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CHILDREN'S SOCIAL SKILLS TRAINING FOR  
ATTENTION-DEFICIT HYPERACTIVITY DISORDER  
IN THE ELEMENTARY SCHOOL

A thesis

presented to

The Faculty of Graduate Studies

The University of Manitoba

In partial fulfillment

of the requirements for the degree

Master of Education

By

Sandra MacDonald

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The author is particularly proud to share the completion of this document with her husband David Tod, and mother, Roberta MacDonald. Thank you for your support and understanding. I made it, because you believed in me! And now, I am free.

This thesis is dedicated to the memory of Steven Jackman who convinced me that I am "a good social worker".

#### Abstract

The present study utilized a cognitive-behavioral social skills training approach to attempt to increase attention span, and to decrease impulsivity, and hyperactivity in three elementary aged school children. Students were identified by their classroom teachers' as meeting the diagnostic criterion of Attention-Deficit Hyperactivity Disorder based on ratings from the Swanson, Nolan, and Pelham (1984) Rating Scale (SNAP). The experiment was qualitative in nature using an A-B design. Findings suggested teachers' perceptions of students positive behavior changes differed from the perceptions of two independent observers, and the children themselves. Implications for future research is discussed.

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## Chapter 1

### The Problem Area

#### I. Introduction

Considerable public attention has been increasingly focused on children with learning disabilities (Westman, Ownby, & Smith, 1987). The presence of attentional deficits among learning disabled children has also been well documented (Brown & Alford, 1984). Attention-deficit hyperactivity disorder (ADHD) is one of the most widely researched psychiatric disorders of childhood.

According to the Diagnostic and Statistical Manual of Mental Disorders: Third Edition-Revised (DSM-III-R: American Psychiatric Association, 1987) the essential features of this disorder are "developmentally inappropriate degrees of inattention, impulsiveness, and hyperactivity. People with the disorder generally display some disturbance in each of these areas, but to varying degrees" (p. 50).

The disorder is typically manifest in most settings including home and school, work, and social situations. The DSM-III-R (American Psychiatric Association, 1987) states that symptoms typically worsen in situations requiring sustained attention, ... "such as listening to a teacher in the classroom, attending meetings, or doing class assignments or chores at home" (p. 50).

At school, inattention may present in failure to follow through on the requests and instructions of teachers. Likewise frequent shifts from one uncompleted activity to another often occur. Such students also fail to follow the rules of structured games or to listen to other children. High levels of impulsivity are displayed by being unable to await one's turn in games, interrupting, grabbing objects, and acting before thinking about consequences. Hyperactivity is evident in the inability to remain seated when expected to do so, excessive jumping, and by excessively noisy activities (American Psychiatric Association, 1987). Children who present with many behavioral signs and symptoms of ADHD are often described by parents and teachers as being "on the go" and "always having his motor running".

## II. Etiology

DSM-III-R (American Psychiatric Association, 1987) outlines some age-specific features. In preschool children, for instance, prominent features include general signs of high gross motor activity. In older children and adolescents, prominent features tend to include excessive fidgeting and restlessness rather than gross motor overactivity. Inattention and impulsiveness are often the culprits contributing to failure to complete tasks, following of instructions, and neat work.

Features which are associated with the disorder tend to vary as a function of age. Characteristics which may appear simultaneously include low self-esteem, learning disabilities, mood lability, low frustration tolerance, and temper outbursts. Academic underachievement is also common (American Psychiatric Association, 1987).

While onset of the disorder is often before age four, frequently the disorder is not identified until the child enters school (American Psychiatric Association, 1987). This is likely a function of the increased number of specialists functioning within schools. According to Sawyer (1989), another reason is that special education has a tradition of seeking the etiology of a learning problem as a fundamental part of developing instructional programs.

According to DSM-III-R (American Psychiatric Association, 1987), in the majority of cases the disorder persists throughout childhood. Often other disorders may develop later in childhood such as Oppositional Defiant Disorder or Conduct Disorder. These are behavior disorders which describe a population of children who manifest large repertoires of inappropriate behavior. In addition, clinical follow-up samples suggest that roughly one-third of children with ADHD continue to show signs of the disorder as adults. Predictors of a poor prognosis include: coexisting Conduct Disorder, low IQ, and severe mental disorder in the parents. Often

some impairment in school and social functioning occurs, though school failure is the major complicating factor.

The prevalence of ADHD is relatively high compared to other childhood disorders. It may occur in as many as 3% of children. The gender ratio in clinical samples indicates that the disorder is six to nine times more common in males than in females. In community samples it is only three times more common in males than in females (American Psychiatric Association, 1987).

The predisposing factors outlined in the DSM-III-R (American Psychiatric Association, 1987) focus on nervous system abnormalities such as the presence of neurotoxins, cerebral palsy, epilepsy, and other neurologic disorders. Disorganized or chaotic environments and child abuse are also reported to be predisposing factors.

### III. Implications for the School Psychologist

One of the greatest difficulties in talking about the cluster of symptoms associated with ADHD is the problem of establishing an accurate diagnosis. The next obstacle for the school psychologist is intervening in a meaningful way to assist both the classroom teacher and the student. The former shall be discussed further first.

Traditionally, the ADHD diagnostic criteria have overlapped considerably with those given to children who manifest symptoms of

"specific learning disabilities" (Douglas, 1972). Formerly ADHD was called Minimal Brain Dysfunction or Hyperkinetic Syndrome. As a result it has been historically difficult to separate the distinguishing characteristics between a student's disabled learning style and the presence of ADHD symptoms. We now know, however, that ADHD often occurs simultaneously with other disorders (e.g. Tourettes Syndrome) and also with specific learning disabilities (Douglas, 1972).

Therefore, the issue for the school psychologist becomes one of identifying instruments for test batteries and utilizing observation skills which enable one to discriminate the behavioral signs and symptoms of ADHD. There are a variety of instruments used by school psychologists for this purpose. Some of these include the Conner's Parent Questionnaire, Conner's Teacher Questionnaire, Matching Familiar Figures, The Porteus Mazes Test, The Jumbled Numbers Game, and specific subtests such as the Arithmetic, Digit Span, and Coding subtests based on administration of the Wechsler Intelligence Scale For Children-Revised (WISC-R; Kushne, Kehle, and MacMahon, 1987).

Kushne, Kehle, and MacMahon (1987) examined all of these instruments, with the exception of the WISC-R. These authors found that four of the five measures successfully discriminated between groups of children with ADHD and groups of children with Specific

Learning Disability. The four instruments which predicted group membership in descending order of power were: The Conner's Parent Questionnaire, The Conner's Teacher Questionnaire, The Matching Familiar Figures Test, and the Porteus Mazes Test. The authors concluded that both parent and teacher rating scales are good predictors of ADHD. This is important to the present study as the Swanson, Nolan, and Pelham (1984) Rating Scale (SNAP) which is similar to the Conner's Teacher Questionnaire will be administered. It is also important information for the school psychologist who upon completion of an assessment must consult with family and school personnel regarding appropriate intervention.

Designing appropriate intervention is a monumental task. Manitoba school psychologists have identified a variety of approaches. One approach is to consult with parents about parenting issues which deal with the structure of the home (Kircher, 1988). In many cases this intervention is sufficient. However, often school personnel often suggest that they too require strategies for dealing with the ADHD student in the school setting. There are an abundance of tips and suggestions the school psychologist can offer the classroom teacher to deal with inattention, impulsivity and hyperactivity. These include: sitting the student at the front of the room and away from distractions, structuring the classroom, accepting and offering the student a frequent change of task, having

the student repeat directions back to the teacher, or having the student monitor their own problem-solving strategies by verbalizing them covertly. The teacher can also employ prompts and cues, and provide reinforcing comments and rewards. Sometimes strict behavior modification techniques, such as a token economy, are also effective, etc. However, none of these suggestions are guaranteed to work independently. Subsequently, a complete psychoeducational program sometimes becomes warranted.

There has been a proliferation of commercial programs appearing on the market over the past ten years (Mulcahy, Peat, Andrews, Darkso-Yeboah, and Marfo, 1989). There are an equal number of programs which take into consideration the training background of the clinician rather than the needs of the child. For example, there is the Auditory Discrimination Program utilized by speech and Language Pathologists in Manitoba schools. The underlying assumption of this program seems to be that children who present with ADHD manifest inherent difficulties discriminating language sounds. While this may be true in some cases, this program is unlikely to remediate the student who has an auditory short-term memory that serves them well, but who shows severely depressed visual short-term memory. In addition, it seems that difficulty discriminating language sounds would not fully account for the

difficulties experienced by ADHD children as suggested by the DSM-III-R (American Psychiatric Association, 1987).

There are a number of strategies which clinicians use on a pull-out (of the classroom) basis which may have essential features for an effective program with ADHD students. However, often these do not achieve the desired program generalization sought. For instance, cooperative games are a fruitful tool for providing ADHD students with social reinforcement and the physical contact with peers which they often lack. (Since many ADHD boys are found to be aggressive they are often rejected by peers and teachers and become social isolates with many unmet emotional needs: Ledingham, Younger, Schwartzman, and Bergeron, 1982; LaGreca, 1981). However, this procedure alone is not sufficient to expand the problem-solving repertoire of students for a number of reasons. The most obvious reason is that the excitability of children in the game setting creates a difficult environment for effective teaching to occur. Also, group work ignores the importance of direct teaching in a structured setting. Structured settings best enable ADHD students to concentrate (Kircher, 1988).

Another teaching approach includes The Access Program: Adolescent Curriculum for Communication and Effective Social Skills (Walker, Todis, Holmes and Horton, 1988). As the title indicates, this program was designed for use with adolescents. Subsequently

many of its exercises include vocabulary and comprehension demands which surpass the level of understanding of younger children. In addition, while its' activities highlight the importance of good listening, eye-contact, and appropriate comments; the program does not deal with impulsivity or excessive motor activity. Nevertheless, the program has many strengths and numerous activities which may be easily adapted and modified for use with younger children.

Another program which is designed for use with young children, both in small groups and the classroom setting, is the Think Aloud: Increasing Social and Cognitive Skills - A Problem-Solving Program for Children (Camp and Bash, 1981) program. The Think Aloud program combines training in both cognitive and social problem-solving through verbal mediation. Verbal mediation is the use of language as an internal regulator of thought and logic (Camp and Bash, 1981). Preliminary research on this procedure of talking to oneself to guide problem-solving and other behavior was conducted by Jensen (1966) and Michenbaum (1977; both cited in Camp and Bash, 1981).

The strengths of the Think Aloud program are many, however, there are also a variety of weaknesses. First, the techniques can be used in regular classrooms or small groups outside the classroom. The consumer must buy different programs for use in the classroom at different levels such as the "Primary Level" program. In addition,

the consumer must choose whether to order the classroom oriented program, or the small groups program, and use with children outside the grade one and two range requires the teacher to modify lesson length, content, and memory requirements. Secondly, the program expands on both the student's general and social problem-solving repertoire. But, the program admittedly fails to address children who have unmet emotional needs, such as the need for ADHD children to experience some gentle physical contact with their peers as suggested earlier via, for example, cooperative games.

Camp and Bush (1981) also explained that the Think Aloud program fails two other types of children: those who are cognitively too high or too low for the program, and children who are motivationally or emotionally damaged. The latter likely could not be controlled for by any specific program available on the market dealing with problem-solving. The former is likely due to the nature of the predetermined content found in the program activities.

Another criticism of Think Aloud is that the user must gather all necessary materials, nineteen of which must be bought commercially. This greatly escalates the cost of the program and the time required to acquire all the materials. Consequently it hinders the availability of the program to schools. A program utilizing teacher-made materials would be much more practical, less

expensive, curriculum specific, thus would promote generalizability to the daily classroom environment. Such materials would also be quicker to assemble, easier to transport and manage, and would enable school personnel to implement the program as needs arise. Thus, even Think Aloud with all its strengths, has too many shortcomings for practical use in schools.

Inspection of such cognitive education programs suggests that they differ widely in terms of scope, cost, skill development, age/grade suitability, instructional methodology, curriculum integration, and training requirements. Instead of reflecting current conceptualizations in thinking, program differences seem to be influenced largely by the context (e.g., time period, prominent theories of members, etc.) in which they and their colleagues collaborated (Mulcahy et. al., 1989).

#### IV. Definition of the Problem

With all the pressures placed on the school psychologist, the ADHD student, and the classroom teacher of the ADHD student, there is a need to identify a program which teaches ADHD students to be more attentive, more reflective and less impulsive, to control physical activity, and which also takes into consideration many of the unmet needs of ADHD students. While it is quite likely that such a program will require teacher-made modifications of activities

to suit the individual and curriculum needs of students, a more simplified and encompassing program is warranted for use by school psychologists and other school personnel.

The purpose of the present study is fivefold. To examine a program which takes into consideration the need for remediation of behaviors which are outlined in the DSM-III-R (American Psychiatric Association, 1987) as diagnostic criterion. To meet the emotional needs of these students. To examine the use of this program with students in grades four and five who have been nominated by their classroom teachers and who matched the ADHD diagnostic criteria on the SNAP. To have school personnel evaluate behavior changes (or lack of) in the student sample, and to evaluate utility of the program for use in their own classrooms. And finally, to examine the relationship between these constructs. Specifically, answers to these questions will be sought:

1. Will a program designed to expand general and social problem-solving repertoires of grade four and five ADHD students which includes verbal mediation and cooperative games have an impact on classroom behavior?
2. Will the diagnostic behaviors of ADHD students show positive improvements?

3. Does this program imply advantages only for use in a small group setting?

#### V. Educational Significance of the Study

According to Schloss, Schloss, Wood and Kiehl (1986), social skill deficiencies are of the most critical deterrents to adult adjustment. The present study will contribute to the existing literature applicable to disciplines of psychology, educational psychology, and education. For example, the present investigation stands to support two well established methods of intervention for ADHD children. These include lessons from the Think Aloud program (Camp and Bash, 1981) and Michenbaum and Goodman's (1971) procedure for verbal mediation, or self-speech. Support for these two intervention approaches together with the need for new innovative approaches are important for numerous reasons. To begin, there is an established relationship between social functioning in childhood and long-term adjustment (Buswell, 1953; Cowen, Roff, Sells, and Gelden, 1972; both cited in Schloss, Schloss, Wood, and Riehl, 1986; Cowen, Pederson, Babigan, Izzold, and Trost, 1973). In addition, social skill deficits have also been associated with juvenile delinquency (Roff, Sells, and Gelden, 1972; cited in Schloss et al., 1986), bad conduct discharges from the military (Roff, 1961; cited in Schloss et al., 1986), and psychiatric hospitalization (Goldsmith

and McFall, 1975; cited in Schloss et al., 1986). Studies have also shown that employers consider social competencies such as initiating contact with a supervisor to be more important than specific occupational skills (Johnson and Mithaug, 1978; Mithaug and Hagmeier, 1978; Schult, 1982; all cited in Schloss et al., 1986). Based on the above, it is believed that the present training program may provide directions for future prevention research.

