Hyperactivity: The problem, a review of treatments and a proposal for a modified cognitive behavioral intervention

Michael J. Schulein

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HYPERACTIVITY: THE PROBLEM, A REVIEW OF TREATMENTS AND A PROPOSAL FOR A MODIFIED COGNITIVE BEHAVIORAL INTERVENTION

By

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B.A., Gonzaga University, 1978

Presented in partial fulfillment of the requirements for the degree of
Master of Arts
UNIVERSITY OF MONTANA
1981

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Date 9-21-81
The purpose of the present study was to examine the effectiveness of a self-instruction intervention with three moderately impulsive and hyperactive children. Recent studies (Campbell & Douglas, 1971; Hoy, Weiss, Minde & Cohen, 1976; Weiss, Minde & Cohen, 1971) indicate that hyperactive children have short-term and long-term difficulties. Short-term problems are based upon overactivity, while long-term problems consist of sustained attention and stimulus-processing deficits. Drug and behavioral treatments were found to focus on short-term problems while long-term problems were not treated.

More recently, Meichenbaum and Goodman (1971) employed self-instruction training in a cognitive intervention which focused on sustained attention and stimulus processing weaknesses. Since that time other researchers have attempted to demonstrate the efficacy of self-instructional treatments with hyperactive children. However, these studies have been faulted (Abikoff, 1979; Kendall, 1979; Meichenbaum, 1979) for 1) use of analogue populations; 2) use of analogue assessment measures; 3) over-reliance on rating scale data; 4) minimal follow up; 5) weak generalization and maintenance.

The present study attempted to modify the content of the self-instructional treatment so as to more accurately reflect each child's experiences and problems. Problem-solving skills and a focus on each child's metacognitions (Meichenbaum, 1979) were included. In addition, a response-cost program was implemented with two children one week after the self-instruction phase. Children were assessed by classroom observations, rating scales, academic performance and additional ancillary measures. Post treatment observation and rating scale data demonstrated moderate improvements for all subjects. Follow-up data is currently being collected with preliminary analysis suggesting some weakening and loss of consistency in effects. Results are discussed as indicating possible selection variables for similar interventions. The negative side effects of training session stimulation are discussed along with the possible role self-instruction may play in a total intervention package including drug and behavioral treatments.
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HYPERACTIVITY: THE PROBLEM, A REVIEW OF TREATMENTS AND A PROPOSAL FOR A MODIFIED COGNITIVE BEHAVIORAL INTERVENTION

CHAPTER ONE

HYPERACTIVITY: THE PROBLEM

INTRODUCTION

Hyperactivity: This disorder is characterized by overactivity, restlessness, distractibility, and short attention span, especially in young children. This behavior usually diminishes in adolescence. DSM II.

A definition of hyperactivity is much like a definition of light. We all know what light is. Yet, when we sit down and try to write a specific definition, we find it difficult to express our understanding in words. For the lay person, such a situation is nothing more than an inconvenience as the lay person has no real need to define light. The scientist, on the other hand, requires a precise definition of the term light. The scientist working with light needs to know exactly what light is and what characteristics it has. The strength of the definition directly relates to the type of work that the scientist does or envisions doing. Likewise, for the psychologist, the definition of a disorder will relate to the quality and type of research and treatment that is conducted. In addition to fostering channels for psychologists to work in, the extent of the understanding of the disorder is exemplified by its definition. Both of these considerations speak poorly, but accurately of our understanding of hyperactivity.

Hyperactivity or hyperkinesis is a poorly understood and poorly conceptualized phenomenon. The hyperactivity classification was rarely used prior to the late 1950s and early 1960s. Given the weakness of the present definition and lack of understanding of the phenomenon, it is more appropriate to deal with hyperactivity through a functional analysis.
This paper will focus on research findings, behavior, and other observable phenomenon in an effort to avoid paths that may be artificially narrow and possibly inaccurate.

CAUSES

The data on causes and mechanisms of hyperactivity are very mixed and confused. This confusion leads to a general conclusion that we do not know, with any certainty, the causes or mechanisms by which hyperactivity occurs. Damage to the hypothalamus and to the frontal lobes is known to cause hyperactivity in animals and adult patients having undergone neurosurgical procedures (Millichap, 1975). Encephalitis is also known to lead to hyperactivity (Laufer & Shetty, 1975). Children with lead encephalopathy have been found to be very impulsive and hyperactive (Laufer & Shetty, 1975). Some research suggests that an imbalance of the reticular activating system may be a pathophysiological source of hyperactive behavior (Millichap, 1975). A genetic factor is thought to be present in many cases. Genetic causes are suggested by findings that show hyperactive children have a greater likelihood of having parents and relatives who were hyperactive (Leufer & Shetty, 1975). Further, twin studies have shown 100% concordance for monozygotic twins (Laufer & Shetty, 1975). In addition to these possible causes, social and emotional deprivation during development seems to predispose some children to hyperactive behavior (Laufer & Shetty, 1975).

Research with causality has been focused on noting which definable problems, biogenic and psychogenic, are often associated with hyperactivity. This elementary approach to etiological research suggests
three conclusions. First, we do not know much about the exact etiology of hyperactivity. Second, we dare not focus on any one possible cause as the sole etiology. Third, at this time, clinical treatments need to focus on the observable, definable, and provable problematic features of hyperactivity and not on unknown or untested suspected causes.

Given the inadequacy of any one definition of hyperactivity, a review of common clinical features of children thought to be hyperactive may be a superior way to define the disorder.

PHENOMENOLOGICAL DESCRIPTION

In general, the most appropriate way to determine that a child is hyperactive is by reviewing his or her developmental history from birth to the time of referral. It is very common for the hyperactive child, as an infant, to be unusually active in the crib. The infant will tend to get into everything and excessively handle any and all objects. Generally, high levels of activity will be a hallmark of the child as he or she continues to grow. Typically, these children will stand out because of unusually higher levels of activity. Although for some hyperactive children, the level of activity is not so much the salient feature as is the consistency and persistence of the activity.

Compared to other children of the same age, the hyperactive child will usually have a shorter attention span and be more easily distracted. A need to handle and finger things may be present. These children are frequently explosively irritable and their mood and performance are apt to be very unpredictable and variable (Laufer & Shetty, 1975).
In school settings, hyperactive children are characterized by "excessive movement, unpredictable behaviors, unawareness of consequences, inability to focus on and concentrate on a particular task, and poor academic achievement" (Ayllon, Layman & Kandell, 1975). Not all the characteristics described above are always seen together. In some cases only a few of the typical behaviors may be present. If this is the case, it is thought that distractibility is usually one of the core behaviors present.

The child's impulsivity and constant movement may both create and intensify difficulties in a circular way. Because of the child's impulsivity and overactivity, the child will most likely perform poorly and unacceptably. This difficulty commonly leads to criticism and pressures which the child is already unable to deal with given the nature of his or her problem. "Such children are prone to develop almost any kind of psychiatric disability in response to those special problems and to the normal needs for adjustment required in the process of psychological-sexual-social maturation" (Laufer & Shetty, 1975). One common response to this is negative self-concept. Negative self-concept is a common feature of a child's reaction to his or her hyperactivity. This negative self-evaluation may stem from an acknowledgement that he or she "is not right."

The Comprehensive Textbook of Psychiatry, 1975, outlines the effects of a child's hyperactivity on others:

The fact that other children grow out of this kind of behavior and that the hyperkinetic child does not grow out of it at the same time and rate, that variability of performance, the temporary response to pressures, the fact that in
most cases the child is not retarded, and has 'no excuse for his behavior,' the general nuisance value and inexplicable- bility of the behavior—all may lead to adult dissatisfaction and pressures. (p. 2204)

Frustration, with fluctuations from anger to sympathy, is frequently found in the parents of a hyperactive child.

DEMOGRAPHICS

Given the imprecision of any definition of hyperactivity, statistics on the prevalence of the problem should be viewed as only general suggestions of the magnitude of the problem. Data concerning occurrence of hyperactivity vary from a low of an estimated 4% of grade school children in St. Louis to a high of 15-20% of grade school children in Montgomery County, Maryland (Masland, 1965). The most common figure cited for the occurrence of hyperactivity is that of 10% of the U.S. school population (Masland, 1965). These variations in percentiles may reflect criterion differences in diagnosis rather than actual geographic distribution of the condition. Coleman (1976) suggests that in 1976, two million children were diagnosed as hyperactive. In 1974, 850,000 to 975,000 patient visits were made to private physicians involving prescriptions for hyperactive behavior (Schrag & Divoky, 1975). Grinspoon and Singer (1973) estimate that some 200,000 school children receive medication for the treatment of hyperactivity.

As far as incidence by sex is concerned, hyperactivity is a male-dominated disorder with the ratio of males to females ranging from a low of three to one (Paine, Werry & Quay, 1968) to a high of nine to one (Werry, 1968).
Of greater importance regarding the rate of occurrence of hyperactivity is the fact that of clinical referrals for psychological problems for children, 50% in university clinics and 50-65% in country clinics are referred for hyperactivity (Laufer & Shetty, 1975). Kendall (1978) notes that hyperactivity and especially the impulsivity associated with it are the most common behavioral problems leading to children being referred to mental health facilities. Thus, for the clinician who works with children, hyperactivity is an extremely high base-rate phenomenon.

LONG-TERM EFFECTS OF HYPERACTIVITY

Regarding the course of hyperactivity, hyperactivity is thought to be present from infancy on, and it is thought that it runs its course and "burns out" by early adolescence or when the child reaches sexual maturity. Consequently, treatment has been focused on solving the readily visible problems which the hyperactive child has prior to adolescence with the expectation that once puberty is reached, the hyperactivity and its concomitant problems, will disappear. Support for the belief that hyperactive symptoms fade out comes from Weiss, Minde, Werry, Douglas and Nemeth (1971). They found that the general activity level of the hyperactive group decreased from initial referral during childhood to follow up at adolescence. Other researchers found similar results in earlier studies (Laufer & Denhoff, 1957; Lytton & Knobel, 1958). These studies helped mold treatment considerations to focus on current problems without consideration for long-term difficulties.
This narrow approach to treating hyperactivity relates back to and is aided by an inadequate definition of the problem.

More recent investigations indicate that hyperactive children at adolescence still have significant educational, emotional, and social problems. Improvement is noted in symptoms of overactivity that the earlier intervention programs dealt with, but not in the areas not viewed as part of the hyperactive syndrome (Hoy, Weiss, Minde & Cohen, 1976; Mendelson, Johnson & Stewart, 1971; Minde, Weiss & Mendelson, 1972; Weiss, Minde, Werry, et al. 1971). "Academic underachievement, low self-esteem, and anti-social behavior would appear to be common characteristics of hyperactive children at adolescence" (Schrag & Divoky, 1975).

In contradiction to earlier thought, hyperactivity is not a problem that ends at adolescence. The high activity levels which are often viewed as the only problem of hyperactive children, may fade out at adolescence. However, a host of severe problems continue on, having been deeply engraved during earlier years when only the hyperactivity per se was dealt with by medical or behavioral interventions. Hoy, Weiss, Minde and Cohen (1976) concluded:

In contrast to earlier reports claiming that hyperactive children 'outgrow their symptoms,' more recent studies suggest that at adolescence these children still have serious educational, emotional, and social problems despite some improvement in their target symptoms.

At this point, hyperactivity has been briefly reviewed with attention given to definitions, etiology, manifestations of hyperactivity, characteristics, and long-term consequences. We will now move
into an explanation of an evolving criteria for use in selecting the most appropriate treatment for hyperactivity.

A DECISION-MAKING PROCESS

Suppose you wished to fasten two pieces of wood together in the course of building a porch. Your choices may be to use glue, screws, or nails. You decide to use nails as they are the easiest and least expensive of the options that fit your purpose. After having nailed the two pieces of wood together you happen to remember that you will need to detach and reattach those two pieces of wood at various times to allow increased access to the porch. Now, nailing the two pieces of wood together was not the best approach as it does not meet the expected future needs. Given this new information regarding future needs or uses, the use of screws might have been the best option. In fact, by having used nails we now risk damaging the wood when we take the two pieces apart. In addition we will then have to start over using screws.

What happened here is as follows. Initially, a choice was made based solely on current needs and information. When information about future needs was acquired, the first choice was shown to be a poor one. If, when the decision was originally made, the builder had not only matched the method to the current needs, but had also matched the method to the future needs, then the best choice would have been made. In this case, the choice would have been to use screws from the beginning.

While this analogy may appear simplistic, it serves to focus on the requirements of a comprehensive decision-making process. In any decision-making process, and especially in one where something is being
chosen that will have a long-lasting effect, we are trying to match the need or situation with the best option available. The need should be based on the current situation and on the expected need or situation. The adequacy of any chosen course of action will be improved when that action is based on the current need and the expected future situation.

This approach applies directly to psychotherapy. In any psychopathology, there is a present situation and there will be a future situation. The present situation includes all those events or problems occurring at the time of the primary intervention. The future situation includes events or problems that occur or are likely to occur as the pathology progresses and evolves after termination of the intervention. The best treatment choice will probably be the one that can best deal with current problems while also preparing the person to deal with future problems or best avoid them.

For example, when working with a person to overcome his anxieties in meeting new people, intervention should not only focus on aiding the client to approach and greet others, but should also include help in conversation skills. The present need is to be able to greet new people, but the future situation will be that once the client greets someone, chances are the other person will converse with him. Therefore, treatment must be aimed at the expected problem as well as the current problem. Here, it may be the client's lack of adequate conversation skills that leads him to fear greeting others. In this case, knowledge of the future problem may actually shed light on the nature of the current difficulty. Table 1 provides components of poor and good decision making.
Table 1. Decision-making process.

POOR
Past events + current situation = Foundation for decision

BETTER
Past events + current situation + anticipated events, stressors, typical outcomes, needs = Foundation for decision

This idea is similar to that of an analysis of behavior. A behavioral analysis focuses on antecedents, responses (behaviors) and consequences. Knowledge of the behaviors (responses) is most easily obtained as it is what usually prompts the clinical referral. Knowledge about the antecedents and consequences is not so easily determined. That information has to be searched for and carefully investigated. The effort involved in such an investigation is justified as understanding the antecedents and consequences often helps explain why a behavior is being emitted, and it also may point to more efficient ways of altering the behaviors.

In a decision-making model, future situations or needs are similar to consequences in a behavioral analysis. Behavioral analysis can be used with one modification. The dimension is changed from one of specific responses to that of presence of the disorder. That is, antecedents are now considered to be those events that occur prior to the full expression of the disorder (behavior) and the consequences are considered to be those events that occur after termination of the disorder. Table 2 demonstrates the behavioral analysis from this perspective.
Table 2. Behavioral analysis of a psychopathology.

antecedent + behavior + consequence  
(events/history prior) (the problem) (long-term effects, outcome)

As with the decision-making model, future problems or situations (consequences) may have important implications for choice of response intervention.

IMPLICATIONS FOR TREATMENT

The above ideas can be easily adapted to the problem of hyperactivity. The antecedents of hyperactivity may be associated with speculated causes that are still unclear. The behavior or response of hyperactivity is the period during which the disorder is in full manifestation. This is characterized by the clinical features that are described earlier, typically from ages 0 through 12. The consequences are those features that exist when the overactivity diminishes, usually in adolescence. As far as hyperactivity is concerned, we have much information on the current problems, no factual information on specific antecedents and only recently have we obtained empirical information on consequences. Table 3 places this material in perspective.

Table 3. Behavioral analysis of hyperactivity.

Antecedents = Speculated causes, developmental history +
Behaviors = Those behaviors seen when the child is normally thought to be hyperactive +
Consequences = Impulsivity, problem-solving deficits, and those problems found at and past puberty
Logically then, any intervention programs conceived prior to accumulation of information regarding the consequences of hyperactivity cannot have taken into account those consequences in their treatment. Thus, those intervention programs were devised or decided upon as being the most appropriate for the treatment of hyperactivity based solely on the on-going behavior of the hyperactive child.

Given the implications arrived at by the decision-making model and the behavioral analysis, one would question the adequacy of interventions decided upon prior to the availability of knowledge of the consequences of hyperactivity.

Chemotherapy and forms of behavior therapy are two types of intervention strategies that were developed prior to knowledge of the consequences of hyperactivity. Based on this observation alone, one might doubt the adequacy of either intervention. However, even though these two approaches focused solely on response (on-going behaviors) stages of hyperactivity, they may still be adequate and totally appropriate if the following upheld:

1. There are no negative or problematic consequences once the hyperactivity per se has "burnt out."

2. The consequences are not different from problems that occurred during the response (behavior) phase.

3. The overactivity of the hyperactive child did not mask any subtle problems which might underlie the whole etiology of the disorder and are now more salient with the cessation of the overactivity.
It is immediately clear that the first assumption is incorrect. There are very definite problematic consequences following a hyperactive child's maturation. The recent longitudinal studies following hyperactive children into adolescence demonstrate the negative outcomes. Hoy, Weiss, Minde and Cohen (1976) concluded in an extensive longitudinal study of hyperactives matched against controls that, "Despite some amelioration in their activity level, it is evident from the present data that the hyperactives at adolescence still have cognitive, emotional, and social difficulties." (p. 322)

The second assumption is probably true. The difficulties that remain after the behavior (overactivity) subsides are probably difficulties that were present during the response (behavior) phase. However, as far as chemotherapy and earlier behavior therapy interventions are concerned, it might be better if this assumption of problem continuity were false. The fact that the major consequences could be continuations of problems that were present during the response phase suggests first that hyperactivity is more than a problem of elevated energy levels and second, it suggests that the interventions used were not helpful in resolving the problems but only aided in making the children more manageable. This indicates that the third assumption of core problems being hidden by gross overactivity is exactly what happened.

The third assumption provides a superb example of the superiority of the suggested decision-making process using a variation of behavioral analysis in determining appropriate intervention and target behaviors. With the use of this system, knowledge of specific consequence behaviors may lead to increased understanding of the problem and selection of an
appropriate therapy for intervention at the response stage. Consequence analysis is now serving to modify our focus on hyperactivity from one of overactivity to one focused on stimulus-processing and sustained attention deficits.

It must certainly be admitted at this point that the study of consequences does not directly suggest a determination of cause and effect between cognitive deficits and overactivity. A spokesman for chemotherapy or earlier forms of behavior therapy may suggest that overactivity causes the cognitive problems. However, if cognitive deficits are a reaction to overactivity and the intervention that has been used is successful in treating the overactivity, then why does the consequence data continue to show the same cognitive deficits at adolescence?

At this point, we have examined the role of decision-making with a behavioral analysis in the explanation of maladjusted behavior and in the selection of the most appropriate intervention. What follows is a review of current popular treatments for hyperactivity. Each treatment will be reviewed in terms of what it is, its main effects, its problems and its compatibility with the above criteria for choosing the best intervention.
CHAPTER TWO

STANDARD TREATMENTS

CHEMOTHERAPY

Perhaps the most commonly known treatment for hyperactivity is chemotherapy. Central nervous system stimulants are the mainstay of chemotherapy with hyperactive children. Knowledge of paradoxical reactions in some children to amphetamines or other stimulants has been available since the 1930s as a result of some findings with psychiatric in-patient populations (Bradley, 1937). However, it was only with the creation of the hyperactivity classification and its growth that chemotherapy came to be used with such children. Schrag and Divoky (1975) note:

In the mid-1960s no more than a handful of children were taking psychoactive drugs for learning disability or hyperactivity; since then, according to all available estimates, the number has doubled every two or three years (so that) by 1975 between 500,000 and 1,000,000 U.S. kids and adolescents were taking amphetamine-type drugs and other psychostimulants by prescription. By the end of 1975 the number may exceed 1,000,000.

Three central nervous system stimulants have played a primary role in the pharmacological treatment. They are amphetamine sulfate (Benzedrine), dextroamphetamine sulfate (Dexedrine), and methylphenidate hydrochloride (Ritalin). Of these three, Ritalin is the most commonly used. In addition to the stimulants, various phenothiazines have been prescribed for hyperactive children who have high levels of anxiety. Thiordazine hydrochloride (Mellaril) is the most commonly
used drug from this group. Other drugs used with some success are chlorpromazine (Thorazine), chlordiazepoxide hydrochloride (Librium), imipramine hydrochloride (Tofranil), and lithium carbonate.

Somewhat of a second generation drug in the treatment of hyperactivity is pemoline (Cylert) which has been acquiring increasing attention since the early 1970s. It has similar properties to those of Ritalin with the advantage of being longer lasting, thus requiring fewer administrations. (See Schrag & Divoky, 1975, for a review of the addition of Cylert to the market.)

Discussion of drugs will focus on the stimulants and especially on Ritalin as it is the most common pharmacological intervention.

In 1973 it was estimated that 200,000 children in the U.S. were receiving amphetamines to control their hyperactivity (Krippner, Silverman, Cavallo & Healy, 1973). That number is reported to be increasing significantly (Krager & Safer, 1975). Although no nation-wide survey of the prevalence of drug treatment has been conducted, several studies suggest that approximately 2% of children in elementary schools during the 1970s received medication for hyperactivity (Krager & Safer, 1975; Sprague & Sleator, 1973). Krager and Safer's study (1975) of medication for hyperactive children in Maryland County, Maryland, indicated at least a 48% increase in medication use for hyperactive children from 1971 to 1973. Krager and Safer concluded from their study that: 1) at least 300,000 U.S. children in elementary schools receive psychotropic drugs for hyperactivity, and 2) medication is becoming more widely used for hyperactivity.
The widespread use of drugs in the treatment of hyperactivity is based, in part, in a number of studies, usually conducted in the laboratory or classroom, that indicate medication leads to improved behavior and reduced impulsivity, "out of seat" behavior and overactivity (Denhoff, Davis & Hawkins, 1971; Hollis & Omer, 1972; Sprague, Barnes & Werry, 1970; Sykes, Douglas & Minde, 1971). For example, Comly (1971) found that of 40 hyperactive children, those who were given stimulants were rated by their teachers as having better listening ability, less excitability, less forgetfulness, and better peer relationships. In addition, global ratings by parents, teachers and clinicians suggest that several of the stimulants reduced children's hyperactivity (Conners, 1971).

LIMITATIONS OF CHEMOTHERAPY

Thus, clinical support exists for the use of medication in the treatment of hyperactivity. Note, however, that this justification is based on the assumption that the behaviors affected by medication are either focused on the issue of overactivity being primary to the problem or that a hyperactive child who is "successfully" treated with stimulant drugs will eventually acquire better skills because of the rewards he is given for his good behavior while on the drug.

Both of these assumptions beg to be validated by an examination of the consequences of hyperactivity with pharmacological interventions. However, recall that the drug treatments began prior to the availability of consequence information. Such consequence information is now available and must be examined to determine the validity of the two
assumptions underlying the use of medication.

Recall the consequence information for hyperactive children presented earlier. At the time of "burn out" of the overactivity, definite cognitive, social and emotional problems persisted. A comparison of the consequences of hyperactive children having had pharmacological treatment with the consequences of children without treatment will shed light on the appropriateness of medication. Dr. Gabrielle Weiss (Weiss, 1975) reviewed an excellent study by Sroufe and Stewart (1973) and found:

Sroufe and Stewart's doubts about the long range efficacy of the drugs were confirmed by the first long term study of the effects of Ritalin on hyperactive children. The study found no improvement among youngsters receiving the drug in comparison with those taking no medication. The children who had been treated with Ritalin for three to five years did no better than a carefully matched drug free group on a range of measures of academic performance, emotional development or delinquency.

