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The Effects of a School-Based Social Skills Training Program on Children with ADHD: Generalization to the School Setting

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by

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Dedication

I owe everything to my wonderful family. I am so grateful to my children Dylan, Victoria, and Aidan who have sacrificed many hours with their mom while she worked on reaching her goals. You each teach me something new every day that makes me a better psychologist, mother, and human being. You are my angels from heaven, and you know I love you to the moon and back.

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ABSTRACT

A diagnosis of Attention-Deficit/Hyperactivity Disorder is given when a child exhibits developmentally inappropriate levels of inattention, impulsivity and hyperactivity. In addition to academic and behavior problems, these children often have significant social problems. Since social problems are associated with a greater risk for developing problems later in life, a number of interventions have been attempted to normalize the social interactions of children with ADHD. These have included stimulant medication, cognitive-behavioral interventions, behavior modification, and social skills training. Additionally, attempts have been made to maximize the benefits of these interventions by combining them. Typically this involves combining stimulant medication with one of the other non-pharmacological interventions. Unfortunately, no one intervention or combination of interventions has stood out as the clear choice for improving the social problems of children with ADHD. Therefore, more research is needed to clarify this issue.

Social skills training is often used in clinical and school settings for children with ADHD who experience social problems, despite the apparent lack of empirical evidence for its effectiveness. Social skills training programs frequently report success, but the evidence for success is taken only from anecdotal reports by parents and teachers. The purpose of this study was to document the effectiveness of a social skills training program for children with ADHD.

A social skills intervention program was implemented for four children with ADHD. Eight weekly sessions focused on six targeted social skills. All four children were administered their prescribed stimulant medication for the duration of the training. In addition to small group training with the four target children, weekly classroom guidance lessons were conducted in each child's general education classroom focusing on the skill taught that week in small group. The target children were observed weekly in the playground setting at their schools prior to and during the training. Their parents and teachers completed the ADHD Rating Scale-IV and the Social Skills Rating System both pre- and post-training. A multiple baseline across behaviors design was used. Although three of the four children showed improvement on teacher ratings scales. Further, none of the parent rating scales showed improvement. None of the children showed improvement as evidenced through direct observational data.

Chapter I

Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most common behavior disorders of childhood. Approximately 3-7% of the school-aged population is affected by this disorder. Children with ADHD display developmentally inappropriate levels of inattention, impulsivity, and/or motor activity (American Psychiatric Association, 2000). Many children with ADHD exhibit severe social problems. These social problems often result in their being overtly rejected by their peers. Such rejection is a strong predictor of poor long-term outcomes (Parker & Asher, 1987). Since children with ADHD are among the most unpopular in any peer culture (Whalen & Henker, 1991a), they are particularly vulnerable to poor outcomes.

Statement of the Problem

The Social Behavior of Children with ADHD

Pelham and Bender (1982) have estimated that more than 50% of children with ADHD have significant problems in social relationships with other children. There is a vast amount of research that has attempted to investigate the social behavior and social problems of children with ADHD. This research can be organized into five general areas: response patterns, style of approach, social information processing, peer appeal and social standing, and the social impact and influence of children with ADHD (Whalen & Henker, 1992).

Response patterns. This category includes undesirable or inappropriate behaviors, prosocial behaviors, and transactional patterns. Since children with ADHD are often more disruptive, noncompliant, bossy, intrusive, rule-breaking, noise-making, and annoying than other children, they appear unconcerned with the feelings and needs of others and unresponsive to social cues and feedback (Whalen & Henker, 1992). Despite this, children with ADHD have not been found to engage in prosocial behavior less often than those without ADHD (Buhrmester, Whalen, Henker, MacDonald, & Hinshaw,1992; Hinshaw, Henker, Whalen, Erhardt, & Dunnington, 1989). However, studies have found that there are difference in the quality of interactions between children with ADHD and their peers (Clark, Cheyne, Cunningham, & Siegel. 1988; Cunningham, Siegel, & Offord, 1985; Hubbard & Newcomb, 1991). Peers seem to respond differently to children with ADHD and, when these children exhibit appropriate social behavior, peers respond to them more normally.

Style of approach. Difficulties with intensity, modulation, and affect may differentiate children with ADHD from those without in terms of peer interactions. Studies have indicated that children with ADHD are perceived as more intense than their peers (Whalen & Henker, 1985; Whalen, Henker, Collins, McAuliffe, & Vaux, 1979). Children with ADHD also seem to have difficulty modulating responses according to changing situational contexts and cues (Landau & Milich, 1988; Whalen et al., 1979). That is, children with ADHD are more consistent in their social behavior than are those without ADHD and this consistency causes them difficulties since social interactions require flexibility in responses from situation to situation. Additionally, children with

ADHD also have poor emotional control. They tend to be highly emotional and overly responsive to diverse types of situations, including those that are social as well as physical (Whalen & Henker, 1992).

Social information processing. Research in the area of social cognition has not provided much definitive evidence of deficits in children with ADHD. However, some specific findings from this research may assist in planning interventions for children with social problems. First, children with externalizing problems have been found to exhibit a hostility bias (Dodge & Feldman, 1990). That is, following an ambiguous act by another child, these children are likely to infer a hostile intent by that person while also underestimating their own responsibility for outcomes. Aggressive boys tend to underestimate their own aggressiveness, making it less likely that they will make an effort to use self-control and more likely that they will use similar responses in future interactions (Lochman, 1987).

Children with social problems also have difficulty generating behavioral solutions to interpersonal problems (Evans & Short, 1991; Guerra & Slaby, 1989). Although they can choose an appropriate first solution, when the first solution is ineffective, these children seem to have difficulty coming up with alternative solutions.

Finally, the frequency of inappropriate behavior typical of children with ADHD makes one wonder if they know right from wrong. That is, do these children recognize that their behavior is inappropriate? Research findings indicate that they do. Children with ADHD have been found to be just as accurate as those without ADHD in identifying inappropriate behaviors (Whalen et al., 1989; Whalen, Henker, & Granger, 1990).

Peer appeal and social standing. Negative peer regard has many detrimental consequences including undermining self-worth, engendering discord, and constraining opportunities for social learning. Peer rejection also is a strong predictor of poor long-term outcomes (Parker & Asher, 1987). Since children with ADHD are among the most unpopular in any peer culture (Whalen & Henker, 1991a), it is not surprising that peers show a negative halo effect regarding these children. Children with ADHD have been found to be criticized by peers for negative qualities not observed as well as actual misbehaviors observed (Whalen, Henker, Castro & Granger, 1979).

Social impact and influence. Children with ADHD seem to have a negative effect on their social partners, including parents, teachers and peers. They have been found to engage in a pattern of behavior with their parents consistent with Patterson's (1982) coercive cycle theory. That is, aversive behaviors by the child are negatively reinforced by the parent and continue to escalate as a result (Danforth, Barkley & Stokes, 1991). A similar pattern was found in their interactions with teachers (Whalen, Henker, & Domemoto, 1980). There also is evidence that there is a change in the behavior of peers who interact with children with ADHD (Clark et al., 1988; Madan-Swain & Zentall, 1990). These findings indicate that children with ADHD have a clear impact on their social environment. How parents, teachers and peers respond to the behavior of the child with ADHD can provoke or prevent escalation and can provide or preclude the social learning opportunities crucial to developing interpersonal competence.

Parents and teachers of children with ADHD seem to be sensitive to their behaviors and respond positively when they are treated medically for this disorder

(Danforth et al., 1991; Whalen, Henker, & Domemoto, 1980). However, peers do not show this pattern of reaction to children with ADHD. Even when children with ADHD improve their behavior, their peers do not change their reactions to them (Hinshaw, Henker, Whalen, Erhardt, & Dunnington, 1989; Hinshaw & McHale, 1991; Pelham, 1989; Pelham, Schnedler, Bologna, & Contreras, 1980; Whalen, Henker, Buhrmester et al., 1989).

Interventions for Social Competence

A variety of interventions have been used with students experiencing social problems. These interventions include stimulant medication, cognitive-behavioral interventions, behavior modification, and social skills training. A number of reviews of the literature have been conducted in this area and the results have been disappointing. In general, it has been concluded that no intervention or combination of interventions has provided sufficient or lasting benefits for the social problems experienced by children with ADHD (Hinshaw & Erhardt, 1991; Pelham, 1989; Whalen & Henker, 1991b).

