual subjects was entirely dependent upon the vagaries of ATU admissions at the time of experimental involvement.

Subjects had been admitted to ATU for severe behavioral dysfunction in the home, at school, or in the community. Most had psychiatric diagnoses that included: major affective disorders; conduct disorders; drug and alcohol abuse; learning disabilities; psychoses; and attention deficit disorder. Extreme psychosis and affective/cognitive disorganization (e.g., acute psychiatric disturbance) precluded experimental involvement. An assesment of Borderline Intellectual Functioning (DSM III; Spitzer et al., 1980) or above was required to participate. All ATU patients are given a standard psychological/educational assessment battery upon admission. The patients of ATU are unique in the severity of their problems and the dearth of familial resources for coping with these problems. In some cases the state's judicial system had remanded these children to ATU for treatment.

Selection of Subjects

The 10 non self controlled subjects were selected on the basis of their scores on the Self Control Rating Scale (SCRS; Kendall & Wilcox, 1979) which was filled out by the classroom teacher. The subjects were randomly assigned in blocks of 2 to the treatment or control conditions, according to the following procedure: subjects were ranked from highest to lowest on the basis of their scores on the SCRS. Then they were randomly assigned from blocks of two (e.g., 1/2, 3/4, etc.) to the treatment group or the control group, with one child

being assigned to each condition within a block. There were 5 non self controlled adolescents in each group.

Assessment Instruments: Dependent Measures

Once the adolescents had been rated for non self control by the teachers on the SCRS (described below) and had been selected for treatment, they received a test battery consisting of measures of social perspective taking and social problem solving.

1. Chandler Bystander Cartoons (CBC): This task, developed by Chandler (1973), is a measure of social perspective taking that requires a child to tell a series of stories based on cartoon sequences printed on a set of cards. The child is instructed to pay particular attention to what the main character is thinking and feeling in each story. After concluding the initial story, the child is asked to retell the story from the point of view of a bystander who arrives later on in the story and is unaware of what happened at the story's beginning. The child receives a score based on the degree of privileged information ascribed to the bystander (i.e., information available to the child from the previous part of the story, but of which the bystander is unaware).

Of the social perspective taking tasks in the literature, the most complete set of reliability data are available for the CBC (Chandler et al., 1974; Burdek, 1977; Rubin, 1978; Kendall, Pellegrini, & Urbain, 1981). Across various studies,

interrater reliabilities have ranged from .78 to .96; inter-correlations between individual cartoon scores have ranged from approximately .30 to .87; and short term (2-4 weeks) test-retest correlations have been .80. Kurdek (1977) reported a test-retest correlation of .68 after a slightly longer (5-week) period. Data reported by Rubin (1978) indicate average interitem correlations of .52 across grades. Kurdek (1977, 1979) reported no sex differences in performance on this task, though perspective taking ability did increase with age. Rubin (1978) confirmed this age trend.

Correlations between perspective taking performance on the CBC and IQ have typically fallen in the range of .2-.4 across studies (e.g., Chandler, 1973; Rubin, 1978; Urbain & Kendall, 1981). Additional evidence is available indicating significant correlations between this task and other measures of cognitive perspective taking (Kurdek, 1977). Teacher's rating of children's self control (SCRS) were correlated with social perspective taking at .40 (Kendall & Zupan, 1981; Kendall, Zupan & Braswell, 1981).

Chandler (1973) reports that the CBC discriminated at a high level between normal control children and a group of chronic delinquent adolescent boys. Kendall and Urbain (1981) also reported marked differences in perspective taking performance between a group of impulsive-aggressive grade school children and a group of nonimpulsive children.

Several training studies employing the CBC measure have been reported (Chandler, 1973; Chandler et al., 1974; Little, 1978, reported in Little & Kendall, 1979; Kendall & Zupan, 1981; Kendall & Urbain, 1981, Kendall, Zupan, & Braswell, 1981). In general, it appears that the task is sensitive to treatment effects (Kendall, Pellegrini, & Urbain, 1981). At times, perspective taking task improvement has been clearly associated with improvement in behavior (Chandler, 1973), although the evidence is inconclusive (Chandler et al., 1974; Little, 1978, reported in Little & Kendall, 1979; Kendall & Urbain, 1981). Inconclusive results may be due to differences in training procedures and in the length and intensity of the intervention programs employed across studies.

2. Means-Ends Problem Solving Test (MEPS): The MEPS (Platt & Spivack, 1975), a measure of social problem solving, is an "open middle" story completion technique that presents 10 problematic interpersonal situations that have a successful outcome. Stories include such diverse themes as getting to know a beautiful girl, successfully stealing a diamond, getting along with one's boss, or finding a lost watch. The MEPS task is presented as a "test of imagination" in either verbal or (group) written form, and subjects are asked to "fill in the middle of the story." Stories are scored for number of: (a) relevant means (discrete steps to problem solutions or to overcome obstacles); (b) irrelevant means (vague or ineffective

steps); (c) no means (simple rewording of the story, value judgments, "miracle" solution, etc.); as well as for (d) enumerations of means (i.e., elaborative substeps); (e) obstacles; and (f) time references evident in the response. These scores represent the operationalization of components of means-ends thinking; namely, step by step planning, circumvention of obstacles, and recognition of temporal elements in problem situations. Stories may also be scored for the thematic content of means. The scores most commonly reported are: (a) the number of means; and (b) the relevancy ratio (proportion or relevant to total means).

For adolescents, the MEPS is typically shortened to three or four stories dealing with social problems such as making friends, dating and dealing with peers.

A series of studies comparing the performance of adult psychiatric patients and nonpatient controls on the MEPS found psychiatric patients deficient in means-ends cognition relative to controls (Platt & Spivack, 1972a, 1973, 1974; Siegal, Platt, & Peizer, 1976). Within groups of acutely ill psychiatric patients, means-ends thinking ability was found to be inversely related to two indices of degree of psychopathology: premorbid social competence (Platt & Spivack 1973b), and MMPI scale elevations and configurations indicative of psychosis (Platt & Siegal, 1976). Siegal and Spivack (1973, 1976) developed an interpersonal problem solving therapy program for chronic

hospitalized patients, and Coche and his colleagues demonstrated that problem solving training for hospitalized psychiatric patients produced improvements in MEPS performance (Coche & Flick, 1975) and in self report indices of impulse control, self-esteem, and feeling of competence (Coche & Douglas, 1977) relative to no treatment and placebo control groups. Deficient means-ends cognition on shortened versions of the MEPS has also been found to characterize acting out adolescents in residential treatment (Spivack & Levine, 1963) and hospitalized adolescents (Platt, Spivack, Altman, Altman, & Peizer, 1974) relative to normal adolescent controls, as well as addicts relative to nonaddict controls in a reformatory setting (Platt, Scura, & Hannon, 1973).

In addition to a lower number of elements of means-ends thinking, emotionally disturbed children tended to limit their responses to pragmatic, impulsive, and physically aggressive means (Shure & Spivack, 1972). Larcen (reported in Kendall, Pellegrini, and Urbain, 1981) reported a negative relationship between MEPS scores and measures of emotionality, inability to delay, and social aggression in a group of latency-aged children placed in institutions because of parental neglect. The authors report the MEPS scores continue to discriminate successfully between adjusted and maladjusted groups with the effect of IQ controlled (Shure & Spivack, 1972; Spivack et al., 1976). In addition, Kendall and Urbain (1981) found large

differences between impulsive-aggressive grade school children and a group of nonimpulsive children on a modified version of the MEPS procedure. Social class differences were not statistically significant in one study (Shure & Spivack, 1972), although there were significant class differences in means-ends thinking in another study (Braswell, Kendall, & Urbain, 1982). MEPS scores have been found to be sensitive to treatment, though the absence of alternate forms has been identified as problematic (Kendall & Zupan, 1981).

Test-retest reliability has been reported in the range of .43-.64, and interrater reliability correlations in the high .80's or low .90's by Platt and Spivack (1975) and Kendall and Fischler (1984). Platt and Spivack (1975) additionally report test internal consistency rated in the low .80's.

3. Self Control Rating Scale (SCRS): The SCRS (Kendall & Wilcox, 1979), a measure of self control, was developed for use by teachers and parents to assess the generalization of self controlled behavior to extratherapy settings following therapeutic intervention and to investigate the nomological net associated with self control in children. It was developed according to a cognitive-behavioral conceptualization of self control, defined as having two components: a cognitive (legislative), and behavioral (executive) component. The self controlled child governs his or her own behavior to attain certain ends. This governing requires the cognitive skills to generate and

evaluate behavioral capacity to inhibit acting on the discarded alternatives and to engage in the selected option (Kendall & Wilcox, 1979).

Each of its 33 items are rated on a 7-point scale. Ten of these items are descriptive of self control (e.g., "Does the child stick to what he or she is doing until he or she is finished with it?"); 13 items are indicative of impulsivity (e.g., "Does the child grab for the belongings of the others?"), and 10 items are worded to denote both possibilities (e.g., "Does the child interrupt inappropriately in conversations with peers, or wait his or her turn to speak?"). Total SCRS scores are computed by adding the rating scores for each item, the higher the SCRS score, the greater the child's lack of self control. An orthogonal factor analysis identified one principal factor reflecting cognitive-behavioral self control (Kendall & Wilcox, 1979).

The internal consistency of the SCRS as measured by Cronbach's Alpha (Cronbach, 1951) was quite high (.98). Test-retest reliability over 3-4 weeks for a sample of 24 children was .84 (Kendall & Wilcox, 1979).

Kendall, Zupan, and Braswell (1981b) found the SCRS scores were meaningfully related to classroom behavior, with higher scores associated with more disruptive behavior in the classroom setting, and Kendall and Wilcox (1979) observed the same relationship in a special testing setting. The SCRS has also

been demonstrated as sensitive to the effects of cognitive-behavioral interventions (Kendall & Wilcox, 1980; Kendall & Zupan, 1981; Kendall & Braswell, 1982b) and yields score changes that parallel observed changes in classroom behavior. In addition to distinguishing between non self controlled children and normal controls (Kendall et al., 1981b), the mean SCRS score has been found to vary with the diagnostic category of the child (Robin, Fischel, & Brown, 1984). Hyperactives obtained the highest mean score, followed by conduct disordered children. Children displaying more internalizing types of problems that did not involve deficits in self control received the lowest mean ratings (Robin et al., 1984). The SCRS was originally developed for use by teachers and parents, and both were raters in the Robin et al. (1984) study, with the means for parent raters approximating those teacher raters. More specifically, Kendall and Braswell (1982b) had both parents and teachers complete the measure and obtained a correlation of .66 between those groups.

Testing Procedures

The non self controlled subjects were assessed at three different points, as shown in Table 1. Pretesting was conducted 1-2 weeks prior to interventions, following completion by the teachers of the SCRS used for subject selection. Subjects' SCRS scores were rank ordered and subjects assigned to conditions via a modified randomized blocks procedure. Posttesting occurred in the 1-2 week period

Table 1. Assessment schedule.

	Treatment Group	Control Group
Pre-test	SCRS	SCRS
	CBC	CBC
	MEPS	MEPS
Post-test (end of 4 weeks)	SCRS	SCRS
	CBC	CBC
	MEPS	MEPS
Follow-up (end of 8 weeks)	SCRS	SCRS
	CBC	CBC
	MEPS	MEPS

immediately following the termination of the treatment groups. All assessment measures were administered at that time. The follow-up assessment was conducted between 4 and 5 weeks following posttesting. Again, all assessment measures were readministered at that time. No alternate forms were used for any of the measures. All 6 CBC cartoons and 6 MEPS stories were administered at each testing session. There were several considerations for this decision. In the first place, there are no available alternate forms of the MEPS. Of the 6 CBC stories, 3 have been used as a pretest and 3 as an alternate posttest in previous research (Chandler, 1973). However, since the present study involved three different assessment periods (pretest, posttest, and follow-up), it was decided that all 6 stories would be used for a single assessment. While this procedure is vulnerable to inflation of scores due to practice effects of readministering the same tests, both experimental and control groups should be equally vulnerable to this effect (Campbell & Stanley, 1963). Any positive effects of treatment would still be evident in the superiority of experimental group over control. The grouping of the individual stories for both the MEPS and the CBC into a single combined measure (rather than using selected stories as alternate test forms at pre-, post-, and follow-up testing) was further defensible on the grounds that it was likely to produce a more reliable total score, being less vulnerable to individual story defects or to rejection or miscomprehension of individual stories by the subjects (Urbain, 1979).

Training of Testers

In addition to the author, one project assistant was recruited to assist in the testing. Initial training involved discussion and role play of testing procedures the with project assistant. Actual scoring of test protocols was done in a blind fashion by the author. All identifying data was removed from test protocols prior to scoring. This was done in an attempt to compensate for any bias of test scores arising from the scoring process itself.

Teacher Meetings

Teachers and administrators of the Education Department of ASH who work with the ATU were briefed prior to the initiation of the pretesting period. The SCRS was discussed as well as scheduling, and a general description of some aspects of the training. Description of the training was deliberately made nonspecific. They were told that there would be different activities in the different groups, such as role playing, discussing problems and feelings, and playing cooperative games. They were informed that the experimental nature of the study required that they be unaware of the exact nature of the treatment conditions during the study until the time after the follow-up assessment. After the follow-up, a final meeting could be held with interested teachers to discuss the precise nature of the training procedures and to elicit any comments and questions.