Sroufe and Stewart (1973) themselves concluded, "The outlook for children treated primarily with drugs is relatively poor. In their teens, these children were still having trouble in their families, often behaving anti-socially, and presenting academic and behavioral problems in school."

Cunningham and Barkley (1978) concluded from an extensive review of the drug studies with hyperactive children, that as far as academic achievement is concerned, "Prolonged drug treatment has little, if any, effect on the long term adjustment of hyperactive children." In addition to drug treatment having marginal effects on academic, social and emotional adjustment at follow up, Abikoff (1979) notes that the maintenance of these effects is questionable. Abikoff reviewed drug
studies for treatment effects maintenance and concluded, "Maintenance of treatment gains has been disappointing following the withdrawal of stimulant medication with hyperactive children."

One might legitimately respond to such consequence data by noting that in this case, the results were poor because the intervention plan used in conjunction with medication was weak. The position taken here is that the use of stimulants makes it possible to treat those children with psychological and educational interventions. Laufer and Shetty (1975) emphatically stress the adjunctive nature of medical intervention for hyperactivity:

In evaluating the efficacy of medication, one should note some possible distortions. Both the child and parents may expect, by some kind of magic, that all behavioral problems will be erased and that, if they are not, the medication is not worthwhile. Although these medications may, in a most dramatic way, control the organically based hyperkinetic aspects, they do nothing directly for the emotionally based aspects. Professionals, parents, and children alike need to keep in mind that emotionally determined problems will not be solved by these medications.

With an adjunctive emphasis on the use of medication, the poor consequences might be shrugged off and blamed on the non-pharmacological aspects of the intervention used. However, medicinal intervention is actually used as a primary treatment modality and not as an adjunct. Schrag and Divoky (1975) note, with what is considered an under-representation of the facts, that "for roughly one of every ten children labeled 'hyperactive' or 'learning disabled' chemotherapy is the first line of treatment." This may be very understandable. For once the medication has suppressed the aversive hyperactive behavior, parents
and significant others may be so relieved that the remaining difficulties do not have sufficient impact to push the adults to pursue further treatment for the child. Given the dramatic positive affects those drugs have on hyperactive children, adults may be easily, yet mistakingly, led to believe that the medication has improved all aspects of the problem. This state of affairs is supported by the poor choice of the words "hyperactivity" or "hyperkinesis." These labels are misnomers as they easily mislead the unknowing person to believe that the real problem is only one of overactivity. Therefore, when the overactivity is dealt with by medication, normal channels of education are thought to be all that is needed to help the child adjust. Stewart and Olds (1973) have observed this phenomenon and noted that stimulant medications became the treatment of choice for hyperactive children in the 1970s.

Obviously the above problems might be corrected by introducing a clinically effective adjunctive program with chemotherapy. However, even if all the interventions with medication were done on an adjunctive basis, their efficacy rests on one assumption that is pivotal to the efficacy of chemotherapy, yet has been accepted without verification. This assumption is that treatment, learning, and effects that occur while on medication transfer across to non-drug state conditions.

Swanson and Kinsbourne (1976) suggest that this key assumption of learning transference cannot be taken on faith and that data exists which seriously questions the extent of any transfer from drug state learning to non-drug state performance. Stewart and Olds (1973) explain the rationale behind the challenge to transfer of learning while on the
medications:

It would be surprising if children did acquire new habits under the influence of drugs, because learning is so closely related to the specific stimuli (internal and external) experienced by the individual as he learns a new pattern of behavior. It is unlikely for this reason that a pattern he follows when he feels somewhat subdued after taking a stimulant will carry over to a time when he is his natural self, full of pep and mischief.

Barkley (1977) suggests another explanation for drug-state dependent learning. Barkley concluded from a detailed study of the effects of methylphenidate (Ritalin) on task performance that task change activity was reduced as other studies have shown:

However, a commensurate increase in the average time spent per toy did not occur. Six of the eighteen children either failed to increase the average time spent per toy over the placebo condition, or actually decreased their time per toy during the drug treatment. While speculative, these findings underscore the clinical observations of Rie, Rie, Stewart and Ambue (1976) that some hyperactive children may show decreased interest in the environment while taking methylphenidate. That some of these children were less interested in their environment was intimated by clinical observations of their decreased enthusiasm for conversing with others, preference for staring out windows, or at objects, blandness of affect, and increased self-stimulatory behavior such as nail biting.

Ironically, perhaps one explanation for drug-state dependent learning is that the child's attention and ability to concentrate is impaired by the drug action that reduces the hyperactive child's overactivity. While the hyperactive child's aversive behaviors may be moderated by medication, it appears that, at least for some hyperactive children, the drugs also moderate the child's ability to learn and perform academically. This research suggests that the poor transfer of learning
may be the result of poor learning in the first place which may be due to the sedative effects the medications have on these children.

The point here is not to prove the error of a key assumption in the rationale for medical intervention, but to clearly point out that the assumption of learning transference is only an assumption and one that can no longer be taken on faith.

Further, consequence research cited earlier, which shows poor outcomes for hyperactive children treated with medication, indirectly supports the suggestion of poor transfer of learning while on medication. There are four ways such consequence information can be analyzed. First, one may argue that the poor outcomes were due to inadequate adjunctive interventions. This may be true. However, it seems unlikely that of all the different outcome studies done that all the adjunctive strategies would be poor and that the outcome data would be so similarly poor across studies. Second, one could suggest that the consequence problems of hyperactivity simply cannot be dealt with and corrected during the response phase. Such an answer cannot be seriously entertained after reviewing different intervention programs that have more positive consequences. Third, one might answer that these studies relied solely on pharmacological intervention. If this is so, then this lends support to the belief that clinicians treat children primarily with medications and not also with adjunctive therapies. One would hope that these researchers would know better than to rely only on drugs. And if they would not, why should we expect that parents would? The fourth and last possible answer is, of course, that transfer of learning and practice from drug to non-drug conditions might not occur as is assumed.
The above studies suggest that we no longer take it on blind faith that transfer of learning occurs, but that we now place a burden on those who advocate medicinal interventions to demonstrate that transfer of learning does occur and that it occurs at better levels than the learning and transfer which occurs without medication.

More traditional considerations in the use of pharmacological interventions involve reactions to the drugs. Stimulant drugs are not a cure-all on any level for all hyperactive children. Data typically concludes that about one-third of all children treated with any medication for hyperactivity may show no improvement, while two-thirds will show improvement varying from marginal to dramatic. Another limitation is that Ritalin (and most stimulant drugs for hyperactivity) should not be used in children under six years of age since safety and efficacy in this group have not been established.

Specific complications from the use of Ritalin and other central nervous system stimulants include: 1) lowering of the convulsive threshold in patients with a prior history of seizures or with EEG abnormalities in absence of seizures (reports show that 50 to 60% of hyperactive children have varying kinds of EEG abnormalities), 2) frank psychotic episodes, 3) nervousness, 4) insomnia, 5) hypersensitivity, 6) anorexia, 7) nausea, 8) dizziness, 9) headache, 10) drowsiness, 11) abdominal pain, 12) permanently impaired weight gain and growth in stature (Safer, 1972).

It should be noted that the above side effects do not occur in a majority of hyperactive children treated with medication and the complications that are common tend to be those with less long-term
repercussions.

Treatment with chemotherapy or adjunctive treatment including chemotherapy results in very dramatic suppression of behavior that society finds extremely aversive. However, we need to investigate whether or not the use of the drugs has positive effects on the consequences of hyperactivity and on the less aversive, but more persistent features of hyperactivity. The use of medication in the treatment of hyperactivity has two compelling advantages. First, it is immediate and results in dramatic suppression of the aversive behaviors characteristic of hyperactivity. Second, it is simple and inexpensive. One would hope that these immediate advantages not be used to justify an approach with known problems and questionable long-term benefit.

BEHAVIORAL TREATMENT

The second major treatment strategy used with hyperactivity is behavior therapy. Behavioral strategies involve many different elements used independently or in combination with each other. This review will attempt to deal with the more salient elements of a typical behavioral intervention for hyperactive children.

A review of behavior therapy and its common elements is not within the scope of this paper. Excellent reviews may be found in Rimm and Masters (1974) and Kazdin (1977).

Behavior therapy differs from pharmacological interventions in more than the obvious ways. Drug treatment is tied to the known reactions of the drugs. Choice of the most appropriate drug is based on the one whose reactions most closely match the targeted behaviors in question.
Behavior therapy consists of skills and techniques based on a learning model. Their general aim is to have the subject learn adaptive behaviors to replace maladaptive ones. Thus, behavior therapy may be viewed as an active intervention in which the child changes his behavior, while chemotherapy is a passive intervention in which the drug causes a change in the child's behavior.

The techniques of behavior therapy are available to a wide range of behaviors and problems and are not restricted by their nature to a specific type of response. Only one prerequisite for behavior therapy stands out. The behaviors or targeted responses must be observable, recordable, or measurable. This situation makes a generic evaluation of behavior therapy, as it regards hyperactivity, difficult. However, some of the general problem areas that exist within behavior therapy are poor generalization, low maintenance and token learning. These issues will be discussed later. In addition, what will be offered is a critique of the current target of the behavior therapy approaches within the realm of hyperactivity.

A review of the treatment literature suggests that the most common behavioral interventions for hyperactivity are token economies. The most basic behavioral approach to treatment combines the use of positive and negative reinforcement when the child is behaving appropriately and inappropriately. Such information is hardly new. With this basic concept, the teacher or parent rewards the child for appropriate behavior with some tangible compensation or praise and punishes the child for inappropriate behavior with a loss of reinforcement, no attention, or removal from the environment. This approach is really
more an idea than a treatment as the lack of structure makes it difficult to provide consistency both in the amount and the timing of the reinforcement as well as the amount or type of behavior desired. Such difficulties and lack of control would most probably lead to failure of this simple approach.

One reason why token economies are the behavioral interventions of choice is because they most fully control for the above difficulties and abide most closely by the learning principles that are fundamental to the use of reinforcement. Consequently, we will devote our time to token economies.

The token economy has several basic requirements. First, the behaviors, both desired and undesired, need to be identified and then assessed. Second, a system of tokens needs to be established. For example, poker chips, points on a record sheet, or punched holes on cards all may serve as tokens the child can obtain in exchange for targeted behaviors. Third, back-up reinforcers need to be decided upon. With any given token system, it is best to provide a variety of back-up events that have reinforcing value. This reduces the likelihood of satiation and may retain the desire for the reinforcers. At this stage an exchange rate is needed regarding the cost, in tokens, for each back-up reinforcer. Fourth, the token system requires explicit identification of the contingencies. That is, a specification is required of the responses that will be reinforced and punished and how many tokens each of those responses is worth. These four provisions make up a basic token system.

Ayllon, Layman, and Kandel (1975) provide support for the efficacy
of this basic token economy with hyperactive children. They used a
token system based on one used by O'Leary and Becker (1957) in a
classroom setting. Contingencies were targeted on academic responses
with reinforcements including candy, school supplies, free time, lunch
in the teacher's room and picnics in the park. This study's use of a
token economy is very interesting as the results of this system with
hyperactive children were contrasted with a drug treatment group of
hyperactives on behavioral and academic variables. Ayllon, Layman, and
Kandel (1975) concluded that:

Reinforcement of academic performance suppresses
hyperactivity. Further, the academic gains produced by
the behavioral program contrast dramatically with the
lack of academic progress shown by these children under
medication. The multiple baseline design demonstrates
that token reinforcement for academic achievement was
responsible for the concurrent suppression of hyperactivity.
The control over hyperactivity by the enhancement of
academic performance was quick, stable, and independent
of the duration and dosage of the medication received
by each child before the program.

This study not only suggests the efficacy of token systems. It also
demonstrates the difference in drugs and behavior treatments. Drug
interventions can obviously only have effects on the behaviors for which
there is a drug reaction. Drugs used in treatment of hyperactivity have
their affect on the activity level of the children. What the drugs do
is suppress one behavior (overactivity) that prevents the hyperactive
child from having the opportunity to behave more appropriately. When
the drugs are implemented one then hopes that no other barriers exist
and that the child will now learn to do better with his behavior and in
school.
An extensive review by Cunningham and Barkley (1978) concludes that this hope is ill founded. Their review of 120 drug treatment studies concluded that although stimulant drugs may have improved short-term manageability of hyperactive children, these medications had little or no impact on scholastic achievement or academic outcomes.

Behavioral treatments, especially token economies, are not as limited to what behaviors they can target. A token economy can focus its contingencies not only on overactivity but also on improving school work. Apparently overactivity and academic performance are incompatible for hyperactive children. Therefore, a program focused on the positive side of improving academic performance may also result in reduced overactivity. A number of studies have tested and support this relationship (Ayllon, Layman & Burke, 1972; Ayllon, Layman & Kandel, 1975; Ayllon & Roberts, 1974; Harris & Sherman, 1973; Kirby & Shields, 1972).

Flexibility in targeting behaviors allows for increased control and specificity of treatment. "If a classroom program for hyperactives has as its only goal the reduction of undesirable behaviors, amphetamine drugs and operant procedures may be effective. However, if improved scholastic achievement is hoped for, there is growing evidence that behavior modification is the treatment of choice." (Wolraich, Drummond & Kerner, 1978).

The flexibility and range of target behaviors amenable to behavioral treatments are factors that may help explain behavioral treatment's superiority over drug treatment. If one were to restrict a token system to contingencies applying only to overactivity, the results obtained would mimic those of drug treatment with lowered
levels of activity, little other changes, and similarly poor follow-up data. Thus, it is not necessarily the token system that makes the behavioral treatment superior to medication, but it is the control one has in deciding upon the target behaviors to deal with.

Historically, token systems and other behavioral systems began by focusing on the target behaviors that pharmacological treatments focused on. The results, needless to say, were similar to those of the drug studies. Perhaps the reason why early behavioral treatments did not examine other responses and consequence behaviors for possible targeting was because these behaviors were not being extensively investigated, nor were they seen as playing an important role in etiology or treatment. And why should this have been otherwise? Drugs cannot change their affects simply because new responses or consequences are discovered that need to be treated. What motivation was there for the status quo to investigate problems that status quo interventions could not deal with? Only slowly have we realized that behavioral treatments allow for changing and adding target behaviors. For example, Ayllon, Layman, and Kandel (1975) produced a landmark study by showing that hyperactivity might be managed by targeting for academic performance. By simply revising behavioral targets, their intervention not only reduced hyperactivity, as can drugs, but it improved academic performance which drugs apparently cannot do. Perhaps we are moving away from a medical model of treatment, with its fixed range of target behaviors and are now seeing that we can more precisely match our behavior interventions to the response and consequence behaviors of the particular disorder.
Such knowledge should spur further research, for if we could isolate the basic maladaptive behaviors involved in hyperactivity, by directing our behavioral intervention to those behaviors we might be able to undermine the hyperactive process.

One way of assessing if the most appropriate target behaviors are being chosen is by looking at current and consequence results for hyperactive children treated by a behavioral program with specific target behaviors. Those treatments that show the most positive and generalized results in current and consequence behaviors may be the treatments that are attacking the most critical behaviors underlying hyperactivity.

The assumption here is not necessarily that some previously untreated behaviors or deficits associated with hyperactivity can be treated and will result in total cure. However, one should also not assume that re-evaluating and re-focusing the target behaviors of our interventions will not improve the overall condition of the hyperactive child.

Unfortunately, this author was unable to find any long-term consequence studies specifically with hyperactive children being treated by token systems or more general behavioral therapies. The few studies that report using behavioral interventions with hyperactive children provide little or no total outcome or follow-up information. Thus, the problems experienced in behavioral treatments, which we will examine, will need to be generic in nature. This should not present serious problems when applying the analysis to treatment of hyperactive children.
Several reasons exist which, if anything, suggest that the characteristics of hyperactivity do not reduce the general problems of behavioral programs, but may, in fact, exacerbate them. First, hyperactivity, by its definition, acknowledges a problem of over-activity. Such an overactivity makes it difficult to focus on contingencies or reinforcements and the appropriate behaviors at the same time (Levine & Fasnatch, 1974). Firestone and Douglas (1975) note that positive reinforcement may increase the hyperactive child's difficulties by increasing impulsivity and distracting his attention from the behavior targeted to the reinforcement or reinforcing agent instead.

Token systems with disruptive children evidence the same behavioral treatment limitations as generally reported. Certainly, hyperactive children may be described as at least being disruptive. Research on cognitive abilities and processes of hyperactive children, which will be examined later, strongly suggests that treatment of hyperactive children via behavior therapy will have at least the same kinds of problems as the problems that exist in general with behavioral interventions.

Therefore, at this point let us review some of the hallmark limitations of behavior therapies and token economies in particular. These common problems involve poor transfer of training and response maintenance. We will review these problems, ways attempted to deal with them, and also look at a different explanation of these problems with implications for correcting them.
LIMITATIONS OF BEHAVIORAL THERAPIES

Response maintenance refers to the continued performance of a targeted behavior after the intervention program is terminated. The basic goals of a treatment are not only to produce the desired behaviors, but also to have the subject incorporate them into his or her response repertoire and use those responses when appropriate. Token economies very effectively produce their desired target behaviors during intervention, but there is usually poor response maintenance following treatment termination. "A reversal of behavior to baseline has been shown after the program is withdrawn across a wide range of settings and clients. Removal of the contingencies usually results in a decline of performance to baseline or near baseline levels" (Kazdin, 1977).

Transfer of training refers to the use of the targeted behaviors in environments other than those associated with the treatment program. For example, transfer of training is said to occur when a child behaves appropriately not only in the classroom with the token system, but also at home or elsewhere where the token system has not been used. This taps at the level of stimulus generalization that occurs from the stimuli that elicit the target behaviors. Unless the target behaviors of a token system are only needed in the intervention environment, the efficacy of a token system will depend on how well the new behaviors transfer to other environments. Unfortunately, the research on transfer of training is pessimistic.

In most token economies, altering behavior in one situation does not result in transfer of those changes.
to other situations either while the program is in effect or after it has been withdrawn. Indeed, the range of stimulus conditions controlling behavior often is quite narrow. Typically, behavior changes are restricted to the specific setting in which training has taken place and to the presence of those who administer the program. (Kazdin, 1977).

Although no formal consequence studies have been done of hyperactive children treated with behavioral programs, Drabman, Spitalnik, and O'Leary (1973) give a clear idea of what can be expected:

Although the efficacy of a variety of behavior modification treatment procedures with children has been well documented, behavioral programs which demonstrate long-range effectiveness are rare. In particular, token reinforcement procedures in classrooms have led to clear increases in both academic and appropriate social behavior, but coincident with a withdrawal of the token programs, there is usually a deterioration in both academic and social behavior.

Abikoff in a 1979 review of behavioral interventions found maintenance of treatment gains has been poor following the fading out of the contingencies with the subjects in the behavioral programs.

Many different strategies have been used in attempts to improve response maintenance and transfer of training. Several of these will be looked at with the eventual intent of showing how they stem from one explanation of the problems.

One strategy that has been promoted to improve response maintenance is to focus only on target behaviors that are likely to be reinforced by the natural environment. This is the idea of a 'behavioral trap' as suggested by Baer and Wolf (1970). The behavioral trap can be viewed as an extension of the "Relevance of Behavior Rule" developed by Ayllon and Azrin (1968), which states, "teach only those behaviors that will
continue to be reinforced after training."

Several difficulties exist with this solution. First, it is difficult to know what behaviors will be reinforced after training. Second, few responses would be maintained by the social environment because consequences are not consistently nor systematically provided and because desired behaviors usually go unreinforced with punishment for inappropriate behaviors being used rather than reinforcement for appropriate behavior.

A second way of dealing with maintenance and transfer of learning issues involves fading the contingencies. By gradually removing the token reinforcement contingencies, it is hoped that the behavior will be maintained. The end goal is total removal of the program with no loss of target behavior. This approach has been used extensively in token systems. A review of the token economy literature suggests that fading is simply assumed to resolve the response maintenance problems. Kazdin (1977) notes, however, that very few studies have investigated the impact of this technique on long-term maintenance of target behavior. Of the several successful studies popularly cited using fading, one (Drabman, et al. 1973) only had a twelve-day follow up and the other (Turkewitz, O'Leary & Ironsmith, 1975) had only a five-day follow up. One might argue that the behavior maintenance problem must be a serious one if researchers do not evaluate their treatment effects past five or twelve days.

A third strategy for dealing with maintenance and transfer issues is to modify the reinforcement schedules. Intermittent and delayed reinforcement are often suggested. These strategies really only attend
to the maintenance problem. Both of these approaches promote resistance to extinction. However, extinction will occur eventually if the reinforcement is stopped altogether. Therefore, unless this strategy is used in conjunction with another strategy to promote maintenance and transfer, the loss of behavior is only delayed.

A fourth strategy for dealing with poor maintenance and transfer of learning is to expand the stimulus control. If one conceives the maintenance and transfer problems to be due to the discrimination of a narrow range of cues for eliciting the desired responses, then by expanding the range of cues used, the behavior may transfer to different environments. If transfer occurs, perhaps maintenance will be indirectly strengthened.

The stimulus expansion strategy suggests two ideas. First, that there is a known specific set of environments or stimuli for which the behavior should transfer to. If this is so, then this approach may offer a way to tackle the maintenance and transfer problems. Second, this strategy can be viewed as suggesting that if enough stimuli can be associated to the behavior, the subject will learn to perform the behaviors in all environments or when confronted with all the appropriate stimuli. It seems that at some point a shift occurs in viewing this process as one of generalized stimulus control to one of subject internalization of behavior and learning when the behavior is appropriate. A shift occurs from stimulus generalization to conceptualization. This strategy may then be tapping into cognitive mediational elements in an indirect way. Those elements may be accounting for successful transfer of training and maintenance when it occurs across many stimuli. Without
desiring to expand on this here, such an approach may be successful by indirectly teaching and reinforcing a processing strategy for the use of learned behaviors.

A variety of additional approaches for improving generalization and maintenance of behaviors have been used with behavioral interventions. However, these will not be reviewed here. For a more thorough review of these strategies see Kazdin (1977).

All of the above suggestions offer the hope of solving the problems of response maintenance and transfer of learning, however, given all of these strategies and their use, Kazdin (1977) still concludes, "behaviors usually extinguish when a program is withdrawn."

One very interesting observation should be made about the above strategies for dealing with response maintenance and transfer of learning. They take a given situation with a target behavior and wrestle with the contingencies, the reinforcement schedules, the stimuli, and other aspects of the treatment mechanisms. Given the generally poor maintenance and transfer data, even with these strategies, it seems reasonable that we should focus our attention on other factors as well. We seem to have been operating under the assumption that if a system does not have response maintenance and transfer of learning, then something in the machinery needs retooling. But could it not also be that we failed to focus on the appropriate factors? We have been assuming that the correct target behaviors are being used and that, therefore, when maintenance does not occur, something is wrong with our treatment devices.
Consequence data further suggests that we need to re-evaluate the focus of our target behaviors. Although no specific outcome studies of hyperactive children treated by behavioral interventions were available to the author, it appears that the poor outcomes associated with drug treatments may also exist with behavioral interventions. Certainly those behavioral programs that focus their attention on behaviors similar to those of pharmacological interventions will most likely have outcomes similar to those of the drug treatments. As behavioral interventions focus on target behaviors more removed from, or in addition to, those of drug treatments, the possibility of improved long-term results arises.