Stimulant medication. The use of stimulant medication with children with ADHD is by far the most common and accepted treatment. Stimulants have been found to dramatically decrease aggressiveness in children with ADHD (Hinshaw et al. 1989; Hinshaw, 1991). They also have been found to enhance social compliance and task orientation in social interchanges with teachers and parents and decrease negative social behavior and aggression in peer settings (Hinshaw & McHale, 1991). There also is some evidence that stimulants increase prosocial behavior and social status in children with ADHD (Whalen et al., 1989). However, although stimulants have been found to improve

aggression and peer appraisal, the lack of normalized social functioning found in these studies suggests a need for combined interventions.

Cognitive-behavioral interventions. Cognitive-behavioral interventions usually include training to enhance problem-solving skills and alter cognitive information processing, behavioral rehearsal to practice newly developed social skills, and explicit reinforcement of appropriate social behavior. For children referred for aggression or social problems, interventions such as these produce clear improvement in important social behaviors (Hinshaw, 1992). Unfortunately, the same cannot be said for children with ADHD. A number of studies and literature reviews have found that cognitive-behavioral interventions are not effective for children with ADHD (Abikoff, 1991; Hinshaw & Erhardt, 1991). However, some studies have found these interventions to be successful with some specific aspects of behavior of children with ADHD. A cognitive-behavioral intervention was found to be successful in enhancing both general self-control and the use of specific coping strategies for anger control in children with hyperactivity (Hinshaw, Henker & Whalen, 1984a). Another study found that the observed social behavior of children with ADHD on the playground was enhanced by reinforced self-evaluation (Hinshaw, Henker, & Whalen, 1984b). Therefore, the findings that cognitive-behavioral interventions have been successful with some aspects of the behavior of children with ADHD warrants further investigation.

Behavior modification. Behavior modification interventions typically include a functional behavior assessment to determine the target behaviors, training parents and/or teachers in behavior management techniques, reinforcement contracts for home and

school, and daily reinforcements and consequences. Although behavior modification has been found to be effective at reducing aggressive behavior in children with ADHD to normal levels, the primary features of ADHD (i.e., attention, activity, and impulsivity) have not been normalized (Abikoff & Fittelman, 1984). However, when behavior modification is combined with stimulant medication treatment, behavior change tends to be greater than with the use of either intervention alone (Gittelman et al., 1980; Pelham, Schnedler, Bologna, & Contreras, 1980)

Social skills training (SST). Social skills training programs are usually conducted in a group setting, outside of the classroom, and often in clinics. Each training session typically involves instruction in a new skill, modeling of the skill, guided role-plays with performance feedback, homework assignments to use the skill outside of the group setting, and some type of reinforcement for using the skill. Skills taught usually involve such themes as communication, cooperation, and participation. Several studies have examined the use of SST with children with ADHD, and some have found that the training improves the social behavior of these children (Frankel, Myatt, Cantwell, & Feinberg, 1997; Sasso, Mellory & Kavale, 1990). However, others studies have not found SST effective over and above stimulant medication treatment alone at changing their social behavior (Pelham et al. 1988; Sheridan, Dee, Morgan, McCormick, & Walker, 1996; Abikoff et al. 2004; MTA Cooperative Group, 1999).

In recent reviews of the literature of outcome studies of social skills training research (Gresham, 1998; 2002) six general conclusions were formulated. First, the most effective SST strategies appear to contain some combination of modeling, coaching, and

reinforcement procedures. Second, evidence for cognitive-behavioral procedures is weak. Third, the greatest weakness revealed in the SST literature is the absence of consistent, durable gains across situations and settings over time. Among meta-analytic reviews, only modest effect sizes have been found, suggesting that SST is a relatively weak intervention strategy. Forth, cognitive-behavioral interventions tend to use outcome measures which lack social validity and which do not asses the extent to which improvements on these measures translate into socially skilled behaviors in natural settings. Fifth, there appears to be a relationship between the amount of SST and the effects of the interventions. And sixth, SST studies which matched training with skill deficits were more likely to produce positive results.

Gresham (1998) offered some suggestions for improving SST. First, assessment procedures need to be improved by considering social validity and the sensitivity of outcome measures. Second, social skills intervention strategies need to be matched to specific social skills deficits. And third, programming for functional rather than topographical generalization must be implemented by adopting a contextual approach to teaching social behavior within a competing behaviors framework.

Combined interventions. In most studies examining interventions for social competence, when behavior modification, cognitive-behavioral intervention, or social skills training was combined with stimulant medication, the combined packages ranked ahead of any of the interventions alone in terms of effectiveness (Gittelman, et al., 1980; Hinshaw, Henker, & Whalen, 1984a; Pelham & Murphy, 1986; Pelham, Schnedler, Bologna, & Contreras, 1980; Whalen & Henker, 1991b). In addition, only children

receiving combinations of interventions have shown clinically significant benefits (i.e., normalized behavior) (Gittelman et al., 1980; Hinshaw, Henker, & Whalen, 1984b; Pelham, Schnedler, Bologna, & Contreras, 1980). Therefore, it seems that the preponderance of the research indicates that the most effective strategy for improving the social behavior of children with ADHD is to combine stimulant medication with either behavioral, cognitive-behavioral, or social skills interventions.

Conclusions Regarding Interventions for Social Competence

Given the fact that research findings regarding the success of interventions for social problems are mixed at best, Hinshaw (1991) recommends that experts need to reformulate social skills interventions. Interventions should address the severe motivational and behavioral problems of children with ADHD and aggression. He suggests that the severity and number of problems experienced by these children, including social problems, learning problems, and aggression, mandate the construction of intervention programs with the strongest possible components. Such intervention programs should include active behavioral cueing and reinforcement, strategies designed to enhance problem solving and alternatives to aggression, and the teaching of accurate self-monitoring and self-evaluation of social behaviors. Success likely will be maximized by combining these programs with pharmacological treatments. Overall, programs need salient motivational incentives and lengthy periods of administration before meaningful change can be produced. Treatments need to be individually tailored and delivered over years rather than months.

To enhance generalization, Hinshaw (1991) recommends that parents and teachers acquire specific knowledge of the intervention strategies to enable them to promote use of the skills taught. To ensure that skills can withstand difficult contingencies from peers who have come to expect trouble or discord, children with ADHD require the overlearning of new skills. Since it is the generalization of social skills that is the goal of all social interventions, it seems likely that those interventions that use the most powerful procedures for promoting generalization will be those that are the most successful.

Conclusions

The literature on the efficacy of interventions for social problems seems to reflect both success and failure. Further, it seems that combining stimulant medication with any of the other interventions is more beneficial than using medication alone. All studies of social skills training interventions found at least some benefit for children with ADHD when combining interventions with stimulant medication treatment. However, the paucity of research examining social skills training with this population makes it difficult to conclude that this combined intervention is a useful one.

Generalization of skills to real social environments is the most important feature of any intervention for social competence. For children, the most frequent place that they interact with their peers is at school. Confirming that the skills taught in a social skills training program generalize to the school setting is an important outcome for any social skills training program. If the skills learned during the training are not used with the peer group in the child's everyday experiences, then the intervention is not powerful enough to produce meaningful change in the child's behavior.

Of the studies that did find an effect of social skills training specifically for children with ADHD, only two of the studies demonstrated generalization. Sasso et al. (1990) demonstrated that the social skills trained were observed in non-trained settings for one child with ADHD. Frankel et al. (1997) found general treatment gains as reported by parent and teacher ratings, which suggests that the skills may have generalized to the home and school settings. However, no direct measure of generalization was used in that study. Although Sheridan et al. (1996) did find that the skills learned during social skills training were demonstrated during analogue observations, the skills did not generalize to the natural setting (i.e., playground).

Research Questions and Hypotheses

This study was designed to answer the following general research questions: Will skills learned in social skills training group generalize to the school playground setting? Will teacher and parent perceptions of the child's social competence change by the end of the training cycle? Will teacher and parent perceptions of the child's ADHD symptoms change by the end of the training cycle?