According to Schloss et al. (1986) there is considerable evidence for the effectiveness of social skill training procedures. However, several critical limitations are present in the literature. Such limitations will be addressed in the present study, thus expanding the literary knowledge base associated with social skill training procedures. For example, according to Bernstein (1981; cited in Schloss et al., 1986) existing definitions of social skills are broad and nonspecific. The definitions of social skills to be modelled in the present study are clear. Listening, for example, is defined as looking at the speaker while they are speaking, with good posture and no fidgeting. Likewise, the cognitive skill of plan-making involves four specifically worded questions (see Ralph the Bear Cue Pictures, Appendix A). This strategy may be applied in both social and academic settings and is therefore regarded as a social skill. Consequently, the present study stands to promote the development of techniques and curriculum intended to increase social

competence through the application of widespread operational definitions.

Another strength of the social skill definitions in the present study is that they specify the topography of the desired response. Examples of these and target behaviors include eye contact, posture, questions, appropriate remarks, etc. (Schloss et al., 1986).

Schloss et al. (1986) believe that such discrete response definitions overcome the limitations of more general definitions in three ways. First, specifying the topography of a response allows for reliable observation. Second, they can be matched developmentally to the respondents chronological age. Third, they have been related to specific social contexts such as cooperative play in the gymnasium, sitting in a desk, etc.

One of the greatest contributions to be demonstrated in the present study is a perspective which Schloss et al. (1986) stated that most social skill studies leave unanswered. According to the literature, the most critical question to be answered is - to what degree did the change in target behavior influence the individuals' interpersonal relationships? The present study will explore teachers' perceptions of the subjects' ADHD behavior before and following the experimental training package. Consequently, if teachers' ratings of their students' behavior reflects less severe

ADHD symptoms, one can argue that the teachers' perceptions about the student have been positively influenced. Teachers' perceptions of student behavior have been shown to influence the quality of teacher-student relationships and to be good predictors of students' peer acceptance (Ledingham, Younger, Schwartzman, and Bergeron, 1981; LaGreca, 1981). Therefore, the present study will suggest directions for future research regarding our understandings of teacher perceptions and how they may change as a result of group level intervention. Likewise, given that teachers' perceptions are good predictors of peer acceptance, the present study implies that one might predict the subjects' level of peer acceptance based on teacher ratings on the SNAP. This hypothesis suggests directions for future research as well.

Another contribution of the present study to the fields of education and educational psychology centres upon cost effective intervention. Educational and mental health programs operate within limited resources (Schloss et al., 1986). The training package proposed in the present study is extremely economical in that it includes materials which are easily replicated in addition to resources available in any school. Therefore, the value of the program may be judged by the subject and significant people concerned based on the student's needs (Schloss et al., 1986).

## VI. Definition of Terms

Attention-deficit Hyperactivity Disorder. Developmentally inappropriate degrees of inattention, impulsiveness, and hyperactivity as determined by teacher ratings on the Swanson Teacher Questionnaire and the Diagnostic and Statistical Manual of Mental Disorders - III - Revised (American Psychiatric Association, 1987).

Inattention . Includes the following behaviors exhibited by students in the school-setting: (a) has difficulty sustaining attention in tasks or play activities, (b) often shifts from one uncompleted activity to another, (c) often does not seem to listen to what is being said to him or her.

Impulsivity. Includes the following behaviors manifest by students in the school setting: (a) is easily distracted by extraneous stimuli in the environment, (b) has difficulty awaiting turn in games or group situations, (c) often blurts out answers to questions before they have been completed, (d) has difficulty following through on the instructions of others, (e) often intrudes on or interrupts others, (g) often loses things necessary for tasks at school or at home.

Hyperactivity. Includes the following behaviors manifest by students in the school setting: (a) often fidgets with hands or feet or squirms in seat, feelings of restlessness, (b) has

difficulty remaining seated when required to do so, (c) has difficulty playing or working quietly, (d) often talks excessively, (e) engages in dangerous activities without considering possible consequences.

Swanson Teacher Questionnaire (SNAP). The SNAP is a 23-item rating scale filled out by the classroom teacher for the purpose of rating the presence of ADHD diagnostic criteria in students. It has a similar format to the Conner's Teacher Questionnaire which is a widely accepted measure. The difference between the SNAP and the Conner's Teacher Questionnaire is that the SNAP is based on the DSM-III-R (American Psychiatric Association, 1987) diagnostic criteria. The Conner's Teacher Questionnaire is composed of ADHD symptoms which were evident in earlier literature.

Social skill. These are specific strategies an individual uses to perform social and academic tasks, and they allow one to behave in a manner that can be judged socially competent.

Grade five and six students. An individual enrolled in grade five or six in a public elementary school in central Canada during the 1989-90 school year, and who has been nominated to participate in the study by their classroom teacher.

Classroom teacher. A member of the school faculty charged with the responsibility of teaching and supervising grades four, five or six students.

Verbal mediation. The use of language as an internal regulator and tool of rational thought and logic. It can be described as talking to oneself to guide problem-solving or other behavior.

Cooperative game. A high interest group activity designed to teach children specific social skills.

Cognitive modelling. The teacher's overt verbalization of her own self-guiding thought processes or self-instructional activity.

## Chapter 2

### Related Literature

#### I. Introduction

The definitional complexity of the topic of ADHD has led to a multitude of research in the past century. For the purpose of this thesis, a review will be made of only that segment of the literature that defines our contemporary understanding of ADHD and which led to the present diagnostic criteria found in DSM-III-R (American Psychiatric Association, 1987). The review will also include a brief overview of the development of some of the treatment approaches which have evolved and which are currently used by physicians, psychologists, and teachers.

#### II. Attention-Deficit Hyperactivity Disorder:

##### It's Nature Empirically Defined

##### Theoretical Base

The characteristics of hyperactivity, inattention, and impulsivity were brought to the attention of special educators in the 1940's by Heinz Werner, a developmental psychologist, and Alfred A. Strauss, a neuropsychiatrist (Ross and Ross, 1982). Werner and Strauss described in great detail the characteristics of "brain-injured" children, most of whom today might be called emotionally disturbed, learning disabled, or mentally retarded.

Included in their descriptions of these children are behavior disorders such as hyperactivity, inattentiveness, and impulsivity (Kauffman, 1985). Kauffman (1985) suggested that their descriptions of "brain damaged" children are of historical and contemporary importance for the following reasons:

1. They tied together conceptually a cluster of related characteristics, specifically perceptual problems, problems of attention, and excessive motility which today's research has not unravelled.
2. They implied that hyperactivity, distractibility, and impulsivity are caused by brain pathology, and that idea still has many proponents.
3. They described characteristics that are now known to apply to several categories of exceptional children, most notably the learning disabled, emotionally disturbed, on the educable mentally retarded (p. 170).

It has been known for more than three decades, then, that some exceptional children exhibit a cluster of interrelated behaviors, which presently, are included in the ADHD diagnostic criteria of the DSM-III-R (1987).

The description and research of the characteristics associated with ADHD have been particularly important for special educators because they highlight behaviors that seem to preclude good social

adaptation and school achievement (Barkley, 1982; Safer, 1982a; Whalen, 1983; all cited in Kauffman, 1985).

In the remainder of this chapter, inattention, hyperactivity, and impulsivity are discussed. The former two will appear under the same heading. Because these characteristics are highly interrelated, their separate discussion is to some extent artificial.

#### Hyperactivity and Inattention

Regardless of how it is defined by clinicians, hyperactivity is now one of the most frequent reasons for referral to school psychologists (Ross and Ross, 1982). Over the years, a variety of terms have been used to refer to hyperactivity: hyperkinesis, hyperkinetic impulse disorder, minimal brain dysfunction, dyslexia, and Strauss Syndrome "(after A. A. Strauss)", for example (Kauffman, 1985). Distractibility, on the other hand is a characteristic closely tied to the construct of attention. The distractible or inattentive child is assumed to manifest difficulty "attending" to relevant events in the environment (Kauffman, 1985). Part of the historical difficulty of defining both hyperactivity and inattentiveness precisely is the difficulty in measuring them.

Prior to the 1950's the inability of hyperactive children to maintain attention was well known. However, aside from the documented observations of clinicians, teachers, and parents, few

experimental studies have actually shown an attention-deficit in these children. For example, Sykes (1969; cited in Douglas, 1972) found that hyperactive children had no difficulty in responding to tasks if they were forewarned that the stimulus they were required to respond to was coming. He also noted that while hyperactive children made more overall incorrect responses on tasks than non-hyperactive control children, they also managed to work speedily enough to make a similar number of correct responses (Douglas, 1972). This finding contributes to our present understanding that hyperactive children function best in highly structured settings.

Nevertheless, this also raised questions about hyperactive children's ability to compensate for brief lapses in attention by working rapidly through tasks. Subsequently Sykes, Douglas, Weiss, and Minde (1971) predicted that impaired attention would negatively influence the performance of hyperactive children on tasks where information about when to respond was unpredictable. The unpredictability of this experimental environment resembled the natural contingencies of the classroom, where the natural contingencies of the classroom, distractions in hallways, bells, teacher demands, and peer interruptions are common.

The attention task required hyperactive and matched non-hyperactive controls to monitor a screen on which letters appeared at regular intervals. The subjects were required to press

a button each time a letter which had already been presented appeared again. The two dependent measures were the absolute score which was a measure of overall accuracy; and the error score which was the number of responses to letters presented on the screen only once.

The results supported the research hypothesis. Compared to non-hyperactive children in the sample, the hyperactive children were found to be deficient in their ability to maintain attention to the experimental task, and were found to be more restless as measured by a stabilimetric cushion. Specifically, the hyperactive children detected fewer letters presented more than once, and, made more incorrect responses to letters presented only once. The investigators, concluded, therefore that the school functioning of hyperactive children likely suffers because of impulsive work habits and inability to sustain attention. Methodologically, this study was satisfactory in that it simply attempted to define the behavioral composites of ADHD behavior, and did not set out to determine the interactions between these variables.

#### Impulsivity

Impulsiveness is also related to hyperactivity and problems in attention. The focus of the discussion here will be on impulsivity as a cognitive tempo which hinders school performance.

Under the previous heading, the study by Sykes et al. (1971) concluded that the school functioning of ADHD children was effected by impulsive work habits and inability to sustain attention. This assertion led Cohen and Douglas (1972) to hypothesize about the impact of an individual's initial response, or orienting response to novel stimuli. Past research has shown that populations who display attention-deficits and high levels of impulsivity also show deficiencies in characteristics of the orienting response, and its habituation. These populations have included mentally retarded, young children, and schizophrenics, and minimal brain dysfunction (Luria, 1963; Barstein, 1967; cited in Cohen and Douglas, 1972; Boydston, Akerman, Stevens, Clements, Peters, Dykman, 1968). When an orienting response terminates, it means that one's initial arousal to novelty dissipates and the individual's arousal level returns to something more comfortable. This cessation of an orienting response is referred to as habituation. The results of research with the populations mentioned, above who showed high levels of inattention and impulsivity, found these subjects did not become very aroused by new stimuli as compared to controls, and, their low level of arousal did not persist as long as controls with more typical responses to novelty.

Cohen and Douglas (1972) expanded this research and hypothesized that compared to controls, hyperactive children would

also exhibit smaller amplitude orienting responses which would also habituate quickly because of this population's clearcut deficiencies in attention and impulse control. This hypothesis supported trends which appeared in the literature of the time. A second hypothesis proposed that hyperactive children would differ with regard to skin conductance during rest. This hypothesis is not as well founded, in that it assumed that hyperactive children's levels of arousal was higher than that of non-hyperactives at large. Such a premise would require vast assessment and considerable exploration of many complex physiological responses. Twenty elementary hyperactive school children were matched for age, gender, and IQ. All subjects received treatment conditions individually while seated in a semi-reclining chair. The apparatus was in a room with a one-way mirror. Electrodes were attached to subjects' hands in order to provide a measure of skin conductance. This would provide a physiological indicator of change in the environment; and habituation to these changes.

Treatment commenced with a 10-minute relaxation period. During this time skin conductance readings were taken. Next subjects listened through earphones to thirty different 500 HZ tones. Then subjects were told that they would hear other sounds with the tone sounds mixed in. These nonsignificant sounds were presented to warn subjects that the tone would be presented next.

Subjects were instructed to press a button each time a tone was presented during this mix, and to keep the button depressed until a buzzer signal occurred. Subjects were also encouraged to respond to the tone as quickly as possible.

Skin conductance readings were taken during the presentation of the insignificant sounds and the presentation of the tones. The measures of skin conductance were recorded as orienting responses if they were at least .1 umho in amplitude and if they occurred within a few seconds of stimulus onset. The orienting responses based on skin conductance data were expressed as the difference between the logarithms of the non-significant erroneous sounds and the tones.

The results of the study did not support the second hypothesis. Neither group differed in measures of skin conductance during rest. However, the primary hypothesis was supported. The two groups did differ when an active response to meaningful stimuli was required. Controls exhibited larger and more persistent orienting responses than the hyperactive children. It therefore seemed that, in terms of response time, non-hyperactive children were clearly more efficient than the hyperactive children in their ability to attend and to respond to novel stimuli. The overall support for the primary hypothesis of this study contributed greatly to our present understanding and response definitions which are documented in the literature (Cohen and Douglas, 1972).

Kolligan and Sternberg (1987) use the triarchic theory of intelligence to interpret their investigations of variables linked to learning disabled students. They would argue that the failure of Cohen and Douglas' (1972) hyperactive sample to be sufficiently aroused by novelty was due to the result of deficient cognitive strategies and the failure of these to become automatic. Admittedly, Cohen and Douglas (1972) agreed their findings could not be explained with the interpretation that the performance of their hyperactive sample was merely a function of deficient attention or motivational processes. Rather, they discussed Cohen's (1970; cited in Cohen and Douglas, 1972) earlier work where both hyperactive and matched control subjects were rewarded with tokens for especially fast response times. Cohen (1970; cited in Cohen and Douglas, 1972) found that when rewards were withdrawn, the performance of the hyperactive children deteriorated; while in controls it remained at the same level which had been reached with rewards. Based on these findings Cohen (1970; cited in Cohen and Douglas, 1972) concluded that the responses of the non-hyperactive sample were more readily shaped by the contingencies of reinforcement. A more accurate conclusion may have referred to the notion that continuous reinforcement was not sufficient to maintain the desired behaviors. Rather, the authors did not address the roles that the variables of

continuous versus intermittent reinforcement may have played in this study.