PASSIVE VS. ACTIVE INTERVENTIONS

Drug interventions can be viewed as a passive treatment. Drug therapies affect the child without the child necessarily learning any new behaviors. Behavioral therapies offer an advantage over drug treatments because they are more active. The subject has to participate at some level. Typically, the subject participates by doing a desired behavior in return for reinforcement. Ayllon, Layman, and Kandel (1975) demonstrated that by focusing on academic performance, hyperactive children not only improved academically, but their hyperactivity diminished. This program was one step further along the continuum from passive to active intervention. Not only did the children have to behave appropriately, but they had to study and improve academically. Note that active participation increased with the addition of a target behavior that required conscious cognitive work by the children. Recall
the last strategy discussed for response maintenance and transfer of learning improvement, which was that of expanding stimulus control. This technique may credit at least part of its success to its indirectly tapping into cognitive processes within the subject. As such, it is requiring more active participation by the subject.

It is possible that the more active the participation required of the subject, the more likely it is that response maintenance and transfer of training will occur. For example, O'Leary and Drabman (1971) suggest that self-evaluation and self-reinforcement skills be taught and utilized within a token system to aid maintenance. O'Leary and Drabman are suggesting that by increasing subject involvement in the program, maintenance will improve. Note that their ideas for improving the programs make the interventions more active by teaching the subject cognitive skills.

Passive treatment requires the subject to do nothing. As a result, the subject may not learn anything. When the drug is withdrawn the subject goes back to what he or she knows. For the hyperactive child this will be the hyperactive behavior. If the child is maintained on drugs until he or she "burns out," what remains after the "burn out" are the skills and abilities that he or she has known all along. Those skills and abilities form the poor consequence results we have with hyperactive children treated by status quo interventions.

Most contingency management programs are guilty of the same passive problems. Douglas, Parry, Marton and Garson (1976) note:

In the past few years, contingency management techniques have been used in several attempts to eliminate troublesome and disruptive behaviors of hyperactive children at home and
in the classroom and to encourage observable behaviors thought to accompany attention and learning. Implicit in most of these studies is the usually untested assumption that if non-attending, non-work-oriented behaviors can be reduced and 'attending like' behaviors increased, the child will learn more efficiently and perform better academically.

Because drug and behavioral interventions cannot or do not look at consequence problems, which may require more active interventions, those problems found at long-term follow up will exist and serve as permanent scars to attest to one's once having been hyperactive. Equally significant is the suggestion that if these consequences exist when the child 'burns out' then they probably also existed when the child was hyperactive. Data documents that controlling hyperactivity by drugs or behavioral approaches does not preclude non-overactivity and social-emotional complications at puberty. Apparently more than just overactivity problems are occurring for the hyperactive child. If we examine the consequence data, new factors may appear that warrant attention.

**CONSEQUENCE FACTORS**

Towards the beginning of this paper, long-term consequences of hyperactivity were discussed. One of the most consistent remarks in the different consequence studies was that at puberty, hyperactive children continued to have academic difficulty, were underachieving, and evidencing learning difficulties (Hoy, Weiss, Minde & Cohen, 1976). Weiss, Minde, and Cohen (1971) go to the very heart of the matter:

Our overall impression, based on the pattern of hyperactive - control differences obtained at five year follow up, is that it is attentional and stimulus-processing, rather than activity and distractibility
difficulties that continue to differentiate hyperactives from controls at adolescence. It would appear that the deficits we have noted at five year follow up are not transitory, but remain at adulthood. The hyperactives have both a sustained attention and a stimulus-processing deficit.

A look at the consequence data suggests that two main difficulties are at the core of hyperactivity, a sustained-attention deficit and a stimulus-processing deficit. Clearly, the need for a decision-making process, as suggested earlier, incorporating a modified behavioral analysis, is now apparent. Chemotherapy and behavior therapy focused their attention on the behaviors that occurred during the hyperactivity. Overactivity is the most pronounced problem during that time and consequently, those problems related to or a part of that overactivity were targeted. As a result, overactivity and distractibility are the typical target behaviors of chemotherapy and behavior therapy. A review of the literature documents this observation. If sustained attention and stimulus-processing difficulties were observed by drug and behavioral treatment designers, they were most likely viewed as a result of the overactivity and distractibility. What the consequence data suggests is that the stimulus-processing and sustained attention deficits persist past puberty whether or not the hyperactivity and distractibility problems were dealt with earlier. This observation strongly suggests that the problems with stimulus-processing and sustained attention are relatively independent elements in the hyperactive syndrome and warrant being targeted in their own right.

We now need to investigate how these two problems may manifest themselves during the actual hyperactivity or response phase. An

Kagan, one of the leading authorities on the reflection-impulsivity dimension, noted in a study of 155 first graders whom completed several inductive reasoning tests that the impulsive children had faster response times and higher error scores than the reflective children. Kagan (1966) concluded that, "Impulsive children make more errors in inductive-reasoning problems because they do not pause to evaluate the quality of their inferences. The impulsive child responds quickly in situations where inferences are required."

Campbell and Douglas (1971) further note in studies of hyperactive children vs. controls on academic and cognitive tasks that:

Tests of reflectivity-impulsivity, field dependence v. independence; automatization and constricted-flexible control all significantly differentiated the hyperactive subjects from the controls. When faced with alternative responses, the hyperactive child is more likely to respond impulsively without evaluating the response possibilities. Moreover, when faced with alternative and contradictory cues, he is less apt to monitor his behavior and inhibit incorrect responses. On a task demanding the isolation of a relevant stimulus from a confusing background, he tends to be more easily drawn by the most obvious and compelling aspects of the stimulus field. Finally, when the task requires rapid response rating, he is slower than the normal child, suggesting poor ability to concentrate. Taken together, these data suggest that hyperactive children typically employ less efficient problem solving strategies than normal children.
Consequence studies show that problems persist past puberty regardless of the intervention employed. Therefore, in terms of causality, it seems unlikely that overactivity caused the cognitive and problem-solving difficulties. For if this were so, why would the cognitive and problem-solving difficulties continue on at follow up even though overactivity and distractibility were successfully treated? Given this data, it is more reasonable to assume that either 1) the overactivity-distractibility and cognitive problem-solving difficulties exist independently with neither one explaining nor solely affecting the other problems, or 2) these cognitive and problem-solving difficulties are at the base of the other hyperactive problems.

Campbell and Douglas (1972) suggest the second idea. They note that, "There is much evidence showing that children exhibit individual differences in strategies of problem solving or cognitive styles which influence a wide range of behaviors." Their suggestion is that the inabilities to sustain attention and control impulsivity form a core group of symptoms that can account for most of the problems associated with hyperactivity.

As an extension of this view, Campbell and Douglas, and others, have suggested a cognitive intervention program for hyperactive children. The suggestion is made that the cognitive styles of hyperactive children can be modified with the intent being to replace the impulsive styles with reflective strategies for stimulus processing and problem solving.
CHAPTER THREE

THEORETICAL FOUNDATIONS

COGNITIVE TREATMENTS

The theoretical foundation for the cognitive approach for treatment of hyperactivity comes from the work of A. R. Luria and L. S. Vygotsky, two Soviet psychologists. Luria and Vygotsky suggest that self-statements, which might also be called thoughts, have a self-guiding and controlling influence on an individual. Adults have thoughts which may guide and direct their behavior. However, this function is not a priori, but is a consequence of development. Luria and Vygotsky suggest that the controlling aspects of thought come through an internalization of overt verbalizations. From a psychodynamic perspective this would be similar to the internalization of the super-ego. What Luria and Vygotsky suggest is that "thought and self-control are the internalization of the language and controlling gestures of the child's speech community" (Kohlberg, Yaeger & Hjertholm, 1968).

Luria postulates three stages of development in verbal control. During the first stage the speech of others, usually the parents, controls and directs the child's behavior. During the second stage the child's talking to himself becomes a controlling agent. The third stage occurs when the overt talking becomes internalized and provides guidance as covert verbal thought.

Support for the Luria-Vygotsky theory comes from a number of studies (Bem, 1967; Klein, 1963; Kohlberg, et al., 1968; Luria, 1959, 1961; Meichenbaum & Goodman, 1969a, 1969b). These studies point to an
increase in self-guiding private or covert speech with age and with a progression from the external to the internal.

The Luria-Vygotsky theory was then applied to the reflectivity-impulsivity issue. It was postulated that impulsive subjects had not reached or successfully integrated the second and third stages of the model. Consequently, when outside verbal control was not provided or meaningful, the subjects responded impulsively and with a lack of self-control. The long-term follow-up data with hyperactive children indicates that impulsive cognitive styles continue past adolescence. Inability to sustain attention and control impulsivity, both self-control issues, are then viewed as a core group of symptoms of hyperactive children.

**COGNITIVE TREATMENTS**

Cognitive approaches for treating hyperactivity based on the above theory, first appeared in a classic article by Meichenbaum and Goodman in 1971. Their treatment attempted to lead the hyperactive subjects through the latter two stages of the Luria-Vygotsky model. Meichenbaum and Goodman proposed that their self-instructional procedures would help the "child's private speech gain a new functional significance; to have the child develop a new cognitive style or 'learning set' and thus to engender self-control" (1971, p. 116).

The Meichenbaum and Goodman approach involved four one-half hour treatment sessions over a two-week period. During each session the therapist would perform a task and say out loud what he was doing. The therapist would then actually be modeling verbalizations for the
subject. The subject would then perform the task while the therapist verbally instructed him. Next, the subject would do the task while instructing himself out loud. This procedure was followed by the subject doing the task and only whispering it and finally doing the task while saying it to himself covertly.

An often cited example of the typical Meichenbaum and Goodman self-instruction task is:

Okay, what is it I have to do? You want me to copy the picture with the different lines. I have to go slow and be careful. Okay, draw the line down, down, good; then to the right, that's it; now down some more and to the left. Good, I'm doing fine so far. Remember, go slow. Now back up again. No, I was supposed to go down, that's okay, just erase the line carefully...good. Even if I make a mistake I can go slowly and carefully.

(Meichenbaum & Goodman, 1971, p. 117)

The tasks involved in this study ranged from easy sensorimotor abilities to more difficult problem-solving tasks. However, the tasks involved did not have direct relevance to classroom behaviors or tasks. Tests involving tasks similar to those used in the training showed a significantly improved performance. However, a lack of generalization to the school environment was found. No follow-up testing was conducted, nor was any additional generalization assessed.

Since the Meichenbaum and Goodman study in 1971, many other studies have been conducted using self-instructional training to train hyperactive children with reflective strategies (Barkley, Copeland & Savage, 1977; Bugenthal, Whalen & Henker, 1977; Camp, Bloom, Herbert & van Dornick, 1977; Douglas, Parry, Marton & Garson, 1976; Drabman, Spitalnik & O'Leary, 1975; Kendall & Finch, 1976, 1978; Meichenbaum, 1977; Moore & Cole, 1978;
Robertson & Keeley, 1974; Robin, Schneider & Dolnick, 1976).

Kendall and Finch (1976) report a treatment with a nine-year-old impulsive boy using the Meichenbaum and Goodman self-instructional approach. They included flashcards to remind the child to "Stop, Listen, Look and Think," before he responded. In addition, Kendall and Finch targeted for generalization by changing the therapy room, games used, and therapist over the course of the sessions. Kendall and Finch also added a response-cost feature to the program contingent on the target behavior which was the subject's switching from one topic, game or rule to another. At termination this behavior had significantly abated and the subject's conduct grades on his report card had improved. At six-month follow up the subject performed in a reflective manner on the Matching Familiar Figures Test and was not doing his switching behaviors. Unfortunately, this study only focused on one specific behavior and failed to show follow-up evidence of generalization to other behaviors or situations requiring problem solving.

Douglas, Parry, Marton and Garson (1976) conducted a program with eighteen hyperactive children that incorporated the Meichenbaum and Goodman model. In an attempt to enhance generalization, Douglas et al. involved different content areas for the training. The topics in the sessions were vaguely described as involving visual, auditory, and tactual processes and academic and social situations. Post-test and three-month follow-up testing showed that the subjects improved on a few criterion measures. However, with all but the reading skills, the instruments used for the training sessions were very similar to the criterion measures. Therefore, one cannot be sure if generalization and
maintenance is being seen rather than only practice effects. The authors suggest the failure to include other behaviors and content areas in the training may have led to poor generalization. Recommendations regarding additional content areas for self-instructional training were not given.

Camp, Bloom, Herbert and van Dornick (1977) conducted a training program with twelve aggressive second grade males using methods similar to those of Meichenbaum and Goodman. Daily thirty-minute sessions were given over six weeks. Several additions to the Meichenbaum and Goodman program were included. First, modeling of the verbalizing was enhanced by initially having the subjects play a "copy cat" game with the therapist. When the subjects became familiar with self-verbalizations the "copy cat" game was faded out. Second, added to the problem-solving content were auditory verbal tasks and interpersonal problem-solving games. These tasks were in addition to the cognitive interpersonal problems used by Meichenbaum and Goodman. Third, the Camp program added a revised Shure and Spivack (1974) program involving a sequenced series for identifying emotions, determining antecedents to emotion, considering what might happen next, and evaluating the outcome.

Results from this study were mixed. While the subjects improved prosocial behavior in the classroom, they did not differ significantly from the untreated group in reduction of aggressive behavior. In addition, the positive results must be tempered with the knowledge that they rest on teachers' ratings and, the teachers knew which subjects had been in the program. As with most studies in this area, no follow up was reported. While the Camp program affected test performance and some
classroom behavior, the authors concluded, "The program failed to pro-
duce changes in all areas examined and in some instances may have had
a negative effect" (p. 168). The negative effect consisted primarily of
improving the subjects' verbal output but failing to channel it into
constructive or appropriate paths.

Kendall and Finch (1978) followed up their self-instruction case
study (1976) with a clinical population comparison in 1978. Twenty
subjects were selected based on Matching Familiar Figures test scores.
Ten were assigned to treatment and ten to control. Self-instructional
training involved six content areas, one per each of the six twenty-
minute training sessions. These six sets were: a) conceptual thinking,
b) attention to detail, c) recognition of identities, d) sequential
recognition, e) visual closure, and f) visual-motor reproduction. All
six sets of stimuli were visually presented. The self-instruction
training followed closely upon the Meichenbaum and Goodman model. This
program also involved a response-cost element in which the subjects
would have tokens, which they had been given before each session, taken
away as a result of errors and lack of attention. Three dependent
variables were used involving 1) patient performance on Matching
Familiar Figures, 2) self-reports on the Impulsivity Scale (Sutton-
Smith & Rosenberg, 1959) and the Impulse Control Categorization Instru-
ment (Matsushima, 1964), 3) two rating scales, the Impulsive Classroom
Behavior Scale (Weinrich, 1975) and the Locus of Control Scale
(Armentrout, 1971).

Significant improvement was found only on the Matching Familiar
Figures test (MFFt) and the Impulsive Classroom Behavior Scale (ICBS).
Kendall and Finch concluded that performance and classroom behavior improved. One may question the extent of the improvement in classroom behavior as it was based on the ICBS. The ICBS appears to load on academic factors related to impulsivity and not on more psycho-social classroom behaviors. Kendall and Finch admit in their report that generalization to the classroom occurred only with psycho-educational tasks. Further, the authors did not control for highly significant baseline group differences on the ICBS. Abikoff (1979) concluded from a re-analysis of the data that the results do not support the treatment's utility for reducing classroom impulsivity. Additional dependent variables, especially classroom observation would have helped clarify the extent of treatment effect.

Moore and Cole (1978) conducted a multiple group comparison study with fourteen eight to twelve year old hyperactive children. One group received self-instruction training, one group was an attention control and the third group was an untreated control. The children in the self-instruction training group received six individual self-instruction sessions with social reinforcement and feedback. At post-testing, the self-instruction group performed significantly better than controls on MFFt latency, Children's Embedded Figures Test and Picture Arrangement from the WISC. No differences from controls were noted on MFFt errors, WISC Block Design or Coding test scores and the Conners Teacher Rating Scale. The self-instruction content focused on psycho-educational tasks and no behavioral social exercises were provided. Maintenance effects are not known as there was no follow up.
PROBLEMS WITH COGNITIVE TREATMENTS

The preceding studies are often viewed as the standard bearers of the cognitive treatments with hyperactive children. Yet, several problems emerge from this review.

Generalization is a core problem of all of the above studies. None of these studies have a follow up past six months and the one study with a six-month follow up targeted on only one narrowly defined behavior. Follow ups of more global impulsive behaviors are unavailable as are follow ups of self-instruction with hyperactive subjects of more than three-months' duration. Abikoff's (1979) review of thirteen controlled cognitive training studies with children shows one study with a twenty-week follow up as being the longest follow up conducted. Five of the thirteen studies conducted no follow up whatsoever.

Meichenbaum (1979) concluded from a more thorough review of the literature that:

Although CBM (cognitive-behavior modification) approaches with children who have self-control problems are encouraging, evidence for the generalization of such treatment effects across settings and over time is not encouraging. A relatively consistent pattern of results is now emerging from such studies, namely that the CBM self-instructional group does better on a number (but not all) of the psychometric indices employed, but these results do not generalize to classroom settings. (p. 2)

Kendall (1979) is perhaps more optimistic than Meichenbaum, yet he concludes with a similar thought, "A critical review of the literature dealing with self-instruction training reveals both inconsistency in the evidence for treatment generalization and an additional wealth of studies where the outcomes are not without weaknesses" (p. 2). In
addition to the question of generalization to classroom behavior, the question of treatment generalization to non-school behaviors has yet to be considered in the CBM literature.

A critical analysis of the generalization that does occur with self-instructional training, shows that such generalization is only across settings and only with the specific types of items taught in the training sessions. These items usually focus on mathematics, puzzles, mazes and reading performance.

The most current research with self-instruction focuses on altering and expanding the content of the self-instruction material to enhance generalization. For example, Kendall and Wilcox (1979) found that self-instruction using conceptual strategies evidenced stronger generalization than did self-instruction with concrete content. Meichenbaum and Asarnow (1979) refer to one type of conceptual self-instruction as metacognition. They suggest that by teaching impulsive children to be aware of their cognitive activities or operations that the treatment may have more generalized affects.

Kendall (1978) commented that if the self-instruction had included interpersonal situations, then outcome data would have shown generalization to classroom behavior. He concluded that, "It is likely that the training tasks are relevant in regard to the type of generalization that will be obtained."

A NEW PERSPECTIVE FOR SELF-INSTRUCTION CONTENT

The above hypotheses suggest that the content of the self-instruction may determine the extent of generalization. This idea,
along with the generalization data, suggests that the child's self-statements may possibly operate and generalize along some of the same lines as overt behavior. However, rather than burden this paper with trying to prove Ullman's (1970) assertion that cognitions are behaviors and should be treated as such, let us return to the theory from which the self-instructional model arises.

Luria based his extrapolation of Vygotsky's theory to some extent on observations of children. Such observations demonstrated the three stages of verbal control and internalization. In stage one, the parents and significant others provide external verbal control via commands and other communications. The second stage involves the child giving himself the same verbal commands out loud. The third stage involves the child internalizing these verbal statements and controlling his behavior via mental statements. This strategy results in a generalized self-control via mental 'verbal statements.' Self-instruction is based on this process. However, unlike the natural three-stage process, self-instruction does not model the same content at any one of the stages.

Imagine a four year old child at stage one in which his parents provide external verbal control. Would the parents verbally direct the child only on mazes, puzzles, mathematics, reading and intelligence tests? Hardly. The parents' verbal control would probably focus on the following: Behavior ("Slow down, Tommy, you're going too fast."); Affect ("You don't need to be angry if you really look at it."); Sensations ("The stove is hot and if you touch it you will burn your hand."); Imagery ("If you imagine a great big ice cream cone, then it won't hurt as much.");
Cognitions ("If you think it out slowly and carefully you'll get it right."); Interpersonal Relationships ("Why not tell your friend that you like him rather than showing it by teasing him and getting him upset?"); and physical care, including biological factors, Drugs ("Here, this is how you brush your teeth.").

Parents provide external controlling cues for their children that control all aspects of their lives. That is, on their Behavior, their Affect, their Sensations, their Imagery, their Cognitions, their Interpersonal relationships, and their physiology (Drugs). Lazarus (1976) describes these aspects with the mnemonic BASIC ID. He argues that they constitute the modalities of human personality. Whether this last comment is true or not, it is very obvious that most parents will provide external verbal control for their children with each of these modes.

Thus, the BASIC ID describes the content areas of the self-instruction process that occurs naturally. In most cases the child progresses naturally through the three stages of the Luria-Vygotsky model when the content taps each element of the BASIC ID. The end product usually is an individual with appropriate self-control in most facets of his personality. Generalization occurs in the natural process when the child learns that the control he has acquired with one specific item in a particular modality also applies to another item in that mode. Generalization is made less difficult by reducing the size of the required inferential leap. The suggestion is that this is how self-control via the acquisition of self-instruction naturally occurs.
SELF-INSTRUCTION CONTENT REVISIONS FOR GENERALIZATION

The implications the above examination of the natural process of verbal internalization and self-instruction have on targeting for generalization is readily apparent. What is needed is a reworking of the content of the self-instruction training to include a focus on each element of the BASIC ID. Each of the modalities of the BASIC ID should have at least the equivalent of one session devoted to it with the therapist leading the child through the examples in much the same manner as the usual Meichenbaum and Goodman procedure. Optimally, the last few sessions would involve tasks from each area of the BASIC ID so as to aid integration.

Perhaps as we have slowly begun to switch from the analogue studies with self-instruction of the early and mid-1970s to the clinical studies of the late 1970s, researchers forgot to also adapt analogue content to real world content. Generalization difficulties are now telling us that it is time to re-structure the content of self-instruction training so that it taps into each of the seven personality dimensions represented by the BASIC ID and by reality.

Meichenbaum (1979), while not commenting on the total picture, did conclude that, as far as classroom generalization is concerned:

> It does not seem reasonable to expect that teaching children to self-instruct on, say, the Porteus maze or some other lab task will transfer to improved classroom performance as assessed by the Conners scale. Instead the teaching of general self-interrogation strategies or superordinate skills must be central to CBM treatment. (p. 3)
A second consideration for generalization also stems from the narrow content focus of self-instruction programs. Most self-instruction programs are performance oriented. The content involves getting a child to use abilities which he already has. The focus is on the subject slowing down and methodically performing the task. Reality, however, requires the child not only to perform tasks competently, but also requires him to choose how he will deal with tasks or problems. When a self-instruction program focuses on task performance that program apparently presupposes that the appropriate response has been chosen. However, one of the most salient problems of hyperactive children is their failure to examine and evaluate possible courses of action before engaging in one.

Both task performance and task selection are affected by hyperactive styles. Consequently, generalization of self-instruction training is a function of the choice of an appropriate solution and that solution's appropriate use. Problem solving, based on D'Zurrilla and Goldfried's (1971) model needs to be added to the self-instruction content. It is a curious fact that most studies have used either self-instruction or problem solving. Very few have incorporated the two, which is entirely feasible. As self-instruction and problem solving are required in reality they should also be incorporated in treatment so that they might eventually be performed in reality.