From these research questions, the following hypotheses were developed:

Hypothesis #1: When directly observed in the playground setting, the frequency of prosocial behaviors will increase by 80% over baseline following social skills training. [If the behavior is not observed during baseline, an occurrence of the behavior at least one time per observation session would be expected; if behavior is observed one time per observation session during baseline, an increase to two times per observation session would be expected].

Hypothesis #2: Parent and teacher ratings of the child's social behaviors will increase in a positive direction following social skills training. Prior to treatment, this investigator determined that a strong positive change in perceived behavior on the SSRS would be defined as a change in standard score on any scale of one or more standard deviations (as listed in the SSRS manual) in the non-problematic direction. Since the SSRS did not include a system for determining change over time, this system was decided upon based on the methods used in other studies (i.e., Sheridan et al. 1996). This investigator decided that when a change did not meet the conventional one standard deviation difference that a moderate change was defined as .5 to .9 and a mild change was defined as .25 to .49 standard deviations in the non-problematic direction. Therefore, on the SSRS, a standard score change between 3.75-7.35 represents a mild change, 7.5-13.5 represents a moderate change, and greater than 15 points a strong change.

Hypothesis #3: Parent and teacher ratings of the child's ADHD symptoms will increase in a positive direction following social skills training. DuPaul, Power, et al. (1998) recommend using the Reliable Change Index (RCI), developed by Jacobsen and Truax (1991) to assess the clinical significance of treatment outcomes. The RCI is equal to the difference between the student’s pre- and post-treatment scores, divided by the standard error of the difference

(provided in manual) between the two scores. Significance is defined as a RCI that exceeds 1.96. Therefore, the RCI is a measure of the degree to which an improvement in functioning is likely due to the effects of the treatment rather than to imprecise measurement.

Purpose of the Study

The purpose of this study was to examine a school-based social skills training program for children with ADHD. This study adds to the research base by directly examining the generalization of the skills taught in the social skills training sessions. Observations took place in the school setting to document generalization of performance of new skills taught during the program. Additionally, parents and teachers completed ratings scales to examine their perceptions of change in the home and school settings.

Chapter II

Review of the Literature

Over the past two decades, a tremendous amount of research has been published on Attention-Deficit/Hyperactivity Disorder (ADHD). Barkley (1998) estimated that between 4000 to 6000 studies in this area have been conducted. The following review of the literature will summarize the major research findings related to ADHD. Although general information about ADHD is briefly reviewed first, the majority of the review will focus on the social skills problems experienced by children with ADHD and the interventions that have been used in attempts to improve these problems.

Attention-Deficit/Hyperactivity Disorder

Diagnostic Criteria

According to the most recent diagnostic criteria for ADHD included in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition, Text Revision (DSM-IV-TR) of the American Psychiatric Association (2000), ADHD affects 3-7% of the school-aged population. The DSM-IV-TR states that a persistent pattern of inattention and/or hyperactive-impulsivity is the essential feature of the disorder. This inattention or hyperactive-impulsivity must be observed to be more frequent and severe than is typical for individuals at a comparable developmental level. Symptoms must be present for at least six months and must have been displayed before the age of 7 years. Impairment in functioning due to these symptoms must be present in at least two settings (i.e., home,

school, social situations). The symptoms must clearly interfere with developmentally appropriate social, academic, or occupational functioning.

Symptoms of inattention listed in the DSM-IV-TR include the following: (1) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities, (2) often has difficulty sustaining attention in tasks or play activities, (3) often does not seem to listen when spoken to directly, (4) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions), (5) often has difficulty organizing tasks and activities, (6) often avoids, dislikes or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework), (7) often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools), (8) is often easily distracted by extraneous stimuli, (9) is often forgetful in daily activities. At least six of these symptoms of inattention must be present for at least 6 months to a maladaptive degree which is inconsistent with the child's developmental level.

Symptoms of hyperactivity listed in the DSM-IV-TR include the following: (1) often fidgets with hands or feet or squirms in seat, (2) often leaves seat in classroom or in other situations in which remaining seated is expected, (3) often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness, (4) often has difficulty playing or engaging in leisure activities quietly, (5) is often

"on the go" or often acts as if "driven by a motor", (6) often talks excessively. Symptoms of impulsivity listed in the DSM-IV-TR include the following: (1) often blurts out answers before the questions have been completed, (2) often has difficulty awaiting turn, (3) often interrupts or intrudes on others (e.g., butts into conversations or games). Six or more symptoms of hyperactivity-impulsivity must be present for at least 6 months to a maladaptive degree which is inconsistent with the child's developmental level.

Three subtypes of ADHD were included in the DSM-IV-TR. ADHD, Predominately Inattentive Type (ADHD/I) is given when the child's behavior meets the criteria for inattention but not for hyperactivity-impulsivity. The diagnosis of ADHD, Predominately Hyperactive-Impulsive Type ADHD/H is given when the child behavior meets the criteria for hyperactivity-impulsivity but not for inattention. And the diagnosis of ADHD, Combined Type (ADHD/C) is given when the child behavior meets the criteria for both hyperactivity-impulsivity and inattention.

Theoretical Framework

Barkley (1998; 2003) has proposed a theory which suggests that ADHD is a disorder of disinhibition. Inhibition is a crucial function in the development of human cognition, thinking and self-regulation. He believes that inattention does not distinguish this disorder from others since inattention is common in many other disorders (i.e., anxiety, depression, learning problems, etc.). Disinhibition is actually the defining feature of ADHD. Impulsiveness and self-restraint rather than inattention should be used in diagnostic decisions. Inhibition problems arise first, usually in the preschool years.

Barkley proposes that ADHD/H and ADHD/C are not two separate types, but rather the same disorder at different developmental stages (i.e., preschool and later).

Inhibition is the ability to delay the initial response to an event. Barkley believes that inhibition is a foundational psychological construct since other mental abilities will depend on it for their ability to function. If this foundation is weak, the other functions will fail regardless of how good they are. Once humans develop the ability to delay their first response to an event, four other mental functions will develop. These are called the executive functions because they give us self-regulation and manage our behavior. These include prolongation/working memory, self-regulation of affect/motivation/arousal, internalization of speech, and reconstitution.

Barkley believes that each of these executive functions started out as a publicly observable behavior that, over the course of development, became internalized and made private so others cannot see them. The behavior is still happening, but it cannot be seen by others. This allows behavior to be controlled by internal information. Over the course of child development, there is a shift in what is controlling behavior. In the case of a young child, it is the environment that controls behavior. As a child matures, the environment becomes less influential, and what becomes more influential is what the child is generating internally. Internal information will take over behavior progressively. There is a shift from outer control to inner behavior that generates information and takes over the control of outer behavior. That is, the shift from control by the moment to self-control or from control by the “now” to control by the future. The executive functions

seem to have evolved in order to bring behavior under the control of distant consequences as opposed to just immediate consequences alone.

Individuals with ADHD are externally governed not internally guided. They are driven by the moment not the future. Their behavior is being governed like that of a less mature individual who has not made the shift to mental forms of executive control. Barkley proposes that people with ADHD are not regulated by time, the future and mental events to the extent of those without ADHD (Barkley, 1998; 2003)

Developmental Course

The typical developmental course of ADHD begins with the onset of symptoms in the preschool years, typically around age 3 or 4 (Taylor, Sandberg, Thorley, & Giles, 1991; Weiss & Hechtman, 1993). The pattern of hyperactive-impulsive behavior is the first to arise. Parents of children with a persistent pattern of ADHD at this age describe them as restless, always up and on the go, and frequently climbing and getting into things. The most recent estimates are that between 30-60% are actively defiant or oppositional (Barkley, 1998). Consequences typically used with children this age, such as the promise of a reward or the threat of punishment, do not seem to impact their behavior. Parents often misinterpret the child's apparent inability to benefit from such intervention as willfulness rather than the result of impulsiveness (Goldstein & Goldstein, 1990).