Nevertheless, Cohen and Douglas (1972) suggested that their hyperactive sample did not exhibit response times to novelty equal to that of the non-hyperactive sample because they were not as intrinsically motivated by the natural contingencies of reinforcement associated with the task. And this had an impact on their attention to task. Also, when the hyperactive samples' best trials were examined, Cohen and Douglas (1972) found these children were capable of reacting as quickly as the non-hyperactive sample, but that it was the erratic nature of their performance which reduced their scores. Implications of these findings according to Kolligan and Sternberg's (1970) views are suggested. They theorized that when an individual fails to adapt to the environment, the individual will attempt to shape the environment. Failing this, they are likely to come to believe that their difficulties are insurmountable. At large, students for whom this experience is common, like the learning disabled, will be less likely to engage in the adaptive achievement-oriented behaviors that could ameliorate the manifestations of their learning disabilities. An understanding of the ways in which ADHD children's learning style may differ from that of other children points to the importance of the variable of cognitive style.

Based on the literature reviewed under this heading it is becoming clear that variables such as one's general level of arousal to new stimuli, and, impulsive approach to task which seems to affect response time are quite subtle differences which appear to distinguish ADHD samples of children from non-ADHD samples. A deeper understanding of such subtle differences in learning style will be presented through discussion of the variable: cognitive style.

#### Cognitive Tempo and Cognitive Style

Introduction. Knowing that ADHD children are capable of responding reflectively like non-ADHD children, but that distractibility and motor overactivity are variables which overlap and intervene, these children are best understood in terms of the cognitive approach they employ while problem-solving. First, research will be presented which illustrates how the term response time, speaks about an important factor called cognitive tempo. The discussion will then turn to the pervasive influence of cognitive style which has been revealed by developmental psychology. This topic suggests directions for educational remediation which will be dealt with in the following chapter.

Cognitive tempo. Throughout the decades theorists have proposed a trait dimension to the speed with which individuals react in problem-solving situations. The characteristic which was coined

by Cattell (1946; cited in Kagan, 1965) was called "behavioral tempo". Until the mid 1970's, both European and American psychologists showed much indifference to the cognitive phenomena associated with problem-solving.

Nevertheless, Kagan, Rosman, and Day, Albert, and Phillips (1964) continued to support the presence of this trait. They demonstrated an element contributing to differences in cognitive functioning; namely the child's cognitive tempo. They renamed Cattell's term to refer to the habitual speed of decision making in problem situations where more than one solution could be derived.

Their 1964 research also identified a cognitive disposition which they referred to as "reflection-impulsivity". The procedure was based on the assumption that stable differences in decision time would be manifest during problems where impulsive and reflective subjects had to generate solution alternatives mentally. Kagan et al. (1964) hypothesized that non-impulsive children, as compared to impulsive children, would display longer response times to visual recognition tasks, including picture tasks for which response alternatives had to be generated.

The results of the study were interesting. Generally, the impulsive children made decisions too quickly, resulting in more errors. Conversely, the responses of the non-impulsive children were characterized by longer latencies and fewer errors. Kagan et

al. (1964) concluded that a child who does not generate several possibilities while problem-solving will likely implement the first idea that occurs to him and increase the chances of failure. This impulsivity is the inverse of reflectivity.

Kagan's (1965) understanding, then, is that response time is a faithful reflection of decision time. Thus, decision time is greatly influenced by the reflection-impulsivity dimension which refers to the degree to which an individual considers alternative impulses. He also maintained that the results of his studies did not imply that the reflective child is necessarily the brighter child. He suggested his studies supported differences in existing learning styles. And that instruction and training procedures must consider the interactions between the dispositions of the learner and the material.

Cognitive style. Kagan et al. (1964) outlined three distinct processes which occur during problem-solving: (a) initial categorization of information, (b) storage of the encoded information, and (c) transformation and elaboration of the encoded material. The form taken by these processes is shaped both by the nature of the problem (Kagan et al., 1964) and the problem-solver's cognitive style (Campbell, Douglas and Morgenstern, 1970).

Campbell et al. (1970) discussed four cognitive styles which became the basis for their investigation. The first, which is

reflection-impulsivity (Kagan et al., 1964), which refers to one's speed of decision making. The second style is referred to as field dependence-independence which was initially coined by Witkin (1959; cited in Campbell et al., 1970). This dimension is known to reflect differences in the ability to perceptually separate an item from the field in which it is embedded. Take for example a painting of a house in the woods. In such a painting the house would represent the "figure" of the picture and the trees in the background the "ground". Where some individuals perceptually zero in on the figure of a concept, others focus first upon the ground. Such cognitive differences often differentiate an individual's perceptual, or, learning style.

The third style called constricted-flexible (Klein, 1954; cited in Campbell et al., 1970) reflects differences in the ability to ignore distracting and contradictory cues, and to inhibit incorrect verbalizations (Gardner and Lang, 1952; cited in Campbell et al., 1970). This skill is illustrated by the notion of doing written work while listening to the radio. An individual who manifests this style may not be able to perform two such tasks simultaneously. The fourth cognitive style called automatization refers to the ability to respond rapidly to simple repetitive tasks. This has been shown to reflect differences in the ability to

overlearn routine material (Broverman, Broverman and Klauber, 1966; cited in Campbell et al., 1970).

In view of these cognitive styles, Campbell et al. (1970) found that hyperactive children were more impulsive; more field-dependent; more constricted in ability to control attention; and slower automatizers, than matched non-hyperactive children. The investigators concluded that when hyperactive children are faced with alternative responses and contradictory cues, they are less likely to monitor behavior and to inhibit incorrect responses. Based on their data, Campbell et al. (1970) also suggested that modification of the hyperactive child's inefficient cognitive styles should be a major therapeutic goal of schools.

Evaluation of the research. The strengths of the investigations examined in this chapter are numerous. Each of these studies used DSM-III diagnostic criteria, samples of children with IQs of eighty or above; and students for whom hyperactivity was the referral complaint. In addition, sample sizes were generally adequate (n = 51). Another strength was that each study examined behavioral and cognitive correlates within a theoretical framework. Generally, hypotheses were formulated based on tenants of information processing theory.

The majority of experimental designs, however, were quasiexperimental. Although experimental and control groups were

accurately matched, pre-measures of the behaviors investigated were virtually non-existent. Future studies should include, for example, information about subjects' baseline levels of the behaviors being measured.

### III. Treatment of ADHD

#### Introduction

Silver estimated in 1987 that 20 percent of the four million learning disabled students in the United States were hyperactive. Many professionals from a variety of disciplines have proposed approaches for helping these children. The development and testing of acceptable approaches requires interdisciplinary efforts over many years. Often parents are vulnerable to new approaches, especially those that offer immediate results. The present review will present some of these controversial approaches first. While the current treatment of choice is a combination of medication and cognitive-behavioral techniques, these will be discussed separately.

#### Controversial Approaches

Neurophysiological retraining refers to a group of approaches based on the notion that stimulation of specific sensory inputs and exercises of specific motor patterns can improve central nervous system functioning. Silver (1987) discussed three such therapies. The first, patterning was developed by Doman and Delacato (1968a;

cited in Silver, 1987). The underlying concept is one that reflects poor "neurological organization" based on failure to properly pass through a sequence of stages in the development of mobility and language skills. They prescribe a number of techniques. These are: (a) sensory stimulation, (b) rebreathing of expired air with a plastic face mask (claimed to stimulate blood flow through the brain), and (c) restriction of fluid, salt, and sugar intake (to decrease cerebrospinal fluid production and cortical irritability).

Numerous professional associations have opposed this form of treatment. Together, the American Academy of Pediatrics, the American Academy for Cerebral Palsy, the United Cerebral Palsy Association of Texas and the Canadian Association for Retarded Children, published statements of concern (Silver, 1987). Review of the relevant literature led the American Academy of Pediatrics (1982; cited in Silver, 1987) to state that patterning:

... offers no special merit, that the claims of its advocates are unproven, and that the demands of families are so great that harm may result from its use (p. 499).

A more popular neurophysiological treatment approach is called optometric visual training. According to Carlson and Greenspoon (1968; cited in Silver, 1987) optometrists adhering to this form of treatment generally adopt one of two views: the first is a devotion to the enhancement of clear, comfortable, and efficient visual

functioning. Techniques include the prescription of corrective lenses and the use of conventional visual training or orthoptic techniques.

The second view suggests that learning and reading are primarily visual-perceptual tasks. Therefore they employ educational and sensory-motor perceptual training techniques in order to correct student's educational problems. However, the value of both approaches to learning disabled students remains controversial (Silver, 1987). According to Metzger and Werner (1984; cited in Silver, 1980), there is no evidence to suggest these methods improve reading. In fact, evidence against the effectiveness of visual training led to a joint statement by the American Academy of Pediatrics and the American Academy of Ophthalmology which criticized the validity of these approaches.

The Feingold diet (Rimland, 1987), and variations of it, are another controversial form of treatment which have received considerable criticism. At a meeting of the American Medical Association in 1973, the distinguished pediatrician and allergist, Ben Feingold, reported that food additives were responsible for hyperactivity in 40 - 50% of hyperactive children. He therefore advised parents of hyperactive children that artificial food coloring and flavoring were the single most effective factors responsible for hyperactive behavior. Thus, he recommended a diet

free of these additives. Empirical support for the "Feingold hypothesis", as it was called by his critics (Kinsbourne & Swanson, 1988; Rimland, 1987; Lamberg, 1984), was claimed based on children on the diet whom were reported to be healthier than the typical hyperactive children who were not on the diet.

Feingold's research methodologies typically employed a food additive "challenge". In other words, children were administered additives to see if it increased their hyperactivity. All of his studies can be criticized for not considering the role of the children's nutritional status prior to the studies. For example, samples of children on the Feingold diet were compared to controls on natural diets in each of his studies. This would have greatly biased the results in his favour. The Feingold diet keeps the child from consuming "junk food". Consequently these children may have been more able to withstand the food additive challenge. His critics agreed that this failure to recognize and control relevant variables, together with the arbitrary conclusions of these studies were sufficient to dismiss the Feingold diet as a prime treatment method of choice.

At this time, the treatment of children with ADHD is still exploratory. According to Varley (1984), effective treatment approaches must consider the multiple needs and problems of these children. In many cases management suggestions to parents and

school personnel are sufficient to maintain acceptable levels of behavior (Kircher, 1988). These include structuring the environment, keeping tasks and directions short, and gaining eye contact. However, contemporary state-of-the-art treatment focuses upon the individual or combined use of stimulant and/or behavioral intervention.

#### State-of-the-Art Approaches

Psychostimulants. Stimulant medications (e.g. amphetamines) are the most commonly used forms of medicating ADHD children (Varley, 1984). The three most commonly found are methylphenidate (Ritalin), dextroamphetamine (Dexedrine) and magnesium pemoline (Salert) (Sattler, 1982). Each of these has consistently been shown to have positive effects on measures of school behavior (Biederman and Jelliner, 1983; cited in Forness and Kavale, 1988).

The effects of these medications appear between one to eight hours following ingestion. They also lead to immediate increases in attending behavior (Kupietz, Winsberg and Sverd, 1982; Swanson, Kinsbourne, Roberts and Zuker, 1978; Weiss, 1981; all cited in Kavale et al., 1986). Generally, the psychostimulants lessen hyperactivity and decrease distractibility (Silver, 1987). However, while they do improve students' readiness for learning (Kavale et al., 1986), they do not treat the underlying learning disability. For instance, while medicated students have reported better ability

to organize their thinking (Silver, 1987), there is no evidence to suggest a long term positive effect on learning (Varley, 1984).

While psychostimulants have been shown to effectively reduce motor behavior and improve attending behavior there are limitations when they are used exclusively. Side effects, are well documented. Stunted growth patterns requiring drug-free holidays have been demonstrated (Rapoport et al., 1978; cited in Varley, 1984) and reputed (Varley, 1984). Other negative side effects include loss of appetite, and drowsiness. Another problem, for the physician, is the difficult task of finding the appropriate dosage level, and monitoring the drug program. The most serious limitation is the lack of long-term improvement. Medications cannot expand the actual academic and social repertoires of ADHD children. But it seems that schools possess the environment that can. This has implications for Canadian schools. According to some reports (Butchard, 1989), three-quarters of American children as compared to Canadian children diagnosed as ADHD are treated with medication. According to McLean (1989), stimulant medication is effective in 70% of individuals presenting ADHD symptoms (1989).

Cognitive-behavioral intervention. In the treatment of children with attentional disorders, Douglas and her colleagues (Douglas, 1975; Firestone and Douglas, 1975; cited in Brown and Alford, 1984) have been concerned about the exclusive use of

contingency management techniques with these children. Douglas and her associates stated that positive reinforcement actually increases impulsivity and attracts the child's attention away from the task and toward the reinforcement (Friebergs and Douglas, 1969; Parry, 1973; both cited in Brown and Alford, 1984). Furthermore, the possibility of deleterious side effects associated with stimulant medication also suggests that it would be unwise for clinicians to rely solely on control by external agents. Consequently, Brown and Alford (1984) explained that much research during the last decade has attempted to train hyperactive children to utilize various methods of self-control as opposed to control by outside agents (Goldfried and Merlaum, 1973; Michenbaum, 1976, 1977; Thorensen and Mahoney, 1974; all cited in Brown and Alford, 1984).

Vygotsky (1962) suggested that internalization of verbal commands is the essential step in the child's development of voluntary control of behavior. According to Michenbaum and Goodman (1971), the speech of adults controls and directs the behavior of children. Gradually, the child's own overt speech comes to regulate their behavior, and eventually the child's covert or inner speech assumes regulatory control.

Michenbaum and Goodman (1971) designed two studies to examine the effectiveness of a cognitive self-guidance program which applied the developmental sequence of speech described above. The focus of

these studies was to examine the child's own verbal control of their nonverbal behavior.

Study one employed an individual training procedure which required attention-deficit children to talk to themselves aloud, then silently, following modelled instructions by the examiner. The sample size of children who learned the self-control technique was five. These children were compared to untrained matched controls on a number of educational tasks. The results were interpreted to suggest that the training group improved significantly on the Porteus Maze Test, Performance IQ on the WISC, and on a measure of cognitive impulsivity. These children later also continued to show improved performance one month later (Michenbaum and Goodman, 1971).

The second study examined the efficacy of the same cognitive treatment procedure in altering the impulsive children's performance on Kagan's measure of cognitive impulsivity. The results indicated that cognitive modelling alone was sufficient to slow down the impulsive child's response time on tasks. But only with the addition of self-instruction training was there a significant increase in the children's accuracy of performance (Michenbaum and Goodman, 1971).

These two studies were critical historically. They demonstrated that one can teach impulsive children to be less impulsive and to improve response accuracy. However, the

investigation did not suggest or test directions for reducing impulsivity in the natural classroom environment. Consequently questions which remain unanswered, and, which will be addressed in the present study include: Did the skills learned by children generalize to the classroom setting? What were the teachers' impressions of the study? Does the learned skill of reflectivity impact upon the children's relationships with others? In the present study the training procedure involves fading-in, the classroom teacher and classroom tasks, to promote generalization to the classroom setting.