Parental Consent

A parent/guardian consent form was obtained prior to the initial testing of the subjects (see Appendix A). The form described the purpose and the procedures of the study. The author was available to answer any questions from interested parents, but no systematic attempt was made to communicate with the parents aside from the initial consent form. Feedback to parents was available upon request.

Training Procedures

All subjects assembled in training groups that met on a 3-times per week schedule, for a total of 12 sessions per group (See Table 2). Each session was 45-60 minutes in length, and sessions were conducted during the regular school day. All assessment and training took place within the confines of the self-contained ATU, utilizing the available treatment rooms. Subjects were told that they would have the opportunity to be part of a series of special groups that would involve lessons and games to learn how to get along better with themselves and others. Except for the cognitive-behavioral self control training proper, subjects in both treatment and control group were given similar tasks, task instructions, and performance feedback. Actual experimental condition training employed a therapy manual developed by Kendall, Padawer, & Zupan (1980). Over the course of treatment, the therapist (1) taught the experimental condition subjects to use step by step self verbalizations to modulate his or her own behavior, (2) modeled the use of these self directed commands as well as a paced problem solving approach, and (3) followed through on the subject's

Table 2. Description of the task and highlights of the 12-session Cognitive-Behavioral Program for Self Control.

Session	Task	Highlights
1	"Which one comes next?"	Introduction to self-instructions, response cost contingency, self evaluation and bonus chip systems; overt Verbal Self Instruction; concrete labeling of response cost; assign homework project.
2	"Following directions"	Review self instructions and homework project; overt VSI for majority of the session, begin fading process to whispering VSI and final 2-3 tasks; concrete labeling.
3	"Specific skills series"	Review self instructions (especially coping statements) and homework assignments; encourage rephrasing of VSI to curb rote memorization, continue fading process with whispered VSI, some overt; begin conceptual labeling with final 1-2 errors.
4	"Little Professor"	Encourage rephrasing of VSI and note additional step possible with a new task; whispered VSI, conceptual labeling, child begins self evaluation.
5	"Little Professor"	First interpersonal task; homework project reviewed: example of when child actually used five steps outside of therapy; whispered VSI; conceptual labeling.
6	"Tangram puzzles"	Continue fading from whispered to covert VSI; conceptual labeling; emphasis on coping model, coping statements during difficult tasks.
7	Checkers	Covert, occasionally whispered VSI; conceptual labeling; inquiry into specific classroom/home problems.

Table 2--Continued

Session	Task	Highlights
8	Backgammon	Last interpersonal play session; homework assignment for next time: example of using VSI in social/interpersonal situation; covert, occasionally whispered VSI; conceptual labeling.
9	Identifying emotions	First session related directly to interpersonal problem solving; mixture of VSI (overt and covert), modification of steps; probing by therapist when necessary; conceptual labeling.
10	Hypothetical situation	Rephrasing/adjustment of VSI for new problem solving situation; mixture of VSI; conceptual labeling.
11	Role playing	Role playing of social situations, both created and real; mixture of VSI; conceptual labeling.
12	Role playing	Role playing of real problems; mixture of VSI; conceptual labeling; children "teach" procedure to each other.

behavior by providing social praise and reward for desirable action and a response cost contingency for unsuccessful performance or inappropriate behavior.

Trainer/Therapist Characteristics

All training/therapy was provided by the author. The author was an advanced graduate student, an experienced therapist, and psychometrician with 9 years of experience in the field. Actual training for this intervention employed a therapy manual (Kendall et al., 1980) as well as a training demonstration video (Kendall & Braswell, 1982).

Self Control Training Components: The Experimental Conditions

This section will illustrate the separate strategies that combine to form cognitive-behavioral self control therapy of impulsive adolescents. The main strategies for the cognitive-behavioral self control therapy include: (1) a problem solving approach, (2) self instructional training, (3) behavioral contingencies, (4) modeling, (5) affective education, and (6) role play exercises. The strategies are essentially an interwoven program, but, for the sake of description, each will be presented in a separate section. A detailed and systematic description of the program is embodied in the program manual (Kendall et al., 1980).

Problem Solving Approach

Basic to the strategies to be discussed is an underlying problem solving theme. The emphases of the training focused initially upon

cognitive or impersonal tasks, and later upon interpersonal problems. The intention was to develop adequate social problem solving skills that will remedy deficits in cognitive functioning by teaching strategies for interpersonal problem solving.

Self Instructional Training

It was proposed that an effective means to the solution to a problem is via the careful examination of the problem solving process. Self instructions are self directed statements that provide a thinking strategy for adolescents with deficits in this area and serve as a guide for the child to follow through the process of problem solving. Self instructions reflect the desire of the therapist to break down the process into discrete steps, and accordingly, each self instruction represents one step of solving a problem (after Meichenbaum, 1975, 1977). The verbal self instructions that were taught to the experimental condition subjects are outlined in Table 3.

As shown in Table 3, the content of the self instructions includes five types of statements. These statements proceed from the generation of a problem definition, to stating the problem approach, focusing of attention, and self rewarding for correct responses. Coping statements are built in for use after an incorrect answer. In such an event, the coping statements help teach the subject something that can be thought to him or herself when committing an error; something that may facilitate the inhibition of a disturbing outburst. The coping statements are designed to avoid overly negative self statements such as "That was dumb" or "I'm dumb," and to encourage comparatively

Table 3. Content and sequence of self instructional process.

Content of self instructions

Problem definition	"What am I supposed to do?"
Problem approach	"Look at all the possibilities."
Focusing attention	"Concentrate and focus in."
Choose an answer	"I think it's this one . . ."
Self reinforcement, or	"Not bad! I did a good job!"
Coping statement	"Oh, I made a mistake. Next time go slower."

Sequence of self instructions

- * Therapist models task performance and talks aloud. Child observes;
 - * Child performs task, instructs him/herself aloud;
 - * Therapist models task performance, whispering self instruction;
 - * Child performs task, whispering to him/herself;
 - * Therapist performs the task using covert self instruction with pauses and behavioral signs of thinking (e.g., stroke beard);
 - * Child performs task using covert self instructions.
-

neutral statements about the error such as "I made a mistake, I'll try again."

The problem solving self instructions are designed to help the child (1) recognize that there is a problem and identify its features, (2) initiate a strategy that will help him/her move toward a problem solution, (3) consider the options, and (4) take action on the chosen plan. Importantly, self rewarding self instruction is included to strengthen the child's "thinking" habit.

One of the most important aspects of the self instructional procedure is the meaningfulness of the actual sentences for the individual child; that is, saying the self instructions the way the therapist would is not as crucial as having the child say them in his/her own way. The therapist, child, and fellow group members collaborate to create (having the child discover) specific self directive statements.

As seen in the sequence of self instructions (the second part of Table 3), the therapist and subjects take turns completing tasks, each using the self instructions. One of the goals of therapy is for the child to internalize the self statements so that he or she is able to use them to think slowly through potential solutions to problems outside of therapy. For this reason, use of the self instructions both by the therapist and subjects fades from overt (out loud), through a whispering phase, and finally to covert (silent) speech.

Behavioral Contingencies

Incentive manipulation is vital, and the use of contingencies is an essential feature of the training. The behavioral contingency features of the cognitive-behavioral self control therapy for adolescents included (1) self reward and social reward, (2) response cost, (3) self evaluation, and (4) rewarded homework assignments.

Self Reward and Social Reward

The typical behavioral contingency concerns rewards for desired responses. In this training, a healthy dose of reward contingencies were proffered. Two types of rewards were employed, systematically and generously--they were self reward and social reward.

In the self instructional training the child was taught to say "I did a good job." The exact wording was not of concern as much as the need for self reward following successful task performance. As a part of the self instructions that were rehearsed for each task, the child must pause to provide and profit from self rewards. In addition to self reward as part of the self instructions, self reward was to be fostered in any instance where it would be appropriate.

Social reward ties in directly with the suggestion to create a rewarding environment. The therapist used smiles, comments such as "good," "fine," and "nice job," and any of the generally socially rewarding messages appropriate with adolescents (e.g., "awesome!"). These rewards set the tone of the sessions: positive, rewarding, and encouraging. Braswell et al. (1984b) found that statements of encouragement ("Keep up the good work," "I can see you're really trying

hard," etc.) but not simple confirming statements ("That's correct," "Right," "Uh-huh," etc.) were associated with more positive child outcomes.

Response Cost

Impulsive, non self controlled children tend to respond quickly without carefully evaluating all possible alternative solutions to problems; consequently, they make many mistakes. When presented with a choice of alternative answers, impulsive children will sometimes answer correctly, conceivably obtaining the right answer by chance or because the problem was so easy that the answer was immediately apparent. If one only reinforces an impulsive child for right answers, which can be a matter of luck or fast guessing, one in effect spuriously rewards the child for being impulsive. In order to circumvent this problem, the cognitive-behavioral strategy used a response cost contingency whereby the child was given a number of tokens (e.g., 20) to start with and lost a token each time he or she made a mistake on the tasks (answered incorrectly) or misused (or forgot) any of the self statements. The response cost contingency was employed following errors on the tasks, fast guessing, or failure to use all of the self statements when self instructing out loud. As such, it was designed to assist the subjects in remembering to stop and think before responding; it was not the only contingency to be employed and is not construed as a punitive effort.

Following a response cost, the therapist took the next turn at the task and returned again to self instructing out loud. This return to overt self instructions occurred at each instance of response cost

regardless of how far along the training had progressed. That is, even if response cost is enacted during a training session when the subjects no longer self instruct out loud (they have previously demonstrated competence and now are at the silent self-instruction stage), the therapist went back to repeating the self statements out loud.

On losing a token, it was important that the child understand why the token was to be taken away so that he or she could avoid the same mistake in the future. Therefore, the therapist labeled and explained the mistake. Two labeling approaches were used: concrete labeling and conceptual labeling (this distinction is also made for the types of self instructions taught to subjects). In concrete labeling, the subject was told exactly what he or she did wrong--for example, "You lose one chip because you didn't say the step I have to look at all the possibilities'." In the conceptual labeling of mistakes, the child was told in a general fashion when he or she did wrong--for example, "You lose one chip for not taking your time and not getting the correct answer." The therapist's manner of explaining mistakes always remained quite matter of fact (not punitive) and shifted over the course of the 12 training sessions, fading from concrete to conceptual labeling. Concrete labels tend to apply to one specific mistake and were used in the very early stages of training, while conceptual labels, being more general, apply to a variety of mistakes and situations. As mentioned above, the distinction between concrete and conceptual procedures pertains also to the self instructions, and

therefore self instructions also fade from concrete to conceptual, with the majority being conceptual (Kendall & Wilcox, 1980).

Self Evaluation

When behavioral contingencies are consistently and appropriately employed, the child will learn the desired behaviors. In order to encourage generalization, especially outside of the training environment, self evaluation skills were fostered.

Self evaluation skills were taught through the use of a "How I Did Today" chart. A sample chart is shown in Table 4. The self evaluation chart was used first by the therapist and subsequently by both the subjects and the therapist. At the conclusion of the first session, the therapist rated the subject's performance, providing feedback on how he or she did for the day. For example, the therapist might tell the child, "You did pretty good today; you did the problems carefully and made very few mistakes. You also remembered the self instructions. I think I would rate your performance a 4--'very good.' If you had made many errors, gone too fast, or forgotten the steps, I would probably rate you a 1--'not so good.' If you had done even better than today, but not making any mistakes, I probably would rate you a 5--'excellent.'" In later sessions the subjects were also asked to evaluate their own performance. If the individual subjects were also asked to evaluate their own performance, and if the individual subjects and the therapist ratings matched (exactly or within one point), the subject earned additional rewards.

Table 4. Sample self evaluation chart.

How I Did Today				
1	2	3	4	5
Not so good	OK	Good	Very Good	Excellent

Homework Assignments

Given the desirability of having the child stop and think outside as well as inside the training session, homework assignments were included as part of the training. The assignments were "graded" in two ways. First, they were graded according to acceptability: if the assignment was completed in an acceptable fashion, then the child earned a bonus chip. Second, they were graded in terms of a hierarchy of difficulty.

Early assignments were less complex and easier than later assignments. For example, at the end of one of the early training sessions, the children were encouraged to use the self instructions in the classroom. A contingency was established; The child could earn an extra chip at the start of the next session if he/she could describe an instance where he/she could have used the self instructions. This task was designed to simply get the children to identify instances where using the steps would be appropriate. In later sessions, the children must describe an instance where he/she actually used the self instructions in the classroom or on the unit. Here the emphasis was on actual deployment of self instructions outside the specific training sessions.

Modeling

The therapeutic use of modeling entails the exposure of a client to an individual (or individuals) who actually demonstrate the behaviors to be learned by the client. Modeling, also referred to as

observational learning, has been used to produce such diverse therapeutic and educational outcomes as the elimination of behavioral deficits, the reduction of excessive fears, and the facilitation of social behavior (Bandura, 1969, 1971; Rosenthal & Bandura, 1978). In alternating with the child task by task, the therapist demonstrated or modeled problem solving and the use of the self directed self instructions. The child's observations of his peers within the group also provided a model for problem solving. The training approach involved teaching via modeling with a modicum of direct orders. The therapist did not so much tell the child what to do as work with the children, showing them valuable alternatives to think through problems.