When children with ADHD start elementary school, the hyperactive-impulsive behavior is likely to continue with additional problems in the area of goal-directed persistence (sustained attention). Difficulties with work completion, productivity, distraction, forgetfulness, lack of planfulness, poor organization of work activities,

trouble meeting deadlines related to home chores, school assignments and social promises or commitments to peers begin to emerge at this time. In 40-70% of children with ADHD, problems with oppositional and socially aggressive behavior may develop during these early school-age years as well (Barkley, 1990). This also is the time during which a pattern of social rejection often appears. The high rate of behavior, noisiness, and tendency to touch objects more than is age-appropriate combine to make children with ADHD overwhelming, intrusive, and even aversive to others (Landau & Moore, 1991).

Although there is a decline in the level of hyperactivity and an improvement in their attention span and impulse control in adolescence (Hart, Lahey, Loeber, Applegate, & Frick, 1995), 70-80% of children with ADHD continue to display these symptoms to an extent that is inappropriate for their age (Barkley, Fischer, Edelbrock, & Smallish, 1990). Up to half of all children with ADHD may develop symptoms of Conduct Disorder by the ages of 8 to 12 years (Barkley & Fischer et al., 1990; Taylor et al., 1991).

Comorbidity

Children with ADHD are at greater risk for developing other psychiatric conditions and learning problems. As mentioned above, many children with ADHD will develop defiant and oppositional behaviors. Studies indicate that 54-67% of children and adolescents with ADHD will meet the diagnostic criteria for Oppositional Defiant Disorder by age 7 or later (Barkley, DuPaul, & McMurry, 1990; Barkley & Biederman, 1997; Biederman, Faraone, & Lapey, 1992; Fischer, Barkley, Edelbrock, & Smallish, 1990). These studies also indicate that 20-56% of children with ADHD will eventually meet the criteria for Conduct Disorder. Having ADHD has been found to be one of the

most reliable early predictors of these disorders (Fischer, Barkley, Fletcher, & Smallish, 1993; Loeber, 1990; Mannuzza & Klein, 1992). Anxiety disorders are comorbid with ADHD 25-40% of the time (Biederman et al., 1992; Russo & Biedel, 1994), and 40-50%of those with ADHD will eventually develop some type of mood disorder (Biederman, Faraone, Keenan, & Tsuang, 1991; Biederman et al., 1992).

Associated Academic Problems

Almost all clinic-referred children with ADHD have difficulties with school performance. Most often these difficulties involve underproductivity of schoolwork. This is believed to result from the students inattentive, impulsive, and restless behavior in the classroom (Barkley, 1998). Children with ADHD have been found to score below children without ADHD on standardized achievement tests (Barkley et al., 1990; Brock & Knapp, 1996; Casey, Rourke, & Del Dotto, 1996; Dykman & Ackerman, 1992; Fischer et al., 1990; Semrud-Clikeman, et al., 1992). The findings from these studies indicate that students with ADHD are not simply underperforming in school relative to their ability, but possibly have lower academic ability than students without ADHD.

Since defining a learning disability (LD) varies greatly depending on the school district, getting information on this is more difficult than other associated problems faced by students with ADHD. Barkley (1998) describes several different methods used in the research literature for defining LD. He concluded that based on the more rigorous approaches, approximately 8-39% of students with ADHD are likely to have a reading disability, 12-30% are likely to have a math disability, and approximately 12-27% are likely to have a spelling disability. As many as 80% of children with ADHD are two or

more grades below grade level in late childhood (Cantwell & Baker, 1992). A higher prevalence of speech and language disorders also has been found among children with ADHD, ranging from 30-64% (Gross-Tsur, Shalev, & Amir, 1991; Hartsough & Lambert, 1985; Humphries, Koltun, Malone, & Roberts, 1994; Szatmari, Offord, & Boyle, 1989; Taylor et al., 1991). As many as 40% of children with ADHD have received some form of special education services by adolescence, 25-35% or more have been retained in a grade at least once, 10-25% have been expelled, and 10-35% never complete high school (Fischer et al., 1990; Weiss & Hechtman, 1993).

The Social Behavior of Children with ADHD

It was estimated that more than 50% of children with ADHD have significant problems in social relationships with other children (Pelham & Bender, 1982). As mentioned above, the interpersonal behavior of children with ADHD is often characterized as more impulsive, intrusive, excessive, disorganized, engaging, aggressive, intense, and emotional. This behavior disrupts the smoothness of the ongoing stream of social interactions, reciprocity and cooperation that may constitute the children's daily life with others (Whalen & Henker, 1992).

Whalen and Henker (1992) provide a structure for organizing the vast research on the social behaviors and problems of children with ADHD. This structure includes five areas: response patterns, style of approach, social information processing, peer appeal and social standing, and the social impact and influence of children with ADHD. The research in this area will be summarized below using this structure.

Response Patterns

Response patterns include undesirable or inappropriate behaviors, prosocial behaviors, and transactional patterns. In terms of undesirable or inappropriate behaviors, the diagnosis of ADHD is made based on observations of these children engaging in these types of behaviors. Children with ADHD are often more impulsive, intrusive, excessive, disorganized, engaging, aggressive, intense, and emotional during interpersonal encounters. Their elevated activity level heightens their visibility and may put them at risk for conflict with and rejection by peers (Whalen & Henker, 1992). Since most children with ADHD engage in clearly socially objectionable acts, most of the research and clinical interest has concentrated on the negative behaviors that they demonstrate. Children with ADHD tend to be more disruptive, noncompliant, bossy, intrusive, rule-breaking, noise-making, and annoying than other children. These behaviors are reported by parents, teachers, and peers and cause children with ADHD to appear unconcerned with the feelings and needs of others and unresponsive to social cues and feedback.

Since inappropriate behaviors are more salient and intrusive, it is not surprising that much less research has been conducted on prosocial behavior in children with ADHD. Even if a child is able to reduce his or her inappropriate behavior, it does not necessarily mean that he or she will engage in more prosocial behavior. However, the little research which has investigated prosocial behavior in children with ADHD has not provided much evidence of deficient prosocial behavior. Buhrmester, Whalen, Henker, MacDonald, and Hinshaw (1992) compared boys with ADHD to those without and found

no differences between them for any aspect of prosocial behavior. Hinshaw, Henker, Whalen, Erhardt, and Dunnington (1989) had similar findings regarding prosocial behavior in children with ADHD.

In addition to examining the types of behaviors exhibited by children with ADHD, researchers have examined the interactive chains and sequences of behaviors between children with ADHD and those without. In a study by Cunningham, Siegel, and Offord (1985), mixed dyads of 42 boys with ADD and 42 boys without ADD ranging in age from 4 to 12 were videotaped in free play, cooperative task, and simulated classrooms. Boys with ADD received either placebo, .15 mg/kg, or .5 mg/kg of methylphenidate. During both cooperative tasks and simulated school settings, children without ADD were significantly less likely to respond positively to those interactions initiated by their peers with ADD. In addition, peers without ADD tended to respond to the high rate of dominating and controlling behavior of the children with ADD with controlling responses of their own. Stimulant mediated reductions in the controlling antecedents of children with ADD were associated with a reciprocal reduction in the controlling responses of children without ADD. This study illustrates not only that peers respond differently to children with ADHD, but also that when these children change their social behavior, peers respond to them more normally. The main limitation to this study is that the peer interaction activities were simulated in a laboratory setting. In addition the "peers" were unfamiliar and had only 15 minutes to get to know each other before the simulations began. These limitations decrease the likelihood that results will generalize to the natural interactions of children with ADHD.

Clark, Cheyne, Cunningham, and Siegel (1988) used a sequential observational approach to compare peer interactions of boys with a diagnosis of Attention Deficit Disorder with Hyperactivity (ADD-H). Their participants included 10 mixed dyads of boys with ADD-H paired with boys without this disorder. A control group of 10 dyads of boys who did not have ADD-H was also included. Participants ranged in age from 7 to 9 years, and children with ADD-H were unmedicated. Children were observed and videotaped during a cooperative task and school task. They found that control dyads demonstrated better developed conversational skills and were able to maintain reciprocal dialogue more consistently than were mixed dyads. Further, the probability of withdrawal from aggression was much higher in mixed dyads. They concluded that difficulty in verbal exchange as well as overt aggressive behavior may lead to social rejection of children with ADD-H. As in the study by Cunningham et al. (1985) above, these findings may have limited generalizability to natural settings since the peer interaction activities were simulated in a laboratory setting, and the "peers" were unfamiliar.