Nevertheless, according to Reid and Hresko (1981; cited in Brown and Alford, 1984) the plethora of research on the application of cognitive training has produced speculative conclusions about the generalizability of these procedures to the classroom. In their review of the effectiveness of cognitive training for handicapped learners, Keogh and Glover (1980; cited in Brown and Alford, 1984) noted that even though some generalization of cognitive tasks has been identified, other studies indicate no transfer to academic tasks. In fact, the design of many studies makes it difficult to evaluate whether the cognitive training or simultaneous operant techniques produced the observed behavior changes (Reid and Hresko, 1981; cited from Brown and Alford, 1984). For example, it is often difficult to ascertain whether the desired experimental effects were

the result of modelling, behavior reversal, instruction, feedback, contingent reinforcement, role play, or other social learning strategies (Combs and Lahey, 1981; Kelly et al., 1983; Smith and Fowler, 1984; all cited in Schloss, Schloss, Wood and Kiehl, 1981). At large, it remains questionable whether the findings in laboratory studies of learning can be extrapolated to the classroom (Brown and Alford, 1984). The failure of some learned behaviors to generalize to the classroom is due to variables such as the lack of conceptual framework, the need to validate social skill objectives, and insufficient generalization data.

A handful of studies, however, have been very successful in promoting generalization. Edgeland (1974; cited from Brown and Alford, 1984) performed a study to enhance the cognitive response style of impulsive second graders. The treatment procedure in this study included what the authors named an attentional skills strategy. This strategy consisted of training sessions including match-to-sample exercises, recall, and drawing designs from memory, and a description of geometric designs. Results from this study found children in the attentional training groups made fewer errors on the Matching Familiar Figures Test and concomitantly demonstrated significantly better reading proficiency as compared to the control group. This study suggested that the use of attentional skills training with learning disabled children improved the ability

to perform on experimental tasks, and may have generalized to better academic skills in the classroom.

Subsequently, in an effort to continue this research Brown and Alford (1984) hypothesized that a package of self-control procedures would improve academic performance. Performance was measured on the Wide Range Achievement Test on which ADHD children generally perform poorly because of weak attentional skills. The training program covered a two month period during which eight children were trained individually to process information and to selectively attend to visual discrimination problems more efficiently. The materials and exercises utilized were similar to those used by Edgeland (1974; cited in Brown and Alford, 1984). Throughout training self-verbalization procedures were also used. These followed the basic approach of Michenbaum and Goodman (1971) and included: (a) stopping to define the problem, (b) evaluating alternatives before acting on any one, and (c) verbalizing the strategy throughout training.

The results of the study which were based on measures of reading, attention, and inhibitory control showed improvement among the children who received self-instructional training. Also, according to measures on the Wide Range Achievement Test the training results were sustained even at a 3-month follow-up. Additionally, though changes in classroom conduct and task oriented

behaviors during structured activities were not evaluated, anecdotal observations suggested that on-task behaviors persisted and that general conduct improved.

The results of this study are encouraging. However, they also suggest that investigators need to get their hands dirtier. Researchers need to put some of these evaluative instruments away and try using educational resources to train children to perform better in the classroom.

#### Educational Considerations for Treatment

According to the reports of parents (Campbell, 1973; Conners, 1970), teachers (Campbell and Paulauskas, 1979; cited in Grenell, Glass and Katz, 1987) and peers (Grenell et al., 1987; Milich and Landau, 1982), children who manifest ADHD suffer significant interpersonal difficulties. The clinical literature supports a positive relationship between disturbed early peer relations and psychiatric problems and social maladjustment during adulthood (Ladd, 1984).

The secondary characteristics associated with ADHD include poor peer relationships (Ledingham, Schwartzman and Bergeron, 1981; LaGreca, 1981; Atkins, Pelham and Licht, 1985; Johnston, Pelham and Murphy, 1985), school failure, negative self statements, and antisocial aggression (Prinz, Connor and Wilson, 1981). The perceptions of teachers as tapped on the Swanson, Nolan and Pelman

(1984; cited in Johnston et al., 1985) rating scale have also been found to reliably identify ADHD children experiencing interpersonal difficulties. Therefore teacher perceptions, themselves create a variable which needs to be addressed by researchers.

Teacher perceptions are important for another reason. According to attribution theory (Weiner, 1979; cited in Reid and Borkowski, 1987), the frequent failures experienced by ADHD children occur over long periods of time. These failures also occur across a wide variety of school related tasks and teachers. This leads to feelings of helplessness and to a lower sense of self-efficacy (Bandura, 1977; cited in Reid and Borkowski, 1987). Consequently, next to parents, teachers and resource teachers are likely the first to identify children who manifest difficulties coping with failure. These teachers, therefore, require access to treatment approaches available within their own schools to which they can refer children, or, borrow for administration in their own classrooms.

#### IV. Summary and Hypotheses

ADHD is a psychiatric diagnostic label referring to children who manifest unusually high levels of inattention, impulsivity, and hyperactivity. The incidence of this disorder approaches 3% of all children in schools (American Psychiatric Association, 1987). Research on ADHD has been extensive in attempt to empirically define

the ADHD diagnostic criteria. The emergence of Michenbaum and Goodman's (1971) self-instructional techniques have provided a means of teaching ADHD children to exhibit some control over their impulses in the school setting.

Michenbaum and Goodman's (1971) research left many questions about transference to academic skills unanswered. Brown and Alford (1987) addressed this issue and demonstrated that self-instructional techniques can improve academic performance. They concluded their training techniques would adapt quite well to classrooms for the learning disabled. However, they cautioned that their techniques deserve further investigation before they are implemented in such settings.

It would seem that similar techniques which can be implemented in the regular classroom are also warranted. Given the validity of children's social relationships as predictors of adult functioning (Cowen, Pederson, Barbigian, Izzold and Trost, 1973) it is also widely accepted that effective treatment approaches for ADHD children are needed. The treatment for the present study is described in Appendix A.

The Hypotheses. The research questions posed in Chapter 1 will now be restated in terms of hypotheses which will be tested in this study:

1.0 It is predicted that the social skills program will increase on-task behavior in the classroom setting as measured by two independent observers.

1.1 The effectiveness of a self-control training and verbal mediation intervention program will be indexed by decrements in teachers' ratings of impulsivity, attention, and hyperactivity on the SNAP.

1.2 It is also predicted that the students, themselves, will observe changes in their own behavior following social skills training, as indexed by the DSM-III Structured Childrens' Interview schedule.

In the following chapters the procedures for collecting and analyzing the data will be reported.

## Chapter 3

### Research Procedures

#### I. Introduction

The purpose of this study was to improve the skills and behaviors manifest by children identified as ADHD by their classroom teacher's ratings on the SNAP.

In this chapter the research methodology is outlined. A description of the instruments used is included. The characteristics of the subjects used in the study are also presented.

Procedural Pragmatics. The study was introduced to teachers during the middle of the school year. An overview of the characteristics of ADHD was presented. This included an emphasis on ADHD diagnostic criteria. The teachers' assistance in recruiting suitable candidates for the sample was requested. Based on their agreement, they were asked to think about two or three students from their classrooms who met the ADHD diagnostic criteria. Next they were asked to fill out the SNAP rating scale separately for each child they nominated.

The study was first introduced to the parents of potential subjects through an information letter. This letter requested that parents who did not wish their grade four or five children to be

considered for nomination by classroom teachers to participate in the study, to advise the school secretary or principal.

Permission was received from the superintendent of the school division and the principal of the school to solicit support from parents and teachers of grade four and five students for the purposes of this study. Arrangements were made with classroom teachers to conduct this training program during regularly scheduled class time at the school.

## II. Design

The study utilized an A-B design. Qualitative data were collected in three ways from three sources. First, independent observers recorded subjects' pretraining and postraining levels of on-task classroom behavior. The second source of qualitative data, was obtained from subjects' classroom teachers, who were administered a diagnostic rating scale (SNAP), prior to, and also following the introduction of social skills training. Lastly, the subjects were administered a diagnostic childrens' interview (DSM-III-Structured Children's Interview) which tapped their own awareness of the ADHD characteristics which the examiner presumed they possessed. This interview was also administered during the

pre- and post-training phases. Each of these three sources of data allowed comparisons to be made between pre- and post-measures.

The sample selection criteria were changed to accommodate the needs of individual teachers and to meet the needs of the school population. Ten students from grades five and six, were nominated to participate in the social skills training group. While the examiner had planned to include grade four students, it was the feeling of the grade four teachers that there were no suitable grade four students.

### III. Procedure

The subjects who participated were enrolled in a middle class suburban elementary school of 400 students in western Canada. The study took place during the 1989 - 90 school year. The examiner proposed to recruit ten students, to compose two subject groups of five.

At the start of each session a new topic was introduced or the former topic reviewed. Rules for the group were also reviewed. This took the first five minutes of the 45 minute period. During the next 10 minutes of the session a lesson would proceed. The following 20 minutes were used for practise and sometimes included cooperative games or role-plays. The last 10 minutes of sessions were used for discussion, feedback, and snack time.

During the 20 minute practise interval reinforcement was delivered through a multisensory approach using verbal comments (e.g. I like when you look at me when I'm speaking; Great plan!), gestural motions (e.g. 'hurray' motions, claps, etc.), and physical contact (e.g. pat on the back, gentle touch on shoulder). Visual aids also served as reinforcers. These included an "appropriate comment" name chart (see Appendix B) and a name check-list for students who verbalized self-talk (see Appendix C). The examiner also modelled appropriate behaviors during this portion of the session, and these were reviewed during the discussion interval.

During 'discussion time' students were asked to explain their own appropriate behaviors and those of the other group members. Snack time provided students the opportunity to wind down before returning to class. It was also intended to be conducive to socializing.

Baseline. Two independent observers were recruited to collect observations on the on- and off-task classroom behavior of each subject. Baseline behaviors were recorded in the regular classroom setting. The method of interval recordings was used (see Interval recording: III INSTRUMENTATION).

Prior to the data collection the observers were trained by the examiner to make interval observations of childrens' attentional skills. Inter-observer agreeability was not measured during the

A-B phases of the design because the observers could not coordinate their work schedules in such a way as to allow for observations to be conducted simultaneously. Nevertheless, the actual training estimate was 100% agreeability between observers.

Teacher ratings. The SNAP rating scale was administered to the classroom teachers of each subject prior to, and following the study. These pre- and post-measures served two functions: First, they provided information about the teachers' perceptions regarding the presence or absence of ADHD symptoms. This information was also used to screen student candidates for subject eligibility. Secondly, the pre- and post-measures provided data about the effectiveness of the training program.

#### IV. Instrumentation

The Swanson, Nolan, and Pelham (SNAP) Rating Scale (see Appendix D) was used as a pre- and post-measure reflecting the extent to which ADHD behaviors were perceived as present by the teachers both before and after the training sessions. An interval recording method was used to collect baseline and independent observer data. The Teacher Evaluation Survey was administered to the classroom teachers following training for the purpose of determining their impressions about the usefulness of the training program. The Student Evaluation Survey was administered to subjects

at the completion of the four week period so that they too could share their impressions about the program. These instruments and the rationale for their use are discussed.

Swanson, Nolan and Pelham (SNAP) Rating Scale. The most common classroom measures of student behavior, are teacher ratings and direct observation (Atkins, Pelham, and Licht, 1985). Rating scales may be used to measure attention, hyperactivity, and impulsivity and are considered to be the state of the art method used in the clinical evaluation, and, empirical study of the ADHD child (Ross and Ross, 1982). The use of teacher ratings is justified on two counts: a) the ease and economy of data collection, and, b) the importance of information derived from teachers for an understanding of child behavior (Atkins, Pelham, and Licht, 1985). In addition, teachers are typically more experienced with children and more objective than parents, and students are better known to teachers than to clinicians (Soal, Downey, and Lahey, 1980; cited in Atkins, Pelham, and Licht, 1985).

The Conners Teacher Rating Scale (Conners, 1969) has been the most widely used and researched of the teacher rating scales. It is a 39-item checklist. The 39-items may be scored on a factor basis, such as Conduct Problem - Aggressivity, Inattentiveness, Anxiety-Tension, Hyperactivity and Socialiability. The test-retest factor reliabilities range from .70 to .90 (Conners, 1973). The

behaviors which compose Conners' (1969) factors, however, are not entirely congruent with the DSM-III-R (American Psychiatric Association, 1987) diagnostic criteria. Rather, the Conners Teacher Rating Scale (Conners, 1969) was composed of symptoms evident in earlier literature (Johnston, Pelham, and Murphy, 1985).

The SNAP Rating Scale is a more current instrument which follows the same format as the Conners Teacher Rating Scale (Johnston, Pelham, and Murphy, 1985). To improve diagnoses, DSM-III (American Psychiatric Association, 1980) provided criteria more specific to attentional-deficits rather than activity based behavior. The SNAP is comprised of ADHD symptoms as described in the DSM-III (American Psychiatric Association, 1980; cited in Johnston, Pelham, and Murphy, 1985). It is a 23-item rating scale which has shown high concurrent validity ( $r = .9$ ) in correlations with the Conners rating scale (Swanson, Nolan, and Pelham, 1981). The Conners test-retest reliability has been identified as ( $r = .83$ ) (Goyette, Conners, and Ulrich, 1978; cited in Swanson, Nolan, and Pelham, 1981).

The SNAP is composed of four factors. These include inattention, hyperactivity, impulsiveness, and peer relationships. Like the Conners Teacher Rating Scale, items are rated by teachers as present "not at all", "just a little", "pretty much", or "very much". Following DSM-III-R guidelines any student who receives

extreme ratings ("pretty much" or "very much") on at least two of the hyperactivity criteria, and three each of the inattention and impulsivity criteria will be classified as ADHD. According to Pelham, Atkins, and Murphy (1981; cited in Johnston, Pelham, and Murphy, 1985) this definition results in 6% of an elementary school population being identified as ADHD.

The items found in the peer relations section of the SNAP will not be included for subject selection and post-testing. This factor provides a variable which will not be explored directly in the present study. Classroom teachers who respond on the SNAP Rating Scale will, however, be asked to rate their students according to the other three factors. Scores for each factor will be derived and these will be interpreted according to the SNAP Rating Scale norms and the DSM-III-R (American Psychiatric Association, 1987) ADHD diagnostic criteria.

Interval recording. Direct observations have been used to determine the behaviors that differentiate ADHD from non-ADHD children (e.g. Abihoff, Gittelman-Klein, and Klein, 1977; Vincent, Williams, Harris, and Duval, 1981; Whalen, Henker, Collins, Fink, and Demoto, 1979; all cited in Atkins, Pelham, and Licht, 1985). Typically in such studies interrater reliability has been low, and often the child has been observed less than one hour (Atkins, Pelham, and Licht, 1985). A measure that is often useful is the

number of instances a particular behavior occurs in a given period of time (Martin and Pear, 1978). In the present study it was important to determine the frequency of occurrence for ADHD behaviors manifest by the subjects, in the classroom setting, both at baseline and following training. According to Martin and Pear (1978) interval recording is an appropriate behavioral-observation method for recording the frequency of on and off-task behavior (e.g. in a classroom). This strategy designates a block of time (such as a ten-minute observation period). This time is then divided into equal intervals of relatively short duration (e.g. five seconds during every minute). The specified behavior is then recorded once during each five second interval throughout the observation period which may occur across a period of time (e.g. ten minutes) (Martin and Pear, 1978).