More specifically, the therapist served as a coping model. Note the distinction between the mastery model and the coping model (e.g. Kazdin, 1974; Meichenbaum, 1971). A mastery model performs the problems perfectly, demonstrating ideal task performance. A mastery model would complete the therapy tasks without difficulty and without making mistakes. A coping model, on the other hand, makes mistakes occasionally and shares with the subjects any difficulties that are encountered while completing the tasks. The coping model demonstrates coping strategies for dealing with difficulties or failures. Some children tend to back off from difficulties in problem solving by randomly guessing at any answer, just to get off the hook. The coping strategy demonstrated by the coping model was particularly important for these children. The training provided opportunities for the child to observe both the therapist and his/her peers as coping models. The

therapist also had multiple opportunities to comment upon the children's individual performance on tasks, thereby creating a wealth of coping models among the group members.

It is also important to note that a model who self verbalizes is superior to one who does not verbalize. That is, talking out loud while modeling offers a demonstration of the thinking through of a problem to problem solution. This practice is most potent. Meichenbaum (1971) provided data to support the statement that the most effective modeling strategy is the model's stating out loud cognitive coping strategies.

By serving as a coping model, the therapist demonstrated not only the use of the self instructions in the performance of a task, but also the use of coping strategies when problem solutions are not readily available. Since it was inevitable that the child would run into problems that were not readily soluble, having coping responses available would reduce the likelihood that the child would throw up his/her arms and quit, or turn against the environment and act out. As noted earlier, coping statements are built into the self instructions for use after the incorrect response and were designed to replace overly negative self statements such as, "I'm dumb" with more acceptable statements such as, "I'll have to be more careful."

Affective Education

Improving the child's ability to accurately recognize and label his/her own emotional experiences, as well as the emotions of others, may be a necessary step for improved interpersonal problem solving.

Toward this end, the training program included tasks that required the child to label the emotions associated with various facial expressions, bodily postures, or problematic interpersonal situations. The actual materials used to generate such discussions are less important than the process of making the child more conscious of the nature of his/her own emotions, the association between certain emotions and certain situations, and the effect of self talk in the mediation of emotional experiences.

The training program also addressed the child's emotional responses in the context of the role playing exercises. While the manner in which these exercises were conducted is addressed in the next section, it should be noted that one reason for even including role play tasks is to heighten the child's level of emotional involvement and arousal. Thus, the child has an opportunity to practice the self instructional skills while grappling with problematic situations that may "pull for" a more impulsive, emotional type of responding. Clearly, when a child is working within a group structure, the role plays can generate the level of affective response that might typify the same interaction with a family member or with a peer on the unit. The therapist must keep the intensity of these role plays within appropriate limits. Goodwin and Mahoney (1975) had their elementary school aged subjects practice displaying self control in the face of verbal taunts by having the children play a game in which they actually called each other names. Needless to say, they succeeded to generate very realistic levels of emotional arousal. When the training

situation includes opportunities for utilizing the self instructions in emotionally arousing situations, one is, in effect, training for generalization.

Role Plays

Role playing, in conjunction with thinking through the problem situation, offers an opportunity to act out the behavior and provides a performance base for the intervention. Role plays were arranged for either hypothetical situations or situations that were actually problems for the child. Typically, both types of problem situations were employed in a sequence that facilitated the child's involvement, reduced the likelihood of resistance, and enlivened the activity of training. Towards these ends, role plays of hypothetical problem situation best precede "real" problem situations. Sample hypothetical situations include:

- * "You are watching television, and your mother/sister changes the channel."
- * "You spill your coke during lunch and someone is making fun of you."
- * "You are having trouble with a school worksheet and your friend is already finished."
- * "You would like to ask the new boy/girl out for a date but your best friend says that he/she has already staked a claim."

Each situation was written on an index card in advance and, once the child understood what was involved in a role play task, one

index card was selected from a deck of cards that became the situation for the role play. Fellow group members were scripted into appropriate roles. This contributes to the "real" feeling of the endeavor. While it may be the case that one or several of these "hypothetical" situations may be real problem situations for the child, they were quite general and likely to be problems for most of the children in the group so that no one specific child was likely to feel directly targeted.

After the child, group, and therapist had gained experience with the hypothetical role plays, real problem situations were performed. These real problem situations were elicited from the child him/herself, fellow group members, unit staff, and teachers. Proper wording is important so that the child understands precisely what is seen as a problem if the source is other than the individual.

In an effort to overcome the initial difficulties moving from just talking about situations to acting them out, the following format was followed:

1. Just as in previous sessions, the child was asked to state the problem.
2. As in the sequence of problem solving, the child knows that he/she is supposed to look at all the possibilities. The therapist's role at this time is to help the child understand that in social problem situations, he/she has to generate or create his/her own possibilities for action while taking into account the practical limits of the situation. Three or four

alternatives for coping were generated. Evaluation of the quality of each possibility would be held for step 3.

3. The therapist would translate the third step--think hard or focus in--into a process of evaluating the relative merits of each alternative. Evaluate the possibilities in terms of their behavioral and emotional consequences for the child and for the other people involved in the situation.
4. The fourth step involved picking an answer. With social problems, the therapist could tell the child that sometimes there will be more than one good answer or good way to solve a problem. With more cognitively sophisticated children, the therapist may also wish to add that in other, more difficult situations, none of the choices may seem very good and that in those cases one has to try to pick the least bad solution. With regard to the child's actual choice, if the therapist was satisfied that the child had evaluated each possibility, then the actual response the child selected was of less importance.
5. The fifth step could be handled much as it was with impersonal problem solving tasks. The child would be encouraged to use a self reinforcing statement to reward his/her good problem solving or, if he/she had gone too fast or forgotten a step, a coping statement would be used.

When the children had a clearer understanding of how the steps could be used to solve social problems, rigid adherence to the five step model was discontinued.

Training Tasks

The actual tasks used to facilitate cognitive-behavioral self control training are quite unimportant relative to the method of task approach that is being taught (Kendall, Padawer, & Zupan, 1980; Kendall & Braswell, 1985). The nature and sequence of the training tasks utilized in the Kendall et al. (1980) training manual will be described in the following section. The following sequence will utilize a 12 session format.

The training generally progressed from impersonal, cognitive tasks to more interpersonal, emotionally laden material. Beginning with simple cognitive tasks allowed the child to devote more of his/her attention to the new method of problem approach without becoming bogged down in the actual mechanics of the task or his/her personal problems. The training program researched and developed by Kendall and colleagues began with a simple pattern matching task ("Which One Comes Next?"). This emphasis was continued in sessions 2 and 3 via the use of tasks from Barnell-Loft's Specific Skill Series (Barnell-Loft Publishers, Baldwin, N.Y.).

Sessions 4, 5 and 6 employed psychoeducational games that provided a transition between the purely impersonal cognitive problems and more socially oriented games. The "Little Professor" math computer by Texas Instruments was utilized with the games that have been developed to be used in conjunction with it. Tangram puzzles are another pattern matching task that were utilized to combine elements of cognitive problems and a game.

More typical games, such as checkers, were introduced next. This allowed the children to practice the application of the problem approach steps with more common activities. The game type interaction also provided an opportunity for the therapist to begin asking the children more about their opinions of what types of situations were most troublesome for them. The therapist and the children played checkers in session 7, and a new game, Backgammon, was introduced in session 8. Applying the steps with a totally new game provided an interesting opportunity for transfer of the self instructional skills for the children.

In session 9, the material became more relevant to interpersonal problem solving, for it focused on the accurate recognition and labeling of emotions. This allowed the children to begin to think about the role of emotion in their behavioral responses and what types of emotions are produced in various interpersonal situations. Session 10 carried the discussion of interpersonal situations even further by asking the children to think of alternative responses in problematic situations and the possible emotional and behavioral consequences of each alternative. Finally, in sessions 11 and 12, the children were assisted in role playing the various alternatives for problematic situations, with the primary focus being on situations that were particularly difficult for individual children. The children took turns playing the lead "role" in order to individualize the learning experience.

Research Design

The research study consisted of a field experiment intended to assess the psychotherapeutic outcome of the application of cognitive-behavioral self control techniques with a hospitalized, adolescent population.

Subjects selected for participation in the project were assigned either to the experimental group or the attention control group via a modified randomized block procedure. These equated groups were subject to dependent measures at pretreatment, posttreatment, and after a four week delay, at follow-up.

The experimental group received 12 sessions (60 minutes each) of cognitive-behavioral self control training as previously described. The attention control group received 12 sessions (60 minutes each) of exposure to the same materials, but without the cognitive-behavioral self control training. Both groups received the reward chips although the experimental condition alone was subject to response cost reinforcement.

Internal Validity

According to Campbell and Stanley (1963) the "Pretest-Posttest-(Follow-up)" design qualifies as a "true experimental design" (p. 13). The major threats to internal validity are all well controlled. History is controlled insofar as general events that might produce a change in the training condition would also produce changes in the attention control condition. Special reference is made here to the locked ward, self-contained status of ATU in addition. In essence all

the subjects are members of a closed community that share common experiences to an extent beyond that typically found in the home/school social environment. Intrasection history was controlled by approximate sessions (i.e., same day, same place, same therapist, same materials [without the cognitive-behavioral features or response cost in the attention control group]), and simultaneity being nearly achieved by serially scheduling sessions to immediately follow on the next hour. Maturation and testing effects were controlled in that they should manifest equally in both the experimental and control group.

Instrumentation effects were controlled by using the "blind" scoring of all protocols by a single scorer. Scorer was unaware of experimental condition assignment as well as identity of subjects.

Regression effects, as far as mean differences are concerned, were controlled by the utilization of random assignment of subjects to both conditions. The population sample that these subjects was drawn from represented an extreme pool that is representative only of non self controlled, hospitalized, psychiatrically disturbed Arizona adolescents. Regardless of the extremity, the control group would regress as much as the experimental group.

In order to enhance the equality of the two groups and to minimize the selection effects, a randomized block assignment to conditions was utilized. Subject scores on the teacher rated SCRS served as the blocking variable. Subject scores were rank ordered, sequentially paired, and then one of each pair was randomly assigned to treatment condition or control group.

Mortality issues were controlled by the disqualification from participation of any ATU adolescent with a scheduled release date that falls prior to the follow-up measure. Any selected subjects who completed all dependent measures at all measurement periods were included in the statistical analysis, regardless of number of missed training sessions. This may have attenuated the apparent effect of the training, but it avoided a sampling bias (Campbell & Stanley, 1963).

External Validity

As the major intent of this study was to ascertain the generalizability of cognitive-behavioral self control training effects to the population of non self controlled, hospitalized, psychiatrically disturbed adolescents, it was critical that any impediments to generalization (that is, external validity) be controlled.

Campbell and Stanley (1963) allude to the sensitizing effect of pretesting and its potential interaction with, and confounding of, training effects. The authors state, "The effect of the pretest upon X as it restricts external validity is of course a function of the extent to which such repeated measurements are characteristic of the universe to which one wants to generalize" (p. 18). Recalling the target population of generalization (i.e., hospitalized, psychiatrically impaired adolescents), it was certainly not a novel or unusual experience for these adolescents to participate in extensive and frequent batteries of psychological/educational assessment. Additionally, the repeated measures design utilized in this study was probably perceived

as only one of many evaluations or observations. Pretesting should not have jeopardized external validity.

The interaction of selection of subjects and training effect can also compromise external validity. The representativeness of the sample under scrutiny becomes a critical issue. As the difficulty of getting suitable subjects increases, so does the potential for confounding interaction effects with treatment. Are the patients of ATU representative of all hospitalized, psychiatrically impaired Arizona adolescents? Probably not, but their unrepresentativeness may constitute a statement of the relative severity of their problems and the dearth of familial, financial, social and personal resources that are reflected in their plight. In other words, these individuals represent the broadest range and fullest depth of debilitating psychological and social disabilities. The extremity of their need constitutes a factor that cannot help but suggest that any statistically significant change in their post treatment measures, suggests that those who are similar in plight but less cursed with privation may also benefit from the training. For this reason, selection was seen as an enhancement, rather than a compromise of generalizability.

Reactive Arrangements

Campbell and Stanley (1963) address the artificiality of the experimental setting as a prompt for the subjects to assume an uncharacteristic role as a "guinea pig" and to attempt to second guess the experimenter's intentions. This effort would seriously hamper the generalizability of the results of any study. The authors contend that

any aspect of the experimental procedure may produce this reactive arrangements effect (p. 20). The relative effects of the testing (repeated measurement) has been previously discussed, but other features of the experiment must be addressed.

1. Randomization/Assignment: Patients were regularly removed from their assigned class individually (or in varying membership groups) to participate in therapy, staffings, or other rehabilitary activities. This was a daily occurrence. The "new" group appeared to be status quo.
2. Novel Therapist: While the treatment team of ATU is more or less stable in individuals making up the team, there is a constant turnover in staffing as well as rotations of mental health graduate students, who participate in the unit's functions for short periods of time. In order to attenuate the novelty produced by the experimenter's presence, a week prior to testing, the experimenter commenced spending time on the unit and was introduced to the adolescents as a "new intern on rotation." No special treatment or announcements concerning the study were made.
3. Staff cooperation: As with the adolescents, the ATU staff is quite used to the seemingly random comings and goings of graduate students. Primary interaction was with the teachers of the ATU school, and that relationship has been previously defined. Full administrative support for the study was granted. The

hospital's policy and procedure for human subjects research was followed.