SELF-INSTRUCTION PROGRAM REVISIONS FOR MOTIVATION

A second major problem found in most cognitive-behavior modification studies, especially those using self-instruction, is a failure to deal with the issue of motivation. Perhaps this is another consequence of the
heavy reliance on analogue studies in which the hyperactive children may be assumed to be willing to listen and work on the material presented. Such an assumption is quickly dispelled when working with a hyperactive child.

Given that a child is impulsive and prone not to think in problem-solving ways regarding the consequences of his behavior, why should he want to use self-instruction outside of treatment? This issue can also be seen as a generalization problem, for why should the hyperactive child perform the appropriate self-instruction outside of treatment when he does not, at least initially, see the advantage of it?

Two compatible approaches to the problem of motivation appear promising. The first approach involves the addition of a behavioral program to the cognitive intervention. Several researchers with self-instruction have directly called for the addition of behavioral procedures (Camp, Bloom, Herbert & van Dornick, 1977; Douglas, Parry, Martin & Garson, 1976; Meichenbaum, 1975). Kendall (1979) also argues for the addition of behavioral procedures. He notes that:

Examining the studies that have found generalization to extra therapy settings we find that several used a response-cost procedure (Furgurson, 1978; Kendall and Finch, 1976, 1978, Kendall and Wilcox, 1979). One used reward contingencies (Bornstein and Quevillon, 1976) and one used relaxation training (Watson and Hall, 1977). All of these studies employed cognition plus behavioral interventions.

(p. 9)

If behavioral contingencies are set up so the child needs to use his self-instructions to obtain or maintain the reinforcers, then motivation to use the self-instruction skills may be enhanced. This
approach simply involves structuring the child's environment so that the child sees the advantage of using the self-instruction skills. If reinforcers are contingent on behavior that is accomplished through the use of self-instructions, then the child may be motivated to use his newly taught skills.

Care is needed to ensure that the child's focus is not centered more on the reinforcement than it is on the self-instruction skills. Several researchers (Cohen, 1970; Douglas, 1975; Firestone, 1974; Firestone & Douglas, 1975; Freibergs & Douglas, 1969) have found that positive reinforcement may increase impulsivity and attract the hyperactive child's attention away from the task and toward the reinforcement or the reinforcing agent. If a positive reinforcement program is overly complicated and its reinforcers are exceptionally compelling, the program may backfire with the child focusing on the reinforcers while forgetting the need to use self-instruction to obtain those reinforcers. Therefore, programs that capitalize on normally occurring reinforcers may be most beneficial. What might be involved is increasing the amount of reinforcement that normally occurs in the individual settings. For example, in the classroom reinforcers might include praise and attention, special privileges and duties.

A second type of behavioral intervention to aid motivation involves the use of response-cost. Kendall and Fince (1976, 1978) and Kendall and Wilcox (1979) have conducted several self-instruction programs incorporating response-cost during training. The child is given a number of tokens before the session and they are taken away if the child does not perform as required during the session. Tokens left at the end of the
session may be exchanged for reinforcers. The response-cost procedure may prove helpful with hyperactive children who have difficulty staying with the therapist during the session. However, care should be exercised to prevent the focus from resting on the tokens rather than on attending to the tasks. As with a contingent reinforcement program, secondary reinforcers should not be overly compelling as they may interfere with the child's concentrating on the self-instruction training and its use.

Another way to enhance subject motivation to use self-instructions comes from a cognitive perspective. Baer (1970) described 'behavioral traps' as changes in a subject's natural environment so that behaviors acquired in the behavioral intervention environment are reinforced in the subject's natural environment. The 'trap' occurs when the subject's natural environment offers contingencies which motivate the subject to use his newly acquired behaviors. Templeman and Wollersheim (1979) present a similar idea within a cognitive framework. They discuss the use of a cognitive treatment with psychopaths that involves appealing to the self-interests of the psychopaths to motivate them to change. Templeman and Wollersheim suggest that if the interests of the subject are known, the therapist can side with the subject's self-interests and show him how his current way of behaving does not help him meet those interests. The therapist then helps the subject see that other ways of behaving help him satisfy his desires. The result is a 'cognitive trap' in which the subject sees that it is in his best interest to use the techniques that the therapist offers. If the subject is helped to discover this for himself, it is even more likely that he will take the new behaviors on as his own and be internally motivated to use them.
The direct compatibility of the above ideas for motivating hyperactive children is striking. Templeman and Wollersheim note that, "The psychopath has typical characteristics of impulsiveness, egocentricity, inability to delay gratification and failure to learn from experience" (p. 3). This description might just as well be a description of a hyperactive child. A further suggestion of the compatibility of the above idea for work with hyperactive children is seen by the treatment that Templeman and Wollersheim recommend for use with their approach to motivation. They suggest self-instructional training and problem solving be used with psychopaths in conjunction with their approach. Thus, it seems that Templeman and Wollersheim's method of motivation enhancement is directly applicable in the treatment of hyperactivity.

Research is needed to specify exactly what the hyperactive child's self-interests are. This author's clinical experience with hyperactive children suggests several interests which hyperactive children may hold high. First, many hyperactive children are observed to try to finish an assigned task as quickly as possible so that they may move on to something else. Second, many hyperactive children have a strong desire for attention. A third observation of hyperactive children's self-interests is their desire to be or feel that they are in control of the situation. The therapist can make the most use of a 'cognitive trap' by helping the hyperactive child clarify these self-interests and then support them. By continually, although not blatantly, suggesting and showing that self-instruction can help the child fulfill his interests, internal motivation may be enhanced. This would especially be the case if a consistent approach was taken to the child's problem behaviors so
that his problematic behaviors would reduce the opportunity to obtain his self-interests.

Motivation to use self-instruction and problem solving can be aided by a 'behavior trap' and a 'cognitive trap.' The cognitive trap is more likely to lead to an internalized source of motivation, whereas the behavioral trap is likely to result in an externalized source of motivation. The best approach may be to first attempt the 'cognitive trap' with only slightly increased social reinforcement for using self-instruction and problem solving. If this does not result in sufficient motivation, as measured by generalization, then a 'behavior trap' via a response-cost token system could be implemented.

At this point the literature pertaining to self-instruction training with hyperactive children has been reviewed. Several conclusions are noted. First, current self-instruction programs fail to focus adequate attention on the content of the self-instructions taught. It is suggested that self-instruction training includes contents tapping behaviors, affects, sensations, imagery, cognitions, interpersonal relationships, and physiology (drugs). Generalization of training may be enhanced by focusing on these modalities of personality as discussed by Lazarus (1976). In addition, self-instruction training should include problem-solving training to prepare the hyperactive child to encounter situations where a response choice has to be made. Problem solving might be presented in two fashions. First, as a separate training session focusing on the process of problem solving and second, as incorporated in the self-instruction sessions throughout the training.
The second conclusion regards motivation. The issue of motivation needs to be more carefully dealt with than has been the case in the literature. As motivation is improved, so are the chances for generalization across settings and behaviors. Two ways to improve motivation are suggested. One comes from a behavioral orientation while the other is from a cognitive background. The behavioral intervention includes response-cost approaches to motivate the child to attend to the training and positive reinforcement programs to 'pull' for the use of trained behaviors in natural environments. The cognitive approach involves an attempt to get the subject to see that his interests are best met by using self-instruction and problem solving. This approach has an advantage of working internally as a 'cognitive trap,' and, therefore, being less subject to maintenance problems.

A GENERAL TREATMENT PROPOSAL

After baseline measurement and observation is completed, the self-instruction training may commence. One thirty-minute session per school day will provide the subject with daily practice without involving severe problems with the child's short attention span. Sessions should be conducted during the morning hours to give the child opportunities to practice his new skills the same day. In addition, sessions should not conflict with any activities the child is fond of, such as recess, as this would reduce attending to task and motivation to perform. Each session would be devoted to an aspect of the BASIC ID with several sessions focusing on problem solving in particular while all sessions integrated a problem-solving approach. These sessions should start at
a low level of difficulty and increase in difficulty as the session progresses and from one session to the next. Two additional sessions should be allowed for training and integration of the previous sessions with tasks that tap each facet of the BASIC ID. Perhaps playing a game with the therapist would offer the child a chance to integrate the skills taught in the prior session.

A response-cost system might be used with children who seem unmotivated and not interested in academics and who have extreme difficulties with impulse control. Tokens may be handed out at the beginning of each session. If the child fails to attend and perform as expected in the session, then tokens may be taken back by the therapist prior to the token exchange for primary reinforcers.

During the course of the training the therapist should very actively foster a positive relationship with the child. The child's desires and self-interests should be pinpointed. The therapist then needs to indirectly help the child to see that 1) he supports the child's interests, 2) the subject's self-interests are not and cannot be satisfied by his impulsive behavior, and 3) the use of self-instructions will help satisfy his self-interests. The issue of motivation should be paid close attention to as it offers the strongest possibility for true generalization.

Four weeks of training is suggested followed by one week without training or special treatment. Observation and assessment should be on-going from the baseline. Behavioral observation and assessment that taps problem solving and the BASIC ID are required to accurately measure generalization.
Following the week without self-instruction training, a school response-cost token system may be initiated if generalization to the classroom has been poor. The success of the response-cost system depends on how it is presented to the child. If the child focuses on using his self-instruction skills to obtain reinforcement and realizes that his behavior determines the reinforcement, then he may 'buy' into the system. This system should be viewed as a way to highlight the advantages of using self-instruction and it should not serve as the primary motivation for appropriate behavior. The primary motivation should come from the child, perhaps as a result of working with the child using the ideas of Templeman and Wollersheim as discussed earlier. This approach may avoid the loss of behavior that frequently accompanies removal of a token system when it serves as the primary intervention.

The token response-cost system may be viewed as an attempt to create a 'behavioral trap' while the Templeman and Wollersheim approach provides the fundamental internal motivation via a 'cognitive trap.'

Specific target behaviors should be decided upon before treatment begins. An attempt should be made to include behaviors or targets from each dimension of the BASIC ID. The modality profile suggested by Lazarus (1976) may serve as part of the assessment format. A modality profile with suggestions for self-instruction content and possible assessment instruments is provided in Appendix B.

Long-term assessment is mandatory with follow up occurring at one, three, and six months. Following the first and second follow up, a booster session may be provided. The booster sessions will aid maintenance and provide another type of check on how well the subject has
maintained his self-instruction skills.

ADVANTAGES OF THE PROPOSED TREATMENT

Several advantages arise with the above approach to self-instruction training. First, by focusing more on the content of the self-instruction and working with each of the elements of the BASIC ID, generalization is more likely. Second, by including problem solving, the child is not only prepared to perform a given task, but is also prepared to choose the most appropriate task to perform. Third, by helping the subject see that the use of self-instructions better aids him in satisfying his self-interests, motivation becomes internalized. Fourth, the delayed addition of the reponse-cost token system allows the therapist to see how effective the program has been without external supports, yet it also allows for the addition of a behavioral program to function as an external motivator. Fifth, the staggered schedule for presenting program components allows for specific multiple baseline analysis to aid in refining the program. Sixth, long-term follow up with booster sessions may better meet real world needs, help the child maintain his improvement and give data regarding the long-term merit of the program.

SUMMARY

A review of the etiology of hyperactivity is presented along with a review of the longitudinal outcomes of hyperactive children treated by drug and purely behavioral interventions. The long lasting problems of hyperactive children lend support for treating these children with a more cognitive intervention.
Cognitive-behavioral interventions are an outgrowth of a change in target behaviors that came about with the inclusion of consequence information in the decision-making process and behavioral analysis. The more active participation required of the child extends the likelihood for generalization and maintenance effects past that of strictly behavioral interventions and offers a better possibility of dealing with current and follow-up problems than does chemotherapy.

Cognitive treatments for hyperactivity are reviewed along with an explanation of the Luria-Vygotsky theory from which self-instructional training arose. This review shows persistent generalization problems. Upon further examination of the Luria-Vygotsky theory it is hypothesized that the content of the self-instructional training needs to be expanded to include tasks from each of the major dimensions of personality. Lazarus' BASIC ID model, along with problem solving, is suggested as the most representative of natural self-instructional training and, therefore, most likely to lead to generalization.

In addition, motivation is discussed and planned for in the proposed treatment program. The Templeman and Wollersheim approach to increasing internal motivation along with a response-cost token system to increase external motivation are suggested to further enhance generalization. Finally, the advantages of the proposed program are outlined.

Chapters Four and Five provide the specific method and procedure, respectively, for conducting the proposed treatment intervention.

It is hoped that as the content of self-instructional training programs becomes more in touch with reality and more removed from the laboratory, as does this proposal, that treatment effects and
generalization will be such that society will no longer have to rely primarily on interventions that make hyperactive children manageable at the price of untreated, life-long problems.
CHAPTER FOUR

METHOD

SUBJECTS

After a thorough description of impulsive and hyperactive children was presented to the third, fourth and fifth grade teachers at St. Joseph's Grade School, teachers met to decide which students best matched the descriptions that were given. Two boys and one girl were selected as being the most impulsive and the most appropriate for the study.

Following a procedure used in other studies (Douglas, Parry, Marton & Garson, 1976) the subjects' parents and teachers were interviewed to assess for each child's level of impulsivity or hyperactivity. A careful history of each child was taken. Problems of impulsivity, activity level and attentional difficulties were observed from infancy or very early childhood in all three subjects. For inclusion in this study each child had to receive a mean rating of 2.0 (out of a possible 4.0) on either the parent or teacher rating on the Conners Scale (short form). In addition, a minimum IQ score of 80 was required.

Subject number one (S1) was an eleven year, five month old female in the fifth grade. An interview with the parents revealed that this subject had a clinical diagnosis of hyperactivity. She had been placed on Cylert in the fourth grade; however, due to bothersome side effects the medication was discontinued after two months. Both the parents and the teacher described her as having severe problems including impulsivity, high activity level, severe mood swings, and attentional
deficits. The parental interview revealed a very warm and concerned home environment in which the parents were coping in the best way they knew. A symptom etiology based on emotional conflict or deprivation was ruled out. S1 was described as lacking tolerance for frustration, easily becoming bored, lacking inhibitions against talking back or fighting with adults and flying off the handle. S1 received a rating of 3.5 from the parents on the Conners Scale. She also received a 23-point rating on the Zukow Parent Scale (9 and above suggests hyperkinesis) and a rating of 60 from the teacher on the Zukow Teacher Scale (36 and above suggests hyperkinesis). Although this child's WISC-R performance suggested an IQ of only 71, the subject was included in the study, as the low IQ was interpreted as reflecting extreme hyperactivity rather than intellectual ability. This position was supported by a vocabulary score near average and age appropriate behavior and conversation during an interview. As an ancillary dependent measure, a post treatment WISC-R was scheduled to attempt to support this conclusion and assess the impact of self-instruction training.

Subject number two (S2) was an eleven year old male fifth grader. S1 and S2 were not in the same classes. Interviews with the parents and teacher revealed problems with sloppy work, a lack of self-discipline and impulsivity. The impulsivity was reflected in an extreme desire to do things quickly. Both the parents and the teacher described S2 as being mildly overactive. He often did poorly on school assignments due to his failure to read directions. S2 was reported by both parents and the teacher to have great difficulty completing tasks he started. A desk full of half completed school assignments supported
this contention. S2's interview data suggested that he was the least impulsive of the three subjects. This observation was also indicated by the rating scale scores of 2.4 and 1.8 on the Conners Scales and 6 and 25 from the parents and teacher on the Zukow Scales.

Subject number three (S3) was a ten year, eight month old male fourth grader. Interviews with the parents and his teacher revealed that this child had great difficulty paying attention and completing tasks. In addition, he was described as being very disruptive in class due to almost constant talking and movement. S3's schoolwork was described as extremely sloppy. He was receiving "Ds" in penmanship and was having difficulty with math work due to sloppiness. S3 had difficulties with reading as he would read so fast that he would skip over words. The parents described the child as a well-meaning boy who often got into trouble with others because he "came on too strongly," and did not think things out before doing them. S3 received a rating of 3.7 and 3.5 from the parents and teacher respectively on the Conners Scale. On the Zukow Scales, S3 received a rating of 8 from the parents and 41 from the teacher.

All three children were from middle to upper middle class homes. The families of each subject were intact and the parents did not report, nor evidence, marital discord as based on interviews and self-reports.

DEPENDENT MEASURES

A battery of eight dependent measures assessing various aspects of each child's impulsivity were used. All measures were employed at pre and post treatment periods unless otherwise noted.
PRIMARY MEASURES

Behavioral Observations: Each child was observed by an undergraduate student trained in the use of the O'Leary and Becker (1970) nine category coding system. Each child was observed for twenty minutes at a time before, during, and following training. A baseline of 3, 5, or 7 observations was conducted depending on the stability of the subject's behavior. A baseline was established prior to any contact with the therapist. Each child was then observed twice a week during training and for five consecutive days following training. Observation times remained constant throughout the program and reliability checks were conducted by two additional undergraduate students.

Rating Scales: The Conners Scale (short form) consists of ten items; the respondent marks each item as occurring not at all, just a little, pretty much, or very much. The Zukow Scales operate in a similar manner, however, the parent and teacher forms have items more directly associated with their respective environments.

Academic Performance: Each subject's academic performance was analyzed from two report cards given. One report card was given just prior to treatment and the second was given four weeks following treatment. Comparisons were made on all grades, including conduct. In addition, handwriting samples were taken at pre and posttreatment periods and graded by each subject's teacher at posttreatment.

SUPPLEMENTAL MEASURES

T.A.T.: Two T.A.T. cards were presented in a standardized manner to each child. The T.A.T. cards were used as a measure of each child's
ability to integrate, plan, and complete a creative task. Pretreatment and posttreatment stories were compared for ability to follow instructions, use self-instruction and successfully tell a story using the total card.

Stanford-Binet Picture Completion (Draw-a-Person): Standardized scoring was used on the drawings. A qualitative analysis was also conducted focusing on the number and location of features drawn and evidence of the use of self-instruction or problem solving. This item was hoped to be a good indicator of a child's impulsiveness as it was thought that the more impulsive the child, the more likely that features would be missing or inappropriately drawn.

WISC-R Mazes: Two mazes were administered to each child. Standardized scoring was used on the mazes in addition to a focus on whether the child used self-instruction at posttreatment testing.

Rosensweig P-F Study: Each subject was given two scenes from the Rosensweig at pretreatment, during training and at posttreatment. This instrument was included to tap into each child's responses to interpersonal frustration. The scenes were presented as comic strips in which each subject had to be the person who was to respond in the scene. The subjects practiced on two scenes with the therapist during the training period to provide an indication of whether training on items resulted in increased use of problem solving and reduced frustration.

Self-Report: Each subject was given a modified Zukow Rating Scale at pretreatment and posttreatment. The scale consisted of ten items which each subject marked as occurring, "never, sometimes, or a lot."
TRAINING MATERIALS

An analysis of typical problems experienced by a hyperactive or impulsive child were made following Lazarus' (1976) breakdown of personality into seven elements. Once the typical problems experienced in each of these seven areas were identified, an approach was designed to work on each. An attempt was also made to match assessment instruments to each area. Appendix B outlines the modalities with the typical problems in each modality and the tasks used to deal with each problem.

Employed to teach self-instruction were the visual closure subtests of the Illinois Test of Psycholinguistic Abilities, two WISC-R Block Designs, four WISC-R comprehension questions, and the Rosensweig items. Role playing of difficult situations (asking for attention, classroom misbehavior, dealing with negative self-image) with an emphasis on problem-solving techniques, was used. Other materials included dominoes, the game of Trouble and penmanship and mathematics exercises. In addition, throughout the twelve training sessions each child was asked about what they were doing and how they were doing it. An emphasis on the process (i.e., metacognition) was maintained throughout the sessions.

TREATMENT DESIGN

A multiple baseline across three subjects was used in this study. Each subject was seen individually by the therapist for a total of nineteen sessions, including assessment and follow up. Figure 1 below graphically outlines the design of the treatment employed.
INITIAL SUBJECT INTERVIEWS

Each child was seen individually for two hours before training commenced. The purpose of the interviews was to develop a friendly relationship with the subjects and assess his or her interests and desires. Topics of interest for each child were found and focused on until each child felt more at ease with the therapist.

Once a friendship was begun with each child, the therapist discussed the problems each child was experiencing and how their behavior was not helping him or her get what they wanted. Each subject was informed that testing revealed that he or she was quite bright, but that problems were hiding their real ability. Each subject was told that the therapist knew some games or skills that could help them avoid problems and get what they wanted. The subjects were told how
self-instruction could help them to get things done as quickly as possible, to help them control situations, and to help them gain attention. Finally, each subject was given an embedded figures strip from the ITPA to complete. After the subjects completed the task, the therapist showed each child the objects they had missed. He then modeled self-instruction and problem solving with a new strip. Each child was then asked to state the difference in the therapist's approach that allowed him to find all the objects. All three subjects were able to comment on the use of self-instruction and then attempted another strip which they successfully completed. The goal of this process was to have the children see that it was to their advantage to work with the therapist because they would improve in areas they valued. This process was adapted from the model presented by Templeman and Wollersheim (1979). At the end of the session, two of the children expressed a very strong desire to start training immediately while S2 did not express an interest in the program.

The second interview began with a review of the first. Each child was then asked to tell the therapist the story of the Tortoise and the Hare. All the children knew the story and retold it. The therapist asked each child which of the two animals he or she was like when problems occurred. Each child quickly concluded that a fast "rabbit-like" pace led to errors and unfinished, sloppy work. Each subject was then given two 3 x 5 laminated index cards (see Appendix D). One portrayed a rabbit running with a bright red line through it and a "NO" underneath. The other card portrayed a turtle with a bright green "YES" underneath it. The cards were drawn in attractive colors with the
rabbit looking tired and the turtle appearing calm and confident. The children were instructed to keep the cards with them in school and to look at them occasionally. When the subjects looked at the turtle they were to remember to slow down and use self-instruction. Posters of each picture were given to the parents and teachers to place in conspicuous places. All three children appeared to like the cards and brought them with them to the training sessions. In addition, the teachers reported that the children would often take their cards out of their desks and look at them when doing class work, but that this behavior did not seem to be interfering with their actual work.

**TRAINING SESSIONS**

Each child was seen for twelve one-half hour training sessions. All sessions were conducted in the school in the morning, three times a week. The morning sessions gave the subjects the opportunity to immediately practice in class what was worked on in the session.

Each session involved self-instruction and problem solving with one or more of the training materials. The self-instruction sequence generally started with the therapist doing the task out loud while using a problem-solving procedure (stating the task, thinking of many possible alternatives, evaluating the consequences of each alternative, choosing the best alternative, and checking the work). Next, the therapist did the task while the subject verbalized the strategy. The subject then did the task while saying the strategy out loud. Finally, verbalization of the strategy was faded out.
The following example of self-instruction with problem solving was used with the embedded figures strip task:

O.K. My task is to go over this strip and find all the objects. I better go slow and carefully so I don't miss any. First, I start at one end and slowly go up and down while looking for the hidden objects. Now I move my finger over a little and continue to go up and down to find the objects. Oh, there I found one, good. Now I keep going up and down. I see one way over there, but I won't skip over there to get it because if I do I'll miss some in between, so I'll just keep going up and down and look carefully...There, finished and I got them all.

Modeling and role playing of self-instruction was performed with tasks that subjects had difficulty mastering. Praise and support were given throughout the sessions.

Originally, a response-cost system was planned for use during the training sessions. After consideration of the subjects' ages and the strong response to social reinforcement, this element was dropped from the program.