In the present study this method was used by the examiner to collect baseline data for each subject. This same method was applied by the independent observers for the purpose of recording evidence for or against generalization of trained behaviors to the classroom (see Appendix E).

Teacher Evaluation Survey. The purpose of this survey was to qualitatively determine the classroom teacher's impressions about the training program. This included ratings and comments regarding: the effectiveness of the program, generalizability of appropriate

behaviors to the classroom, and whether or not they would administer the program in their own classroom (see Appendix F). This measure provided the examiner with information about the utility of the program to schools based on teachers' perceptions.

Student Evaluation Survey. This survey, like the Teacher Evaluation Survey provided subjects with the opportunity to report their impressions about the effectiveness of the social training program (see Appendix G).

#### V. Results

During the observer training phase, the two observers together with the examiner used interval recordings to determine the percentage of time on-task of random students in a grade five classroom. Training observations proceeded until practise recordings showed stability. The independent observers practised recordings until they agreed 100%, and 90% of these observations were in agreement with the examiner's recordings. Several factors may have accounted for the 100% agreement during observer training. These are: a) both observers had worked together in the past, b) both observers were members of the school faculty and were familiar with the population, and c) both observers had worked within the special education domain, and possessed excellent observational skills prior to their involvement in the study.

A considerably high subject mortality rate was observed. Of the ten students nominated by grades five and six teachers to participate in the study, three of the students moved. Each of these children lived in foster homes and were rated by their teachers on the SNAP to present attention-deficits, impulsivity, and hyperactivity two standard deviations - or greater, than average. In addition, the only female nominated to participate, who was incidentally, from a dual parent home and who also had SNAP scores two standard deviations greater than average, dropped out after one session because of her reluctance to being "the only girl in the group". Furthermore, one boy from a single parent family, with SNAP ratings greater than two standard deviations above average attended four group sessions and then terminated as a result of a family move. Lastly, one grade five boy and one grade six boy, each from dual parent homes were nominated by their teachers to participate but neither boy was rated to possess ADHD characteristics at a percentage greater than average on the SNAP. Consequently the potential sample size of 10 was reduced to five, and by the fifth session the number of participants decreased to three.

The independent observers successfully collected baseline measures of attention in a classroom setting on five subjects prior to the introduction of social skills, and on the three subjects who completed the group. Return to baseline observations were made one

week following the termination of the group (see page 91 for Figure 1).

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Insert Figure 1 about here

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Phase A. Reference to Figure 1 shows that during the initial baseline phase, two of the three primary subjects showed an interesting trend. Subjects A and B demonstrated a stable range of on-task behavior between 40 - 60% for six 10 minute time samples. Subject C, on the other hand showed a wide range of variability across eight observation periods (range = 20 - 100% on-task behavior). This data stresses the high degree of individual differences and situational variance observed by teachers of special needs students (Sykes et al., 1971).

Interestingly, the anecdotal data collected by the observers regarding the two subjects who dropped out of the study, support both the former and the latter attentional patterns. For example the female participant (subject D) presented a range of on-task behavior in the classroom setting which also ranged between 40 - 60% as did subjects A and B. Subject E, like subject C, however, showed a wide range of on-task behavior in the classroom setting across six observation intervals (range = 10 - 100%)

In view of the above, these results may be interpreted to suggest that the 5 students who began the social skills training tended to show one of two attentional patterns in the classroom. The profile exhibited by subjects A, B, and D, yielded a relatively narrow range of on-task behavior. Subjects C and E, on the other hand showed a wider range of variance.

With regard to the baseline data collected it is worth noting that the relatively low initial baselines were congruent with teachers' ratings on the SNAP which placed participants ADHD characteristics two standard deviations or greater, than average. These findings lend support to the larger body of literature which suggests that teacher perceptions are often accurate predictors in the process of making an ADHD diagnosis (Klein and Young, 1979; Atkins et al., 1985; Ledingham et al., 1984). Continued support for this literal trend is significant to the clinician in that it supports a second body of research supporting the use of teacher rating scales in the assessment of ADHD students (Sandoval, 1981; Lambert and Hartsough, 1973; Swanson et al., 1981). Therefore the present study continues to add credibility to clinicians' appreciation of teachers who, the longer they teach, seem to develop a standard of comparison that parents and many physicians do not have (Sandoval, 1981).

Phase B. The post-training observations were based only on the three primary subjects (A, B, and C). While conclusive interpretations of these data could not be made, two possibilities existed. Reference to Figure 1 indicated that while it appeared that on-task classroom behavior generally improved from phase A to phase B and subsequently stabilized; an alternate explanation might be that subjects' behavior was simply an extension of the patterns observed in phase A of the study. In other words, it was possible that principles of rule governed behavior were not tapped by the intervention, and that observations from the B phase merely reflected the inconsistent classroom performance typically seen by special educators (Kolligan and Sternberg, 1989; Glaser, 1984).

The qualitative nature of the present study, together with the small sample size, and, failure to obtain a measure of independent observer agreement, make it difficult to ascertain which aspects of the treatment package had greatest discriminating power. The premise of an A-B design is the assumption that if no treatment were introduced, the behavior would continue as recorded in the baseline (McMillan and Schumacher, 1989). Unfortunately, the data together with the choice of design, in the present study make it impossible to argue that the intervention had the impact it was intended to have. While the clinical study of individual human behavior change remains paramount, and should continue to be explored through

single-organism designs, the A-B design is relatively weak in internal validity (McMillan and Schumacher, 1989).

Although the teachers' post-ratings on the SNAP and the A-B design did not show that the intervention resulted in behavior change, some interesting data were obtained from the DSM-III-R Structured Interview. These data were interpreted to support Hypothesis 1.2 which predicted that the students would observe changes in their own training following social skills training.

DSM-III-R Structured Interview. The qualitative data collected from the childrens' interviews yielded patterns which would suggest heightened levels of awareness regarding the childrens' perceptions of their ADHD behaviors (see Table 1). Reference to Table 1 illustrates percentage change between pre-and

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Insert Table 1 about here

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post-measures of subjects' ratings of their own ADHD symptoms. Using the coding system of symptoms occurring: 0 = never, 1 = sometimes, and 2 = alot, the data trend suggested less denial of the absence of symptoms over time. The data also indicated increased awareness among subjects of their more severe ADHD characteristics. Interestingly, the students' ratings of symptoms present "sometimes" remained relatively stable.

Take, for example, subject A. Prior to social skills training, subject A reported that 46% of the ADHD symptoms in the interview were atypical of his behavior. Following social skills intervention, however, he indicated that only 17% of the symptoms were atypical. One could imply, therefore that 83% of the symptoms described in the interview did typify some of his behavior. Similarly, initially subject A reported that 25% of the symptoms described were apparent in his behavior "sometimes". Though during the post-test he increased his rating to 43%. Lastly, in view of the ADHD behaviors which were most frequent (e.g. "alot") he had initially acknowledged 11% of the criteria, and subsequently increased these to 30%. It therefore seems that one could imply that subject A's overall awareness of his ADHD behavior increased as a result of the insight oriented social skills training package.

Teacher Evaluation Survey. The qualitative data collected on this evaluation form (see Appendix F) indicated overall satisfaction with the treatment package. In addition teachers described the package as relevant, and they appreciated their role in the transfer of training portion of the study. They also reported that students learned to pay better attention in class. Concerns held by the teachers centered around class time missed by the students and difficulty promoting further generalization of skills given the end of the school year. Pragmatic difficulties which were identified

suggested that it would be difficult to incorporate such a program into the classroom due to two factors: a) differences in individual student needs, and b) curriculum demands.

The overall satisfaction reported on the Teacher Evaluation Survey was somewhat incongruent with teachers' ratings on the SNAP, where they reported a lack of behavioral change. A number of factors may account for this discrepancy. These would include: a) teacher bias based on their knowledge of the purpose of the study; b) overlearning represented by teachers' own more clearly defined understanding of ADHD symptoms, and c) experimental contamination. These issues will be elaborated upon in the Discussion section of this paper.

Student Evaluation Survey. The percentages reported on the Student Evaluation Survey (see Appendix G) suggest that students did perceive themselves as benefitting from the group overall. The students also demonstrated a clear understanding about the nature and purpose of the group. However, the students also indicated that their own motivational drives were a factor which influenced the deployment of the plan-making skills. A larger discussion about the role of student motivation will follow in the Discussion.

Perusal of Table 1 illustrated that another one of the main findings of the study was that the independent observers found on-task classroom behavior did improve, as proposed by Hypothesis

1.0. However, Hypothesis 1.1 was not supported. Teacher perceptions remained stable and did not alter between pre- and post-administrations of the SNAP (Swanson, 1987).

## VI. Discussion

Why did teacher perceptions of their students ADHD behavior remain unchanged? The experimental situation had several features which may be interpreted to explain this finding. The first point to be noted emphasizes the nature of the experimental design. While the independent observers were blind to the purposes of the study, the classroom teachers were not. In fact, for the pragmatic purposes of justifying the students' time spent out of the regular classroom the teachers were very aware of the main aim of the present study. This latter point, taken together with the fact that the examiner went to great lengths to discuss the nature of ADHD with the participating teachers, may have led to an increased awareness of ADHD characteristics. One explanation, therefore, is that the teachers' new knowledge of ADHD allowed for more proficient observations of subjects' following successful identification of participants for the study. It may even be suggested that the teachers experienced affirmation with regard to their own abilities to identify ADHD characteristics. If this were true, the

probability of post-test results being contaminated by teacher's heightened awareness of student symptoms would be increased.

A second explanation which might account for differences in perceptions between the observers and students, from the teachers, may be that the treatment package was introduced in the latter part of the school year. Due to high level of activity-based learning, together with the emphasis on recreational learning, and childrens' high spiritedness as the end of the school year approaches, it can be suggested that the nature of demands placed upon teachers change, and/or increase. These events may have led teachers to ignore program effects (Schloss, et al., 1986). And lastly, another possibility remaining, may be that measures to promote generalization to the classroom were insufficient. There are three obvious ways to wrestle with this dilemma: a) increase the number of sessions where transfer to the teacher is programmed; and carry these over to the classroom, b) train teachers to teach social skills, c) build social skills training directly into the curricula.

Some factors which likely contributed to those aspects of the study which were more successful would include: a) the study was based on a body of knowledge with a conceptual base, e.g. Meichenbaum and Goodman (1971), b) the independent and dependent variables were applied and evaluated with equal precision, and c) training priorities were closely matched to learner needs and

characteristics, (e.g., American Psychiatric Association, 1987; Schloss et al., 1986; McGinnis, Sauerby, and Nichols, 1985).

Furthermore, the social skills training format which was influenced by Camp and Bash (1981) emphasized structured learning. Structured learning is a psychoeducational and behavioral approach to the instruction of prosocial skills. It consists of; a) modelling, b) role playing, c) performance feedback, and d) transfer of training (McGinnis and Goldstein, 1984). Structured learning is designed to teach skill-deficient children prosocial alternative behaviors, and how to use them (Goldstein, 1974; 1981; McGinnis and Goldstein, 1984). A number of procedures are used that enhance the likelihood of the students using these newly learned skills in real life situations. The following discussion examines these components.

Modelling, defined as learning by imitation, has been shown to be an effective teaching approach with children and adolescents (Bandura, Ross, and Ross, 1961; Rosenthal, 1976; both cited in McGinnis & Goldstein, 1984; Rogers-Warren and Baer, 1976). The present social skills training program utilized six components of effective modelling: a) the examiner (expert model) was highly skilled in the target behaviors, b) the examiner was considered to be of high status by the students, c) the model was friendly and

helpful, and d) all participants served as models once they had mastered the target behavior.

Role playing is defined as a situation in which an individual behaves in new ways by taking on a role (Mann, 1956; cited in McGinnis and Goldstein, 1984). Role playing can help a person change behavior or attitudes and has been a popular approach in education for years (McGinnis and Goldstein, 1984).

According to McGinnis and Goldstein (1984) role play enhancers include the four following components. For example a) choice on the part of the student whether to take part in the role play, b) the students' commitment to the behavior being played, c) improvisation in enacting the role-play behaviors, and finally, d) reward, approval, or reinforcement. With regards to the present study, all but the second element above could be influenced by the examiner's instruction, direction, and enthusiasm. If the teachers were correct in their assumption that little or no behavior changes resulted from social skills training, it may be true that the students did not possess the inherent commitment or motivation to change their behavior. Similar programs in the future should clearly define the element of student commitment as a dependant variable. One of the shortcomings of the present study and program is that this variable was not dealt with sufficiently. This point will be elaborated upon in the next section.

As with modelling, role playing may be considered a necessary but insufficient behavior change technique. Used alone, its effects do not last (Lichtenstein, Keutzer, & Himes, 1969; cited in McGinnis & Goldstein, 1984). Combining the two is an improvement. In this way the student knows both what to do, and how to do it. But students also need to know why they should behave in new ways. When a student understands why they behave in a particular way, this heightened awareness will foster their own behavior control. Once a student explores the "why" behind his or her own behavior, they are demonstrating metacognitive thinking.

Performance feedback is defined by McGinnis and Goldstein (1984) as providing the student with information on how well he or she has done during the role play. This component of structured learning was emphasized by the present training package, and according to the Student Evaluation Survey, was received well. McGinnis and Goldstein (1984) considered performance feedback as a motivational or incentive component. In retrospect, the view of the present author is that while performance feedback is an incentive to learners, because it teaches students why the new behavior is useful in a pragmatic way. It is not, however, necessarily sufficient to create increased motivation to internalize newly learned behavioral strategies. That is, performance feedback alone will not result in

long-term behavioral changes (McGinnis & Goldstein, 1984). This discussion will be continued in the next section.

Reinforcement is typically defined as any event that serves to increase the probability of a behavior occurring again in the future. McGinnis and Goldstein (1974) refer to three types of reinforcement and suggested that effective performance feedback must give attention to all three types of reinforcement. The first is material reinforcement, which includes food or money. Second, is self-reinforcement, which is a person's positive evaluation of his own behavior, (e.g. Think Aloud step #4: "I did great, because I tried hard!"). Finally, the social reinforcement, such as praise, or approval from others.

In view of the first form of reinforcement, this was initially excluded from the design of the present program. However, McGinnis and Goldstein's (1984) suggested that an individual's own reinforcement history and current needs will affect whether reinforcers are in fact, reinforcing. For this reason, prior to social skills training the examiner allowed each student to randomly select a reward for himself once he had obtained five chequemarks on each of the Appropriate Comments and Self-Talk charts (see Appendices B and C). Interestingly each student privately indicated a food reward, e.g. chocolate bars.