Analysis of Data

The dependent measures (SCRS, CBC, & MEPS) each produce a continuous distribution of scores, a normal (unimodal) distribution of scores, and were taken from a randomized, blocked sample, representative of the population of hospitalized, psychiatrically impaired adolescents residing (for treatment) at the ATU of ASH. Therefore, the assumptions for the use of parametric statistics were considered to be met (Kerlinger, 1973).

The data collected in this study were analyzed consistently with the demands of the research hypotheses. A t-test (independent means) was employed to test the difference of group means of the dependent measures (Hypothesis 1) at pretest. Hypotheses 2 through 4 were analyzed utilizing Analysis of Covariance (ANCOVA). Significant changes in the mean scores between the treatment and control groups at posttest and follow-up were assessed. Pretest score means were utilized as the covariant. F values were computed to identify any significant differences at the $p < .05$ level.

CHAPTER 4

RESULTS

Introduction

The purpose of this study was to examine the effect of participation in a cognitive-behavioral training program on the following variables for hospitalized adolescents with psychiatric diagnoses: self control, social perspective taking, and social problem solving. Four general hypotheses were generated to address these variables. The results of the data analyses for each of these four research hypotheses are presented in this chapter. Each research hypothesis is analyzed sequentially, and descriptive statistics are presented to clarify the statistical tests.

A t-test (independent means) procedure to test the difference in group means was utilized for Hypothesis 1. Hypotheses 2 through 4 were analyzed utilizing ANCOVA. The pretest measures of the dependent variables (SCRS, CBC, and the three subscales of the MEPS) made up the covariants. A $p < .05$ level of significance was established to assess differences in group means.

This chapter begins with a demographic description of the treatment and control groups. The statistical analysis for each of the four research hypotheses follows. Tables are included to further explain the findings.

Description of the Treatment and Control Groups

The participants in this study were 10 adolescents (5 male and 5 female) currently hospitalized for psychiatric problems at Arizona State Hospital in Phoenix, Arizona. All participants were paid volunteers. These participants were divided into two groups utilizing a matching variable (SCRS) and randomly assigned, via coin toss, to treatment or control group. Each group consisted of 5 adolescent participants. The demographic variables selected to describe the participants included age, diagnosis, IQ, and ethnicity (Table 5). The mean age for all participants was 15.2 years. The treatment group participants averaged 14.6 years of age. The control group participants averaged 15.8 years of age. The range of ages in the treatment group was from 12 years to 17 years of age. The range of ages in the control group was from 14 years to 17 years of age.

The mean IQ for all participants was 91 (WISC-R; Wechsler, 1974) with a standard deviation of 10.65 points. The range of IQ for all group members was from 80 to 118. The treatment group participants averaged an IQ score of 96.2 (SD = 12.44). The control group participants averaged an IQ score of 85.8 (SD = 5.76).

None of the participants were acutely psychotic during the course of the study. Nine of the 10 participants were taking prescribed psychotropic medication for the treatment of their disorders. Diagnostically (DSM III; Spitzer, 1980) the following conditions were represented in each group: Treatment group; Dysthymic Disorder (1), Schizo-Affective Disorder (2), Major Depression (1), and Attention

Table 5. Demographic data.

	Treatment	Control	Total
<u>Age</u>			
Range	12-17	14-17	12-17
Mean	14.6	15.8	15.2
<u>Gender</u>			
Males	5	0	5
Females	0	5	5
<u>IQ</u>			
Range	87-118	80-95	80-118
Mean	96.20	85.80	91.00
SD	12.44	5.76	10.65
<u>Ethnicity</u>			
Anglo American	5	2	7
Mexican American	0	2	2
Native American	0	1	1
<u>Diagnoses</u>			
Schizo-affective disorder	2	0	2
Dysthymic disorder	1	0	1
Major depression	1	2	3
Conduct disorder	0	2	2
Att. deficit disorder	1	0	1
Undifferentiated schizophrenia	0	1	1

Deficit Disorder (1). Control group; Undifferentiated Schizophrenia (1), Non-Aggressive/Undersocialized Conduct Disorder (2), Major Depression (2).

The majority of participants in the study were identified ethnically as Anglo. The treatment group contained 5 Anglo participants. The control group contained 2 Anglo, 2 Mexican-American, and 1 Native American participants.

Literature review did not suggest that sex, gender, or ethnic differences contributed any significant variance in similar studies and there is scant information concerning diagnostic differences, therefore these groups were considered comparable for the purposes of this study.

Hypotheses

Hypothesis 1

The first hypothesis stated that non self controlled, psychiatrically impaired adolescents (as measured by the SCRS pretreatment) manifest deficits in the areas of social problem solving and social perspective taking (as measured by the MEPS and CBC pretreatment) relative to self controlled, psychiatrically impaired adolescents.

Subject's pretest SCRS scores were rank ordered and divided at the median in to Low SCRS Group (self controlled) and High SCRS Group (non self controlled). A t-test performed indicated that the groups were significantly different at pretest on the SCRS ($p < .02$), suggesting a significant difference in self controlled behavior between groups. The mean pretest SCRS score for the Low SCRS Group was significantly lower ($x = 79.6$) than the mean pretest SCRS score for the

High SCRS Group ($x = 148.8$). T-tests were then performed upon the pretest means for the CBC, MEPSTM, MEPS^{NM}, and the MEPS^{RR} comparing the Low SCRS Group with the High SCRS Group on each of these measures. Analysis of CBC pretest means (Low: $x = 1.60$; High: $x = 1.73$) revealed no differences between the Low and High SCRS groups ($p < .83$) suggesting no difference in social perspective taking between groups. Analysis of MEPSTM pretest means (Low: $x = 6.2$; High: $x = 7.8$) revealed no difference between the Low and High SCRS groups ($p < .43$) in the production of relevant means suggesting no difference in social problem solving between groups. Analysis of MEPS^{NM} pretest means (Low: $x = 2.2$; High: $x = .6$) revealed no difference between Low and High SCRS groups ($p < .21$) in the production of irrelevant means suggesting no difference in social problem solving between groups. Finally, analysis of MEPS^{RR} pretest means (Low: $x = .70$; High: $x = .93$) revealed no significant difference between Low and High SCRS groups ($p < .26$) in the relevancy ratio (relevant means over relevant and irrelevant means) suggesting no difference in social problem solving between groups. While there was a significant difference in self controlled behavior between groups the additional findings fail to support Hypothesis 1. Refer to Table 6 for descriptive statistics.

Hypothesis 2

The second hypothesis stated that non self controlled, psychiatrically impaired adolescents participating in cognitive-behavioral training will show a significant improvement in social perspective

Table 6. Descriptive statistics: SCRS, CBC, MEPSTM, MEPS^{NM}, MEPS^{RR} for Hypothesis 1.

Group	SCRS		CBC		MEPS TM		MEPS ^{NM}		MEPS ^{RR}	
	M	SD	M	SD	M	SD	M	SD	M	SD
Low	79.60	23.61	1.60	1.00	6.20	3.70	2.20	2.49	.70	.41
High	148.80	48.25	1.73	1.18	7.80	2.05	.60	.89	.93	.11
Total	114.20	51.11	1.66	1.04	7.00	2.94	1.40	1.95	.82	.31

taking and social problem solving (as measured by the CBC and MEPS posttreatment) when compared to the control group.

The treatment and control groups were compared for their scores on the CBC, and $MEPS^{TM}/MEPS^{NM}/MEPS^{RR}$ at pretest and posttest by means of ANCOVA. All posttest means are adjusted for the covariate (pretest means). Tables 7 through 14 display the descriptive statistics and ANCOVA summaries.

Chandler Bystander Cartoons (CBC). A significant improvement was found in CBC score in the treatment group ($F = 13.75$, $p = .008$) from pretest to posttest, when compared to the control group, with the posttest means adjusted for covariate (pretest). These findings support the hypothesis of improved social perspective taking skills after cognitive-behavioral self control treatment (Tables 7 and 8).

Means-Ends Problem Solving: Total Means ($MEPS^{TM}$). A non significant improvement was found in $MEPS^{TM}$ scores in the treatment group ($F = 3.22$, $p = .1$) from pretest to posttest, when compared to the control group, with posttest means adjusted for covariate (pretest). A tendency toward significance is suggested. However, these findings fail to support the hypothesis of improved social problem solving skills after cognitive-behavioral self control treatment (Tables 9 and 10).

Means-Ends Problem Solving: No Means ($MEPS^{NM}$). A non significant improvement was found of $MEPS^{NM}$ scores in the treatment group ($F = 0.72$, $p = .42$) from pretest to posttest, when compared to the control group, with posttest means adjusted for covariate (pretest). These

Table 7. Descriptive statistics: CBC, pretest and posttest.

	Pretest		Posttest	
	M	SD	M	SD
Control	1.93	1.38	1.97	1.84
Treatment	1.40	0.58	0.53	0.68
Total	1.66		1.25	

Table 8. ANCOVA summary of treatment and control groups: CBC at posttest.

Source	DF	SS	MS	F	P
Model	2	19.88	9.94	106.01	0.0001
Error	7	0.65	0.09		
Corrected Total	9	20.54			
<u>Type I</u>					
Group	1	5.13	--	54.66	0.0002
CBC1	1	14.76	--	157.35	0.0001
<u>Type III</u>					
Group	1	1.29	--	13.75	0.0076*
CBC1	1	14.76	--	157.35	0.0001

* Significant at $p < .05$ level.

Table 9. Descriptive statistics: MEPSTM, pretest and posttest.

	<u>Pretest</u>		<u>Posttest</u>	
	M	SD	M	SD
Control	5.60	3.58	4.00	2.45
Treatment	8.40	1.34	9.80	4.08
Total	7.00		6.90	

Table 10. ANCOVA summary of treatment and control groups: MEPSTM at posttest.

Source	DF	SS	MS	F	P
Model	2	103.20	51.60	5.04	0.04
Error	7	71.70	10.24		
Corrected Total	9	174.90			
<u>Type I</u>					
Group	1	84.10	--	8.21	0.02
MEPS TM	1	19.10	--	1.86	0.21
<u>Type III</u>					
Group	1	32.99	--	3.22	0.11
MEPS TM	1	19.10	--	1.86	0.21

findings fail to support the hypothesis of improved social problem solving skills after cognitive-behavioral self control treatment (Tables 11 and 12).

Means-Ends Problem Solving: Relevancy Ratio (MEPS^{RR}). A non significant improvement was found of MEPS^{RR} scores in the treatment group ($F = 0.99$, $p = 0.35$) from pretest to posttest, when compared to the control group, with posttest means adjusted for covariate (pretest). These findings fail to support the hypothesis of improved social problem solving skills after cognitive-behavioral self control treatment (Tables 13 and 14).

Hypothesis 3

The third hypothesis stated that non self controlled, psychiatrically impaired adolescents participating in cognitive-behavioral training will show a significant improvement in self controlled behavior (as measured by the SCRS posttreatment) when compared to the control group.

The treatment and control groups were compared for their scores on the Self Control Rating Scale (SCRS) at pretest and posttest by means of ANCOVA. Posttest means are adjusted for the covariate (pretest means). Descriptive statistics are displayed in Table 15 and ANCOVA summary in Table 16.

Self Control Rating Scale (SCRS). A non significant improvement was found in SCRS scores in the treatment group ($F = 0.65$, $p = 0.45$) from pretest to posttest, when compared to the control group, with post-test means adjusted for covariate (pretest). These findings

Table 11. Descriptive statistics: MEPS^{NM}, pretest and posttest.

	Pretest		Posttest	
	M	SD	M	SD
Control	2.40	2.30	2.40	2.07
Treatment	0.40	0.89	0.40	0.55
Total	1.40		1.40	

Table 12. ANCOVA summary of treatment and control groups: MEPS^{NM} at posttest.

Source	DF	SS	MS	F	P
Model	2	21.02	10.51	9.97	0.009
Error	7	7.38	1.05		
Corrected Total	9	28.40			
<u>Type I</u>					
Group	1	10.00	--	9.49	0.02
MEPS ^{NM}	1	11.02	--	10.46	0.01
<u>Type III</u>					
Group	1	0.76	--	0.72	0.42
MEPS ^{NM}	1	11.02	--	10.46	0.01

Table 13. Descriptive statistics: MEPS^{RR}, pretest and posttest.

	Pretest		Posttest	
	M	SD	M	SD
Control	0.67	0.39	0.61	0.35
Treatment	0.96	0.08	0.94	0.08
Total	0.82		0.78	

Table 14. ANCOVA summary of treatment and control groups: MEPS^{RR} at posttest.

Source	DF	SS	MS	F	P
Model	2	0.59	.30	11.08	0.007
Error	7	0.19	0.03		
Corrected Total	9	0.78			
<u>Type I</u>					
Group	1	0.27	--	10.13	0.02
MEPS ^{RR}	1	0.32	--	12.04	0.01
<u>Type III</u>					
Group	1	0.03	--	0.99	0.35
MEPS ^{RR}	1	0.32	--	12.04	0.01

Table 15. Descriptive statistics: SCRS pretest and posttest.