Hubbard and Newcomb (1991) also found differences in the interactions between dyads depending on whether one member had ADHD. In their study, eight pairs each of mixed dyads and non-ADHD dyads between ages 7 and 12 were videotaped as they interacted in a free-play setting. The video tapes were coded for play duration and event frequency counts of interactions as well as verbal quality codes. The play duration codes included solitary noninteractive play, solitary interactive play, rough and tumble associative play, constructive associative play, and rule-governed associative play. The verbal quality codes included greetings, activity facilitation, activity conversation,

personal information exchange, negative verbalization, laugh, positive exclamation, negative exclamation, and noncommunicative verbalization. The mixed dyads differed in the quality of verbal interactions as seen in their lower levels of verbal reciprocity and affective expression. Again, this study used analogue settings and previously unacquainted peers thereby threatening its external validity.

In sum, although they often behave inappropriately in social situations, there is no clear evidence that children with ADHD engage in prosocial behavior less often than children without this disorder. However, when these children interact with their peers, their social behavior, which tends to be more controlling and dominating, negatively influences the way their peers respond to them.

Style of Approach

Children with ADHD may know the appropriate behaviors expected of them, and may have an adequate repertoire of interpersonal routines, but their delivery may be too sudden or forceful. Difficulties with intensity, modulation, and affect may differentiate children with ADHD from those without in terms of peer interactions. Studies have indicated that children with ADHD are perceived as more intense than their peers (Whalen & Henker, 1985; Whalen, Henker, Collins, McAuliffe, & Vaux, 1979). There also is evidence that stimulant treatment is effective in reducing the intensity exhibited by these children.

Children with ADHD seem to have difficulty modulating responses according to changing situational contexts and cues. Whalen et al. (1979) had 23 boys with hyperactivity and 39 boys without hyperactivity play the Space Flight game while peer

communication patterns were assessed. In the Space Flight game, the message sender ("Mission Control") is given a photograph of a pattern of blocks and must communicate to the message receiver ("Astronaut") the correct placement of each block. Communication patterns were rated by observers for communicative quality (i.e., intensity, positive affect, etc.), communicative content (i.e., giving direction, requesting direction, etc.), and task products and time to completion. Either a placebo or methylphenidate was given to children with hyperactivity. Regardless of medication status, boys with hyperactivity were less responsive than those without hyperactivity to differential cues for role-appropriate behavior. However, due to the analogue nature of this study, it is unclear whether similar patterns of responding would occur in natural social interactions.

Landau and Milich (1988) also found that the communication patterns of children without ADD were more flexible than those with ADD. In their study, 17 boys with ADD and 18 boys without in grades 3 and 4 were the participants. Each boy with ADD was paired with a boy without for a "TV Talk Show" role-playing procedure. Each boy was videotaped playing both "host" and "guest" and the videotapes were later coded for aspects of social communication (i.e., assertion, question, answer, etc.). The boys without ADD discriminated better between two assigned roles than did the boys with ADD. Taken together, these findings indicate that children with ADD are more consistent in their social behavior than those without ADD. This consistency is problematic since social interactions require flexibility in responses from situation to situation. Again, this

study used analogue procedures which make drawing conclusions about how these boys might respond in real life situations difficult.

Children with ADHD also have poor emotional control. That is, they tend to be highly emotional and overly responsive to diverse types of situations, social as well as physical (Whalen & Henker, 1992). Although it seems likely that this behavior contributes to the social difficulties so many children with ADHD experience, this area is relatively unexplored in the research literature. Instead, researchers have focused on how treatment with stimulant medication influences affective expression. Several research studies have shown that stimulant medication treatment for ADHD reduces affective expression. Sometimes this reduction is a positive one. Whalen and Henker (1991a) asked 25 boys with hyperactivity to rate their anger using a shortened version of the Children's Inventory of Anger. They found that the boys reported a greater propensity to become angry when taking a placebo compared to taking methylphenidate. Although decreased perceived anger is a positive reduction in affective expression, other studies have reported negative side effects such as less affective communication between peers (Hubbard & Newcomb, 1991) and producing a mild dysphoria (Whalen et al., 1979; Whalen, Henker, & Granger, 1989). Some evidence indicates that this mild dysphoria is associated with peer dislike (Buhrmester et al., 1992). Other studies suggest that children prefer to interact with children who are depressed more than children exhibiting symptoms of ADHD (Whalen & Henker, 1985). Although these findings are interesting, it is difficult to draw conclusions regarding the emotional control of children with ADHD

due to the limited research that has been done in this area and the mixed findings that have resulted.

The style of approach of children with ADHD seems to be less flexible in social situations than is necessary to be successful. Since social interactions require a great deal of flexibility, this may help explain why these children are unsuccessful socially. Further, their poor emotional control also may contribute to their social difficulties.

Social Information Processing

Little definitive evidence exists to support the notion that children with ADHD have social cognition deficits. However, some specific findings may be useful in intervention planning efforts. One strand of research focuses on attributional reasoning. That is, how children explain events to themselves. Children with externalizing problems, such as ADHD, are especially likely to exhibit a hostility bias (Dodge & Feldman, 1990). Following an ambiguous act by another child, these children are likely to infer a hostile intent by that person. In addition, they tend to underestimate their own responsibility for outcomes. Aggressive boys tend to underestimate their own aggressiveness, while nonaggressive boys assume greater responsibility for aggressive encounters in the early stages of a conflict (Lochman, 1987). This tendency for aggressive boys to deny their aggressiveness makes it less likely that they will make an effort to use self-control and more likely that they will use similar responses in future interactions.

Children with social problems have difficulty generating behavioral solutions to interpersonal problems. Although they can do as well as others at identifying the first possible solution, the differences show up when they are asked to give alternative

responses. In a study by Guerra and Slaby (1989), 24 high aggressive and 24 low aggressive elementary school aged boys were given three different problems and asked to generate two solutions to each. Although both groups did equally well at choosing a first solution, high aggressive boys were less likely than low aggressive boys to choose an appropriate (i.e., non-aggressive and effective) second solution. Evans and Short (1991) had 14 high aggressive, 16 low aggressive and 15 socially withdrawn boys between ages 8 and 11 generate up to 7 potential solutions each to 6 problems presented. Again, it was found that differences in generating solutions were not found for the first solution, but were for alternative solutions. Nonaggressive and nonwithdrawn boys generated a higher percentage of effective second solutions than did their aggressive and withdrawn peers. In both of these studies, aggressive bots were able to generate a first solution as well as other children; however, they were less successful than nonaggressive children at generating alternative solutions. Therefore, when the first solution is ineffective, aggressive children seem to have difficulty coming up with what to do next. However, these studies focused on children with aggression and did not specify if ADHD was also present. Therefore, it is uncertain if children with ADHD or even children with ADHD and aggression would respond in the same manner.

It is often suspected that children with ADHD have social difficulties because they evaluate social acts differently from those without ADHD. That is, perhaps they do not recognize that their behaviors are inappropriate. However, research findings indicate that children with ADHD are as accurate as those without ADHD in identifying inappropriate behaviors (Whalen, et al., 1989). In fact, in a study by Whalen, Henker, and

Granger (1990), children with ADHD had elevated rates of identifying inappropriate behaviors in others. In their study, the participants were 25 boys with ADHD and 14 boys without ADHD ages 6 to 12 years. Each boy was individually shown videotapes of four boys playing a game and was instructed to push a button each time a child "did something good or bad." The target children in the videos were unfamiliar children with ADHD either on medication or on placebo. Regardless of their own medication state, the judges with ADHD identified more undesirable behaviors in targets on placebo than those on medication. However, judges with ADHD on placebo detected the most negative behavior in the target children. This suggests that children with ADHD have lower response thresholds than were those without ADHD. They were actually less tolerant of inappropriate behavior than those without ADHD. However, the use of video tapes rather than naturally occurring situations and the fact that the participants were unfamiliar with the target children are limitations to this study.