McGinnis and Goldstein (1984) explained that material reinforcement may be viewed as a necessary base, without which the higher levels of reinforcement (social and self-reinforcement) may not function. They also added that, for many young students, material reinforcement may be the only class of reinforcement to which they will respond initially. As there is considerable evidence that behavior which has changed in response to a program of material rewards typically extinguishes (McGinnis & Goldstein, 1984), the present study paired social reinforcers with material reinforcers when providing positive performance feedback.

Transfer of training. While the addition of modelling and role playing increases the likelihood that the behavior to be reinforced will occur again in the future, reinforcement must occur with sufficient accuracy and frequency to have its intended effect (McGinnis & Goldstein, 1984). The last component of structured learning to be considered regards the ultimate purpose of any teaching endeavour. Skills taught in the structured setting must be transferred to the classroom or other real-life settings.

According to McGinnis and Goldstein (1984), many teaching programs fail to have an impact on students' real lives. Research has identified a number of principles of transfer enhancement. The present study successfully dealt with some of these.

For example, the present study implemented social skills training in a setting which closely resembled the natural setting, where the skill was designed to be used. The group was taught in the same school in which students were enrolled, and, in a classroom in the same hall as their homerooms. However, the group being composed of a very small number of students may not have lended itself to the same kinds of classroom dynamics and peer interactions which typically occur in regular classrooms. For example, the system of discipline management was unique to a small group. No punishments or verbal reprimands were delivered. Instead, the natural contingencies within the group design shaped behavior. In the real world, unacceptable behavior is less often tolerated, or redirected in this way. Furthermore, the examiners interactions with students were less authoritative in that detentions were not delivered, student grades were unaffected by participation, and all of the group content and activity remained confidential. Nevertheless, the group format, rules, time duration, setting, and purpose, were designed to resemble the natural school setting. One suggestion which may obliterate the high mortality rate in similar studies would be to make factors such as grades contingent upon attendance.

Another element of skill transfer which was built into the design of the study included teaching the target skills in a variety

of settings such as the classroom and gym; skills were also rehearsed in response to a variety of persons including the examiner, peer models, and homeroom teachers. According to Stokes and Baer (1977) the actual use of a skill is facilitated by teaching the skill in a variety of settings and in response to a variety of persons. One of the limitations of the present study was that generalization to the two teachers was attempted during one session only.

A second important principle of generalization is that continued intermittent reinforcement is required to promote lasting behavior change (McGinnis & Goldstein, 1984). The present study was limited in this regard in three ways. First, the study was not designed to be longitudinal. Second, the program occurred near the end of the school year. With the ensuing summer break, teachers would be unable to continue reinforcement in the classroom setting. Last, all but one of the participants will be enrolled in a new school during the next school calendar year.

In view of these points, task instruction, the final component of skill transfer was impossible. That is, because of the design of the group, together with the time of school year in which it proceeded, instruction was not withdrawn systematically. Rather, training stopped abruptly. Likewise, because all but one of the

subjects were to be enrolled in new schools, periodic review of skills and booster sessions were not possible.

This discussion has focused upon the primary issues associated with both the design and the pragmatics of implementing the present social skills training method. The following section will deal with further considerations and implications for future research and similar psychoeducational intervention.

#### VII. Additional Limitations and Recommendations

The single most difficult limitation and factor for future investigations to consider based on the present study, is student motivation. The present study incorporated a number of elements intended to promote productive student motivation. For example, the classroom in which the training occurred together with use of the gymnasium were both areas which were typically off-limits school areas. This contributed to the sense that participation in the group was a privilege. In addition, in order to attend, sessions were scheduled such that students did not have to miss any classes or activities they especially enjoyed, (e.g., recess, field trips, etc.).

As indicated above the present study was structured in such a way as to enhance student participation. Additional efforts, as outlined by McGinnis and Goldstein (1984), included a discussion of

prosocial skills prior to, and during the first group session. The purpose of these discussions was to give students an idea of the type of skills they would be learning, prior to their own agreement to participate. Nevertheless, it was the examiner's impression that this was not sufficient means for soliciting student commitment to the program. What future interventions, like any therapeutic approach must remember, is that ones' awareness of a problem area is one thing; readiness to process problem components and the motivation to do so are another. It therefore seems that this and previous research has likely failed to distinguish these factors and their impact on developing metacognitive skills instruction and childrens' use of metacognitive processes.

This impression was based on each subjects' failure to complete the homework assigned during social skills training. Perhaps the homework was not completed due to a lack of student commitment to the program. Additional possibilities include: lack of understanding regarding the importance of skill rehearsal, lack of comprehension that newly learned skills truly could be internalized and used in the real world; and lastly, homework tasks were assigned rather than chosen by the students (McGinnis & Goldstein, 1984).

Another limitation of the present study, which was not fully addressed distinguishes between general, historically based

attributions and domain-specific beliefs about self-efficacy (Reid & Borkowski, 1987). The present investigation emphasized opportunities for participants to develop program-generated attributions from the immediate treatment intervention. However, antecedent attributions were ignored. Antecedent attributions represent pervasive self-beliefs about the causes of one's learning based on past successes and failures (Reid & Borkowski, 1987). Perhaps future researchers should consider students' beliefs about their own self-efficacy together with their personal histories; together with students' level of cognitive development, and, also the degree of self-denial of ADHD symptoms prior to selecting a suitable sample. Similarly, depending on the nature of factors above, perhaps student commitment to social skills training could be enhanced via self-nomination or self-referral; as compared to teacher nomination of subjects.

It is the very factors such as those mentioned above (e.g., subjects' personal histories) which threaten the internal validity of this A-B design. For this reason, future investigators should consider alternate designs with stronger sources of internal validity. The A-B-A design, for example, follows the same steps as the A-B design, except that a second baseline condition is included. The A-B-A design has internal validity. If the target behavior changes as expected in each phase of the experiment, one can

conclude that the changes were due to the effects of the treatment, (Borg and Gall, 1989). The problem with this design, is that such a study would not be ethically appropriate for the school setting.

The A-B-A-B design would overcome the ethical issue which would arise with the A-B-A experiment. The A-B-A-B design ends with the reintroduction of the treatment variable. Consequently, students in the school setting would exit the study with the positive aspects of the program effects intact.

Research in education can benefit greatly from single-subject designs. They offer an alternative to group designs by specifying methods which can be tested with a single individual or just a few subjects and still allow for reasonable conclusions to be drawn (McMillan and Schumacher, 1989).

In the present study some additional issues arose which were unrelated to the design and which highlight difficulties within the ADHD or school populations themselves. Some suggestions are offered to control for the high mobility rate associated with high risk populations. These include the following: a) the student attendance and homework record may be used by classroom teachers in the final assignment of grades; b) investigators should determine via interviews with guardians the probability of a residential move; c) regular school attendance histories of participants should be considered prior to their inclusion in a group.

The most obvious and important implication which stems from the present study with regards to the success of future social skills training programs is that increased metacognitive awareness about the overall importance of strategic-based performance is likely relative to success. Metacognitive awareness is a setting variable for new strategy acquisition (Reid & Borkowski, 1987). It therefore seems that successful social skills training may require antecedent training with composites of problem-resolution including; problem identification, metacognitive awareness, and perceptions of self-efficacy (past, present, and future).

In addition to clinical implications, the findings of the present study support the inclusion of affective components in cognitive theories of performance (Reid & Borkowski, 1987). For instance, degree of self-denial together with ones' desire to successfully acquire newly observed target behaviors may hinder or enhance the deployment of available strategies. Further, one can argue that this would impact upon one's ability to explore and sustain the cognitive search for alternative strategies in the face of learning obstacles (Reid & Borkowski, 1987), and conflict resolution during social interactions.

In this sense, the present data provided additional support for the inclusion of motivational components in theories of metacognition. Cognitive acts and their behavioral correlates

influence motivational and affectual beliefs, which in turn have causal influences on subsequent learning activities (Flavell, 1979; Reid & Borkowski, 1987). Reid and Borkowski (1987) also suggest that the exact bidirectional, interactive, and developmental nature of metacognition, must be unravelled. Future research should explore this premise with both typical and special-needs children of both the male and female gender.

Table 1

Percentages of Subjects Responses on the DSM-III  
Structured Childrens' Interview Schedule

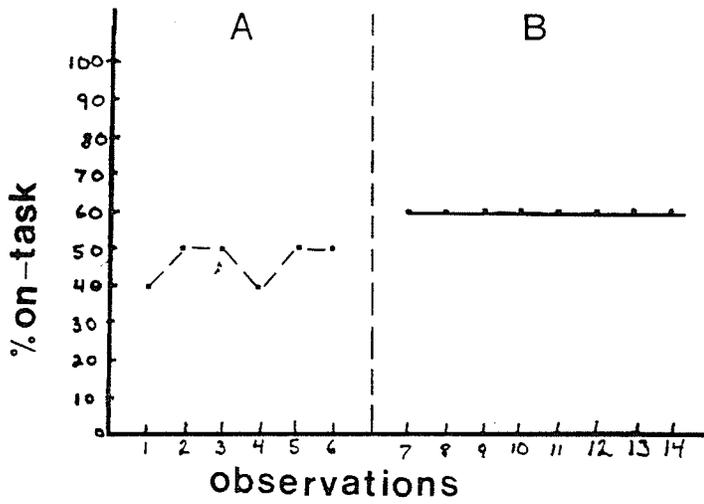
Subjects	0 = never	1 = sometimes	3 = alot
	pre/post	pre/post	pre/post
A	46%/17%	25%/43%	11%/30%
B	25%/16%	46%/46%	8%/20%
C	46%/33%	43%/41%	2.5%/18%

Note. Percentage decrements and increments between pre- and post-administrations may be interpreted to suggest subjects' heightened awareness of ADHD symptoms over time.

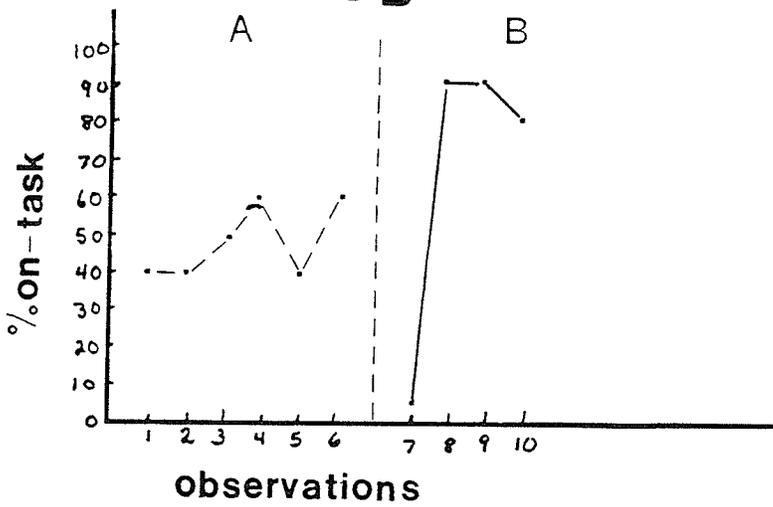
## Figure Caption

Figure 1. Initial and return baselines as recorded by the two independent observers.

S:A



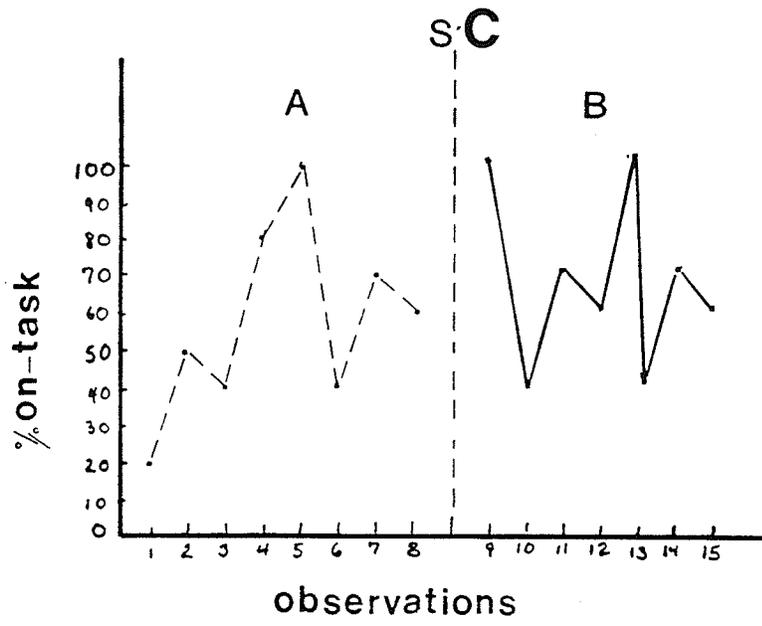
S:B

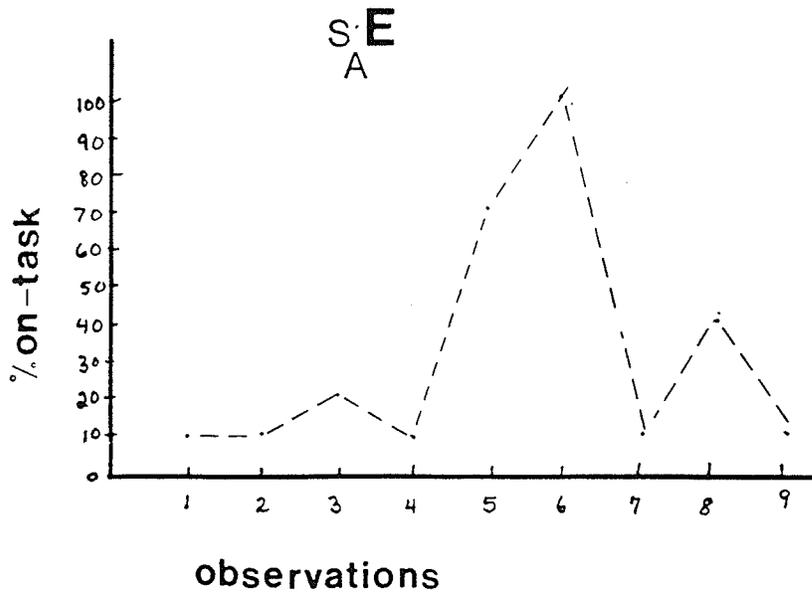
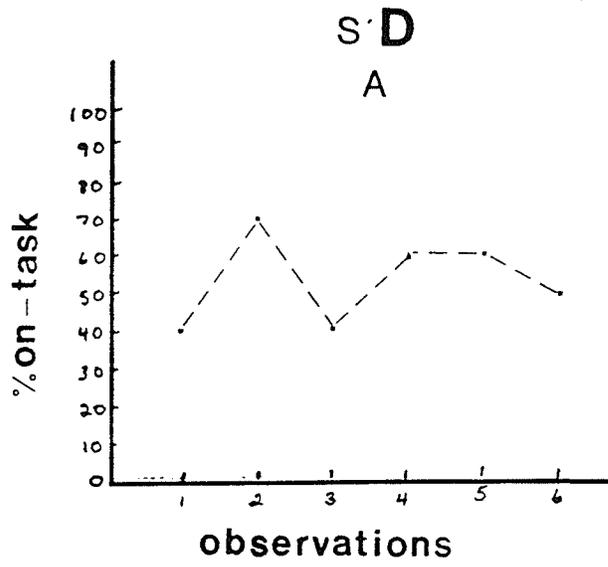


**KEY**

Pre-intervention baseline -----

Post-intervention baseline \_\_\_\_\_





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## APPENDIX A

Social Skills Training

To teach students to use self-guiding speech, this program follows the lead of a Michenbaum and Goodman (1971) who identified four questions which organize students problem-solving approach (Camp & Bash, 1981). The four questions are: 1) "What is my problem?" or "What am I supposed to do?"; 2) "How can I do it?" or "What is my plan?"; 3) "Am I using my plan?" and 4) "How did I do?" Students must learn to ask themselves these questions in order to internalize this systematic problem-solving approach (Camp & Bash, 1981).