**PARENT-TEACHER SESSIONS**

The therapist met with the parents and teachers of the subjects for two training sessions and one follow-up session. The first two sessions involved an explanation of the program. A videotape of the therapist using self-instruction was presented. Tasks with self-instruction were role played with the parents. An explanation of each child's motivation for training was given as well as an explanation of how the "Tortoise and Hare" story was being used. The parents and teachers were asked to assist the children in using self-instruction by
reminding them to "look at their cards," and "work like the turtle."
Copies of several chapters from *Raising a Hyperactive Child* (Steward & Olds, 1973), which dealt with practical responses to typical impulsive behavior, were distributed. Finally, specific problems with program implementation were discussed. The follow-up session involved an explanation of the results with suggestions on how to strengthen the improvements made.

**CLASSROOM RESPONSE-COST INTERVENTION**

If, by the end of one week following self-instruction training, no significant improvement was noted, a response-cost token economy was established for each subject. A session was conducted with the parents and teachers, explaining the system and deciding upon reinforcements and privileges to be used. At the beginning of each school day each subject received a number of tokens equal to the number of thirty-minute blocks of time the subject spent in the classroom (approximately eleven). The teacher noted at the end of each thirty-minute period whether the child violated any of the ten items from the Conners Rating Scale (short form). If the child did violate an item, even after one or two warnings, then one token was taken away and the teacher recorded its removal while also explaining to the child why it was taken and how he could avoid its recurrence. Token exchange for reinforcement occurred before lunch and in the last thirty minutes of the school day. This phase of the program is still in operation and the data is incomplete concerning its effectiveness.
FOLLOW UP

Each subject was reassessed on all the dependent measures at one month following the last training session while additional assessments are planned at three, six and eight months following the last training session.
CHAPTER FIVE

RESULTS, DISCUSSION AND SUMMARY

RESULTS

Behavioral Observation

Each child was observed approximately fifteen times. An interrater reliability of 80.6% was based on twelve reliability checks by two rotating observers. Table 4 provides mean data on scores of inappropriate behavior.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Training</th>
<th>Posttreatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1:</td>
<td>72 (26)</td>
<td>54 (56)</td>
<td>44 (16)</td>
</tr>
<tr>
<td>S2:</td>
<td>50 (45)</td>
<td>43 (18)</td>
<td>32 (78)</td>
</tr>
<tr>
<td>S3:</td>
<td>54 (51)</td>
<td>43 (48)</td>
<td>14 (21)</td>
</tr>
</tbody>
</table>

* ( ): range values

Each subject's frequency of inappropriate behavior decreased following treatment. S1 and S3 demonstrated the most significant improvement with a mean reduction of forty and twenty-eight inappropriate behaviors respectively.

An insufficient number of observations prevents a statistical analysis; however, all three subjects show a reduction in the frequency of inappropriate behaviors. Figure 2 provides specific observation data across baseline, treatment and posttreatment assessment.
Frequency of Inappropriate Behaviors

Baseline
Post training
4 month follow-up
Training
Rating Scales

Table 5 presents pretreatment and posttreatment scores for each subject on the Conners Rating Scale (short form).

Table 5. Conners Rating Scale results.

<table>
<thead>
<tr>
<th>Subject (S)</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>parent</td>
<td>3.5</td>
<td>2.2</td>
</tr>
<tr>
<td>teacher</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>S2:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>parent</td>
<td>2.4</td>
<td>1.5</td>
</tr>
<tr>
<td>teacher</td>
<td>1.8</td>
<td>1.9</td>
</tr>
<tr>
<td>S3:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>parent</td>
<td>3.7</td>
<td>2.0</td>
</tr>
<tr>
<td>teacher</td>
<td>3.5</td>
<td>2.5</td>
</tr>
</tbody>
</table>

All subjects show improvements except for S2 on the teacher rating. Several reasons may explain the slightly higher score at posttreatment on the teacher report for S2. First, the scores given by S2's teacher are relatively low to begin with. It is possible that S2's teacher did not consider him to be a behavioral problem. The slight change in scores, therefore cannot reliably indicate a deterioration in behavior, but the failure for the score to diminish might indicate a lack of change as perceived by the teacher. During an initial interview, S2's teacher commented on several occasions that the boy was not a behavioral problem in class, but that his problems with impulsivity focused on his school work. Consequently, the teacher may not have perceived a behavioral problem and expressed this in both assessments. The second interpretation of this slight change might be that S2 failed to improve in his classroom behavior. Behavioral observation data, however, suggests a reduction of inappropriate behaviors and, therefore,
supports the first explanation of the teacher's report of S2.

Table 6 presents pretreatment and posttreatment results for each subject on the Zukow parent and teacher rating scales.

Table 6. Zukow Rating Scale results.

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>parent</td>
<td>23</td>
<td>15</td>
</tr>
<tr>
<td>teacher</td>
<td>60</td>
<td>47</td>
</tr>
<tr>
<td>S2:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>parent</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>teacher</td>
<td>25</td>
<td>27</td>
</tr>
<tr>
<td>S3:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>parent</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>teacher</td>
<td>41</td>
<td>37</td>
</tr>
</tbody>
</table>

S1 was viewed by the parents and teacher as demonstrating the most improvement, while S3's data suggest some improvement. S2 again has the weakest results. The slight negative direction of the teacher's ratings for S2 may be explained by the same analysis of S2's negative trend on the Conners Scale.

Both the Zukow and the Conners rating scales indicate that behavioral improvements were perceived by the parents and teachers of two of the subjects. S2's data are less consistent, possibly suggesting that overt behavioral problems were not as much of an issue for him as for the other children.

**Academic Performance**

S1's report card data is presented in Table 7 below.
Table 7. Sl's report card.

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>Fine Arts</td>
<td>S-</td>
<td>S-</td>
</tr>
<tr>
<td>Language</td>
<td>D+</td>
<td>C-</td>
</tr>
<tr>
<td>Penmanship</td>
<td>C-</td>
<td>C</td>
</tr>
<tr>
<td>Mathematics</td>
<td>D+</td>
<td>C</td>
</tr>
<tr>
<td>Reading</td>
<td>C</td>
<td>C+</td>
</tr>
<tr>
<td>Science</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>Health</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>Social Studies</td>
<td>D</td>
<td>D-</td>
</tr>
<tr>
<td>Spelling</td>
<td>D-</td>
<td>D</td>
</tr>
<tr>
<td>Personal Dev.</td>
<td>S-</td>
<td>S-</td>
</tr>
</tbody>
</table>

S: satisfactory

Sl's academic performance fails to suggest a trend towards improvement. Five grades improved slightly while three grades dropped slightly. Conduct grades, which are subsumed under Personal Development indicated no change. Although Sl's teacher reported a sizable improvement in the child's penmanship during the posttreatment assessment, this improvement was barely noted on the report card which was issued five weeks following training. It seems likely that much of the improvement in penmanship did not continue past posttreatment testing or did not generalize to all written work. The teacher reported that she had given Sl "the benefit of the doubt" on the first reporting period, but had not been so generous on the second. This shift in approach may have masked Sl's actual improvement by inflating the pretreatment grades.

S2's report card data is presented in Table 8.

S2's academic performance suggests a trend towards improvement. Grades on six academic subjects improved while none dropped. Grades for non-academic subjects were mixed with an improvement in effort and personal development and a deterioration in classroom behavior. The
Table 8. S2's report card.

<table>
<thead>
<tr>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language</td>
<td>D+</td>
</tr>
<tr>
<td>Penmanship</td>
<td>D</td>
</tr>
<tr>
<td>Mathematics</td>
<td>C</td>
</tr>
<tr>
<td>Reading</td>
<td>C+</td>
</tr>
<tr>
<td>Science</td>
<td>C-</td>
</tr>
<tr>
<td>Social Studies</td>
<td>C</td>
</tr>
<tr>
<td>Spelling</td>
<td>C</td>
</tr>
<tr>
<td>Personal Dev.</td>
<td>S-</td>
</tr>
<tr>
<td>Behavior</td>
<td>S-</td>
</tr>
<tr>
<td>Effort</td>
<td>S-</td>
</tr>
</tbody>
</table>

U: unsatisfactory

A drop in the behavior rating was primarily due to the child's excessive inappropriate talking during class time. The penmanship improvement noted on the report card is consistent with the teacher's evaluation of S2's penmanship performance at the posttreatment testing. The stability of this change in grades suggests that S2's penmanship training may have generalized to the classroom and was maintained for the five weeks following treatment.

S3's report card data are presented in Table 9 below.

Table 9. S3's report card.

<table>
<thead>
<tr>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion</td>
<td>S</td>
</tr>
<tr>
<td>Fine Arts</td>
<td>S</td>
</tr>
<tr>
<td>Language</td>
<td>C</td>
</tr>
<tr>
<td>Mathematics</td>
<td>C-</td>
</tr>
<tr>
<td>Reading</td>
<td>C</td>
</tr>
<tr>
<td>Science</td>
<td>S-</td>
</tr>
<tr>
<td>Health</td>
<td>S</td>
</tr>
<tr>
<td>Social Studies</td>
<td>S-</td>
</tr>
<tr>
<td>Spelling</td>
<td>B-</td>
</tr>
<tr>
<td>Personal Dev.</td>
<td>S-</td>
</tr>
<tr>
<td>Behavior</td>
<td>S-</td>
</tr>
<tr>
<td>Effort</td>
<td>S</td>
</tr>
</tbody>
</table>
S3's data indicate that four grades improved while one declined slightly. Penmanship was subsumed under Language and the improvement noted on the report card is similar to the improvement noted by the teacher at the posttreatment assessment. As with S2, the stability of the improvement in penmanship from posttreatment to the second report card suggests that S3's training may have generalized to the classroom and was maintained for five weeks following treatment. S3's class was taught by a substitute teacher for three weeks. This change in teachers may have suppressed further possible gains or it may have otherwise compromised the data for the second report card.

**T.A.T.**

S1's stories provide the clearest example of positive effects from the use of self-instruction with T.A.T. stories. A common remark for S1 was that she could not think of stories. S1 was unable to give a story to Card 1. The second pretreatment card (12M) was a slightly more successful attempt:

Card 12M (Pretreatment): O.K. The boy in bed is sick and he's laying there and his friend is going to try and help him. And they're in a dark house, a great big dark house. I can't think of anything else.

S1 displayed self-instruction and problem solving while completing the posttreatment cards. Card 13B provides one example:

Card 13B (Posttreatment): The task is to do the picture and the story. O.K. The boy looks like he is in an old shaggy barn on a ranch and he looks like he's in an old house and he looks sad or mad because the farm got burned down or something and he's probably thinking how he felt and how he had fun on the farm and he wanted another farm like it.
Si's posttreatment stories were more complete and she gave feelings to the characters. Si used self-instruction in a whispered voice to remind herself to go through the appropriate problem-solving steps in the process of completing the task. The improvement noted between pre and posttreatment stories is very clear. The overt use of self-instruction and problem solving with the superior stories at posttreatment strongly suggested that this subject's story-telling performance noticeably benefited from the use of self-instruction and problem solving. Story telling or T.A.T. training was not used during treatment, therefore, the use of self-instruction and problem solving represents Si's own attempts to apply the training to a new task.

S2 showed no improvement on posttreatment stories. S2 gave all four stories almost immediately after presentation of the cards. Neither self-instruction nor problem solving were observed nor were they indicated in the stories. S2 used equal numbers of repetitions in all four stories. "Run on" and incomplete sentences were also equally used.

S3 did not overtly use self-instruction or problem solving on either set of T.A.T. cards. However, a qualitative analysis of the two sets of stories suggests that S3's posttreatment stories were more integrated and followed the instructions more closely. Cards 1 and 13B provide a good comparison.

Card 1 (Pretreatment): Do I tell you what it is? Well, once upon a time there was a boy and he had to take violin lessons, and he did not, he didn't like piano practice or violin practice and one day his mother told him to do, play the violin for his grandma and he just sat there and didn't do anything. So his mother told him to do it, to play the pi...play the violin and so he did and his
grandmother was embarrassed because his grandson did not know how to play the violin and he'd been studying it for two years. So when he finished his grandmother took him to the Dairy Queen and that was all.

The underlined sections indicate flaws. Repetition, incorrect naming of the instrument and the wrong gender for a possessive adjective suggest that S3 did not give much thought to the story and did not stop to notice errors before saying them. The ending appears to have been tacked on without much thought.

Card 13B (Posttreatment): Once upon a time in an old, in an old shack there lived a family with a little boy that was always worried. The boy was always worried because the family was poor and they didn't have very many things. And one day the boy went out and sat on his porch and was thinking. He was thinking of what he would do when he was old. The end.

This story contains only one repetition and does not have the same type of errors as does the first story. In addition, the story reaches a logical conclusion. Although the difference between the two stories cannot be proven to be the result of self-instruction, such a conclusion is suggested by the pre-posttreatment comparison.

Stanford-Binet Picture Completion (Draw-a-Person)

S1 failed to add hair and failed to complete the eyes in the pre-treatment drawing. A malformed leg without a foot and malformed arms without hands were also noted. The posttreatment drawing displays a leg with a foot, two arms with attempts at hands, eyes and hair. A Comparison shows some improvement in the posttreatment drawing with an attempt to include more detail. S1 overtly used self-instruction to do
the task.

Neither of S2's figures lack essential appendages. The posttreatment figure does evidence a move away from sticklike appendages with an attempt at more realistic arms, legs and hands. S2 did not display self-instruction; however, after stopping, he did review his work and added more detail.

S3 failed to include ears and the correct number of fingers on his pretreatment figure. On the posttreatment drawing S3 failed to draw the ears and completely left out the fingers. A noticeable lack of improvement and a slight deterioration is noted on the posttreatment drawing. S3 did not demonstrate self-instruction on the task and he completed both administrations in an equally short period of time.

WISC-R Mazes

S1 was given mazes five and eight at pretreatment and mazes six and seven at posttreatment sessions. Errors were scored when the child's line touched a wall or crossed into a dead end. S1 had one error on each of the pretreatment mazes and one total error on the posttreatment set. S1 reported having previous experience with mazes. Apparently the subjects' school includes mazes in their recreational curriculum. Consequently, each subject brought well-marked-out attack strategies to the task. S1 did not display self-instruction on the posttreatment mazes nor did she appear to perform the posttreatment mazes in a different manner from the pretreatment performance.

S2 was given the same two sets of mazes and also reported doing many mazes in school. S2 had one error on the pretreatment mazes and
four errors on the posttreatment mazes. The actual increase in errors was compatible with a quicker pace and absence of self-instruction during the posttreatment testing.

S3 was given the same sets of mazes as S1 and S2. S3 did not display overt use of self-instruction; however, he took his time on all the mazes and asked if he could "think it out first." S3 also reported extensive previous experience with mazes. He had seven errors on the pretreatment mazes and five errors on the posttreatment mazes.

The results with this dependent measure may have been seriously confounded due to all three subjects having previous practice with mazes. Inconsistent and weak results may suggest previously engrained task strategies with mazes which led to an absence of effect for self-instruction.

Rosensweig Picture-Frustration Study

S1's pretreatment responses were given very quickly and did not evidence well-thought-out response selection. For example, S1 responded to "You're a liar and you know it," with, "You, no let me see, I'm not lying you are!" S1 demonstrated self-instruction at the posttreatment testing. Her response to scene twenty clearly demonstrates the use of self-instruction with problem solving:

I wonder why she didn't invite us? O.K. These ladies and this man are over here listening to the radio and here's these people over here that look depressed because they didn't get invited. They could say she doesn't like me and didn't want to invite her or they forgot to invite her or maybe they don't like her or maybe they're good friends but she didn't feel like inviting her. The best answer is, she is my best friend but she forgot to invite me. O.K. I wonder
why she didn't invite us because we are her best friends and she forgot to invite us.

S2 responded to all pretreatment and posttreatment scenes in the same manner. He read the given comment first on each scene and immediately responded to it. Self-instruction was not noted on any of the scenes. Although S2 failed to use self-instruction, he did provide responses that were more directly related to the scenes and more appropriate than the responses of S1 or S3. This fact may suggest that S2's level of impulsivity was not severe enough to detract from the adequacy of his answers.

S3's pretreatment responses to two scenes reflect his impulsivity. Both answers were given immediately. Following one response, S3 commented that, "I always do that, I say something fast and then think of something better to say." Self-instruction and problem solving were used on the posttreatment scenes. On each posttreatment response he repeated the given comment, described in detail what was occurring in the scene, gave possible answers and then selected one answer. S3 used self-instruction in a whispered voice. As a comparison, on the pretreatment scene "You're a liar and you know it," S3 responded with "I am not you dirty rat!" At posttreatment, S3 responded to "She should have been here ten minutes ago," with "I know, I hope she is safe." This choice in responses was made after self-instruction was used with problem solving.

S1 and S3, the two children with the highest levels of impulsivity according to rating scales and behavioral observations, both utilized self-instruction and problem solving in their posttreatment answers.
These answers were more relevant to the scenes and generally were more adequate. S2 failed to show any change in response style, however, his responses were more adequate at both administrations than the responses of S1 or S3.

Self-Report

A modified Zukow scale was administered to each child to assess his perception of his impulsivity. Each subject endorsed two or three problems to a greater extent at posttreatment than he had at pretreatment testing. Ratings of difficulties were, "Never," "Sometimes," and "A lot." All subjects allotted more difficulty to item nine (I have trouble waiting for things and get upset when I have to wait) by endorsing "Sometimes" at posttreatment as opposed to the "Never" rating initially given. S2 and S3 responded in the same manner to item six (I get angry at little things and have temper tantrums). In addition to these common changes, S1 changed responses from "Sometimes" to "Never" on item eight (I can play games as well as others can). S3 changed responses from "Sometimes" to "A lot" on item five (I move around in my desk and in class). S2 changed responses from "Sometimes" to "A lot" on item one (I cause trouble in class by not doing what the teacher says). It is interesting that each child reported a greater level of difficulty after receiving training in ways to deal with such problems. These changes may reflect an increased willingness to admit problems now that each subject has ways to deal with them, it may be the result of chance error, or it may simply be the result of self-monitoring effects that were a by-product of treatment.
Ancillary Measure

A posttreatment WISC-R was administered to SI to assess whether the initial full scale IQ of 71 was indicative of intellectual capacity or extreme impulsivity. Forty days following the initial testing, SI obtained a WISC-R full scale IQ of 98 which represents a 27-point IQ gain. The therapist administered both tests and followed the standardized procedures in both instances. This dramatic change in scores suggests that this child's impulsivity was having a severe inhibiting influence on her intellectual performance. Qualitative comparisons between tests clearly demonstrated posttreatment use of self-instruction and problem solving. All subtests evidenced gains except Digit Span which remained constant. SI displayed less doubt and attempted to answer more questions on the posttreatment test than on the pretreatment test. SI's low pretreatment score may have largely reflected a quick admission of ignorance and inability to answer items which with self-instruction and problem solving she was able to answer. The gain of 27 IQ points suggests the extent to which the use of self-instruction and problem solving can minimize the inhibiting effects that an impulsive style has on intellectual or academic performance.

Response-Cost

At the time of this writing data collection for the response-cost phase of the intervention was incomplete. Two subjects participated in the response-cost phase for two weeks. During this time neither subject lost more than three of their twelve daily tokens. Mean number of tokens lost each day was one. Unfortunately, difficulties
with classroom observation data collection render this particular data unreliable for the response-cost phase. Therefore, it is not included.

**DISCUSSION**

**Primary Measures**

**Behavioral Observation.** Data for all three subjects does not indicate a clear baseline to intervention effect; however, a baseline to posttreatment frequency analysis does indicate a moderate reduction in inappropriate behaviors for all children. Analysis of data point overlap does not indicate a baseline to intervention effect; however, as with frequency data, a baseline to posttreatment analysis indicates a moderately consistent pre-post effect. S1's data shows no overlap (on eight points); S2's data demonstrates two points of overlap (on ten data points); and S3 obtained a one point overlap (on twelve total points). The point ranges fail to demonstrate a baseline to intervention reduction in variability; however, a comparison of baseline and posttreatment ranges for S1 and S3 do indicate a reduction in variability. S2's point range indicates an increase in variability. Means for baseline, intervention and posttreatment periods show a steady decline in the number of inappropriate behaviors for all children.

A lack of intervention effects during the training period is indicated by frequency, overlap and range data. The sequence of training materials may account for this delay in positive effects. Self-instruction training, with a behavioral focus, did not occur until the third training session. Specific behavioral problems experienced
by the children were not addressed until the third session. Following this session, the subjects began attempting self-instruction in dealing with behavioral problems. Each subject discussed these early attempts to employ self-instruction, and modeling and role playing were used to refine their application of the techniques. Consequently, the subjects received more advanced self-instruction training late in the sequence. As training continued, the subjects may have become more proficient with self-instruction so that they could more effectively apply the training to real life situations. The refined modeling and role playing with subsequent attempts to again use self-instruction in those settings may have resulted in the shaping of self-instructional skills. Training programs might take advantage of this process by structuring training to include a behavioral focus early in the intervention. Such structuring might allow subjects to experiment and turn to later sessions for more detailed help with their attempts at behavioral improvement.

A second possible cause for the lag in treatment effects may be the treatment itself. Taking an impulsive child out of the classroom to work at various activities may stimulate the child. When returned to the classroom, the child may have more difficulty controlling his or her behavior. The knowledge that the therapist is coming to work with the child that day might also be stimulating. Such additional stimulation may interfere with many of the subjects' attempts to control their own behavior. When training ends and post-assessment begins, the subjects may find their behavior more manageable as a result of the removal of the training session stimulation. This interpretation of delayed intervention effects needs to be further assessed.
If stimulation from training sessions acts to suppress behavioral gains, it is possible that self-instruction programs that do not deal with behavioral issues in the first few sessions may actually promote a higher level of inappropriate behavior during the treatment than during the baseline. Unfortunately, very few studies using self-instruction with impulsive children have included behavioral observations. This makes it difficult to investigate the effect of training session stimulation in a post hoc fashion. Of the few studies that Abikoff (1979) has found that incorporate behavioral observations, none have demonstrated significant change. The possibility of the stimulation of training sessions affecting behavior in a negative way could be assessed by extending the training period. Once a prolonged steady rate of behavior is achieved during training, removal of training could be followed with a post training assessment until another steady rate of behavior is observed. This could then be followed with reinstatement of training, which would provide, in effect, an ABAB design to compare levels of behavior. Such an analysis might delineate the role, if any, that training session stimulation plays in the delay of intervention effects.

The implication for previous cognitive-behavioral studies with impulsive children is clear with this interpretation. If subjects were trained during or shortly after school hours, then inappropriate behavior may have been exacerbated by the novel stimulus of the training sessions. If earlier treatments did not include a focus on behavior control via self-instruction and problem solving, then the stimulation from the training sessions may have weakened the effects
of training on behavior. It may then be understandable why such studies have failed to demonstrate behavioral improvements via pre-post rating scales. Until further research on the effects of stimulation from training sessions is available, researchers should be aware of the possible suppression of behavioral improvements by such stimulation.

**Rating Scales.** The Conners Rating Scale data for S1 and S3 indicates pretraining to posttraining treatment effects. S2's ratings are indeterminant as the parents reported a positive change while the teacher indicated a small negative change. S1's teacher did not report ratings and, therefore, the data are incomplete.