Children with ADDH were similar in their judgments to those without ADDH when asked to nominate familiar peers who were good students, who caused trouble, or who were noisy. However, when they were asked to nominate peers who were "fun to be with," children with ADDH gave more nominations than did those without ADDH. Therefore the boys with ADDH and comparison boys were similar in their dislikes but dissimilar in their likes. The authors suggest that this may contribute to the social difficulties faced by children with this disorder (Whalen & Henker, 1985).

As stated above, there is not much definitive evidence to support the notion that children with ADHD have social cognition deficits. However, when distortions and

deficits do surface in social information processing of children with ADHD, overall they tend to be subtle and context specific, and dependent on such factors as group composition, measurement strategies, and specific features of the task.

Peer Appeal and Social Standing

Since children with ADHD are among the most unpopular in any peer culture (Whalen & Henker, 1991a), it is not surprising that peers show a negative halo effect regarding these children. In a study by Whalen, Henker, Castro and Granger (1987), peers not only criticized children with ADHD for the misbehaviors that they observed on videotapes, but also for qualities that they had no occasion to observe.

Two types of unpopular youngsters have been identified: those who are actively rejected and those who are passively neglected (Ollendick, Greene, Francis, & Baum, 1991). Rejected children are socially active and aversive. They tend to re-establish their rejected status in a new group very quickly. Neglected children interact less frequently and rarely offend others. The differences between rejected and popular children are more striking than those between neglected and popular children. In addition, the rejected status shows long-term stability. These children are least responsive to intervention and at greatest risk for long-term difficulties. Descriptions of children with ADHD/H and ADHD/C seem to correspond with descriptions of socially rejected children while descriptions of children with ADHD/I tend to correspond with descriptions of socially neglected children. Although both groups have social impairments, the differences noted may have implications for intervention planning.

Negative peer regard has many detrimental consequences including undermining self-worth, engendering discord, and constraining opportunities for social learning. Peer rejection also is a strong predictor of poor long-term outcomes. Through an extensive review of the literature, Parker and Asher (1987) examined the relation between peer difficulties and later maladjustment in terms of both the consistency and strength of prediction. Three indices of problematic peer relationships were evaluated (acceptance, aggressiveness, and shyness/withdrawal) as predictors of three later outcomes (dropping out of school, criminality, and psychopathology). It was concluded that children with poor peer adjustment are at risk for later life difficulties.

Overall, it seems that peers seem to form general opinions about children with ADHD based on observing just a few inappropriate behaviors. This type of negative peer regard places children with ADHD at higher risk for difficulties later in life.

Social Impact and Influence

Do children with ADHD have a negative affect on their social partners and do the partners respond more positively when children with ADHD improve? The answer seems to be yes and no. Danforth, Barkley and Stokes (1991) found that the behaviors emitted by children with ADHD and their parents are consistent with Patterson's coercive cycle theory. That is, aversive behaviors by the child are negatively reinforced by the parent and continue to escalate. Similar results were found by Whalen, Henker, and Domemoto (1980) in a study examining teachers interactions with an untreated child with ADHD. There also is evidence that there is a change in the behavior of peers who interact with children with ADHD (Clark et al., 1988; Madan-Swain & Zentall, 1990). Taken together,

it is clear that children with ADHD have an impact on their social environment. Behavior change efforts may need to extend to the child's social partners. How parents, teachers and peers respond to the behavior of the child with ADHD can provoke or prevent escalation and can provide or preclude the social learning opportunities crucial to developing interpersonal competence.

Research has shown that adults are sensitive to the behaviors of children with ADHD and they respond positively when these youngsters are treated medically for this disorder (Danforth et al., 1991; Whalen et al., 1980). It seems that adults react to the child's behavior rather than to their own expectancies. However, peers do not show this pattern of reaction to children with ADHD. Peers of children with ADHD do not change their reactions to these children, even when behavior improves (Hinshaw, Henker, Whalen, Erhardt, & Dunnington, 1989; Hinshaw & McHale, 1991; Pelham, 1989; Pelham, Schnedler, Bologna, & Contreras, 1980; Whalen, Henker, Buhrmester et al., 1989). Only one study has shown improved peer evaluations when children with ADHD were given stimulants. Whalen et al. (1989) compared peer appraisals of 25 boys ages 6 to 12 years with hyperactivity after placebo, .3 mg/kg, and .6 mg/kg methlyphenidate. The peer appraisals were conducted by having the participants nominate peers who were "fun to be with", "causes trouble", "sad or out of it", "tall", and "cooperates." Participants also were asked to identify their three best friends in rank order. Methlyphenidate enhanced social standing by increasing nominations of boys with hyperactivity as best friends, cooperative and fun to be with. But even in this study, peer perceptions were not

normalized. Similar results were found in studies of behavioral and psychosocial treatment programs for rejected or socially incompetent children (Coie & Koeppl, 1990).

Children with ADHD seem to have a negative effect on their social partners. Parents, teachers and peers all have been found to respond negatively to their inappropriate behavioral style. Although parents and teachers respond more positively when the child with ADHD changes his or her behavior, peers do not seem to do so. This is problematic because the naturally occurring reinforcement of peer acceptance is not available to sustain the behavior change.

Summary

The social behavior of children with ADHD seems to differ from that of their peers in a number of ways. Their response patterns, style of approach, social information processing, peer appeal and social standing, and social impact and influence have been found to contribute to the social rejection they often experience. Given that social rejection is associated with poor long-term outcomes, efforts to improve the social experiences of these children are important. If an intervention can be done early on which improves the social interactions of children with ADHD, perhaps their risk for related difficulties later in life can be reduced.

Interventions for social competence

A variety of interventions have been used with students experiencing social problems. Social skills training interventions have been found to benefit youngsters identified as having social problems based on sociometric data (Dodge, 1989). Cognitive-behavioral and anger-control interventions also have been found to be successful with

aggressive children. Unfortunately, recent literature reviews have concluded that no intervention or combination of interventions has provided sufficient or lasting benefits for the social problems experienced by children with ADHD (Hinshaw & Erhardt, 1991; Pelham, 1989; Whalen & Henker, 1991b). This includes even the most validated interventions for children with ADHD, stimulant medication and behavior modification. The literature on interventions used with children with ADHD with social problems is reviewed below.

Stimulant Medication

The use of stimulant medication with children with ADHD is by far the most common and accepted treatment. Hinshaw (1991) did an extensive review of the literature on the effects of stimulant medication on the social interchanges and aggressive behavior of children with ADHD. He concluded that stimulants dramatically decrease rates of aggressive behavior in youngsters with ADHD. Similarly, Hinshaw et al. (1989) compared the behavior of 25 physically and verbally aggressive children with ADHD ages 6 to 12 years who were given methylphenidate to 15 boys without ADHD . They found that aggressive interchanges were reduced to normal levels following stimulant treatment. In addition, this improvement did not come at the expense of increased social isolation or reduced social engagement.

Hinshaw and McHale (1991) reviewed the literature on the effects of stimulant medication on the social interactions of children with ADHD. They concluded from this review that stimulants do exert important effects on the social behavior of hyperactive children. They found that stimulants enhance social compliance and task orientation in

social interchanges with teachers and parents. In peer settings, stimulants decrease negative social behavior and aggression. Overall, they concluded that stimulants exert clear effects on key elements of the social functioning of children with ADHD.

Findings regarding the effects of stimulant medication on prosocial behavior are mixed. Even though peers are the least likely to notice improved social behaviors (Hinshaw & McHale, 1991), stimulants have been shown to improve the sociometric status of boys with ADHD. Whalen et al. (1989) found that social standing was enhanced by stimulant medication treatment. Additionally, nominations of children with ADHD as best friends, cooperative, and fun to be with were increased. In this study, higher doses of medication generally produced stronger effects. However, these improvements did not normalize peer appraisals.

Overall, two key indices of social competence, aggression and peer appraisal, are improved by stimulant medication for children with ADHD. Although improvement is found, the lack of normalized social functioning indicates a need for combined interventions.