If the group instructor asks the first question "What is your problem?" the student may interpret the question as a statement of wrong doing. Therefore the self-directed question should focus attention on the requirements of the task (Camp & Bash, 1981).

The second question promotes planning of alternatives. Having alternative strategies available should increase the amount of time a student spends on-task. Even when the student becomes frustrated (Camp & Bash, 1981).

The third question introduces the concept of self-monitoring. The question helps the student learn self-control as the student is required to rehearse the demands and previous plans. Acceptable answers to the question "Am I using my plan?" include 1) "Yes,

because I'm doing what I planned and it's working," 2) "Yes, because I'm doing what I planned, but there must be a better way to get the job done. So I'll change my plan," 3) "No, because I forgot to do what I planned so I'll start again," or 4) "No, because I forgot what I planned but what I am doing is working, so I'll use this new plan" (Camp & Bash, 1981).

According to Camp and Bash (1981) children's responses to the self-evaluation question are typically one-word answers, such as "fine", "O.K.", "bad". Therefore the instructor's modelling of appropriate answers promotes critical evaluation. Possible self-evaluation answers are: 1) "I did what I was supposed to do and did it quietly", 2) "I was good at following my plan", 3) "I was terrific at thinking out loud", 4) "I was not good at staying in my seat but I finished my work", 5) "Even though I couldn't solve the puzzle, I feel good because I kept on trying", 6) "I'm proud because I found a better way to solve this problem than we planned". These types of responses will be modelled by the examiner in the present study.

## Session 1

### Introduction

Session 1 begins with an explanation about the purpose of the group. Then rules for the group are presented. The activity to

be introduced is adapted from the Think Aloud Program (Camp & Bash, 1981). The Copy Cat game is introduced to focus students' attention on both features of cognitive modelling: speech and actions. This game is effective in centering children's attention on ways of coping with mistakes and corrections (Camp & Bash, 1981). The Mirroring and Shadow activities to be presented teaches children to control and monitor their gross motor movements. This activity in addition to Shadow (e.g., one student mirrors another students' movements) will be incorporated into every session at some point.

#### Teaching Strategies

During the introduction of the rules for the group, students are asked to read these aloud from a poster. Then the poster will be removed and the examiner will check for recall by asking "Who can remember rules for our group?"

To indicate when it is appropriate to stop copying the examiner during Copy Cat, a baseball umpire's "safe" signal is used. The examiner's arms will be positioned in an "X" parallel to the ground (Camp & Bash, 1981).

#### Objective

Each student will correctly imitate 75% of the examiner's sentences while playing Copy Cat. Each student will also practice controlled muscle movements.

### Materials

6 sets of Ralph The Bear Cue Cards (Camp & Bash, 1981), Crayons, stop watch, mirror, record forms.

### Plan

1. Purpose. The purpose for the group will be discussed. Students are told that they have been nominated by their teachers to participate. The examiner also explained that their participation was part of a masters thesis designed to teach students some skills which could help them do well in school. The examiner was careful not to leave a negative image in students' minds about the reason their teachers nominated them. An emphasis was placed on how lucky each student was to be selected over others in their class. The students were also told that their parents have consented to their participation, but that they did not have to participate if they did not wish to. Also, the examiner pointed out that the students could opt out of the program at any time. Information about the length of sessions and the program were also given. Rules for the group were introduced. These included: no blurting out, raising one's hand to speak, no speaking out of turn, taking turns, no put-downs (e.g. laughing at each other).

2. Introduction. Each student will introduces themselves by stating their name and one thing they are good at during the Name Game (Canfield & Wells, 1976).

3. Introducing Copy Cat. We are going to play a game called Copy Cat. You have to say what I say and do (point finger) what I do. Let's play Copy Cat. You have to say what I say and do what I do. If I point my finger (point finger) you have to point yours. If I stamp my foot (stamp foot) you have to stamp yours. You are good Copy Cats! Oh, come on. Stop copying me. (Hands on hips). How can I get you to stop? I need a signal. (Give the umpire's safe signal and explain that it will be the signal to stop copying (Camp & Bash, 1981)).

Sometimes it makes people mad when you play Copy Cat. We need to find out if it's all right with our friends if we copy what they say and do (Bash & Camp, 1981). When we look at someone like we do to play Copy Cat we are paying attention. Teachers expect us to pay attention in class. Let's learn to pay attention while we play Copy Cat again. Here is a picture of Ralph The Bear. Here are some crayons for each of you to share. Now, pay attention. You pay attention by looking at me while I speak and facing me in your chair. Do and say what I do.

The examiner leads the students through the exercise by modelling instructions and having the children echo statements. For example:

Examiner: First I'll take a red crayon.

Children: \_\_\_\_\_

Examiner: Then I will carefully color in Ralph The Bear's belt.

Children: \_\_\_\_\_

Examiner: We are terrific Copy Cats! Now I will take the blue crayon.

Children: \_\_\_\_\_

4. Review. The rules for the group were reviewed. Then the examiner asked each student whether or not they would participate in the next session.

Next the examiner asked the students what skills the group learned playing Copy Cat (e.g., paying attention, looking, listening, facing the speaker, etc.). These responses were prompted when necessary. Following the activity the examiner discussed appropriate movements for the classroom. Next students practised an activity called Mirror Stare which teaches children to control motor movements. Using a mirror, a book, a stopwatch, and a recording chart the children sit perfectly still in front of a mirror. They record how long they can sit there without a book falling from their heads.

5. Snacktime. Crackers were provided by the examiner. This provided each member of the group with an opportunity to nurture themselves and each other.

## Session 2

### Introduction

This session was designed to introduce the meaning of relevant comments and the four questions and Ralph The Bear cue cards.

### Teaching Strategies

The Relevant Comment Chart provided a means of reinforcing students' use of appropriate comments and questions. After the chart was introduced no further reminders about the chart will be noted (Camp & Bash, 1981). Students were taught that to be relevant, a comment, meant adding something or asking a question relating to the topic at hand.

### Objective

Each student will learn the meaning of a relevant comment. Each student will describe an appropriate plan for coloring shapes, and for assembling the Ralph The Bear Puzzle.

Materials

6 pages of shapes for coloring

1 set of Ralph The Bear Cue Cards (Camp & Bash, 1981)

Crayons

Plan

1. Review purpose and rules for the group. Review activity from Lesson 1. Discuss relevant comments. Explain how each student can collect cheque marks next to their name for using relevant comments.

2. Lesson introduction. Last time we met you did good Copy Cat work. Today I'm going to show you a new way of working on problems. I call it thinking out loud because we say what our brain is thinking (Camp & Bash, 1981).

Examiner: What do I call this way of solving problems?

Children: \_\_\_\_\_

Examiner: We'll start with a very easy problem. You probably would not think of it as a problem. But we will pretend it is like a problem we have to solve. Later we will do lots of harder problems and then this thinking out loud will really help. To teach you to think out loud we'll use Copy Cat (Camp & Bash, 1981).

3. Coloring Shapes. We each have a paper with some shapes on it. Let's learn to think out loud using this paper. You be Copy Cats. You must copy what I say and do.

I'm going to think out loud. What is my problem? I am supposed to color this circle/without going outside the line. How can I do it? I'll go slowly/I'll be careful./ I'll outline the circle first./Then I can go faster in the middle./That's my plan./Here I go. (Begin coloring.)

Am I using my plan? Yes./I'm making a frame inside the circle./I'm going slowly./Now I can go faster in the middle. (Cross line boundary.) Say "Oops I went too fast./I went outside the line./(Calm down.) That's okay./I'll be more careful./I'll go slower./There. I did it./ How did I do? I tried hard./When I was careful. I stayed inside the line./That makes me feel good. (Give the signal to stop copying) (Camp & Bash, 1981).

4. Introducing Cue Pictures. Examiner: I thought out loud to help me to remember to color carefully. Sometimes pictures help us remember what we have to say and do. These pictures will help you remember the questions you have to ask yourselves when you think out loud (Camp & Bash, 1981).

The first question we ask ourselves and answer before we start our work is: What is my problem? (Show Cue Picture 1.) Be Copy Cats. Say what I say. What is my problem?/(Examiner) wanted me to color a shape/without going outside the lines./(Show Cue Picture 2.) My plan was to go slowly and carefully. (Give the signal to stop copying.) When we think out loud we ask and answer these two

questions before we start our work. While we do our work, we ask ourselves (Show Cue Picture 3). Am I using my plan? My answer was "yes" because I made a frame inside the circle. Was I using my plan when I went outside the line?

Children: \_\_\_\_\_

Examiner: When we finish our work, we look at our paper and ask ourselves (Show Cue Picture 4), How did I do? My answer to that question is: I was good at thinking out loud. I tried hard to stay inside the lines.

Ralph The Bear can help you remember what to think about when you do your work. Let's see if Ralph's pictures help you remember the questions. (Show Cue Pictures 1 - 4 and review.) For example:

Examiner: What's the first question we ask ourselves before we start to work?

Children: \_\_\_\_\_

Examiner: Good. And the next question (Show Cue Picture 2), etc.

Examiner: One plan for coloring this circle was to make a frame on the inside. I used that plan but I still went outside the line. There are different ways to color. Let's think of different plans for coloring the middle square. What's a different plan? (Camp & Bash, 1981).

Children: \_\_\_\_\_

Examiner: Good. Now (student) pick a shape on your paper and tell us your plan. I will hold up Ralph's pictures to help you. We will play Copy Cat and do what you say and do. (Each student will have a turn leading the group.)

5. Snack.

Session 3

Introduction

Session 3 is designed to explore the variety of situations in which plan making is important. The activity in Session 3 (Electric Fence) presents the group with a problem-solving situation.

Teaching Strategies

Students will discover in a concrete fashion (through play) the importance of developing alternate plans when initial plans were ineffective. The setting in which students are exposed to the concept of alternate plans is cooperative. This will heighten their awareness of the utility of plan making in groups.

Objective

The students will learn to generate ideas about alternate plans. The students will have to generate plans in a cooperative setting. The students may not complete the activity successfully, but they will work together towards a common end.

Materials

1 set of Ralph The Bear Picture Cards

Available gymnasium

Skipping ropes

Wooden board (any size: preferably 4 ft. x 6 in.)

Plan

(\*Tie skipping ropes together to make a rope 6 ft. long. Tie rope to the Apparatus, or volleyball net posts. The rope should be 3 - 4 feet off the floor. Tape Ralph The Bear Cue Cards onto the wall. Leave a board leaning against the wall.)

1. Review rules and purposes of the group. Review meaning of relevant comments. Review the four Ralph The Bear pictures.

2. Take the students to the gym and explain rules for the Electric Fence game.

3. Introduction of Electric Fence.

Examiner: See this rope. It is supposed to be a barrier. It is an electric fence. Behind the fence is where the prisoners are kept. You are all prisoners. You must find a way to escape over the electric fence. I will say the rules. You play Copy Cat and repeat them. We can't go under the fence.

Children: \_\_\_\_\_

Examiner: We must go over the fence.

Children: \_\_\_\_\_

Examiner: If anyone touches the fence, they will be electrocuted./You must make a plan to get over the fence./You have 2 sets of tools./One is the board./The other is Ralph's pictures. (Give the sign to stop copying). Now everyone behind the fence. You have 15 minutes to escape. Now make a plan.

Allow students 2 minutes without intervention. Then prompt if necessary: I see that everyone's plan has been to work independently. Can you make a plan together? Remember, you have some tools. What would Ralph The Bear have you do next? I see some good planning going on. Have you thought your plan through? How will the last person get over the fence?

4. Review. Ask the students to explain their individual or group plans. Ask them to answer Ralph's last question: How did I do? Ask the students: Can you think of a different plan now? Why would it be better? Was it a better plan to work alone or together? Why? Explain that "We learned that sometimes we need other plans. Next time we will learn about alternate plans.

Also review how looking, listening, facing the speaker and making relevant comments can help them to make plans to work together. Review whether or not they followed the group rules during the game. Why or why not? Ask when their teachers might like them to make plans for independent work, and group work. Brainstorm briefly some alternate plans to these situations. Ask

students why the group rules are also good rules for their classrooms.

5. Snack.

Session 4

Introduction

Alternative thinking is a critical aspect of problem solving (Camp & Bash, 1981).

Teaching Strategies

Children need practice identifying appropriate plans for different tasks. According to Camp and Bash (1981) often while learning to think aloud students perseverate on the coloring plan as the only answer to the question "How can I do it?" To encourage flexible planning session 4 utilizes a puzzle to model a choice of plans, and then a change of plans when the first plan proves to be inadequate. The examiner will also model slowing down after impulsively selecting a piece without a plan. The children will then work independently on their own puzzles (Camp & Bash, 1981).

Objective

The student will answer the first two Think Aloud questions appropriately while working independently. The student will also name at least two plans for completing a puzzle.

Materials

Several copies of 2 bear puzzles.

1 set of Ralph The Bear cue pictures.

1 piece of cardboard large enough to cover a bear puzzle.

Plan

1. Review and probe for group rules and the four steps outlined on Ralph's cards. Review alternate strategies for solving the Electric Fence game from the last session.

2. Introduction of lesson.

Examiner: I know you are listening to me and paying attention when you look at me. How do I know when you are paying attention.

Children: \_\_\_\_\_

Examiner: I also know when you are trying hard to listen because you face me in your desks. How do I know when you are listening?

Children: \_\_\_\_\_

Examiner: Another way I know you are trying hard to listen and pay attention is when you sit straight in your chair, with feet flat on the floor, and hands on your lap or on top of your desk. Who can tell me what I just said?