Parent and teacher ratings on the Zukow scales for S1 and S3 also indicate pre to posttraining treatment effects. S2's data are again mixed and of marginal usefulness. A ranking of the subjects on Zukow ratings and on baseline behavioral observations suggests that S1 had the most intense behavioral problems, followed by S3. S2 again appears to have the lowest frequency of inappropriate behaviors.

The improvement on both rating scales for S1 and S3 suggests that the reduction in inappropriate behaviors as revealed by behavioral observations were apparent to the teachers and parents of these subjects. The inconsistent findings for S2 may reflect the difficulty of using rating scales in assessing subjects with low levels of inappropriate behaviors or it may reflect an actual lack of improvement in S2's behavior.

**Academic Performance.** Analysis of report card grades for the children does not indicate a consistent positive effect from training.
on academic or behavioral areas. Academic tasks in the training sessions focused specifically on mathematics and penmanship. All subjects improved on both of these subjects, suggesting that training had a beneficial effect that generalized to the classroom and was maintained for the five weeks following training and before the report cards were issued. The consistent improvement in the two trained areas suggests that the mixed results for the remaining subject areas may be due to a lack of generalization of trained strategies. If viewed in this manner, then two conclusions are possible: First, as with other cognitive programs, the data indicates the ability of self-instruction and problem solving to enhance school performance; and Second, training sessions may have to include a focus on each academic area if a consistent positive effect is hoped for in the classroom.

All three subjects failed to improve on behavioral grades while S2's behavior grades actually fell. These findings are in opposition to the rating scale reports of behavioral improvements provided during the posttreatment assessment. Perhaps there was a lack of maintenance of the behavioral improvements noted at posttreatment to the assessment given on the report card five weeks later. Perhaps also the rating scales and teacher conduct grades were based on different criteria, making the comparison of the two types of scores invalid. Interviews with all three teachers suggested that the teachers weighted various problem behaviors in a manner that would make it difficult to compare conduct grades with rating scale scores. In any event, the lack of change in conduct grades over time for all three subjects suggests that the short-term behavioral benefit from training did not last through
the first five weeks following training.

Supplemental Measures

Results for all subjects on the five supplemental measures were mixed. No changes were observed on maze performance or on Picture Completion. S2's performance did not demonstrate change from pretreatment to posttreatment training on any of the supplemental measures.

S1 and S3 used self-instruction and problem-solving strategies in posttreatment assessments, with S1 performing in a superior manner on all supplementary measures. Both children demonstrated treatment effects on the Rosensweig P-F Study responses and T.A.T. stories. The Rosensweig was used in training, and the posttreatment performance suggested a training effect. The T.A.T. was not used in training and performance at posttreatment was interpreted as a function of generalization. Posttreatment results were more variable on the T.A.T. with S1 clearly demonstrating self-instruction. S3's stories appeared to be improved, but his performance did not include overt use of self-instruction. Thus, one child was able to apply self-instruction to a new cognitive task; one other child may have indirectly benefited from self-instruction with this new task.

The self-report of all subjects at posttreatment suggests a tendency to endorse more items indicating behavior problems. As reported earlier, these changes may reflect chance, an increased willingness to admit problems now that the subjects see ways to deal with these problems, or it may be the result of self-monitoring effects
that were a by-product of treatment. The last alternative seems more likely when S2's data is analyzed. S2's posttreatment changes were very weak across all measures which suggests little change or use of self-instruction. However, S2 responded in the same manner as the other subjects on their self-reports by endorsing more difficulties. Consequently, although S2 may not have believed he had better ways to deal with his problems, he was more willing to acknowledge or was more aware of them. Therefore, it is possible that the training program resulted in self-monitoring among the subjects. This self-monitoring might be effectively used in training programs by integrating it with the admission of problems and motivation.

One curious outcome was the enhancement of WISC-R scores for S1. S2 and S3 did not require intelligence testing as previous testing suggested IQs above 80. Although the pretreatment IQ obtained for S2 was less than 80, it was decided that this score did not accurately reflect her intellectual ability. A 27-point IQ gain was obtained on the posttreatment testing. This gain may be accounted for by the suppressing effects of S1's tendency to quickly admit ignorance during pretreatment testing as contrasted to a posttreatment performance that capitalized on the use of self-instruction and problem solving. The structure provided by self-instruction and problem solving may have helped S1 attempt questions she had previously avoided. This serendipitous finding suggests that self-instruction and problem solving may be powerful cognitive boosts for some impulsive children. Such outcome measures should be integrated into future research to assess the validity and generality of the above results.
Motivation

Two methods to motivate the children to use self-instruction were outlined earlier (pp. 54-60). A response-cost system keyed to the subjects' use of self-instruction and appropriate behavior was implemented with S1 and S3 following postintervention assessment. S2 was removed from the study following posttreatment assessment at the request of the parents due to personal reasons. A response-cost system was not used during training sessions as S1 and S3 demonstrated an obvious desire to attend to the sessions without external reinforcement. A response-cost system with S2 during training might have improved his participation during the sessions. The post-intervention response-cost system with S3 ended after four weeks while S1's response-cost system is still in effect. Although behavior continued to improve, the connection between the response-cost system and the use of self-instruction was difficult to establish. The effects of the response-cost system on the use of self-instruction are difficult to determine. Preliminary one-month follow-up data on S3 suggests a loss of behavioral gains with the removal of the response-cost system. A change in teachers during the week of the follow-up assessment makes this loss difficult to interpret. Controlled studies comparing response-cost systems and combination response-cost/cognitive treatments might clarify the role self-instruction can play in behavioral performance in a response-cost system.

A second attempt to enhance subject motivation to use self-instruction involved application of the ideas offered by Templeman and
Wollersheim (1979). Several sessions were spent with each child talking about topics of interest and playing games. An open and respectful relationship was achieved with S1 and S3, but the relationship with S2 was less firmly established. Following these first few sessions, the therapist discussed the kinds of problems each subject might be experiencing. The therapist stressed that each subject was quite bright and could learn to avoid the things that cause them trouble as well as get more of what they desired. S1 and S2 appeared "eager" to learn the "tricks" to help them with their problems. S2, however, denied having any problems and became defensive and reluctant to participate. An analysis of outcome data clearly demonstrates that S2 had little improvement across any of the measures. This lack of improvement reflects S2's lack of motivation. It appears that a child's own perceptions of his or her difficulties plays a large role in the ability to motivate the child to work on those problems via self-instruction, problem solving or any other active intervention.

Bugenthal, Wahlen and Henker (1977), in an experimental study with hyperactive children, noted that cognitive interventions may be more sensitive than behavioral interventions to a child's expectancies and causal constructs. In their study, children with higher personal attributions of causality had a more favorable response to cognitive interventions while children having a more external attribution of causality had a less favorable response to cognitive programs and a more favorable response to a behavioral program. Bugenthal, Whalen and Henker go on to suggest that the level of personal attribution and control may be a selection variable for placement into a cognitive
or behavioral intervention. In this study, the children with the more serious problems were more willing to admit them and learn how to cope with them. Therefore, motivation may be a function of the severity of the child's problems and his willingness to acknowledge his problems. Or, if we use Bugenthal's model, the level of personal attribution and control may be partly a function of the severity of the problems and the child's willingness to admit the existence of those problems.

If monitoring effects occurred with each child, as suggested by the self-report data, perhaps S2 might have been better motivated by having an initial self-monitoring period followed by an attempt to elicit problems and motivation to change.

A possible relationship between severity and admission of problems, and desire to improve suggests that variables exist to select children who will benefit the most from the intervention strategies presented. This interpretation is in line with Bugenthal's experimentally derived conclusions regarding possible selection variables. Research such as Bugenthal's might eventually clearly delineate children who have a higher positive response to cognitive and cognitive-behavioral programs, especially in the areas of generalization and maintenance of skills.

**SUMMARY**

The purpose of this study was to extend previous cognitive-behavioral work with impulsive subjects more completely to academic and behavioral variables. Abikoff (1979) concluded in a thorough review of the cognitive-behavioral literature with children that
cognitive training has had little impact on classroom behavior, while usually aiding academic functioning. In addition, Kendall (1979) has noted that behavioral observation has been lacking in cognitive-behavioral studies with children. Other researchers (Meichenbaum, 1979) have noted the very inconsistent and weak generalization achieved in cognitive-behavioral programs. An analysis of the language development model which self-instruction is based on suggested that training should include material that a child might typically experience as he or she learns to internalize self-statements. Lazarus' BASIC ID model was used to broaden the approach of previous cognitive-behavioral programs which tended to place primary emphasis on one aspect of the subject's difficulty, usually academic performance. By tapping all areas of functioning found through a BASIC ID analysis, it was hoped that generalization to indirectly trained contents, such as classroom behavior, might occur. An attempt to internalize motivation to use self-instruction and problem solving was conducted by adaptation of the Templeman and Wollersheim (1979) model. A response-cost system was also used in an effort to enhance maintenance of effects.

As in previous studies, effects were found on academic measures of performance. Moderate improvements were observed on behavioral measures at posttreatment assessment, while three, six, and eight-month follow ups will assess the maintenance of treatment effects.

A distinction was made earlier in this paper (pp. 37-39) between active and passive treatments. At that time it was speculated that active treatments would result in better generalization and maintenance of effects than passive treatments, as the active treatments required
more conscious activity from the child. A posttreatment analysis of this comparison indicates that treatments with children that demand more active participation of the children may also require greater efforts on the part of the intervening agents. In this study, the therapist spent approximately thirty hours with each subject, parents and teachers over the course of two months. The feasibility of a program requiring a similar time commitment being offered as a regular treatment by a mental health agency or individual school psychologist is limited. Realistically then, the time required to enhance maintenance of an active intervention with children may be a serious limitation to the widespread use of cognitive-behavioral programs with impulsive children. In many cases a combination of drug and cognitive-behavioral treatments may be the optimum approach for dealing with cognitive and behavioral problems of the impulsive child both in the short and the long run. Such a program could be designed to deal with the behaviors and consequences found in a behavioral analysis of hyperactivity and impulsivity (p. 12).

Future studies might profitably focus on comparison studies of combined chemotherapy-cognitive-behavioral programs with cognitive-behavioral and drug programs alone. Such a focus should include long-term follow-up comparisons. Research on incorporating self-instruction and problem solving in school curricula could be conducted to analyze alternative ways for intervening and enhancing maintenance of treatment effects. Finally, research such as Bugenthal's should be replicated and expanded upon to assess the selection variables pertinent to inclusion in cognitive or cognitive-behavioral programs.
Ten years of research with self-instruction programs for hyperactive and impulsive children have failed to find the elixir that solves all the hyperactive child's problems. Rather, future research may find that cognitive-behavioral interventions play a major role in dealing with the long-term cognitive and behavioral problems while chemotherapy may be appropriately used for dealing with short-term behavioral difficulties. Research concerning drug state dependent learning will be required to ensure that a combination of the approaches will be effective.
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APPENDICES
STEP 1: Pre-assessment interview with parents

Time: After initial referral of child to program and prior to accepting the child into the program.

Place: Clinical Psychology Center.

Procedure:

1. The therapist should introduce himself to the parents. An explanation that this interview is to help assess if the child would benefit from this program is in order. The therapist may share with the parents his previous work and research with children which has led him to devise a treatment plan which he is now conducting.

2. The therapist should then proceed to assess the child's appropriateness for the program. Three tasks are conducted. First, the parents are asked to jointly complete both a Conner's Parents Rating Scale (short form) and a Zukow Parents Rating Scale. The therapist may ask the parents to be as open and honest as possible and consider the child's typical or average behavior when completing the rating scales. Second, the therapist should obtain a developmental history from the parents. Introductory comments regarding wanting to know about the child's background and development to help ensure appropriate assessment should be followed by questions regarding: length of pregnancy, movement in the womb, difficulty of delivery, 'difficult baby,' persistent crying, sleeping time and amount, movement in crib, level of activity as infant and child, activity outside of crib and on
STEP 1 (continued)

own, age of first speech and walking, temper and temper tantrums, 
fergitiness, swings in emotion, ability to concentrate, and tolerance 
for delay and failure. Third, the therapist should specifically 
question the parents regarding the child's excessive activity, 
attentional problems and impulsivity.

3. If the parental assessment seems favorable to accepting the 
child into the study, the therapist should explain the nature of the 
commitment required by the parents. The parents should be informed 
that they will be required to meet two or three times with the therapist 
in addition to one weekly session for four weeks. The general nature 
of those meetings may be explained. It should be made clear to the 
parents that their involvement and participation is essential if the 
program is to help their child. A $20 deposit will be required from 
the parents. Fifteen dollars will be returned upon completion of the 
program.

4. The therapist must next explain that the child may have to meet 
with the therapist for three sessions prior to training to allow for 
further assessment. A time for the child's first appointment should 
then be made.
Therapist's Manual

STEP 2: Intelligence Assessment

Time: After Step 1.

Place: Clinical Psychology Center.

Procedure:

The therapist must obtain the IQ of the perspective subject. A minimum IQ of 85 is required for each subject. IQ determination may be made from records of earlier testing of the child on the WISC, WISC-R, or Stanford-Binet. If no such records are available, the therapist must administer the WISC-R to the child and obtain the IQ. The WISC-R should be given in the standardized manner with the therapist paying special attention to behavioral observation.
Therapist's Manual

STEP 3: Subject Session #1.

Time: After Step 2.

Place: Clinical Psychology Center.

Procedure:

1. The therapist should introduce himself to the child and explain that he is here to do some fun tasks with the subject. The therapist should carefully explain that the child should do each task in the same way he would do them in school. The child may be given a piece of candy or other food at the beginning of the session. In addition, the therapist should inform the child that he should not be overly worried about doing all the tasks correctly as the therapist is more interested in simply watching the subject do the tasks.

2. The Matching Familiar Figures Test should be given first. The therapist should give the test in the standardized manner.

3. Next, the therapist should give a T.A.T. test with the child using only two pre-selected cards (#1 and #12M). The cards should be presented in their usual manner.

4. The child should next be given the "Draw-a-person" test item from the Stanford-Binet Intelligence Test. The therapist may prepare the subject for this by saying how he would like to see some of the subject's drawing and given him a break from the other tasks.

5. Next, the therapist should ask the subject if he is good at puzzles and then give the subject two mazes from the WISC-R to do (#5 and #8). The standardized maze instruction and administration should be conducted. Note: If the subject has already done #5 and #8 mazes
from a WISC-R given in conjunction with this program, then part five may be skipped.

6. The subject should then be told he will be given comic strip-like pictures where he is supposed to be one of the characters and respond as if he were in the comic strip. The therapist should then proceed to give the child picture #6 and then #10 from the Rosensweig P-F Study.

7. Next, the subject should be given the modified rating scale from the Zukow Parent Rating Scale to obtain the child's own views of himself and his hyperactivity.

8. The therapist should then spend a few minutes with the child using an interview style to obtain some of the child's views of himself, his self-esteem and self-concept and his views of others.

9. Following all testing, the child may be given another food reward and informed that he and his parents may ask about the tasks he just completed in a few weeks.
STEP 4: Assessment Interview with the Subject's Teacher

Time: After Step 3.

Place: School.

Procedure:

1. The therapist should meet with the child's teacher as soon as possible after Step 3, preferably in the teacher's classroom. The therapist should introduce himself to the teacher and very briefly explain that the subject is a candidate for the program. The therapist may share with the teacher his previous work and research with children which has led him to devise a treatment plan which he is now conducting.

2. The therapist should then inquire about the problems and difficulties the child causes for himself and his classmates. Special attention should be given to excessive activity, attentional problems, impulsivity and peer relationships. In addition, the teacher should complete both a Conners and a Zukow Teacher Rating Scale.

3. If the assessments seem favorable to accepting the child into the study, the therapist should explain the nature of the commitment required by the teacher. The teacher should be informed that he/she will be required to meet two or three times with the therapist in addition to the once weekly sessions for four weeks. Further, the teacher may have to run a token economy in her/his classroom for approximately two months. The therapist should inform the teacher of the possibility of obtaining graduate school credit in return for her/his involvement with the program.
STEP 4 (continued)

4. If the teacher agrees to the above, then the therapist should explain that an observer will need to be in her classroom for approximately one-half hour each day for one week and then will observe periodically thereafter. The therapist should carefully explain that only the child's behavior is being observed.
STEP 5: Parent and Teacher Session #1

Time: After baselining is completed.
Place: Clinical Psychology Center.

Procedure:

1. Therapist should introduce self to everyone and have everyone share their names. The purpose of this meeting is twofold. First, to explain the program and its elements and second, to have everyone get acquainted with each other and the therapist. A short discussion on the kinds of problems the parents and teachers are having should be encouraged. The therapist should direct the meeting to reflect mutual care to help the children improve and not allow any parties to feel as if they need to defend the children or make excuses. The therapist may write the problems on a chalkboard for all to see, however, the therapist should be especially careful to explain these problems as a problem in cognitive development and eliminate any thought of blame being due to poor parenting.

2. The therapist should then explain the theory behind this approach. First, an analogy to how adults use self-instruction may be made for everyone to relate to. Then a presentation of Luria and Vygotsky's model, in understandable terms, should be provided. Such a presentation may be taken from the prospectus. The therapist should then explain that the details of this program will be provided at the next meeting.

3. The therapist should then explain the need for behavioral observation of each child. How it is needed to gauge program
STEP 5 (continued)
effectiveness and progress, etc. Each category of the O'Leary system
and the Conners Rating Scale (short form) should be reviewed and
explained so that each person may better discriminate and observe those
behaviors. Practice with these categories may be done via role modeling.
The therapist should explain that this training and practice will
facilitate communicating behavior problems as the program continues.

4. Finally, a time should be established for the second session
with the parents and teachers. That session should be held after base-
lining and within three days of training beginning or having begun.
The therapist should conclude the meeting on a note of enthusiasm and
hope.
STEP 6: Subject Session #2

Time: Last school day prior to treatment beginning.

Place: Preferably the school.

Procedure:

1. The therapist should provide the subject with some kind of food reinforcement at the beginning of the session.

2. The purpose of this session is to allow the subject to become more comfortable with the therapist and to discuss the subject's desires and self-interests. The therapist needs to explore what the subject likes to do in school and especially why the subject rushes through assignments or has trouble attending. As each child may require a different approach, no one way of approaching this step is advisable. The purpose of this step, however, is to ascertain what the child wants to do so that he can be shown how using self-instruction, and, therefore reduced acting out and increased academic performance, will help him better meet those interests.

3. The therapist must help the subject, in as indirect a manner as possible, to see how his current behaviors preclude the possibility of meeting his desires. Typical desires include a desire to finish a task quickly to get it over with, a desire to be in control and a desire to have attention.

4. After explaining the subject's interests and indirectly helping him see how his interests are not being met due to his present behaviors, the therapist should very clearly explain to the boy that, from what the therapist has obtained, that he is a very bright boy who is capable of
STEP 6 (continued)

meeting his own interests, but that he simply does not know a few skills or tricks which the therapist can help him with to avoid trouble and get what he wants. The therapist should discuss with the subject the value of learning these tricks. The session should end with the therapist obtaining the subject's interest to acquire the self-instructional skills so that he can fulfill his self-interests.
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STEP 7: Parents and Teachers Session #2

Time: After baselining and within three days of treatment beginning or having begun.

Place: Clinical Psychology Center.

Procedure:

1. Session #2 should be a continuation of Session #1. More precise information should be provided regarding self-instruction. A review of Session #1 should be provided first. The therapist should provide a step-by-step presentation of the self-instruction procedure as outlined in Appendix C. Following the explanation of self-instruction, a videotape and/or audiotape of self-instruction should be provided with a running commentary on each step. The therapist should foster questioning and discussion by the parents and teachers.

2. The therapist should role play the use of self-instruction with the parents and teachers using Block Design items from the WISC-R and mathematics problems to ensure that the self-instruction process is understood. The therapist should then explain the need for the teachers and parents to pull for and praise the use of self-instruction by the subjects. The teachers and parents should read the story of "The Tortoise and the Hare," to their child and point out how the tortoise, or turtle, is like the child who uses self-instruction. In addition, both the teachers and parents should remind the subject to "be like the turtle, or tortoise," and to "Stop, Look, Listen, and Think," when they are attempting a task or having problems.
STEP 7 (continued)

3. The therapist should next explain the internal motivation of the child to satisfy his self-interests. The therapist may briefly explain how the subject may now see that self-instruction will better satisfy his interests while his current behaviors are self-defeating. The parents and teachers must then be told to ensure that the subject's problematic behaviors are consistently made to be self-defeating and never reinforced by satisfying the subject's original goal of the behavior. An example is a desire of the subject to quickly finish a task so that he can daydream or do other activities. The teacher should insist that the student do work of equal difficulty after completing the test or have the child keep doing the task until he does it correctly. Such a contingency defeats the behavior the subject currently uses and makes the use of self-instruction the better way to satisfy the subject's self-interests. This example should be explained to the teachers and parents and several other examples, such as performing jobs at home or attention seeking, should be dealt with to help the teachers and parents see how they can help make self-instruction more desirable for the subject.

4. The therapist should next explain the need for on-going weekly meetings and behavior rating scales. A time should be set up for the weekly meetings at which time a weekly behavioral rating scale (Conners-short form) will be collected.

5. Copies of chapters in *Raising a Hyperactive Child* (Stewart and Olds, 1973, pages 135-188 and 201-211) should be given out to be read, used, and discussed at future meetings.
STEP 8: Subject Session #3

Time: After Step 6 and preferably after Step 7.

Place: School.

Procedure:

1. This session is the introductory training session for the subject. The therapist should quickly review the content of Session #2 (Step 6) with the subject to remind him of his desire to learn these tricks.

2. The response-cost system should then be explained to the subject. The therapist should give the subject eleven plastic chips and inform him that he can buy special treats with those chips. He may spend one chip for a small treat or use as many chips as he desires to buy a better treat. The therapist should then give the subject a sample of the system by taking one of the subject's chips and give him a small treat in return. Once it is clear that the subject understands the contingencies with the chips, the therapist should explain to the subject that at the beginning of each training session he will be given ten chips which he may use at the end of the session to buy treats. However, the therapist should carefully explain that the child needs to work to keep his chips. If the therapist observes the child not paying attention or not seriously attempting a task or doing it correctly, then a chip will be taken each time the therapist observes such behavior. The therapist should then ask the subject to explain this procedure back to him to ensure that the subject understands the response-cost system. The therapist may then briefly point out the
3. The therapist next gives the subject an embedded figures strip from the ITPA and asks the subject to find the hidden objects.

4. Upon completion, the therapist takes the same embedded figures strip and proceeds to do it while modeling self-instruction. The therapist should use one finger and start on the left margin and use a slow up and down scanning from left to right to find all the objects.

The therapist should model self-instruction in the following manner:

Okay, my task is to go over this strip and find all the objects. I better go slowly and carefully so I don't miss any. First, I start at one end and slowly go up and down while looking for the hidden objects. Now I move my finger over a little and continue going up and down to find the objects. Oh, there I found one, good. Now I keep going up and down. Oh, I see one way over there, but I don't skip over there to get it because if I do I will miss some in between, so I'll get it when I get to that place. I'll just keep going up and down and look carefully.... There, finished and I got them all.

5. The therapist should then ask the subject what he (the therapist) did differently that helped him find the objects the subject missed. The therapist should then help the subject see that it was the self-instruction and a slow and careful pace that allowed for the better performance. This explanation should be used to enhance the subject's motivation by explaining that the subject is a smart boy and can do just as well except that he gets into trouble and doesn't satisfy his own interests because he is not using certain tricks which the therapist uses and can teach the subject. Once the subject
STEP 8 (continued)

expresses interest to learn, the therapist moves to the next part of Step 8.