	<u>Pretest</u>		<u>Posttest</u>	
	M	SD	M	SD
Control	116.20	55.74	94.00	30.15
Treatment	112.20	52.55	77.60	61.28
Total	114.20		85.80	

Table 16. ANCOVA summary of treatment and control groups: SCRS at posttest.

Source	DF	SS	MS	F	P
Model	2	14551.1	7275.50	10.66	0.008
Error	7	4776.59	682.37		
Corrected Total	9	19327.60			
<u>Type I</u>					
Group	1	672.40	--	0.99	0.35
SCRS	1	13878.61	--	20.34	0.003
<u>Type III</u>					
Group	1	443.09	--	0.65	0.45
SCRS	1	13878.61	--	20.34	0.003

fail to support the hypothesis of improved self controlled behavior after treatment.

Hypothesis 4

The fourth hypothesis stated that non self controlled, psychiatrically impaired adolescents participating in cognitive-behavioral training will manifest improvements in self controlled behavior, social perspective taking, and social problem solving (as measured by the SCRS, CBC, and MEPS at follow-up) that will maintain beyond the time of immediate training when compared to the control group.

Self Control Rating Scale (SCRS) and Means-Ends Problem Solving (MEPS): Total Means (TM); No Means (NM); Relevancy Ratio (RR). Non significant findings at posttest on the SCRS, MEPSTM, MEPS^{NM}, and MEPS^{RR} rendered moot the follow-up ANCOVA of these variables. Descriptive statistics, nonetheless, are provided below in Table 17. These findings fail to support the hypothesis of maintained (generalized) improvement of self controlled behavior and social problem solving skills, posttreatment upon follow-up assessment.

Chandler Bystander Cartoons (CBC)

The treatment and control groups were compared for their scores on the CBC at pretest and follow-up by means of ANCOVA. CBC follow-up means was adjusted for covariate (pretest means). Descriptive statistics are displayed in Table 18 and ANCOVA results are displayed in Table 19.

A significant improvement was found in CBC score in the treatment group ($F = 13.64$, $p = .008$) from pretest to follow-up, when

Table 17. Descriptive statistics: SCRS, MEPSTM, MEPS^{NM}, and MEPS^{RR} pretest and follow-up.

	<u>Pretest</u>		<u>Posttest</u>	
	M	SD	M	SD
<u>Control</u>				
SCRS	116.20	55.74	109.20	45.69
MEPS TM	5.60	3.58	3.60	2.88
MEPS ^{NM}	2.40	2.30	2.80	2.59
MEPS ^{RR}	0.67	0.39	0.55	0.44
<u>Treatment</u>				
SCRS	112.20	52.55	85.80	57.17
MEPS TM	8.40	1.34	8.60	3.13
MEPS ^{NM}	0.40	0.89	0	0
MEPS ^{RR}	0.96	0.08	1.00	0
<u>Total</u>				
SCRS	114.20		97.50	
MEPS TM	7.00		6.10	
MEPS ^{NM}	1.40		1.40	
MEPS ^{RR}	0.82		0.78	

Table 18. Descriptive statistics: CBC, pretest and follow-up.

	<u>Pretest</u>		<u>Follow-up</u>	
	M	SD	M	SD
Control	1.93	1.38	2.00	1.81
Treatment	1.40	0.58	0.57	0.83
Total	1.66		1.29	

Table 19. ANCOVA summary of treatment and control groups: CBC at follow-up.

Source	DF	SS	MS	F	P
Model	2	20.40	10.20	111.39	0.0001
Error	7	0.64	0.09		
Corrected Total	9	21.04			
<u>Type I</u>					
Group	1	5.13	--	55.99	0.0001
CBC1	1	15.27	--	166.80	0.0001
<u>Type III</u>					
Group	1	1.25	--	13.64	0.0076*
CBC1	1	15.27	--	166.80	0.0001

* Significant at $p < .05$ level.

compared to the control group, with follow-up means adjusted for covariate (pretest means). This finding supports the hypothesis of maintained (generalized) improvement of social perspective taking skills, posttreatment upon follow-up assessment.

Conclusions

This chapter presented the results of the statistical analyses performed to test the four general research hypotheses which were summarized along with the findings. A t-test (independent means) procedure to test the difference in group means was utilized for Hypothesis 1. Analysis of Covariance (ANCOVA) was employed to identify significant changes in the mean scores between the treatment and control groups from pretest to posttest and from pretest to follow-up for Hypotheses 2 through 4. Pretest score means were utilized as the covariant. Chapter 5 presents a discussion of these results.

CHAPTER 5

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

The final chapter of this study addresses three major topics. The first section offers a summary of the study, highlighting the important design components. These include the purpose of the study, information regarding subjects (group membership, recruitment, and demographics), the research hypotheses and dependent variables, assessment instruments, a description of the cognitive-behavioral treatment, and the research design and data analysis procedures. The second phase of this chapter addresses the results of the data analysis for the research hypotheses, with a discussion of the implications of these findings. Finally, recommendations for future research and the author's comments are presented.

Summary

Purpose of the Study

Research addressing the impact of cognitive-behavioral treatment upon children has been carried out primarily with young children (age 12 and under) who have been selected from a non clinical population. Of these children selected for impulsive, non self controlled, or problem behavior, the majority has been identified by test score or teacher referral only. Typically these children have

been selected from grade school classrooms. Seldom have institutionalized, psychiatrically disturbed adolescents been the focus of inquiry. While cognitive-behavioral self control techniques have proven to be effective in modifying the cognitive and social impulsivity of the aforementioned younger population, there has been a general absence of research in applying these techniques to an institutionalized sample of non self controlled adolescents.

The study summarized here was designed to extend our knowledge concerning the impact of cognitive-behavioral self control procedures by applying those procedures to hospitalized, psychiatrically impaired adolescents.

Subjects

The participants in this study were adolescent inpatients between 12 years and 17 years of age, inclusive. Ten (10) individuals participated as subjects in the study (5 treatment and 5 control). The treatment and control group subjects were recruited from the psychiatric inpatients of the adolescent unit in the state hospital in a large city in the southwestern United States. The study was presented to the youths as a voluntary training program in which they could earn some spending money.

Requirements for participation in the study included a functional mastery of spoken English, and IQ at or above 80 (WISC-R; Wechsler, 1974), and no current evidence of acute psychotic phenomena.

Five male and five female participants were selected for the study. These individuals had been previously diagnosed as having some

form of psychiatric illness. Ethnically, the subject group was identified as 70% Anglo, 20% Mexican-American, and 10% Native American, a fair approximation of the state's ethnic makeup.

Research Hypotheses and Dependent Variables

Four general research hypotheses were generated to assess the impact of participation in the cognitive-behavioral self control training on the three dependent variables. The dependent variables examined in this study include self controlled behavior, social perspective taking, and social problem solving.

The first research hypothesis addressed the relationship of the three dependent variables to each other. It was hypothesized that those individuals who were non self controlled behaviorally (SCRS) would also be poor in social perspective taking (CBC) and social problem solving (MEPS). Conversely, those individuals who were self controlled would also manifest good social perspective taking and social problem solving.

The second hypothesis focused upon the variables of social perspective taking and social problem solving. This hypothesis contended that subjects who received the cognitive-behavioral self control training would show a significant improvement in social perspective taking (CBC) and social problem solving (MEPS) when compared with subjects who had not received the training.

The third hypothesis focused upon the variable of self controlled behavior. This hypothesis contended that subjects who received the cognitive-behavioral self control training would show a significant

improvement in self controlled behavior (SCRS) when compared with subjects who had not received the training.

The fourth hypothesis focused upon the variables of self controlled behavior, social perspective taking and social problem solving. This hypothesis contended that subjects who received cognitive-behavioral self control training would show a significant maintenance (generalization) of those gains achieved as a consequence of the training after the actual training had ceased when compared to those individuals who had not received the training. The SCRS, CBC, and MEPS were again utilized as dependent measures.

Assessment Instruments

The research instruments utilized in this study were selected to assess the dependent variables. Each dependent variable was assessed by one measurement instrument. The Self Control Rating Scale (Kendall & Wilcox, 1979), a measure of self controlled behavior, is a teacher or parent rated scale with 33 items. Each item is rated on a 7-point Likert type scale. Ten items are descriptive of self control, 13 are descriptive of impulsivity, and 10 are worded to denote both possibilities. Total score are computed by adding the rating scores for each item; the higher the SCRS score, the greater the child's lack of self control. The SCRS meet the criteria for content, criterion related, and construct validity. Reliability criteria has also been established (Kendall & Wilcox, 1979). The SCRS was completed by the subject's teachers at pretest, posttest and follow-up (see Appendix B).

Chandler's Bystander Cartoons (1973) is a measure of social perspective taking. The CBC is comprised of 6 cartoon strips of 8 frames per strip. Each individual cartoon depicts a sequence of events involving a main character. Later in each strip a bystander is introduced who has no knowledge of what happened to the "hero" prior to the bystander's arrival. The subjects were instructed to tell a story based upon the cartoon sequences. They were also instructed to pay special attention to what the main character was thinking and feeling in each story. After concluding the initial story, the subject was asked to retell the story from the perspective of the bystander who arrives later in the story. The subject received an "egocentrism" score based upon the degree of privileged information ascribed to the bystander. Scoring was done on a 0 to 4 scale. A 0 score indicates no egocentric contamination (good social perspective taking). Each score from 1 through 4 indicated increasing levels of egocentrism (poor social perspective taking). Acceptable reliability ratings have been established for the CBC (Chandler et al., 1974; Kurdek, 1977; Rubin, 1978; Kendall, Pellegrini, & Urbain, 1981). The CBC has been found to be significantly correlated to other measure of social perspective taking (Kurdek, 1977) and to teacher ratings of self controlled behavior (SCRS; Kendall & Zupan, 1981; Kendall, Zupan & Braswell, 1981). The CBC was administered to each subject at pretest, posttest, and follow-up (see Appendix C).

The Means-Ends Problem Solving test (Platt & Spivack, 1975), a measure of social problem solving, is an "open middle" story completion

technique that presents problematic interpersonal situations that have successful outcomes. Stories were scored for number of: (a) Total Means--discrete steps to problem solution; (b) No Means--irrelevant, vague or ineffective steps to problem solution, or simple retelling of the story, value judgments, "miracle solutions," etc.; as well as (c) Relevancy Ratio--the proportion of relevant means to total means (relevant + irrelevant). These scores represent the operationalization of components of social problem solving; namely, step by step planning, circumvention of obstacles, and the recognition of temporal elements in problem situations. Subjects were required to "tell a story that connects the beginning of the story given to you with the end of the story given to you . . . in other words, you make up the middle of the story." Six MEPS stories were selected for use in this study. Acceptable reliability and validity values have been established for the MEPS (Platt & Spivack, 1972a, 1972b, 1973, 1974, 1975; Kendall & Fischler, 1984). The MEPS was administered to all subjects at pretest, posttest, and follow-up (see Appendix D).

Cognitive-Behavioral Self Control Training

The cognitive-behavioral self control treatment was based upon the model created by Kendall, et al. (1980). The treatment was presented in a group format, and was designed to deal directly with the problems associated with impulsive, non self controlled, conduct problem behavior by teaching children to "stop, slow down, and consider all the possibilities." A variety of separate strategies was combined to form cognitive-behavioral self control training. The main

strategies included (1) a problem solving approach, (2) self instructional training, (3) behavioral contingencies, (4) modeling, (5) affective education, and (6) role play exercises. The strategies were essentially interwoven.

The treatment and control groups (both conducted by the author) met separately on a 3 times a week schedule for a total of 12 sessions per group. Each session lasted 60 minutes in length, and was conducted during regular school days. Over the course of the treatment, the subjects in the treatment group learned to use self instructional procedures via modeling while working on a variety of impersonal, personal and interpersonal problem solving tasks. Response cost was employed for errors during training and social and self reward for successful performance and appropriate behavior.

Research Design and Data Analysis

This study utilized a modified randomized blocks (treatment/control) pre/post/follow-up experimental design. Assessments were carried out at three points: pretreatment, posttreatment, and at a four week follow-up. Subjects were rated at pretreatment by teachers on the SCRS, which was the subject selection variable. SCRS scores were rank ordered and subjects were sequentially paired according to ranks. Subjects within the paired blocks were randomly assigned either to control or treatment group via coin toss. Upon selection and group assignment, all subjects were administered the CBC and the MEPS pretreatment assessment. SCRS, CBC and MEPS were administered together at posttreatment and at follow-up. No alternate forms of the dependent

measures were utilized. SCRS forms were rated and completed by the subject's classroom teachers. CBC and MEPS were administered by the author and a trained research assistant. Assignment of individual tester to subject was handled by coin toss. Actual scoring of test protocols was done in a blind fashion by the author. All identifying data were removed from the test protocols prior to scoring, and each protocol was assigned a number.