Cognitive-Behavioral Interventions

Cognitive-behavioral interventions typically include training to strengthen problem solving and alter cognitive information processing, behavioral rehearsal to practice newly developed social skills, and explicit reinforcement of appropriate social behavior. Such interventions have produced clear benefits for important social behaviors among those referred for aggression or social problems (Hinshaw, 1992). For children with ADHD, effects of cognitive-behavioral intervention studies have been

disappointing. Abikoff (1991) reviewed cognitive training studies and concluded that none of the studies support cognitive training as a competitor to stimulant medication as an intervention for ADHD. He suggested that there is no sufficient evidence that cognitive training enhances the beneficial effects of medication. Hinshaw and Erhardt (1991) also reviewed the literature on cognitive-behavioral interventions for children with ADHD and concluded that large-scale trials did not provide evidence for the efficacy of this intervention for this population. However, they found that short-term investigations using direct training in cognitive-behavioral strategies have produced short-term gains.

Some studies have found cognitive-behavioral intervention to be successful with children with ADHD. Hinshaw, Henker and Whalen (1984a) examined the effects of a cognitive-behavioral intervention and methylphenidate on anger control in 21 boys with hyperactivity ages 8 through 13 years. The cognitive-behavioral intervention included training in cognitive self-regulation skills such as specific problem-solving strategies, interpersonal problem-solving, and self-control. Behavioral provocation tests, whereby the trainers teased the boys, were videotaped and rated by observers for self-control, intensity, and strength of provocation. They found that the cognitive-behavioral intervention was successful in enhancing both general self-control and the use of specific coping strategies for anger control in children with hyperactivity. In this study, no advantage was found to combining the cognitive behavioral intervention with stimulant medication in increasing anger control. However, the behavioral provocation tests were done in the laboratory and the boys were prompted that they were going to be tested on their use of the skills they had been taught. In real life situations, such prompting is not

available; therefore, it is difficult to conclude that similar behavior would generalize outside of the training environment.

In another study by Hinshaw, Henker, and Whalen (1984b), 24 boys with hyperactivity ages 8 to 13 years were compared to boys without hyperactivity. The effects on social behavior of cognitive-behavioral reinforced self-evaluation procedures were compared to extrinsic reinforcement alone and methylphenidate was compared to placebo. As part of a 5-week research summer school program for hyperactive boys, the participants received daily training in cognitive-behavioral self-evaluation strategies. The researchers found that observed social behavior on the playground was enhanced by reinforced self-evaluation. Medication enhanced the accuracy of the self-evaluation of the participants and the combination of the two interventions proved optimal. A strength of this study is that the participants spent 5-weeks together and were therefore more familiar with each other. It seems more likely that these results would generalize to real world experiences.

At this point, there does not seem to be strong evidence that cognitive-behavioral interventions alone are sufficient to produce the degree of behavioral change necessary to improve the social problems of children with ADHD. Even when combined with stimulant medication, cognitive-behavioral interventions do not seem to significantly enhance their effects. However, perhaps some of the specific strategies that have produced change may lead to improvement in this intervention in the future. For example, the use of coping strategies, specific problem-solving strategies, and self-

evaluation procedures may be combined with other more effective interventions to enhance outcomes.

Behavior Modification

Abikoff and Gittelman (1984) evaluated the effectiveness of eight weeks of intensive behavioral treatment in normalizing the classroom behavior of 28 children with hyperactivity ages 6 to 12 years. Behavior therapy included a functional behavior assessment to determine the target behaviors for the intervention. Parents and teachers were educated about child management approaches through conferences with the therapist and reading materials given to them by the therapist. Both parents and teachers kept frequency counts of specific target behaviors. Contracts were used both at home and school, and parents provided reinforcements and punishments at the end of the day. A modified version of the Classroom Observation Code was used before, during and after the intervention. They found no significant change in the percentage of children with hyperactivity classified as normal. In this study, "normal" meant no difference between the observed behavior children with hyperactivity and those without. However, although the primary features of hyperactivity - attention, activity, and impulsivity - were not normalized, aggression was consistently and fully normalized. Despite this, children with hyperactivity remained deviant in many aspects of classroom conduct. The major weakness of this study is that the length of the intervention was only 8 weeks. It seems likely that the apparent trend towards improvement might have continued had the intervention lasted longer, possibly resulting in more normalization of behavior.

Pelham, Schnedler, Bologna, and Contreras (1980) used a behavioral and stimulant medication intervention with eight children with hyperactivity ages 6 to 11 years. The behavioral intervention focused on teacher and parent training in behavioral management strategies, such as contingency management, over a period of 5 months. Each child also received one week of placebo, one week of .25 mg/kg of methylphenidate, and one week of .75 mg/kg of methylphenidate before behavior therapy began, three weeks after it began, and thirteen weeks after it began. Behavior was assessed using classroom observations and parent and teacher ratings of individualized problem behaviors. As a group, only with the higher dose of methylphenidate after 13 weeks of behavior therapy did the children with hyperactivity reach the level of appropriate behavior of children without hyperactivity. The authors concluded that the combination of stimulant medication and behavior therapy may be more effective in the short-term than either treatment alone. The major strength of this study is that the intervention took place in the classroom and home settings, which strengthens generalization of behaviors learned.

Gittelman et al. (1980) did a study in which children with ADHD were randomly assigned to one of three treatment groups for an 8 week period: behavior therapy with methylphenidate, methylphenidate alone, or behavior therapy with placebo. Participants included 58 boys and 3 girls with ADHD, mean age 8 years, 3 months. Behavior therapy included both parents and teachers being trained in behavior modification. During sessions with the parents, a functional assessment was done to be used in planning an intervention program for each child. Both parents and teachers were asked to do a

frequency count of specific target behaviors. Contracts were used stipulating positive and negative behaviors and consequences of each. They found that all treatments produced significant clinical improvement, but the combination of methylphenidate and behavior therapy was regularly the best treatment. Behavior therapy with placebo was the least effective of the three. This study also has strong external validity since the intervention took place in the natural environments of the children being observed.

All of these studies in the combination of behavior modification and stimulant medication found that children with ADHD improved their behavior both at home and at school. Since the interventions involved training the parents and teachers of the children, generalization of skills was built into the intervention. However, often this level of involvement with the parents and/or teacher is not possible. Often parents and/or teachers are unavailable, unwilling, or incapable of being trained and carrying out behavior modification interventions. Therefore, this combination of interventions will only be possible for a select few children with ADHD.

Social Skills Training

Sasso, Melloy and Kavale (1990) assessed the effects of social skills training using a structured learning model on the behavior of three children with behavior disorders. The participants were ages 7, 10 and 12 and were in a self-contained classroom with integration for students with behavioral disorders. One student had ADHD, one had autism, and one exhibited general maladaptive behaviors. Skills were trained by teachers using modeling, role-playing, performance feedback and homework assignments. Training was conducted in groups for 45 minute sessions 3 days each week. Following

the training phase, the children were taught to self-record the prosocial target behaviors. The program was effective for all three students and social skills training gains were successfully transferred to integrated settings. The authors concluded that training which includes modeling, role-playing, behavioral rehearsal, reinforcement, and self-recording can be effective in teaching skills that maintain over time and generalize to untreated settings. Since only one of the participants had ADHD, it is difficult to draw conclusions about the use of this intervention with children with that disorder.

Pelham et al. (1988) studied the adjunctive effects of methylphenidate and social skills training for children receiving a 5-month course of clinical behavior therapy. The participants were 32 children (28 boys and 4 girls) with ADD-H ranging in age from 5 to 10 years. The behavior therapy focused on teacher and parent training in contingency management. The social skills training included weekly three hour sessions for eight weeks. The sessions focused on displaying appropriate social behavior in a peer group context and rewards for appropriate peer interactions. Instruction, modeling, and role-playing were used to teach and demonstrate appropriate social behavior. The concepts addressed included communication, participation, cooperation, and validation-support. Findings indicated that clinical behavior therapy showed statistically significant improvement on all dependent measures. The addition of the medication and/or the social skills training did not significantly facilitate the improvement shown with the clinical behavior intervention. A weakness of this study is that data was collected only pre- and post-intervention. Although classroom behavioral observations were conducted in

addition to parent and teacher ratings and peer nominations, none of these measures were done during the training itself. Therefore, experimental control is weak in this study.