6. The therapist should quickly go over the turtle and hare story with the subject and help the subject see how a fast pace leads to errors, problems, trouble and an unfinished task. The therapist may then ask which animal the subject thinks he acts like. This should then be related back to the subject's own interests.

7. The therapist should ask the subject to think about what he learned today, about the turtle and the hare and the skills to help him obtain what he wants. The therapist should inform the subject that the new tricks the therapist knows can be taught starting the next day.

8. The subject's remaining chips should be exchanged for treats of the subject's choosing.

9. During this session with the subject, the subject's teacher should have the subject's classmates complete the modified Zukow Rating Scale found in Appendix F. The teacher should explain to the subject's classmates why the scale is being given to them and talk briefly about the program the subject is involved with. Likewise, the therapist should inform the subject that the rating scale is being given to his classmates, but that it is meant not as a popularity poll or to show him that he is not liked, but is to help assess the subject's difficulties and improvement as the program progresses.
STEP 9: Subject Session #4

Time: After Step 8.

Place: School.

Procedure:

1. Therapist should give the subject his ten chips.

2. Therapist may quickly review with the subject what occurred in Session #3 and try to spur the subject's motivation to learn the self-instruction tricks.

3. Therapist may then explain the "Stop, Look, Listen and Think," motto to the subject and give the subject a "Stop, Look, Listen and Think," (S-L-L-T) flashcard along with a flashcard of a turtle and a hare to help him remember and use them.

4. The therapist may then begin the self-instruction training.

First, the therapist should model performing a Block Design task from the WISC-R (perhaps #4), making sure to first specify the task and how to do it ("I have to make my blocks look like this picture. I'll go slow and make sure I do it right."). In the course of modeling, the therapist should make a deliberate and obvious error and spot the error when finished. The therapist should then calmly correct the error and finish the task. For example:

First, I'll take this block and move it like so with the red side up which matches the picture. Now I'll take this block and put it here, it matches the picture too. Now I take this block and slide it over here to match up. Finally, this block goes here. Now finished, but I better check it. Oh-oh, this piece looks different from the picture so I will fix it. By moving this piece around, now it matches the picture. Good!
5. The therapist should then go through the self-instruction process with the subject (see Appendix A or the self-instruction sequence card which provides a quick reminder of the process. The sequence card may be kept as a bookmark in the manual as well as a quick reference during the training sessions).

6. The therapist should help the subject to closely model the therapist's self-instruction with modeling at points where the subject has trouble and rehearsal when necessary.

7. Once the Block Design is completed, the therapist may then attempt some Picture Absurdities from the Stanford-Binet Intelligence Test. (If the therapist feels at all uncertain about the subject's performance with the Block Design, the therapist may first give the subject another Block Design task to do by himself, starting from Step 2 of the Self-Instruction sequence, prior to this task #7). The Picture Absurdities should be done using the same approach as used in the first Block Design (5%).

8. Throughout the session the therapist should remember to observe the subject and take chips away when the subject is not attending to task or seriously attempting the tasks.

9. The therapist should remind the subject of the flashcards and the turtle and to "Stop, Look, Listen, and Think," to aid in using self-instruction.

10. The subject's remaining chips should be exchanged for treats of the subject's choosing.
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STEP 10: Subject Session #5

Time: After Step 9.

Place: School.

Procedure:

1. The therapist should quickly review Step 9 with the subject and remind him of the turtle and to S-L-L-T.

2. The therapist should give the subject his ten chips.

3. The therapist should do self-instruction with the subject using one Block Design from the WISC-R (#5) and follow the same procedure as used in Step 9, but without modeling it first.

4. The therapist should model a WISC-R Comprehension question for the subject along the same lines as in Step 9, but add an analysis of possible alternative answers before selecting one. The therapist should then ask the subject what he did and then have the subject go through the same question. The therapist should then give the subject a Comprehension question to try self-instruction on without the therapist first modeling it.

5. Suggestions, reminders and hints to use the turtle and to S-L-L-T and modeling when the subject errs should all be used.

6. If time permits, the therapist may role play a scene for the subject of the therapist wanting to scream and yell in class, but using self-instruction to stop himself by looking at what he wants and what will happen if he does scream and then using self-instruction to do something else. For example:
STEP 10 (continued)

Boy, am I upset. I could just scream and yell. But if I do, what will happen? I'll get into more trouble and get even more upset and then my parents may find out and I won't get dessert or that toy they promised me. I guess I don't want to yell so much now. Maybe I'll just tell the teacher why I'm so upset.

7. The therapist may go over this example with the subject if there is time, or ask the subject to think about it.

8. The subject's remaining chips should be exchanged for treats.
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STEP 11: Parents and Teachers Session #3

Time: After Step 9 and preferably after Step 10.

Place: Clinical Psychology Center.

Procedure:

1. This session is designed to discuss what has occurred in training with the children to this point. The subjects' learning should be reviewed with the teachers and parents. An audiotape may be played for a few minutes to give the parents and teachers a better idea of exactly what is occurring in the training sessions.

2. The parents and teachers should each be given a copy of the content of each day's training session, that is, what tasks were used to train with the self-instruction. They should be asked to ask the subjects about that content in an effort to pull for self-instruction in other settings. Both parents and teachers should be encouraged to ask the subjects for examples of their self-instruction daily and heavily reinforce the subjects when they do so correctly.

3. The therapist may discuss with the teachers and parents any particular problems they are having with the program and any questions they have regarding the material given them in the last session.

4. Teachers and parents should be reminded to display their turtle and hare, and S-L-L-T flashcards and to record the number of times they ask the subject to remember them and use self-instruction.

5. Parents and teachers should complete a Conners and a Zukow Rating Scale.

6. The therapist should encourage the parents and teachers.
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STEP 11 (continued)

7. The therapist should arrange with the parents and teachers for the next meeting time, preferably after the next week's three training sessions for the subject.
STEP 12: Subject Session #6

Time: Following Step 10.

Place: School.

Procedure:

1. The therapist should review previous training to date with the subject and inquire about the subject's attempts to use self-instruction.

2. The therapist should inquire about how the week has been for the subject and ask about good and bad times and events. Generally, the therapist should make sure the subject feels comfortable and is ready to work.

3. The therapist should give the subject his ten chips.

4. The therapist should review with the subject his desire for getting attention from others, how he goes about it and the consequences. The therapist may model for the subject how to ask for attention and control possible outbursts and disruptive behavior by using self-instruction. The therapist should then have the subject imagine scenes or create the scenes for the subject and have the subject try, through the use of self-instruction, to appropriately ask for attention. The self-instruction training sequence should be used with the therapist paying close attention to the subject's performance. Suggestions and reminders to use the "turtle" and S-L-L-T and modeling when the subject errs should all be used by the therapist to aid the subject's performance.

5. Additional imagined scenes may be used if time permits.

6. The subject's remaining chips should be exchanged for treats of the subject's choosing.
STEP 13: Subject Session #7

Time: Following Step 12.

Place: School.

Procedure:

1. Quick review of session six.

2. The therapist should give the subject his ten chips.

3. This session will involve the actual playing of a game between the therapist and the subject. The game should be geared to allow two players and involve opportunities for quick success and failure, thus allowing for a wide range of emotions. A game that would be finished within thirty minutes is required. Trouble is a recommended game. The therapist should start out and use self-instruction to explain what he is going to do, what he hopes for, the result and how to deal with the emotions. The subject then takes his turn and must perform the same type of self-instruction. If the subject's self-instruction is poor, the therapist has the subject replay his move reminding him to use self-instruction, think of the turtle and S-L-L-T. In the last five to ten minutes of the game the therapist should continue out loud with self-instruction while the subject is told to try his self-instruction while only thinking it to himself. Much verbal praise should be given to the subject as he uses self-instruction, thinks of the turtle and remembers to S-L-L-T.

4. At the end of the game the therapist should discuss how the game went and how the subject felt about it, hopefully to have the subject discover how much more enjoyable it was to do a game this way.
STEP 13 (continued)

5. The subject's remaining chips should be exchanged for treats of the subject's choosing.
STEP 14: Subject Session #8

Time: Following Step 13.

Place: School.

Procedure:

1. Quick review of Session #6 and subject's attempts to use self-instruction.

2. Therapist should give the subject his ten chips.

3. Therapist should use self-instruction to model penmanship skills with the subject. The therapist should describe the task and how he is doing the task while the subject observes. The task may involve simply writing individual letters and then words and sentences. This should follow the usual self-instruction sequence until the subject is using self-instruction for his writing. The therapist should have the subject fade out the out loud self-instruction with the penmanship by the end of the session.

4. The therapist should remind and review with the subject the turtle and S-L-L-T.

5. The subject's remaining chips should be exchanged for treats of the subject's choosing.
STEP 15: Parents and Teachers Session #4

Time: After Step 13 and preferably after Step 14.

Place: Clinical Psychology Center.

Procedure:

1. The purpose of this session is to discuss what has occurred in training with the child to this point. The children's learning should be reviewed with the parents and teachers. An audiotape, preferably of Session #7 with the child, may be briefly played.

2. The parents and teachers should be reminded of the content being taught and asked to ask the children about what they are learning and to demonstrate it to them. Both the parents and the teachers should be encouraged to ask the subjects for examples of their self-instruction daily and heavily reinforce the subjects when they do so correctly.

3. The therapist may discuss with the teachers and parents any problems they are having with the program and any questions they have regarding the handouts given earlier.

4. Parents and teachers should be reminded to display their turtle and S-L-L-T flashcards and to record the number of times they ask the subjects to use self-instruction.

5. The parents and teachers should complete a Conners and a Zukow rating scale.

6. The therapist should reinforce and encourage the parents and teachers.

7. The therapist should arrange for the next meeting time with the parents and teachers for a time towards the end of the following week.
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STEP 16: Subject Session #9

Time: Following Step 14.

Place: School.

Procedure:

1. Therapist should give the subject his ten chips.

2. Quick review of progress with the subject to date.

3. Remind the subject of the turtle and to S-L-L-T.

4. The therapist should discuss the subject's negative images with him. The session may model more of a mini-therapy hour with the therapist helping the subject express how he may or has recently thought of himself in negative ways and images. ("I'm an ugly and dumb old dog.") The therapist should help the subject express how he views himself when he fails tasks or gets in trouble.

5. The therapist should then model such a scene and feelings and use self-instruction to deal with it. For example:

   Now imagine I've just got back a math test that I thought I did okay on and the teacher has written on it that I wasn't trying and that I flunked it. Boy do I feel mad. I could cry. I just never learn, I'm a dumb dog. (Now the therapist introjects the self-instruction.) Well, I tried real hard, and that's what matters. Maybe I forgot about the turtle and to S-L-L-T. I bet I can do it if I slow down, try it carefully and check my work. I'm not dumb, I just need to work more carefully on it. Maybe mom or dad can help me with it at home.

6. The same scene should be given to the subject to try with this type of self-instruction. The therapist should observe closely and offer suggestions and model for the subject points the subject has
STEP 16 (continued)

7. The therapist should give the subject another scene and have the subject deal with it.

8. The therapist should ask the subject for a scene that has caused him a lot of trouble and then have the subject try self-instruction with that scene.

9. The subject's remaining chips should be exchanged for treats of the subject's choosing.

10. The therapist should give the subject much verbal reinforcement throughout the subject's self-instruction attempts with this content.
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STEP 17: Subject Session #10

Time: Following Step 16.

Place: School.

Procedure:

1. Quick review of Session #9 and suggestions on using self-instruction in that manner.

2. The therapist should re-familiarize the subject with the Rosensweig P-F Study. Therapist should tell the subject that these pictures require the subject to imagine himself to be one of the characters and respond as if he was in the scene. The therapist should then proceed to model self-instruction of #3 and then have the subject go through the self-instruction sequence. Of importance in this self-instruction will be the examination of the situation, generation of possible responses, evaluation of possible responses by their likely consequences and choice of the best response.

3. The subject should then do #19 without the therapist first modeling it.

4. The therapist should offer suggestions and remind the subject of the turtle and to S-L-L-T during the self-instruction.

5. If time permits, have the subject do a Comprehension question from the WISC-R without the therapist first modeling it. Then the therapist may provide help.

6. Subject's remaining chips should be exchanged for treats.
STEP 18: Subject Session #11

Time: Following Step 17.

Place: School.

Procedure:

1. Therapist gives the subject his ten chips.

2. Quick review of Session #10.

3. Therapist models appropriately asking for attention by using self-instruction to not act out, but to ask appropriately. Subject then does likewise. The therapist should then role play various situations with the subject where the therapist initially ignores the subject's appropriate requests for attention and has the subject deal with the frustration via use of self-instruction. The therapist may help the subject use self-instruction to correctly deal with the frustration.

4. The therapist then goes over examples the subject experiences in class and at home and they practice self-instruction to deal with those.

5. The therapist should give much verbal reinforcement and support throughout the session as the subject attempts to use self-instruction with this task.

6. Subject's remaining chips should be exchanged for treats of the subject's choosing.
STEP 19: Parents and Teachers Session #5

Time: Following Step 17 and preferably after Step 18.

Place: Clinical Psychology Center.

Procedure:

1. The purpose of this session is to discuss what has occurred in training with the child to this point. The subjects' learning should be reviewed. An audiotape of Session #10 or #11 should be briefly played to allow parents and teachers to see how self-instruction may be used and to encourage them to ask the subjects to use self-instruction in similar situations when they arise.

2. The parents and teachers should be reminded of the content being taught and asked to ask the subjects about what they are learning and to demonstrate it to them. Parents and teachers should be encouraged to ask the subjects for examples of their self-instruction daily and heavily reinforce the subjects when they do so correctly.

3. The therapist may discuss with the teachers any problems they are having with the program.

4. Parents and teachers should be reminded to display the turtle and the S-L-L-T flashcards and to remind the subjects to use both and record the number of times they ask the subjects to use self-instruction.

5. Parents and teachers should complete a Conners and a Zukow rating scale.

6. The therapist should encourage and reinforce the parents and teachers for their efforts.
7. The therapist should arrange for the next meeting time for two weeks from this meeting and explain how self-instruction training is ending soon and will be followed by observation and then a meeting to discuss the need of the response-cost intervention.
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STEP 20: Subject Session #12

Time: Following Step 18.

Place: School.

Procedure:

1. Give the subject his ten chips.

2. Quick review of Session #11.

3. Discuss with the subject what self-instruction involves. For example:

   Well, what have we been doing that helps? ... We tell ourselves what to do. Now how about reminding ourselves what we need to do. For example, here is a tough math assignment I have to do in class. I'm already upset by it, but I have to stop and think it out, otherwise I'll rush and get it mixed up and all wrong.

4. The therapist should role play frustration and anger situations with the subject and have the subject self-instruct about what will happen if he does not use self-instruction. For example, "Boy am I mad, why I could ... No! Wait if I let myself get into that thinking I'll get into real trouble. I need to slow down and think it out. Okay, now what do I have to do?"

5. Present the subject with several frustration and anger situations and have him deal with them using this form of self-instruction.

6. Remind the subject about the turtle and to S-L-L-T.

7. The subject's remaining chips should be exchanged for treats of the subject's choosing.
STEP 21: Subject Session #13

Time: Following Session #12.

Place: School.

Procedure:

1. Give the subject his ten chips.
2. Quickly review Session #12.
3. The therapist and subject should play several games incorporating challenges to elements of the BASIC ID. Games that may be played several times in the course of the session and are easily understood are Trouble, checkers, and tic-tac-toe.
4. The therapist and subject should self-instruct out loud for the first fifteen minutes and then fade out the out loud self-instruction in the last fifteen minutes.
5. The subject's remaining chips should be exchanged for treats of the subject's choosing.
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STEP 22: Subject Session #14

Time: Following Session #13.

Place: School.

Procedure:

1. Give the subject his ten chips.

2. Practice Block Designs with the subject using self-instruction.

3. Practice an embedded figures strip with the subject using self-instruction.

4. Practice a Rosensweig P-F Study item with the subject using self-instruction.

5. Review with the subject what he has learned. Question the subject about any areas he is having more difficulty using self-instruction in. If any, practice one self-instruction with the subject in that area.

6. Discuss with the subject how his use of self-instruction is making his self-interests more obtainable.

7. Question the subject regarding his use of self-instruction in the future. For example, how can he use it in the future? Remind the subject to use his flashcards to help him remember to self-instruct.

8. Explain to the subject that training is over and that every so often thereafter he will see the therapist to do some tasks with. Praise the subject for his work and effort and remind him how he is a bright boy who now knows some tricks to help him satisfy his own interests.

9. The subject's remaining chips should be exchanged for treats of the subject's choosing.
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STEP 23: Subject Session #15

Time: Following Session #14, but no sooner than one day and no later than four days after training ends.

Place: Preferably the school, but possibly the Clinical Psychology Center.

Procedure:

1. Debrief the subject regarding the self-instruction training. Inform him how self-instruction should help him avoid trouble and do better in school if he remembers the turtle, to S-L-L-T and self-instructs.

2. Explain to the subject that you would like to do some tasks like you did way in the beginning. Do not specifically tell the subject to use self-instruction on these tasks. Assure the subject that there is no time limit on the tests and that he can take as long as he needs.

3. Administer the MFFT first. The therapist should give the test in the standardized manner.

4. Next, the therapist should conduct a T.A.T. test with the subject, using only two cards (#13B and #6BM). A transition comment between steps #3 and #4 may be helpful. The T.A.T. cards should be presented in their usual manner of presentation.

5. The child should next be given the "Draw-a-person" test item from the Stanford-Binet Intelligence Test. The therapist may prepare the subject for this by saying he would like to see some of the subject's drawing and also give him a break from the other tasks.
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STEP 23 (continued)

6. Next, the therapist should ask the subject to do two mazes from the WISC-R (#6 and #7). Be sure that the subject has the regular WISC-R maze instructions given to him prior to his doing the mazes.

7. The subject should then be told that he will be given comic strip-like pictures which he is supposed to imagine himself to be one of the characters and respond as if he were in the comic strip. The therapist should then proceed to give the child picture #14 and then #20 from the Rosensweig P-F Study.

8. The modified Zukow Parent Rating Scale should be given to the subject to complete so as to obtain the subject's own views of himself and his hyperactivity.

9. While the subject is with the therapist, the teacher should have the subject's classmates complete the modified rating scale for peer perceptions of the subject's hyperactivity.

10. Following all testing, the subject may be given a food reward.

11. A few minutes should be spent with the subject simply to talk and assess the child's views of the program and his self-concept and ability to use self-instruction.
STEP 24: Parents and Teachers Session #6

Time: Following Step 22. No sooner than one day, but no later than five days after training.

Place: Clinical Psychology Center.

Procedure:

1. The purpose of this session is to debrief the parents and teachers regarding what has been accomplished and to obtain their assessment of improvement via a Conners and a Zukow rating scale.

2. The parents should be questioned in private regarding the child's excessive activity, attentional problems and impulsivity.

3. The parents and teachers should be reminded to display the flashcards and remind the subjects to use self-instruction.

4. The therapist should explain to the parents and teachers the possibility of a response-cost intervention if significant improvement has not been noted. Mention of the response-cost program should not be made until after the rating scales and interviewing have been completed. The response-cost program should be explained in detail to the parents and teachers. Basically, the program involves giving each child a specified number of tokens which are redeemable at the end of each class day for predetermined reinforcements. The child must act appropriately; if he acts inappropriately, a token is taken away by the teacher. In addition, the entire class should be informed of the program with the subject and told how they can help the subject by reminding him of his chips and need to use self-instruction and think of the turtle. If the subject is able to keep a specified number of chips over the course of
STEP 24 (continued)
each week, then the entire class will receive a reward on Friday afternoon. This program will continue until Thanksgiving at which time the reinforcement element will be discontinued for the subject, but continued for the entire class until Christmas at which time the response-cost program will be discontinued.

5. The therapist should explain how the subject's behavior will be evaluated on the basis of the ten items on the Conners short form rating scale which the teachers will be familiar with by then. Each teacher will note at the end of every thirty minutes if the subject violated any of the ten categories. If the subject has done so, then one chip should be taken. The teacher should, in a soft voice, explain why the token was taken and how the subject can avoid its happening again.

6. The teachers should post a chart showing the number of chips the subject saves each day, so that everyone knows the status of the subject's performance and possibility of obtaining the class reinforcement on Friday afternoon.

7. The therapist may discuss the program with the teachers and parents and role play the response-cost setup.

8. The therapist should then explain that he will re-contact the teachers and parents after analysis of the data and discuss the appropriateness of using the response-cost system.

9. The therapist should then discuss and wrap up any problems or questions the parents and teachers have.
STEP 25: Parents and Teachers Session #7

Time: Following Step 24 and analysis of data.

Place: Clinical Psychology Center.

Procedure:

1. The therapist should explain possible reasons for the lack of significant treatment effect. The therapist should discuss the lack of natural environmental reinforcement or demand for the use of self-instruction, lack of practice and lack of peer pressure as possible reasons for insignificance.

2. The therapist should then discuss how a response-cost program can answer each of these issues by ensuring some environmental reinforcement that is contingent on good behavior which is facilitated by self-instruction and by actively involving the subject's peers which when both are combined, directs the subject to increased practice with self-instruction.

3. The response-cost system should be further explained.
   a. Decide upon reinforcements and privileges to be used.
   b. Beginning with each school day, the subject will receive a number of tokens equal to the number of thirty-minute time blocks for which the child is in class.
   c. The teacher will note at the end of each thirty-minute block, or as it occurs, whether the child violated any of the items on the Conners Rating Scale (short form).
   d. If violations have occurred, the teacher takes one chip from the subject and tells the subject, in a soft voice, why it was
Therapist's Manual

STEP 25 (continued)

taken and how the subject can use self-instruction to avoid its happening again. The teacher should then mark on her thirty-minute chart which categories were violated that caused the loss of the token.

e. The teacher may warn the subject two times before a chip is taken.

f. The teacher should instruct the class to help the subject by reminding him of his tokens, using self-instruction, and the flashcards.

g. If the subject manages to save a set number of tokens per week, on Friday afternoon the entire class receives a reinforcement.

h. The teacher should keep the thirty-minute records for the therapist to pick up for analysis.

i. The teacher should record daily the tokens saved and display that information in a public place in the classroom.

4. The therapist and teachers should go over the program and set up a beginning day for it. The first Monday after this session should be day one. Teachers should be assured of help from the therapist and the promise of weekly contact with the teachers should be made.

5. The parents should be told to ask the subjects about the number of chips they save each day and praise the subjects heavily when they save tokens.

6. The therapist should discuss with the parents the follow-up schedule.

7. The response-cost intervention will be conducted in full force
STEP 25 (continued)

until Thanksgiving. After Thanksgiving only the class reinforcement part will be used.

8. Following Christmas, the response-cost program will be dis-continued with only social praise and reinforcement continuing.
STEP 26: Subject Session #16. Follow up at one month.

Time: One month from the last training session (#13, Step 21).

Place: Clinical Psychology Center.

Procedure:

1. Inform the subject that you are happy to see him again and want to talk with him about how he has been doing, but would like to do some tasks with him first.

2. The subject should be given the MFFT first. The therapist should give the test in the standardized manner.

3. Next, the therapist should conduct a T.A.T. test with the subject, using only two cards (#7BM and #14). The T.A.T. cards should be presented in their usual manner of presentation.