The data collected in this study were analyzed consistently with the demands of the research hypotheses. A t-test (independent means) procedure to test the difference in group means was utilized for Hypothesis 1. Analysis of Covariance (ANCOVA) was employed to identify significant changes in the mean scores between the treatment and control groups at posttest and follow-up. Pretest score means were utilized as the covariant. F values were computed to identify any significant differences at the $p < .05$ level.

Results

The results of the statistical analyses (t-test) used to test the first research hypothesis yielded findings that failed to support Hypothesis 1. A significant difference between the High SCRS and the Low SCRS groups was determined ($p < .02$) supporting the premise that adolescent psychiatric patients manifest a range of behavioral self control capacities. However, no support was found for the contention that social perspective taking and social problem solving skills were associated with behavioral self control. The cognitive skills identified as social perspective taking (CBC) presented, upon statistical

analysis, as being substantially similar in both the High and Low SCRS groups ($p < .83$) regardless of manifested behavioral self control. The cognitive skills identified as social problem solving (MEPS) also were found to be inconsistently associated with good behavioral self control (MEPSTM; $p < .43$, MEPS^{NM}; $p < .21$, MEPS^{RR}; $p < .26$).

The second hypothesis, addressing improvement in social perspective taking and social problem solving, was unevenly supported by the findings. With the posttest CBC means adjusted for the covariate (CBC pretest) a significant difference ($p < .008$) between treatment and control group was found in the area of social perspective taking. MEPSTM results at posttest produced a finding approaching significance ($p = .11$) but still requiring a failure to support the research hypothesis. MEPS^{NM} and MEPS^{RR} posttest results failed to produce a significant difference between treatment and control group means.

The third hypothesis, addressing improvement in self controlled behavior, received no support from the data analysis. With posttest SCRS means adjusted for the covariate (SCRS pretest) no significant differences between treatment and control group was found in the area of self controlled behavior.

The fourth hypothesis, addressing maintenance (generalization) of improvements in the areas of self controlled behavior, social perspective taking and social problem solving received discrete and partial support based upon data analysis. With follow-up CBC means adjusted for covariate (CBC pretest) a significant difference ($p <$

.008) between treatment and control group was found in the area of maintained social perspective taking abilities. Again, MEPSTM results at follow-up produced a finding approaching significance ($p = .10$) but required a finding of non support for the hypothesis. The non significant findings at posttest on the SCRS, MEPSTM, MEPS^{NM}, and the MEPS^{RR} rendered moot ANCOVA data analysis at follow-up. Therefore no support for the research hypothesis concerning maintained self controlled behavior or social problem solving was found.

Implications

The following implications are suggested as a result of synthesizing the results of the data analysis with the literature review.

1. This study failed to support the contention that within a sample of hospitalized, psychiatrically impaired adolescents there is an association between cognitive deficiencies and self controlled behavior. While the comparison groups for Hypothesis 1 were found to be significantly different in behavioral self control as measured by the teacher rated SCRS, the predicted cognitive capacities were not found to be significantly associated. Kendall and Zupan (1981) reported an $r = .40$ between the CBC and the SCRS and went on to also report that the MEPS was sensitive to treatment effects as measured by the SCRS. These effects were not apparent in this study. Social perspective taking skills as assessed by the CBC highlighted the gross similarities between the comparison

groups in terms of this ability. The score levels suggested that qualitatively both groups were in possession of rather low perspective taking abilities at pretest regardless of their assessed behavioral self control. This result suggests that some factor, perhaps the structure of rules and consequences for violating those rules that were part of the hospital treatment unit, were functioning as an external control of non self controlled behavior. If this was the case, the hospital's rules may have reinforced egocentric thinking (e.g., "What will happen to me if I don't follow rules?"). Paradoxically, this form of egocentrism constitutes an important form of social problem solving, i.e., consequential prediction. Somewhat supportive of this theory are the mean score results of the MEPS sub-tests. A non significant difference was established between the self controlled and non self controlled groups at pretest in the area of social problem solving. Nonetheless, the non self controlled group generated more relevant means to solving problems, fewer irrelevant means to solving problems, and a higher ratio of relevant means to irrelevant means than did the self controlled group. This effect may be an artifact of the external controls imposed by the hospital. These non self controlled children would have been more likely to have experienced the consequences of their non self controlled behavior than their self controlled counterparts. It then may be that the application of appropriate cognitive self control

skills was eclipsed by the more prominent external control features of the hospital. Locus of control may be a variable meriting further examination in future cognitive-behavioral self control research. External or environmental factors also could be assessed by comparing residential treatment milieu with out-patient treatment groups.

2. Exposure to the cognitive-behavioral self control training significantly increased social perspective taking at posttreatment and this improvement was maintained at follow-up. This finding suggests that these adolescents manifest some deficit in social perspective taking that could be remediated. This remediation could contribute to the improvement of interpersonal relations, thus reducing the felt isolation, estrangement, alienation, and loneliness that is pervasive in adolescence and exacerbated by psychiatric illness. In assessing the perspective of another prior to selection of behavior an individual could increase the probability of effective and rewarding interaction.
3. Exposure to the cognitive-behavioral self control training seemed to qualitatively enhance the capacity to generate relevant means toward problem solving at posttreatment and this qualitative enhancement was preserved at follow-up. Though this MEPSTM finding approached significance (posttreatment, $p=.11$; follow-up, $p=.10$) it can only be identified as "suggestive" of a positive treatment effect. Shure and Spivack

(1972) found that emotionally disturbed children produced lower numbers of relevant means and additionally tended to limit their responses to pragmatic, impulsive, and aggressive means. This current data can be cautiously interpreted as supporting Shure and Spivack's findings and indicating a trend toward increased relevant means production as a result of treatment.

4. Non significant findings defined the impact of cognitive-behavioral self control training on social problem solving as revealed in the MEPS^{NM} and MEPS^{RR} results. There was a general tendency for both treatment and control groups to hold constant or reduce the number of responses to the MEPS stories. Kendall and Zupan (1981) also noted this trend and suggested that alternate forms of the MEPS be generated to inhibit the repeated exposure effect. In this study, the treatment group held rather steady in their production of relevant means, and no means. The impact of this stasis was to create a "ceiling effect" in terms of the relevancy ratio, as this ratio is expressed as a percentage it is not possible to perform better than 100% relevant means (expressed as the score 1.0). The treatment group thusly was not free to vary (except to perform regressively) and little significant statistical impact could be ascertained. The control group manifest a slight decrease in relevant means; a slight increase in irrelevant means; but essentially regressed in overall relevancy ratio. This regression can be accounted for by the effect of repeated exposure to

the same stimuli, low motivation to cooperate, and perhaps boredom. A qualitative analysis of the follow-up data can be construed as suggestive of a tendency toward improvement of social problem solving skills. It is apparent from Table 17 that the control group continued to produce irrelevant or inefficient problem solving means ($MEPS^{NM}$) through follow-up. In addition, the control group showed some deterioration in the relevancy ratio ($MEPS^{RR}$). Whereas the treatment group, at follow-up, produced no irrelevant or inefficient problem solving means and therefore earned a perfect relevancy ratio.

5. The impact of cognitive-behavioral self control training on the SCRS manifest as non significant differences from pretest to posttest, and from pretest to follow-up. Large between measures variation occurred primarily in the maximum values expressed by the teacher raters of the control group. Maximum value expressed at pretreatment was 207. The maximum value expressed at posttreatment was an astounding 143. A rebound at follow-up resulted in a expressed maximum value of 187. Conversely, treatment group maximum values ranged between 195 and 177. The effect of this phenomenon was to obscure any treatment impact that may have been ascertainable through data analysis of the SCRS. In addition it appeared that the teacher raters were utilizing the general behavior of the adolescents on the hospital unit as their reference point for rating, rather than following the direction on the SCRS rating form

which stipulates" . . . the underlined 4 in the center of each row represents where the average child would fall on this item." One would predict that hospitalized, psychiatrically impaired adolescents would tend to be rated as generally less self controlled than an "average" adolescent. Consequently an average score of > 4 would be predicted overall for each question posed to the raters. In fact, teacher raters gave control group members an average item score of 3.22 over all three measures. Treatment group members were rated an average item score of 2.77. Future researchers are advised to focus upon training teacher/parent raters to insure more standardized response set.

6. Subject variables may have played a role in the outcome of this study. An important anomaly occurred as a result of random assignment of the S's to treatment or control groups. The control group was made up entirely of females and the treatment group entirely of males. A review of the literature reveals a dearth of substantive data which would suggest just what impact this segregation of gender may have. Additionally, the females of the control group were on the average older than the males in the treatment group (Mean Age- T = 14.6; C = 15.8). These age and gender differences may have implications regarding developmental level. If it is assumed that the females of the study manifest the developmental precocity typical of adolescent females when compared to their same age, male

counterparts, then the significant treatment effects and the qualitative trends become more robust. Cohen (1982) found that developmental level, as assessed from a Piagetian stage perspective, interacts with training in predicting treatment outcome.

7. The impact of intellectual capacity may be a variable that contributed to group differences. The control group displayed a range of IQ (WISC-R; Wechsler, 1974) from 80-95 (Mean $IQ_C = 85.8$, $SD = 5.76$) and the treatment group IQ's ranged from 87-118 (Mean $IQ_T = 96.2$, $SD = 12.44$). Intellectual capacity may operate much like the age factor, with higher IQ individuals responding to abstract or conceptual training and lower IQ individuals performing at a more concrete or pragmatic level. This is conjecture as to this study, as there is no data collected to support this hunch.
8. Of the treatment variables that differed between the treatment and control groups, one feature stands out and requires discussion. Both groups were carried out utilizing the same task materials. The only difference was that the treatment group was administered the cognitive-behavioral self control training. This training seemed to serve as a conceptual thread which tied all of the task components together into a coherent whole. The control group did not enjoy this underlying sensibleness and often found the task materials boring, dull and uninteresting. In fact, after the first control group

session, two of the participants quit because, "This is boring. I have better things to do!" It is possible that the control group's repeated exposure to what seemed to them to be "make-work" tasks may have generalized, resulting in their lackadaisical responses to the intermittent assessment tasks and depressing their responses.

Recommendations for Future Research

A number of recommendations for future research are suggested to address the phenomena of cognitive-behavioral self control training with hospitalized, psychiatrically impaired adolescents.

1. The design of this study could be strengthened in a duplication study with a larger N. Certain statistical significances could be determined that were compromised by the small N of this study. A series of duplication studies would further support the research hypotheses. The larger N recommended refers to more groups, not larger groups. Group size of 5-7 for training of this sort is optimal due to the level of involvement required of the therapist.
2. Studies should be undertaken to determine what impact subject variables such as sex, age, diagnostic classification, intellectual capacity, impact of psychotropic medication, locus of control, ethnicity, and socioeconomic level have upon the degree of change in the dependent variables assessed.
3. Studies should be undertaken to determine what impact treatment variables such as individual vs. group treatment, ethnicity/

age/sex of therapist, classroom/educational vs. therapy/psychological program orientation, in-patient vs. out-patient treatment, and duration of treatment, may have upon the degree of change in the dependent variables assessed. A longer follow-up period should be investigated.

4. This study would be strengthened through the use of dependent measures with reliable alternate forms in order to reduce the repeated exposure effect on response patterns to the assessments. Additional assessment instruments could be incorporated into future studies to test the validity of the measures.
5. This study is restricted in its generalizability since all participants were citizens of one southwestern state in the United States, and were all inpatients in the adolescent unit of the state hospital. Other ethnic, regional, and socio-economic factors should be assessed. Participants in this study were primarily Anglo, and middle to lower class. Similar studies should be conducted to evaluate the value and effectiveness of cognitive-behavioral self control training across the continuum of demographic variables.
6. A duplication study should be conducted in which the person(s) conducting the assessments does not participate in conducting the cognitive-behavioral self control training. This dual role played by a researcher may confound data collection through biased scoring or even influence the responses of the subjects to assessment items.

7. Research to date has generally adopted the view that children with problems of adjustment, broadly conceived, have cognitive deficiencies; however, there is no consensus relating specific cognitive deficiencies to particular types of clinical dysfunction. It would be helpful if a pattern of specific cognitive deficiencies could be identified to particular dysfunctions. Treatment directed to a particular clinical problem may need to emphasize specific cognitive processes as a function of developmental level, specific cognitive deficiency, and clinical dysfunction.

Closing Remarks

This study has addressed the contention that hospitalized, psychiatrically impaired adolescents manifest deficiencies in cognition and behavioral control that can be remediated through a course of cognitive-behavioral self control training. The findings of this study have suggested that this population did indeed exhibit a range of self controlled and non self controlled behaviors. Also, there was evidence that cognitive skills such as social perspective taking and social problem solving varied widely throughout the groups, but that overall a general deficit in those cognitive skills existed. Results from the assessment of treatment outcomes showed that there was a significant increase in social perspective taking in the treatment group when compared to the control group, and that this increase generalized to a period one month posttreatment. Additionally, there was a trend toward improvement in the realm of social problem solving that was suggestive

of the potential impact of cognitive-behavioral self control training with this population in other cognitive skill areas. Finally, no significant impact on increased behavioral self control was ascertained as a result of this study. Recommendations for future studies were discussed.