Children:

Examiner: Good listening. I like how (student) is sitting up straight. I also know (student) and (student) were paying attention

because their hands are resting on their laps. (Student) is looking at me so I know he/she is listening. Good work.

At school we have to learn to cooperate with teachers and other students. Sitting or standing still when others are speaking is one way. Let's play Copy Cat. Repeat what I say and do. Some ways to cooperate with teachers and friends are: Sit still when others are talking./Look at the person talking./Sit straight in our desks./Keep our feet flat on the floor./Put away loose materials and keep hands on top of the desk./Make plans. Good! (Signal umpire sign.)

### 3. Puzzle Activity.

Examiner: Today we have a different problem to solve. You are all good at doing puzzles. The problem today is to think out loud to help us put a puzzle together. I'll pick the first piece and you be Copy Cats while I think out loud. Then (student 1) gets to pick the next piece and we will copy him/her. Then (student 2) picks the next piece ... and so on. Let's try it. Remember you are the Copy Cats first. Say what I say and do what I do. What is my problem? (Point to Cue Picture 1.) I have to put these pieces together to make a picture. How can I do it? (Point to Cue Picture 2.) I could look at all the pieces carefully./Or I could match colors./Or I could look for pieces I know./ My plan is to look for pieces I know first. (Uncover the puzzle pieces).

Here I go./ I'm looking at ll the pieces/to find one that looks like something I know./ (Pick up a puzzle piece.) This looks like a shoe./A shoe is usually at the bottom/so I'll put it down here. (Cover the unused pieces) (Camp & Bash, 1981).

(Student 1) it's your turn. What plan will you use to choose the next piece? (Camp & Bash, 1981).

Student 1: \_\_\_\_\_

Examiner: We'll copy what you say as you pick the next piece.

(Proceed through entire group.)

Examiner: (Next turn the examiner says impulsively ...) This one./Oh, slow down./I don't know what that piece is./I could pick that piece,/but I wouldn't know where to put it./I don't see any other piece I know for sure./I need to use a different plan./Now I'll try to match colors./Am I using my plan? (Point to Cue Picture 3.) I'm looking at the color./I'm putting these pieces together because they have the same color. (Complete puzzle.)

Give each student a different bear puzzle. Each of you try to put this puzzle together yourselves. Let me hear you think out loud (Camp & Bash).

Children: \_\_\_\_\_

Teacher: Assists whenever necessary with solution cues (color, lines, shapes, familiarity). Prompt: "What do we ask while we do our work?" "What do we ask when we finish our problem?"

Children: \_\_\_\_\_

Examiner: We will think out loud to help us on lots of problems. You can practice thinking out loud on math and reading problems your teacher gives you.

4. Probe.

Examiner: Let's think of times when it would be appropriate to make plans at school.

Children: \_\_\_\_\_

Examiner: In the classroom, during math, during language arts, etc.

5. Snack.

Sessions 5 and 6

Introduction

The purposes of these sessions is to apply the same Think Aloud procedure as was used in Session 4 to work on problems from a current math and language arts assignment.

Objective

To apply the Think Aloud questions from Ralph The Bear cue pictures to classroom work. To review and discuss appropriate times to make a plan in class. To continue to learn to generate plans in a cooperative group setting.

Materials

1 Grade appropriate and current math sheet for session 5

1 Grade appropriate and current language arts assignment (based on reading of a passage) for session 6

Skipping ropes and gymnasium apparatus (session 5)

1 Brown bag full of odds and ends (e.g., paper clips, string, paper, tape, pen, paper plate, etc.) (session 6)

### Plan

#### Session 5

1. Review importance of plan making in the classroom.

2. Application of Think Aloud questions to current math sheet and problems.

3. Electric Fence game. (Compare present game plans to those of Session 3 through discussion.)

4. Overview of skills taught. Review student generated suggestions from last session about when to use a plan in the classroom. Assign homework. Each student is to tape reduced Ralph The Bear cues to desk. Request that students record on a record sheet two times they used plans in math in their classrooms.

#### Session 6

1. Discuss results of homework assignment.

2. Application of Think Aloud questions to current language arts assignment. Stress method of repeated readings to complete task.

3. Nonverbal Plan game. Students will enter the gym and sit in a circle.

Examiner: Here is a brown bag full of odds and ends. When I tell you to start you will empty the bag and look at the materials inside. You will have 2 minutes to talk and make a plan about something you can make together. Then you will have 5 minutes to work on your plan. During this time you will not be allowed to speak. Then I will give you 2 more minutes to talk and finish your plan. Let's Copy Cat the rules for the game. (Examiner leads.)

Children: \_\_\_\_\_

4. Snack.

## Session 7

### Introduction

The purpose of this session is to introduce the Think Aloud problem solving approach to the classroom teachers of the students in the group. Session 7 also provides the students with the opportunity to practice Ralph's four questions within the framework of their teacher's teaching style during a problem-solving task.

### Teaching Strategies

The aim of this session is to promote generalization of the Ralph The Bear questions to the classroom. The classroom teacher is faded in to the group setting by presenting a lesson in the

environment (room) in which the students learned the verbal mediation strategy. Likewise, classroom teachers are presented with an opportunity to practice and modify their teaching style to accommodate the Think Aloud steps.

#### Objective

The students will learn to use verbal mediation by employing Ralph's four steps during a lesson with their teacher.

#### Materials

1 five minute lesson from each classroom teacher with a student participating in the group. It is suggested that this lesson be taken from the Social-Emotional unit of the Health curriculum.

#### Plan

1. Review appropriate behaviors for the classroom. Review Ralph The Bear Cue Pictures.
2. Each teacher attends the group for 15 minutes during which they present a lesson. The examiner prompts students to use verbal mediation at appropriate points during the lesson. Students and the examiner model Ralph The Bear questions to the classroom teacher. Each teacher will assign their own students a homework assignment. The assignment will be to tell the teacher at the end of each day about one occasion during which they employed the verbal mediation

strategy. (Remember, the reduced Cue Pictures are taped on the students' classroom desks.)

Teachers will place an emphasis on encouraging remarks during the lesson and make particular effort to verbally reinforce their own students (e.g., "Wow! I'm impressed. I'll be looking forward to seeing (student) use this strategy in class.")

3. Review visits from the classroom teachers and discuss during snack.

4. Snack.

## Session 8

### Introduction

Session 8 is a wrap up session. The intent is to provide a sense of closure to the members of the group.

### Teaching Strategies

Students will find excitement and enjoyment during the last two cooperative games. The first places emphasis on group cooperation. The second emphasizes each member's individuality and unique perspectives towards their feelings about themselves and the group.

The student evaluation form will be administered. This is a concrete indicator of group termination.

During snack time the examiner will share her gratitude for the students' participation, thoughts about the group and positive feelings for each student.

#### Objective

The students will gain a sense of closure. They will understand that the group sessions have come to an end.

#### Plan

1. Human Knot game. This will take place in the gym. The students form a small circle. Then each student places their left hand into the middle of the circle. The student must join their left hand to someone else's left hand. However that "someone else" must not be standing beside them on either their left or their right.

Then right hands are put into the centre of the circle and joined. The purpose of the game is to get untangled without letting go of hands. Successful problem-solving means untangling oneself to become part of the original circle.

2. Cooperative interview. Students sit in a U-shape on the floor. A chair is placed at the front facing the children. Children take turns sitting in the chair while the others ask questions.

3. Snack and Examiner's final message to group participants.

## APPENDIX B

## Appropriate Comment Chart

Name	Session	Appropriate Comments and Behaviors					
		1	2	3	4	5	6
Subject A		/	/	//	///	///	///
Subject B		/	/	///	///	//	///
Subject C		/	//	///	///	///	///

I remain still when others expect me to!

I look at people who are speaking to me!

I do not blurt out answers!                      I do not interrupt others!

I do not speak too loudly!

I look at people who I speak to!

Subjects will intermittently received checkmarks on the chart above when they spontaneously generated appropriate comments during sessions. No more than three checks will be earned by any student during a particular session. Similarly, the examiner was certain to award each student at least one checkmark per session. This chart hung on the wall at the front of the classroom where sessions were held.

## APPENDIX C

## Self-Talk Chart

STEPS	Okay, what is it I have to do?	You want me to ...	Directions to myself	Rewarding myself
Sessions	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Subject A	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓
Subject B	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓
Subject C	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓

Students will be rewarded checkmarks when the examiner observes them verbally rehearsing: a) questions about the nature and demands of the task. This will compensate for possible comprehension deficiencies; b) answers to these questions in the form of cognitive rehearsal and planning in order to overcome any possible production deficiency; c) self-instructions in the form of self-guidance. When this step occurs as the student performs a task it will account for any possible mediation deficiency; and d) self-reinforcement (Michenbaum & Goodman, 1971). This chart hung on the front wall of the classroom.

## APPENDIX D

## The Swanson, Nolan, and Pelham (SNAP) Rating Scale

OBSERVATION		Not at all	Just a little	Pretty Much	Very Much
Score		0	1	2	3
Score <input type="checkbox"/>	<u>Inattention</u>				
	1. Often fails to finish things he or she starts				
	2. Often doesn't seem to listen				
	3. Easily distracted				
	4. Has difficulty concentrating on school work or other tasks requiring sustained attention				
Score <input type="checkbox"/>	5. Has difficulty sticking to a play activity				
	<u>Impulsivity</u>				
	1. Often acts before thinking				
	2. Shifts excessively from one activity to another				
	3. Has difficulty organizing work (this not being due to cognitive impairment)				
Score <input type="checkbox"/>	4. Needs a lot of supervision				
	5. Frequently calls out in class				
	6. Has difficulty awaiting turn in games or group situations				
Score <input type="checkbox"/>	<u>Hyperactivity</u>				
	1. Excessively runs about or climbs on things				
	2. Has difficulty sitting still or fidgets excessively				
	3. Has difficulty staying seated				
	4. Moves about excessively during sleep				
Score <input type="checkbox"/>	5. Is always "on the go" or acts as if "driven by a motor"				
	<u>Peer Interactions</u>				
	1. Fights, hits, punches, etc.				
	2. Is disliked by other children				
	3. Frequently interrupts other children's activities				
	4. Bossy; always telling other children what to do				
	5. Teases or calls other children names				
6. Refuses to participate in group activities					
Score <input type="checkbox"/>	7. Loses temper often and easily				

The SNAP will be administered to the classroom teacher of each subject. This data will provide information about the teacher's perceptions of ADHD behavior prior to, and following treatment.

## APPENDIX E

## Observation Form

Name: \_\_\_\_\_

Observation # \_\_\_\_\_

Location: \_\_\_\_\_

Directions: Using a stopwatch, observe the student during a 10-minute period. Record the student's behavior during a 5-second interval at the end of each minute. Score on-task behavior with a checkmark (✓) and off-task behavior with an (X) underneath each minute below. Also record the behavior the student engaged in during the 5-second interval.

Minutes:

1	2	3	4	5	6	7	8	9	10
—	—	—	—	—	—	—	—	—	—

Comments:

- |          |           |
|----------|-----------|
| 1. _____ | 6. _____  |
| 2. _____ | 7. _____  |
| 3. _____ | 8. _____  |
| 4. _____ | 9. _____  |
| 5. _____ | 10. _____ |

NOTES: \_\_\_\_\_  
 \_\_\_\_\_

## APPENDIX F

## Teacher Evaluation Survey

The following survey was designed to be administered to the classroom teachers of students who participated in the ADHD training package presented by Sandra MacDonald at Souris school. The purpose of the survey is to determine the strengths and weaknesses of the program from the teachers' point of view. Please answer the following questions as best you can.

Teacher's Name: \_\_\_\_\_

Student's Name: \_\_\_\_\_

1. What is your impression of the training program received by your student?
 

a) Good	b) Satisfactory	c) Satisfactory, but	d) Weak
<u>2 (100%)</u>		needs improvement	
  
2. From your point of view, what were the strengths, if any, of the program? Name at least two if applicable:
  - 2 (100%) Needed and relevant.
  - 2 (100%) Teacher involvement.
  
3. From your point of view, what were the weaknesses, if any, of the program? Name at least two if applicable:
  - 1 (50%) Classtime missed by students.
  - 2 (100%) Prompting students to use newly learned strategies in the regular classroom.
  - 2 (100%) Time of year.

4. The following three questions all apply to question #4. In your opinion, could a similar program be incorporated into the classroom setting by teachers such as yourself?
- a) Definitely      b) Possibly, but it may be difficult: 2 (100%)      c) No
- b) Please explain: 1 (50%) Not all students require these skills. 2(100%) Fitting program into curriculum.
- c) How strongly do you feel about your comments in #4b.
- a) Very strongly      b) Strongly      c) Neutral      d) Not very Strongly  
2 (100%)
5. From what you know of it, if you had developed this training program, what might you have done differently?
- 2 (100%) Don't know.
6. What did your student learn from participating in the training group?
- 2 (100%) Know how to pay attention better.
- 1 (50%) Knows what I expect.
7. What were your expectations of the training group?
- 2 (100%) Students would learn to pay better attention.
8. Did the training package match your expectations? Please explain.
- 2 (100%) Yes, within reason; expectations were not high.

## APPENDIX G

## Student Evaluation Survey

You can help Ms. MacDonald decide whether the "group" should be taught again next year. By answering the questions below, you can also help me figure out what you learned, and how much you learned in "group". Using a pencil, please answer the following questions.

1. Describe the "group". 3 (100%) It was fun.  
3(100%) I learned to think out loud.  
2 (69%) We played games and had snacks.
2. What kind of work did we do in "group"?  
1 (31%) We practised sitting still.  
3 (100%) We played games.  
3 (100%) Made plans.  
3 (100%) Learned to make relevant comments.  
2 (69%) We had to get along.
3. What did you learn in group? 3 (100%) Same as above.
4. Do you use the skills learned in "group" in your homeroom classroom? 3 (100%) Sometimes.  
 If you answered "yes", please give some examples of these.  
2 (69%) In Math - Sometimes.  
3 (100%) During experiments - Sometimes.  
1 (31%) If I want to do something different from my friends at recess.

If you answered "no", have you ever thought about using the skills you learned in "group" in your classroom? \_\_\_\_\_  
 Why, or why not? \_\_\_\_\_

5. What was your favourite part of "group"?

3 (100%) The games.

3 (100%) Getting out of class.

3 (100%) Getting cheques and chocolate bars.

6. What did you dislike about the "group"?

2 (69%) Thinking out loud when I didn't feel like it.

3 (100%) I wanted to go to the gym more.

3 (100%) Homework.

7. Has the "group" helped you? Please explain.

2 (69%) Yes. I know how to do things better.

1 (31%) Yes. I can make plans when the teacher is too busy to help me.

8. Would you participate in a "group" again in the future?

2 (69%) Yes.

1 (31%) Maybe.

Ms. MacDonald would like to thank you for participating in the group. I will always remember you, and I will look for you in the hallways at your school.