4. The child should next be given the "Draw-a-person" test item from the Stanford-Binet Intelligence Test. The therapist may prepare the subject for this by saying that he would like to see some of the child's drawing and give the child a break from the other tasks.

5. Next, the therapist should ask the subject to do two mazes from the WISC-R (#4 and #9). The therapist should be sure that the subject has the regular WISC-R maze instructions given to him prior to doing the mazes.

6. The subject should then be told he will be given comic strip-like pictures where he is supposed to be one of the characters and respond as if he were in the comic strip. The therapist should then proceed to give the child pictures #24 and #5 from the Rosensweig P-F Study.
STEP 26 (continued)

7. The subject should then complete the modified Zukow Parent Rating Scale to obtain the child's own views of himself and his hyperactivity.

8. A few minutes should then be spent with the child to simply talk and assess the child's views of the program, self-instruction and his self-concept.

9. The therapist should then conduct a 15-30 minute booster session with the subject. The subject should be given five tokens prior to beginning the booster session.

   a. First the therapist should remind the subject about the turtle and to S-L-L-T.

   b. Next, the therapist should run through a self-instruction procedure, first with a WISC-R Block Design and then with a short game of Trouble.

   c. The therapist should remind the subject of the turtle and to S-L-L-T and model more appropriate self-instruction for the subject when necessary.

   d. At the end of the booster session the therapist should exchange the subject's tokens for treats of his choosing.

10. During this time period, a Conners and a Zukow rating scale should be obtained from the parents and teachers.

11. The teacher should have the subject's classmates complete the modified rating scale for peer assessment of the subject's hyperactivity without the subject being present.
STEP 27: Subject Session #17. Follow up at three months.

Time: Three months from the last training session #13 (Step 21).

Place: Clinical Psychology Center.

Procedure:

1. Same as Step 26.

2. Use Rosenweig pictures #1 and #13.

3. WISC-R mazes #5 and #8.

4. T.A.T. cards #9BM and #8GF.
STEP 28: Subject Session #18. Follow up at six months.

Time: Six months from the last training session #13 (Step 21).

Place: Clinical Psychology Center.

Procedure:

1. Same as Step 26, but without a booster session.

2. Rosensweig pictures #2 and #16.

3. WISC-R mazes #6 and #7.

STEP 29: Subject Session #19. Follow up at eight months.

   Time: Eight months after last training session #13 (Step 21).
   Place: Clinical Psychology Center.

Procedure:

1. Same as Step 28.
2. Rosensweig pictures #18 and #21.
3. WISC-R mazes #4 and #9.
4. T.A.T. cards #12F and #12BG.
## APPENDIX B

Examples of Self-Instruction Training Content and Assessment Instruments Using the BASIC ID

<table>
<thead>
<tr>
<th>Modality</th>
<th>Typical Problems for the Hyperactive Child</th>
<th>Self-Instruction Content</th>
<th>Assessment Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEHAVIOR</td>
<td>- over-active/restless</td>
<td>- Rosensweig Picture Frustration Study using problem solving and self-instruction with heavy focus on consequences</td>
<td>- Behavioral observation</td>
</tr>
<tr>
<td></td>
<td>- fidgeting</td>
<td></td>
<td>- Unused items from Rosensweig</td>
</tr>
<tr>
<td></td>
<td>- touches everything and everyone</td>
<td>- S/I and P/S with items from Comprehension sub-tests of WISC-R, Stanford-Binet</td>
<td>- Motor coordination tasks</td>
</tr>
<tr>
<td></td>
<td>- clumsy</td>
<td></td>
<td>- Rating scales</td>
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<tr>
<td></td>
<td>- does not complete tasks attempted</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>- reacts with defiance to instructions or commands</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AFFECT</td>
<td>- frustration</td>
<td>- Real play situations modeling impulse control via S/I</td>
<td>- C.A.T.</td>
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<tr>
<td></td>
<td>- anger</td>
<td>- S/I with problematic situations of child</td>
<td>- Clinical interview</td>
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<tr>
<td></td>
<td>- rapid mood shifts</td>
<td></td>
<td>- Observation of child's game/play behavior</td>
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<tr>
<td></td>
<td>- negative self-evaluation</td>
<td></td>
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<td></td>
<td>- explosive temper tantrums</td>
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<td></td>
<td>- poor tolerance for delay and failure</td>
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<td></td>
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<tr>
<td>SENSATION</td>
<td>- poor understanding of bodily consequences of dangerous behavior</td>
<td>- S/I &amp; P/S with focus on consequences for self of inappropriate behavior</td>
<td>- Behavioral observation</td>
</tr>
<tr>
<td>Modality</td>
<td>Typical Problems for the Hyperactive Child</td>
<td>Self-Instruction Content</td>
<td>Assessment Instruments</td>
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</tr>
<tr>
<td>IMAGERY</td>
<td>negative self-images</td>
<td>-S/I with specific negative self-images &amp; self-concept</td>
<td></td>
</tr>
<tr>
<td>COGNITIONS</td>
<td>-believes no one understands him</td>
<td>-S/I with Dissected Sentences from Stanford-Binet</td>
<td></td>
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<tr>
<td></td>
<td>-believes no one likes him</td>
<td>-Behavioral</td>
<td></td>
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<tr>
<td></td>
<td>-irrational self-talk (believes he is dumb, stupid or incapable)</td>
<td>-Picture Absurdities observation from Stanford-Binet-Interview</td>
<td></td>
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<tr>
<td></td>
<td>-hyper self-critical</td>
<td>-S/I with negative/ irrational thoughts (R.E.T.)</td>
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<tr>
<td></td>
<td>-unaware of consequences</td>
<td>-S/I with &quot;Turtle Technique&quot; to slow down impulsive style</td>
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<tr>
<td></td>
<td>-impulsive style</td>
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<tr>
<td></td>
<td>-denial and projection of blame</td>
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<td></td>
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<td></td>
<td>-poor academic performance</td>
<td></td>
<td></td>
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<tr>
<td>INTER-PERSONAL</td>
<td>-physical aggression towards others</td>
<td>-Rosensweig Study with interpersonal scenes</td>
<td></td>
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<tr>
<td></td>
<td>-does not engage in group activities</td>
<td>-Observation of child's interactions with others</td>
<td></td>
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<tr>
<td></td>
<td>-continually seeks attention</td>
<td>-P/S with focus on consequences of appropriate &amp; inappropriate attention seeking behavior</td>
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<tr>
<td></td>
<td>-complains about other's unfairness to him</td>
<td>-Rating scales -Self report</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-disturbs other children by: teasing, provoking fights, interrupting</td>
<td>-Unused items from Comprehension subtests of WISC-R &amp; Stanford-Binet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-argues &amp; must have the last word in verbal exchanges</td>
<td>-S/I with focus on accepting blame &amp; consequences</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-lack of close peer relationships</td>
<td>-S/I with communication problems</td>
<td></td>
</tr>
<tr>
<td>DRUGS</td>
<td>-overactivity</td>
<td>-not apply</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-distractibility</td>
<td>-not apply</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-impulsiveness</td>
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</tbody>
</table>
APPENDIX C

Self-Instructional Training: A Suggested Program
with Examples

A. Overview

1. Program Goal: "To teach the child to cope more effectively and independently with cognitive and social situations with a more careful, attentive, organized approach. Focus is also to help the child acquire processing skills that will inhibit his impulsive style."

2. Synopsis: The program consists of a trainer working on a task while verbalizing a clear statement about the nature of the problem, and the strategies he is using. The child is then asked to do the same. As sessions progress, the child is told to verbalize his strategies less and less loudly, and finally to only "talk them to himself."

3. Set up:
   a. Child may be seen five times a week for about thirty minutes of training.
   b. Should be done in the morning to allow the child a chance to practice his training immediately in the school room.
   c. Preferably done on the school grounds.

B. Self-Instruction Program

1. First explain, generally, what you will be doing with the subject. For example: "We will be working on various kinds of tasks together and finding ways to do them best and fast...."

2. Begin by talking with child about how his current ways of doing things are not working. Find out what he thinks about that and how he would like it to be better. Set the child up to "buy into" the program by helping him see how his current ways of doing things do not allow him to fulfill his desires and self-interests.

I. TRAINER PERFORMS A TASK WHILE TALKING OUT LOUD (subject observes).

ex.: "Okay, what is it I have to do? I have to copy the picture with different lines. I have to go slow and be careful. Okay, draw the line down, down, good; then to the right, that's it; now down some more and to the left. Good, I'm doing fine so far. Remember, go slow. Now back up again. No, I was supposed to go down. That's okay. Just erase the line carefully...Good. Even if I make a mistake I can go on slowly and carefully. Finished, I did it well!"
ex.: "Let's see. I have to match the two pictures that look alike. I have to go slowly to get it right the first time. Look carefully at this one, now look at these carefully. Is this one different? Yes, it has an extra leaf so I know this isn't the match. Now I'll look at the next and see if it's the match. This one seems to have all the same things as the first one. This is the match, then."

ex.: (trainer making an error) "It's okay, I don't need to get upset about it because I can simply go back and correct it. I'll just look more carefully to avoid those mistakes. I will follow the plan to check each one."

NOTE: The self-instructions should include problem solving and instructions that are incompatible with an impulsive style. They might include:

1. Stopping to define the problem or task and what has to be accomplished.
2. Considering the alternative ways to do the task.
3. Evaluating each alternative by looking at the consequences of each alternative.
4. Choosing the best alternative.
5. Checking one's work throughout and calmly correcting any errors.
6. Sticking with a problem until everything possible has been done to solve it.
7. Reinforcing oneself for a job well done.

II. (following the first task observation) THE TRAINER DOES THE TASK, BUT THE CHILD VERBALIZES THE STRATEGY WITH THE TRAINER FOLLOWING THE CHILD'S INSTRUCTIONS.

ex.: "Now I'm going to try the same task (or a similar one) and you will talk it out loud and tell me how to do it, just like we did before. Your words will control all the movements my hands make."

1. Help make sure the child understands that his verbalizations will control your hands, that is, that the talk controls the behavior.
2. Start with tasks you feel comfortable that the child can do.
3. When the child does this, be very supportive and positive in your remarks. Give helpful suggestions only if needed. Reflect to the child how well he is doing and pull for the positive feeling the child has for doing the task.
4. Help the child to incorporate some self-reinforcing comments in his verbalizations.
5. If the child makes mistakes and runs into trouble, role play it for him to get over the problem. Have the child pick it up again starting at just before the point where he made his error.
III. (following success at the second stage) HAVE THE CHILD DO THE TASK (or a similar one) BY HIMSELF WHILE SAYING IT OUT LOUD.

ex.: "Now you do the task out loud and tell yourself what you are doing, how to do it, just like we did before."

1. Be very supportive and reinforcing.
2. If the child still has problems, suggest he remember how we both did it and how he told you how to do it.
3. If the child still has problems may either go back to the last stage and have him tell you how to do it or role play that specific problem for him and have him start up at the point just prior to the problem.
4. Do not move on to the next stage if the child does not successfully do this step.

IV. DO ANOTHER TASK THAT IS A LITTLE MORE DIFFICULT OR TAPS A DIFFERENT CONTENT (follow steps I, II, III).

V. DO ANOTHER TASK THAT IS MORE DIFFICULT (follow steps I, II, III).

VI. DO ANOTHER TASK OF EQUAL OR LESS DIFFICULTY (start at step III, have the child do the task by himself out loud).

1. Do several tasks at this level.
2. Reinforce the child and have him do self-reinforcement and talk about how he feels about being able to do the tasks.
3. If any problems, follow the suggestions from stage III.

VII. ON THIS TASK HAVE THE CHILD DO IT AND SAY IT TO HIMSELF QUIETLY.

1. Be sure that the child has a very good chance of success with the task.
2. If the child has problems, let him do it out loud and remind him and ask him how we have been doing it.
3. If still having problems go back to the suggestions at stage III.

VIII. HAVE THE CHILD DO THE TASKS IN A WHISPER (check for lip movements).

1. Check for use of self-instruction and correct work.
2. Do as many tasks at this level as needed for the child to become proficient.

IX. FINALLY, HAVE THE CHILD DO THE TASKS SILENTLY WHILE THINKING HIS SELF-INSTRUCTIONS.

1. Check with the child to see if he is doing the self-instruction.
NOTES: —If the child has difficulty and is not able to do what a step requires, it may be most helpful to go back and do some more tasks at the last successfully completed step and then come back.

—If the problems persist work with the child to find out how he is using self-instruction. May need to establish a response-cost system to increase the child's attending to task.

*** —Once those tasks have been done, move into a progression of increasingly complex social situations and use them as tasks following the above stages. Try to use situations that tap from all the aspects of the child's personality, that is, from the BASIC ID. Also try to keep the content practical and real-world oriented.

—Might use audio or video presentation of social situations.

—Continue to help the child discover for himself the benefits of self-instruction and how it better helps him attain his self-interests.

Suggested self-instruction articles:


YES
INSTRUCTIONS
1. THIS IS A STOP!

LISTEN?
LOOK and
THINK

EXPERIMENT
2. BEFORE I START ANY OF THE TASKS I AM GOING TO DO, I AM GOING TO SAY: STOP!

LISTEN?
LOOK!
and
THINK! BEFORE!

I ANSWER
LISTEN!
LISTEN
LISTEN
LISTEN
LISTEN

LOOK!
and
THINK!

BEFORE! I ANSWER
### Teacher's Charts for Response Cost Observation

<table>
<thead>
<tr>
<th>Time Period:</th>
<th>Day:</th>
<th>Time Period:</th>
</tr>
</thead>
</table>

#### Degree of Activity

- **Not at all**
- **Just a little**
- **Pretty much**
- **Very much**

<table>
<thead>
<tr>
<th>Observation</th>
<th>Degree of Activity</th>
<th>Observation</th>
<th>Degree of Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restless and overactive</td>
<td></td>
<td></td>
<td>1. Restless and overactive</td>
</tr>
<tr>
<td>Excitable, impulsive</td>
<td></td>
<td></td>
<td>2. Excitable, impulsive</td>
</tr>
<tr>
<td>Disturbs other children</td>
<td></td>
<td></td>
<td>3. Disturbs other children</td>
</tr>
<tr>
<td>Fails to finish things starts short attention span</td>
<td></td>
<td></td>
<td>4. Fails to finish things he starts short attention span</td>
</tr>
<tr>
<td>Constantly fidgeting</td>
<td></td>
<td></td>
<td>5. Constantly fidgeting</td>
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<tr>
<td>Inattentive, easily distracted</td>
<td></td>
<td></td>
<td>6. Inattentive, easily distracted</td>
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<tr>
<td>Fails to finish things he starts short attention span</td>
<td></td>
<td></td>
<td>7. Fails to finish things he starts short attention span</td>
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<tr>
<td>Cries easily and often</td>
<td></td>
<td></td>
<td>8. Cries easily and often</td>
</tr>
<tr>
<td>Mood changes quickly and drastically</td>
<td></td>
<td></td>
<td>9. Mood changes quickly and drastically</td>
</tr>
<tr>
<td>Temper outbursts, explosive and unpredictable behavior</td>
<td></td>
<td></td>
<td>10. Temper outbursts, explosive and unpredictable behavior</td>
</tr>
</tbody>
</table>

**NAME**

**CHILD'S NAME**

<table>
<thead>
<tr>
<th>Time Period:</th>
<th>Day:</th>
<th>Time Period:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Observation</th>
<th>Degree of Activity</th>
<th>Observation</th>
<th>Degree of Activity</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>1. Restless and overactive</td>
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<td>10. Temper outbursts, explosive and unpredictable behavior</td>
</tr>
<tr>
<td>No.</td>
<td>Question</td>
<td>Almost</td>
<td>Never</td>
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<tr>
<td>-----</td>
<td>--------------------------------------------------------------------------</td>
<td>--------</td>
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</tr>
<tr>
<td>1.</td>
<td>Is the child a behavioral problem in class?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Quiet &amp; withdrawn - a loner?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Unable to follow directions?</td>
<td></td>
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<tr>
<td>4.</td>
<td>Finds it hard to play with his peers?</td>
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<tr>
<td>5.</td>
<td>Seems to touch everything and everyone around him.</td>
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<tr>
<td>6.</td>
<td>Attention span is short.</td>
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<tr>
<td>7.</td>
<td>Child fidgets.</td>
<td></td>
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<tr>
<td>8.</td>
<td>There are no activities that the child can focus his attention on.</td>
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<tr>
<td>10.</td>
<td>Has a low tolerance for failure and frustration.</td>
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<tr>
<td>11.</td>
<td>Eyes and hands can't seem to function together.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Exceptionally clumsy.</td>
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<tr>
<td>13.</td>
<td>Coordination is poor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Reacts adversely to changes in routine.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Speech development is slow or not clear.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please return to me. Thank You.
<table>
<thead>
<tr>
<th>Behavior Form</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child's name</strong></td>
</tr>
<tr>
<td>Unusually hyperactive:</td>
</tr>
<tr>
<td>Jumps from one activity to another:</td>
</tr>
<tr>
<td>Short attention span:</td>
</tr>
<tr>
<td>Fidgets:</td>
</tr>
<tr>
<td>Is unpredictable, unmanageable:</td>
</tr>
<tr>
<td>Irritable:</td>
</tr>
<tr>
<td>Overly sensitive:</td>
</tr>
<tr>
<td>Quick tempered, explosive:</td>
</tr>
<tr>
<td>Panics easily:</td>
</tr>
<tr>
<td>Tolerance for failure and frustration is low:</td>
</tr>
<tr>
<td>Emotionally high strung:</td>
</tr>
<tr>
<td>Told ahead of time about an outing or appointment, becomes anxious or upset:</td>
</tr>
<tr>
<td>Exceptionally clumsy:</td>
</tr>
<tr>
<td>Poor coordination:</td>
</tr>
<tr>
<td>Eyes and hands don't seem to function together:</td>
</tr>
<tr>
<td>Has trouble buttoning:</td>
</tr>
<tr>
<td>Has trouble drawing, writing:</td>
</tr>
<tr>
<td>Was slow learning to walk:</td>
</tr>
<tr>
<td>Trouble with bicycle:</td>
</tr>
<tr>
<td>Trouble catching ball:</td>
</tr>
<tr>
<td>Speech development has been slow:</td>
</tr>
<tr>
<td>Speech is not clear:</td>
</tr>
<tr>
<td>Reacts adversely to changes in routine:</td>
</tr>
<tr>
<td>Can't seem to keep from touching everything and everyone around him.</td>
</tr>
<tr>
<td>Not learning in school although he seems &quot;bright&quot;:</td>
</tr>
<tr>
<td>Is child lazy - not &quot;trying&quot; to do well in school:</td>
</tr>
<tr>
<td>Daydreams while doing homework assignments:</td>
</tr>
<tr>
<td>Knows work orally at home - gets to school and has</td>
</tr>
</tbody>
</table>
Appendix F

Subject Rating Scale

This is a task for you to do to help see how you are doing. Read each question and circle the answer which you think is how you usually are. Being honest will help you more than being dishonest.

1. I cause trouble in class by not doing what the teacher says. ---------NEVER------SOMETIMES----ALOT

2. I am by myself and don't join others in games or work. ---------NEVER------SOMETIMES----ALOT

3. I do what I am told to do. ---------NEVER------SOMETIMES----ALOT

4. I find it easy to play with others. ---------NEVER------SOMETIMES----ALOT

5. I move around in my desk and in class. ---------NEVER------SOMETIMES----ALOT

6. I get angry at little things and have temper tantrums. ---------NEVER------SOMETIMES----ALOT

7. If I don't get what I want I get mad and act bad. ---------NEVER------SOMETIMES----ALOT

8. I can play games as well as others can. ---------NEVER------SOMETIMES----ALOT

9. I have trouble waiting for things and get upset when I have to wait. ---------NEVER------SOMETIMES----ALOT

10. People say I tease and bother them. ---------NEVER------SOMETIMES----ALOT
Behavioral Observation System and Training

Procedure:

1. Four observers will be trained. All four should be doing the observation for credit through the University of Montana and be in school for the entire school year.

2. Three observers will do regular classroom observing. One observer will rotate to each of the three classrooms on a given day and provide a reliability check.

3. Training will involve two weeks with five, and possibly more, training sessions not lasting more than an hour at the maximum.

4. Session 1. Session 1 will involve an explanation of the program and details of what will be the observer's tasks. A copy of the article containing the code system will be given to each observer along with a detailed explanation of the code. Approximately fifteen hours of observing will be required for the entire program. Financial remuneration will be discussed for time provided above that required for credit.

5. Session 2. Session 2 will provide an in-depth look at what each code category means. The subjects will be required to memorize each code category and practice role playing of simple observation.

6. Session 3. Session 3 will begin with a quiz to see if the subjects have memorized the code and can accurately identify a given behavior by the code name and number. A $5 prize will be awarded to the person with the best quiz. A videotape of a person doing various codable behaviors will be viewed and the observers will practice
observing and recording. Questions and problems will be dealt with afterward. Tricky situations will be role played by the therapist and dealt with.

7. Session 4. A second quiz will be given to the observers with the task being to identify the described behavior by the code number that it fits. A $2 prize will be given for the best quiz. The observation system will then be introduced. The observers will be told how the twenty-second observe and ten-second record system works and have it demonstrated to them by the therapist using a tape recorder saying "observe" followed by a twenty-second pause and then a "record." Each observer should then observe the videotape and follow the tape recorder for observation. The recorder should be used without the ear phones for this trial. The subject should then be told where they will be observing and told when they will begin. Each observer should have a tape recorder at his disposal that can be battery operated.

8. Session 5. Each observer should be given his observation time tape and instructed on how to use it. A videotape reliability check should then be conducted with the observers using their own tape recorders and ear plugs. Re-testing and practice during this session may be conducted if interobserver reliability is below 75%. A sixth session may be scheduled if reliability is a problem.

9. Dependent Measure. The dependent measure is the Mean Frequency of Disruptive Behaviors. This measure is determined by dividing the total number of disruptive behaviors by the number of intervals observed.
10. Reliability Check. Reliability will be estimated from a comparison of the number of perfect agreements versus the number of different disruptive behaviors observed within the time period of the observation. Dividing the number of different disruptive behaviors observed by the number of perfect agreements will yield a reliability figure.

11. Observers 1, 2, and 3 will be assigned students to observe through the study. Observer 4 will rotate each day from observing the same subject as observer #1, then #2, then #3. Observer 4 must not sit with, nor collaborate, nor share results with the other observers. The observers should be told that #4 will be observing for accuracy and that another observer, unknown to them, will periodically observe to check the reliability of their observations.

12. Time Line.

Baseline: Observation five consecutive days, twenty-minute observation periods.

Training: Observation two days per week, twenty-minute observation periods.

Post-Training: Observation five consecutive days, twenty-minute observation periods.

During Response-Cost: Observation two days a week, twenty-minute observation periods.

Follow up: One observation at each follow up for one-half hour. Conducted prior to the actual follow up. Four observations for follow up.
13. Observation. The observer will sit in the back of the room with an unobstructed view of the subject. The observer will bring with him a battery-operated tape recorder with an ear phone. When s/he is ready the tape should be played. The tape will say "Observe" at which point the observer will observe the subject's behavior until the tape says "Record." The tape will then go through this cycle over and over for forty times or twenty minutes at which point the observer may then stop.