APPENDIX A

RESEARCH PARTICIPATION CONSENT FORM



ARIZONA DEPARTMENT OF HEALTH SERVICES

BRUCE BABBITT, Governor
LLOYD F. NOVICK, M.D., M.P.H., Director

RESEARCH PARTICIPATION CONSENT FORM

As you may know, Arizona State Hospital (ASH) participates in a number of psychological research projects from time to time. The Adolescent Treatment Unit (ATU) of ASH is currently involved in one such project and you are being invited to give consent for your child, _____, to participate. The project is being conducted by Dennis Elias, M.C., a doctoral candidate in Counseling Psychology at the University of Arizona. We will be running a series of special groups in which the children will be involved in small group discussion, learning exercises, and other cooperative group activities. The goal of the group will be to discuss ways that people communicate with their peers and ways of getting along better with others.

The group will meet three times a week for 4 weeks, starting on _____. Each meeting will last about 50 minutes. The group activities will include problem solving games (to learn to stop, think and plan ahead), in order to reduce impulsive behavioral choices. Also, they'll be learning about determining the consequences of their actions. The staff has selected your child for participation and feel that he/she would benefit from improving thinking and communication skills. We think the project is interesting and would be valuable and fun for the children. The children will also have the opportunity to earn a few dollars for their participation. Since there are only a limited number of groups, not all children may be able to participate. If you are willing to include your child in the project, we would like you to sign this consent form where indicated below. You would be free to withdraw your child from the project at any time if you wished to do so. Also, your child may withdraw if he/she wished to do so. Your child's participation is in addition to

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his/her regular prescribed treatment program and will not affect this treatment in any way. An anonymous audio tape record of the group will be made to monitor the events for research purposes. Your child's name will not appear on any records and the write-up of the project will not mention the names of any individual children.

We believe that this research project represents an exciting and promising new approach to helping troubled children to think before they act. Your consent can help us to assist your child and pave the way to more effective treatment for other troubled youths. We appreciate your interest!

If you have any questions, or would like more information, please feel free to give us a call at _____.

PLEASE RETURN THIS FORM IN THE ENCLOSED STAMPED, SELF-ADDRESSED ENVELOPE AS SOON AS POSSIBLE. THANK YOU VERY MUCH!

Sincerely,

Dennis Elias, M.C.
Project Director

Dick Miller, Ph.D.
Psychologist
Adolescent Treatment Unit

YES I give consent for my child to participate.

SIGNATURE OF PARENT/GUARDIAN _____

YES I give my consent to participate.

SIGNATURE OF PARTICIPANT _____

APPENDIX B

SELF CONTROL RATING SCALE
(SCRS)

ASSESSMENT ISSUES AND PROCEDURES

FIGURE 4-1. Self-Control Rating Scale. © 1979, Philip C. Kendall, PhD

Name of Child _____ Grade _____
 Rater _____

Please rate this child according to the descriptions below by circling the appropriate number. The underlined 4 in the center of each row represents where the average child would fall on this item. Please do not hesitate to use the entire range of possible ratings.

- When the child promises to do something, can you count on him/her to do it?
 1 2 3 4 5 6 7
 always never
- Does the child butt into games or activities even when he/she hasn't been invited?
 1 2 3 4 5 6 7
 never often
- Can the child deliberately calm down when he/she is excited or all wound up?
 1 2 3 4 5 6 7
 yes no
- Is the quality of the child's work all about the same or does it vary a lot?
 1 2 3 4 5 6 7
 same varies
- Does the child work for long-range goals?
 1 2 3 4 5 6 7
 yes no
- When the child asks a question, does he/she wait for an answer, or jump to something else (e.g., a new question) before waiting for an answer?
 1 2 3 4 5 6 7
 waits jumps
- Does the child interrupt inappropriately in conversations with peers, or wait his/her turn to speak?
 1 2 3 4 5 6 7
 waits interrupts
- Does the child stick to what he/she is doing until he/she is finished with it?
 1 2 3 4 5 6 7
 yes no
- Does the child follow the instructions of responsible adults?
 1 2 3 4 5 6 7
 always never
- Does the child have to have everything right away?
 1 2 3 4 5 6 7
 no yes
- When the child has to wait in line, does he/she do so patiently?
 1 2 3 4 5 6 7
 yes no
- Does the child sit still?
 1 2 3 4 5 6 7
 yes no
- Can the child follow suggestions of others in group projects, or does he/she insist on imposing his/her own ideas?
 1 2 3 4 5 6 7
 able to follow imposes
- Does the child have to be reminded several times to do something before he/she does it?
 1 2 3 4 5 6 7
 never always

ASSESSMENT ISSUES AND PROCEDURES

FIGURE 4-1 (Continued)

- When reprimanded, does the child answer back inappropriately?
 1 2 3 4 5 6 7
 never always
- Is the child accident-prone?
 1 2 3 4 5 6 7
 no yes
- Does the child neglect or forget regular chores or tasks?
 1 2 3 4 5 6 7
 never always
- Are there days when the child seems incapable of settling down to work?
 1 2 3 4 5 6 7
 never often
- Would the child more likely grab a smaller toy today or wait for a larger toy tomorrow, if given the choice?
 1 2 3 4 5 6 7
 wait grab
- Does the child grab for the belongings of others?
 1 2 3 4 5 6 7
 never often
- Does the child bother others when they're trying to do things?
 1 2 3 4 5 6 7
 no yes
- Does the child break basic rules?
 1 2 3 4 5 6 7
 never always
- Does the child watch where he/she is going?
 1 2 3 4 5 6 7
 always never
- In answering questions, does the child give one thoughtful answer, or blurt out several answers all at once?
 1 2 3 4 5 6 7
 one answer several
- Is the child easily distracted from his/her work or chores?
 1 2 3 4 5 6 7
 no yes
- Would you describe this child more as careful or careless?
 1 2 3 4 5 6 7
 careful careless
- Does the child play well with peers (follow rules, wait turn, cooperate)?
 1 2 3 4 5 6 7
 yes no
- Does the child jump or switch from activity to activity rather than sticking to one thing at a time?
 1 2 3 4 5 6 7
 sticks to one switches
- If a task is at first too difficult for the child, will he/she get frustrated and quit, or first seek help with the problem?
 1 2 3 4 5 6 7
 seek help quit
- Does the child disrupt games?
 1 2 3 4 5 6 7
 never often

(Continued)

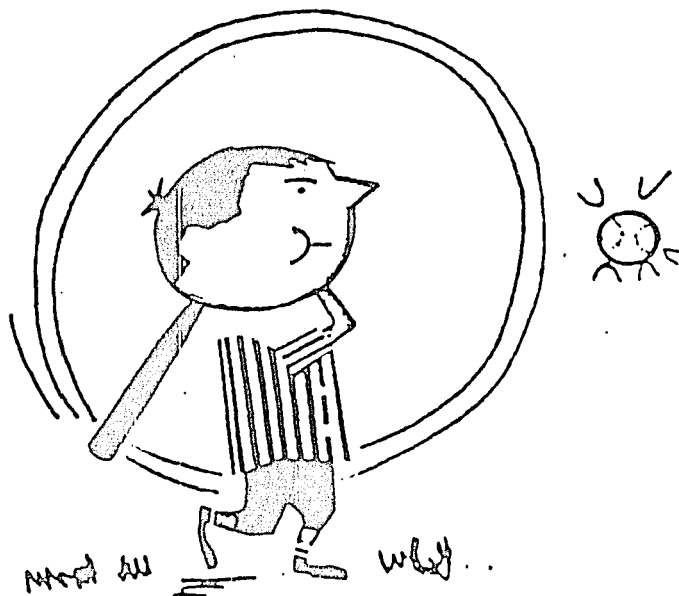
ASSESSMENT ISSUES AND PROCEDURES

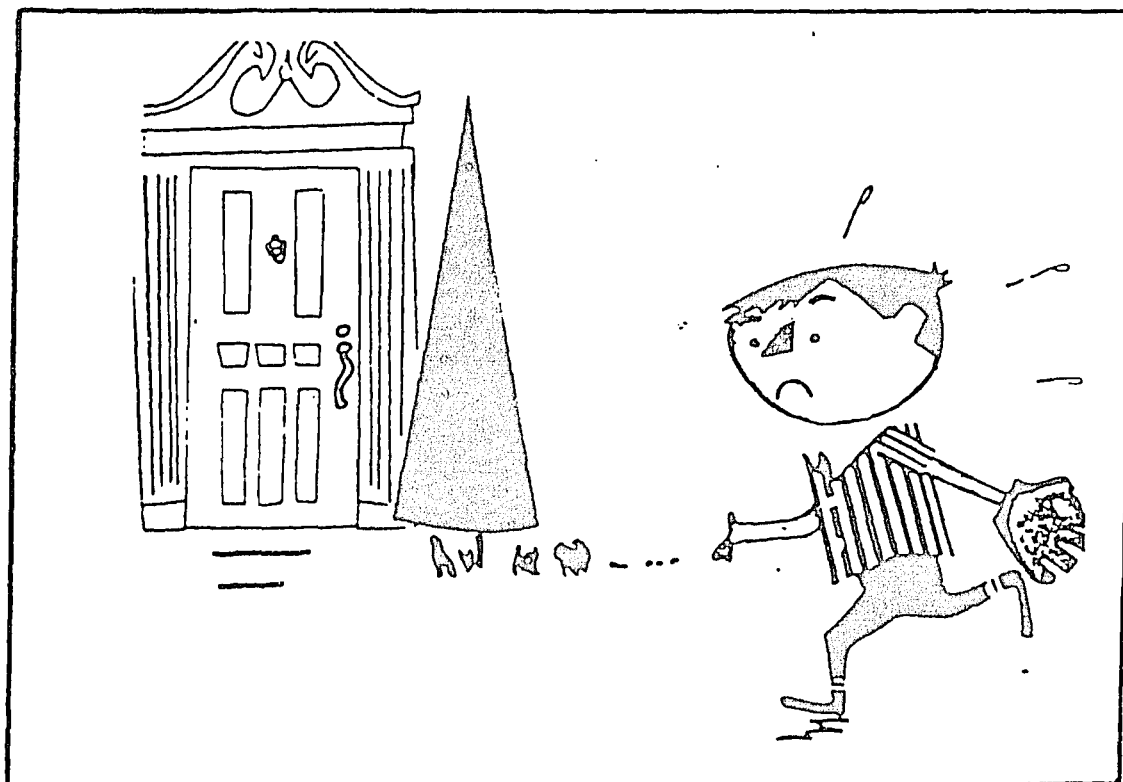
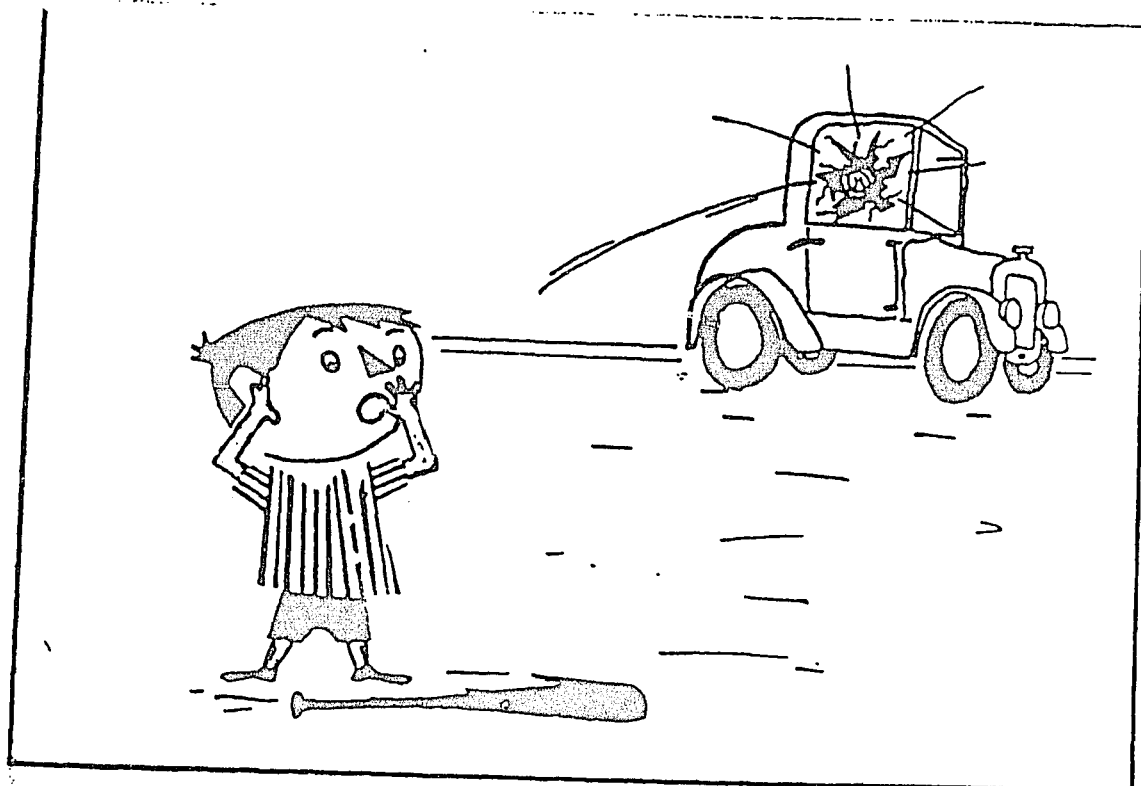
FIGURE 4-1 (Continued)

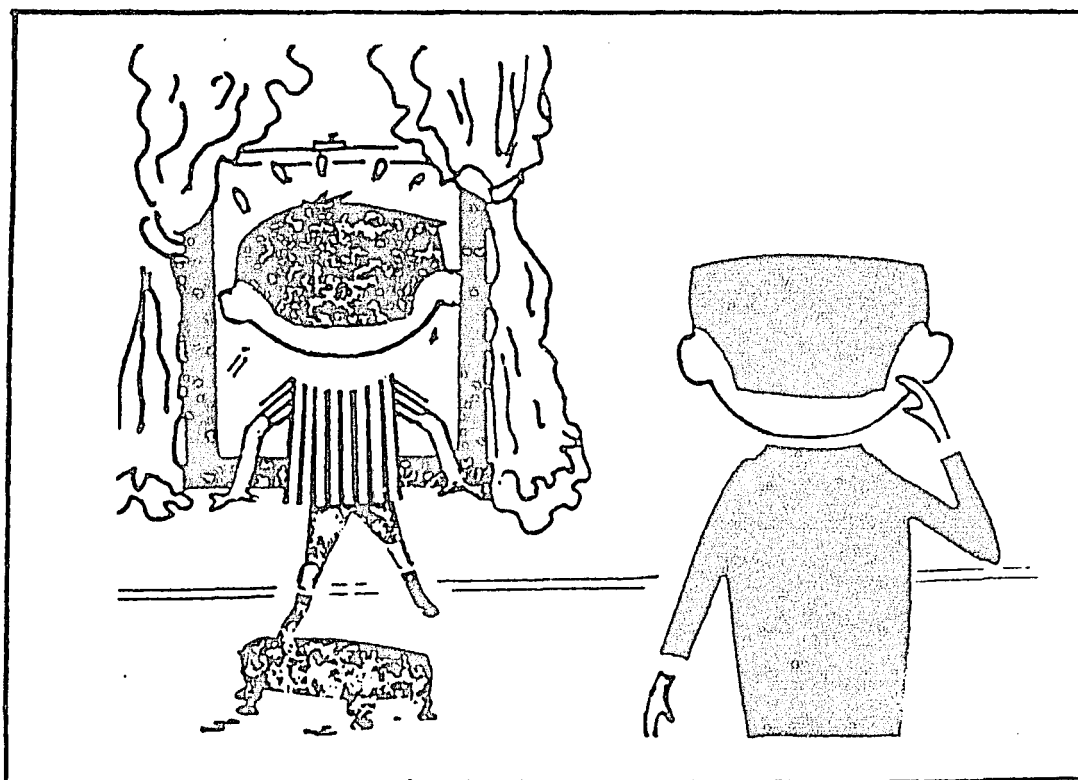
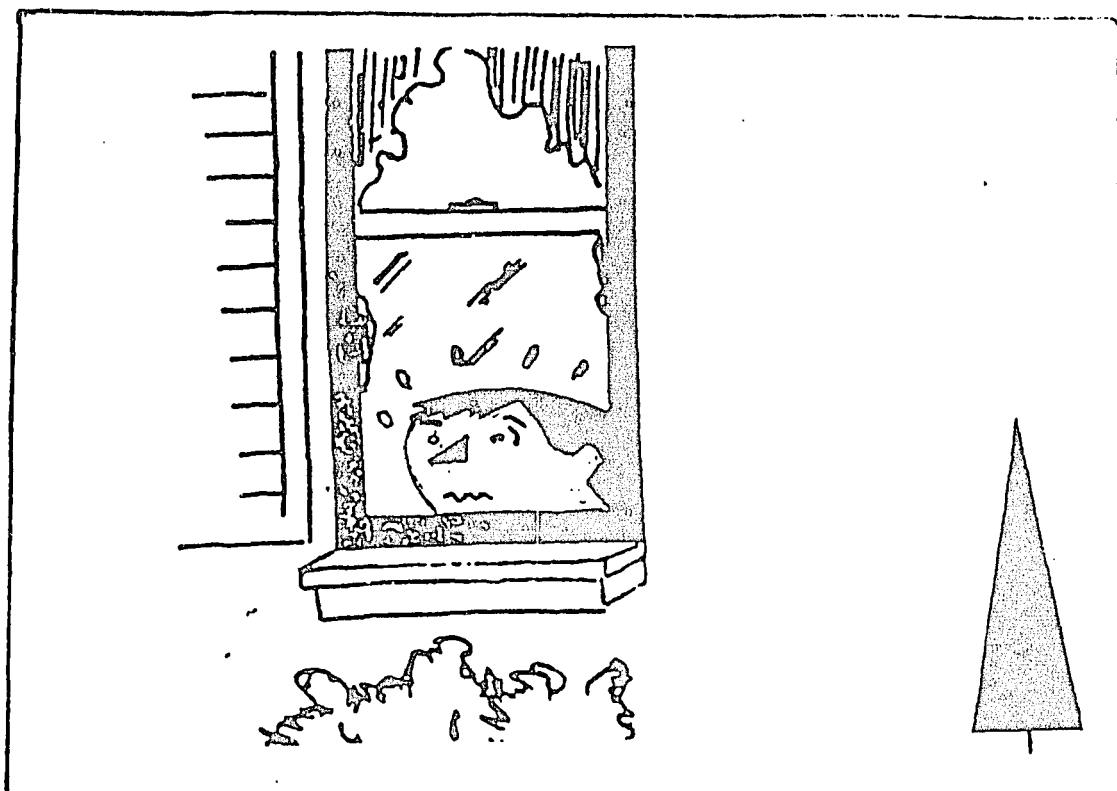
31. Does the child think before he/she acts?	1	2	3	<u>4</u>	5	6	7
	always						never
32. If the child paid more attention to his/her work, do you think he/she would do much better than at present?	1	2	3	<u>4</u>	5	6	7
	no						yes
33. Does the child do too many things at once, or does he/she concentrate on one thing at a time?	1	2	3	<u>4</u>	5	6	7
	one thing						too many

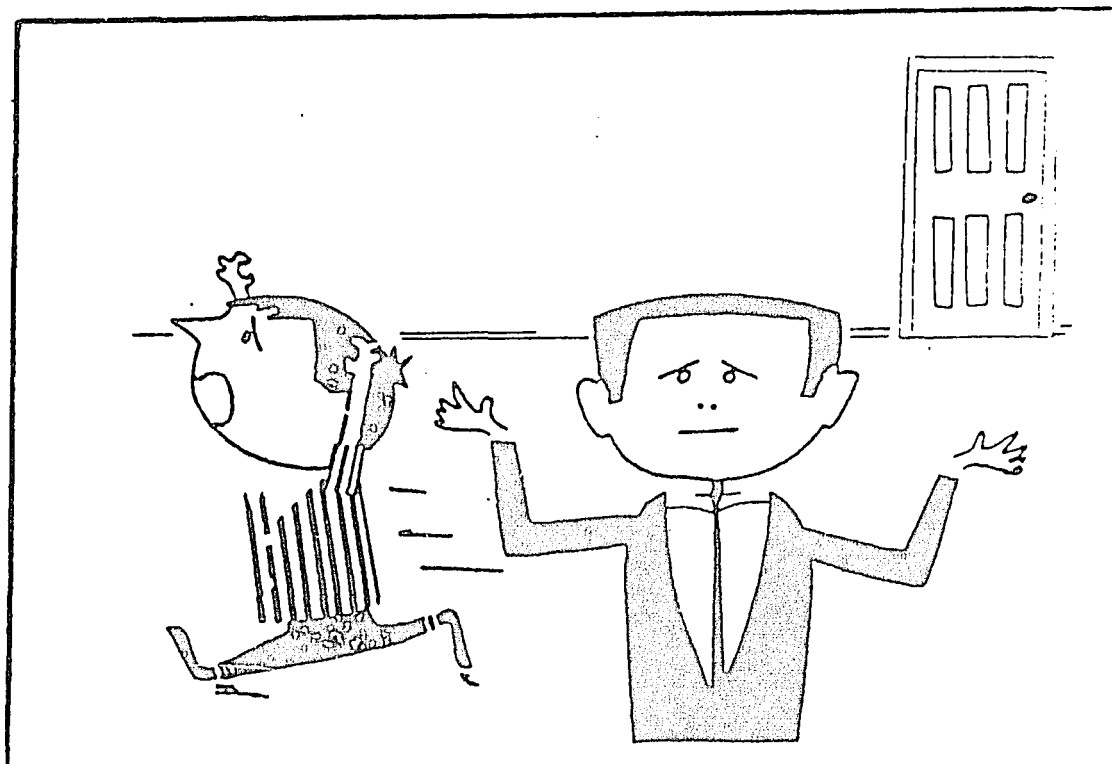
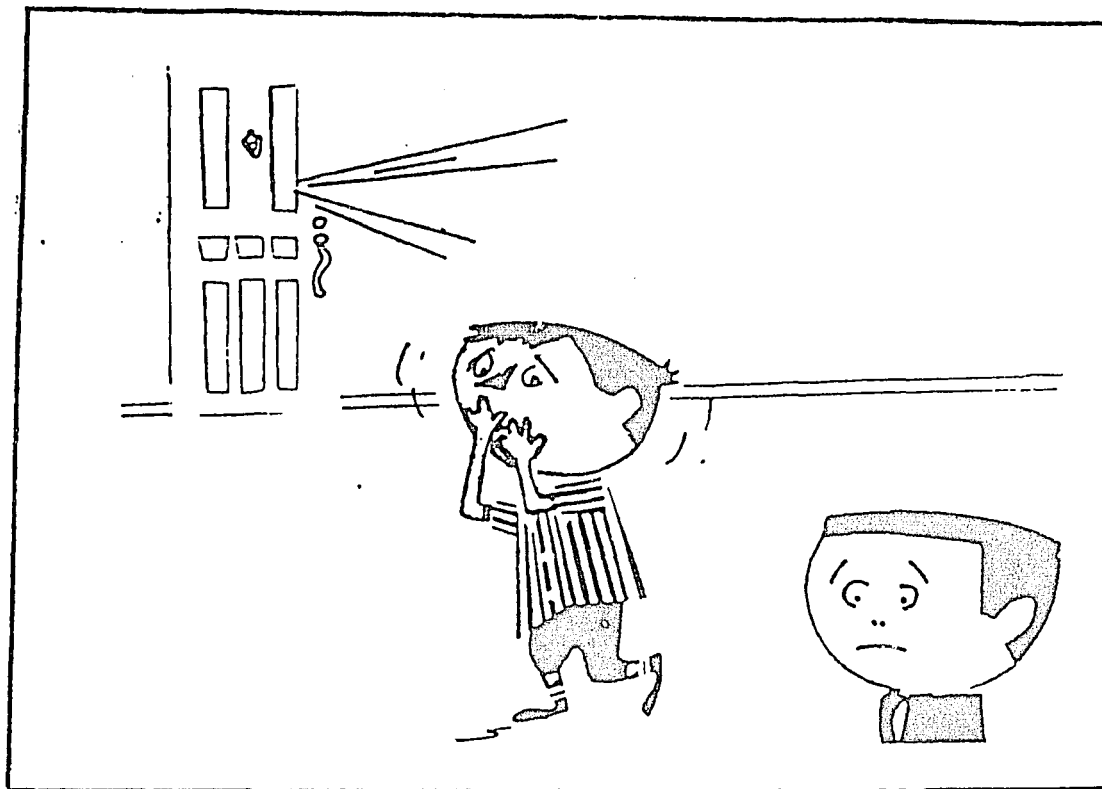
APPENDIX C

CHANDLER BYSTANDER CARTOONS
(CBC) SAMPLE









APPENDIX D

MEANS-ENDS PROBLEM SOLVING TEST
(SIX STORY ABBREVIATED FORM)
(MEPS)

Instructions

In this procedure we are interested in your imagination. You are to make up some stories. For each story you will be given the beginning of the story and how the story ends. Your job is to make up a story that connects the beginning that is given to you with the ending given you. In order words, you will make up the middle of the story.

1. H. loved his girlfriend very much, but they had many arguments. One day she left him. H. wanted things to be better. The story ends with everything fine between him and his girlfriend. You begin the story with his girlfriend leaving him after an argument.
2. Mr. P. came home after shopping and found that he had lost his watch. He was very upset about it. The story ends with Mr. P. finding his watch and feeling good about it. You begin the story where Mr. P. found that he had lost his watch.
3. Mr. C. had just moved in that day and didn't know anyone. Mr. C. wanted to have friends in the neighborhood. The story ends with Mr. C. having many good friends and feeling at home in the neighborhood. You begin the story with Mr. C. in his room immediately after arriving in the neighborhood.

4. Bob needed money badly. The story begins one day when he notices a valuable diamond in a shop window. Bob decides to steal it. The story ends when he succeeds in stealing the diamond. You begin when he sees the diamond.

5. John noticed that his friends seems to be avoiding him. John wanted to have friends and be liked. The story ends when John's friends like him again. You begin where he first notices his friends avoiding him.

6. One day George was standing around with some other people when one of them said something very nasty to George. George got very mad. George got so mad he decided to get even with the other person. The story ends with George happy because he got even. You begin the story when George decided to get even.

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