Sheridan, Dee, Morgan, McCormick, and Walker (1996) studied the effectiveness of a multimethod social skills intervention for children with ADHD. The participants were five boys with ADHD ranging in age from 8 to 10 years. The intervention included 10 weekly sessions for the children focusing on target skills in the areas of social entry, maintaining interactions, and solving problems. All children were taking stimulant medication. A separate parent group met to teach parents skills to help their children with social problems. Parent skills taught included debriefing, problem solving, and goal setting. Their results indicated that all children had a mean increase in target behaviors with the onset of treatment. However, treatment effects were only evident during analogue observations, not during naturalistic observations. This suggests that the behavior change did not generalize to the child's real world experiences. Sheridan and colleagues stated that unequivocal conclusions could not be made based on their findings. However, they believe that this is evidence of how intractable social skills deficits are in children with ADHD. Perhaps the length of the training was too short and a longer intervention would have demonstrated greater behavioral change.

Frankel, Myatt, Cantwell, and Feinberg (1997) examined the effectiveness of an outpatient social skills training program for children with ADHD which used parents to aid in transfer of training. In their study, the children were given 12 one-hour sessions of social skills training. All children with ADHD were on stimulant medication. Each child session consisted of reviewing homework from the previous session, a didactic

presentation, behavioral rehearsal between children and coaching, coached play, and contracts for homework for the coming week. The children were taught conversational techniques, group entry techniques, "rules for a good host," handling teasing and confrontations with adults. Concurrently, the mothers of the children participated in 12 one-hour sessions as well. Each parent session included a review of homework, reading and discussing handouts related to what parents can do to promote good social skills, planning the next homework assignment, and returning to the child group to make homework contracts. Results indicated that children with ADHD showed improved on all teacher and parent-reported measures of peer adjustment and social skills, except teacher reported withdrawal. It was concluded that children with ADHD are best helped by a combination of social skills training for themselves, collateral training for their parents, and stimulant medication. This study demonstrates that social skills training can be effective when generalization is strategically planned for. However, the amount of parent involvement in this intervention may be problematic for many busy parents of children with ADHD. Further, no direct measure of generalization was used, only parent and teacher reports.

Abikoff et al. (2004) investigated the effects of methylphenidate combined with an intensive multimodal psychosocial intervention which included social skills training. The participants were one hundred three children, ages 7 to 9 years, with ADHD without comorbid conduct or learning disorders and who responded to short-term methylphendate. They were randomized for 2 years to receive either medication alone, medication plus multimodal psychosocial treatment that included social skills training, or

medication plus attention control treatment. Outcome data included parent, child, and teacher ratings of social function and direct school observations in gym class. Results indicated that no advantage on any measure of social functioning of the combination treatment over medication alone or medication plus attention control. Significant improvement was found in all three groups over the 2 year period, however. They concluded that there was no support for clinic-based social skills training as part of a long-term psychosocial intervention to improve social behavior. They further concluded that the benefits from methylphenidate were stable over the 2 year period.

The Cooperative Multimodal Treatment Study of Children ADHD (MTA) was the first multisite, cooperative agreement study of children, and the largest psychiatric/psychological treatment trial ever conducted by the National Institute of Mental Health (MTA Cooperative Group, 1999). This landmark study involved a long-term investigation examining the efficacy of pharmacotherapy, behavior therapy and the combination of the two with children with ADHD. The participants were 579 children with ADHD Combined Type, aged 7 to 9.9 years. The presence of comorbid conditions did not lead to exclusion for this study. The participants were randomly assigned to one of four treatment groups for 14 months: medication management (titration followed by monthly visits), intensive behavioral treatment (parent, school, and child components, with therapist involvement gradually reduced over time), the combination of the two, or standard community care (treatment by community providers).

The medication management treatment group went through a systematic process for determining optimal medication and dosages. Once the optimal dosage was reached,

the participants had half-hour monthly medication maintenance visits, pharmacotherapist provided support, encouragement, and practical advice.

The behavioral treatment included parent training, child-focused treatment, and school-based intervention. The parent training was based on the Barkley (1987) method and included 27 group and 8 individual sessions per family. The child-focused treatment was a summer treatment program developed by Pelham as a therapeutic summer camp. The camp ran for 8 weeks, 9 hours per day, 5 days per week. It involved intensive behavioral intervention administered by counselors/aides, supervised by consultants. The behavioral treatment was delivered in group recreational settings and included a point system tied to specific rewards, time out, social reinforcement, modeling, group problem-solving, sports skills, and social skills training. The school-based treatment included biweekly teacher consultation focused on classroom behavior management and paraprofessional aides who were training to work directly with the children.

The community care participants did not receive any of the treatments provided by the study. Rather, they were provided with a report of their initial study assessments along with a list of community mental health resources. The types of treatment they received in the community were then documented.

Outcome data were collected before, during and at the end point of treatment for each group and were analyzed using intent-to-treat random-effects regression procedures. Outcome measures included parent and teacher SNAP ratings of ADHD symptoms and ODD symptoms, the social skills and internalizing subscales of the Social Skills Rating System, two composite scales of parent-child relations, and the Wechsler Individual

Achievement Test (1992). Results indicated that all four groups showed sizable reductions in ADHD symptoms over time. For most ADHD symptoms, combined treatment and medication management groups showed significantly greater improvement than those in the intensive behavioral treatment and community care groups. On the measured "non-ADHD" symptoms, including teacher-rated social skills, combined treatment was found to be superior to all three other treatments, including medication only. The investigators concluded that the carefully crafted medication management used in this study was superior to behavioral treatment and to routine community care that included medication. Further, they reported that the combined treatment used in this study did not produce greater benefits than medication management for the core ADHD symptoms. The most important finding relative to present investigation it that regarding non-ADHD symptoms. That is, the authors suggest that the combined intervention was more effective than medication alone for non-ADHD symptoms (such as social skills) and positive functioning outcomes.

As might be expected, this study has stirred considerable controversy among researchers in the field. Barkley (2000) voiced concerns regarding the lack of theoretical foundation in designing the treatments in the study. Some researchers have suggested that the study's conclusions are invalid due to flawed methodological techniques, including failure to use placebo control groups and double-blind procedures. (Breggin, 2001; Klien, 2001; Jensen, 2001). Some have questioned the choice to use only behavior therapy to the exclusion of other psychosocial treatments such as cognitive-behavioral therapy (Greene & Ablon, 2001; Hoza, 2001). In general responses by the original investigators and others

have defended the selection process used for participants and choice of treatments and stand behind the findings and the conclusions (Swanson, et al., 2002; Abikoff, 2001; Wells, 2001; Harwood & Beutler, 2001).

Gresham (1998; 2001) analyzed narrative and meta-analytic reviews of social skills training (SST) outcome studies. From the narrative reviews, he reported six general conclusions. First the most effective SST strategies appear to be some combination of modeling, coaching, and reinforcement procedures. Second, the evidence for cognitive-behavioral procedures is weak. Third, the greatest weakness in the SST literature is the absence of consistent, durable gains across situations and settings over time. Among the meta-analytic reviews, only modest effect sizes have been found suggesting that SST is a relatively weak intervention strategy, leading to only 14% improvement in social functioning over chance. Forth, cognitive-behavioral interventions tend to use outcome measures which lack social validity and which do not asses the extent to which improvements on these measures translate into socially skilled behaviors in natural settings. Fifth, there appears to be a relationship between the amount of SST and the effects of the interventions. And sixth, SST studies which matched training with skill deficits were more likely to produce positive results.

Gresham (1998) offered three recommendations for rebuilding SST. First, assessment procedures need to be improved by considering social validity and sensitivity of outcome measures. Second, social skills intervention strategies need to be matched to specific social skills deficits. And third, programming for functional rather than

topographical generalization must be implemented by adopting a contextual approach to teaching social behavior within a competing behaviors framework.

Relatively speaking, not much research has been done looking specifically at the effectiveness of social skills training programs for children with ADHD. Among those studies which have examined this issue, some have found it to be beneficial and some have not. However, this intervention is a very popular one in clinical settings, despite this apparent lack of strong research support for its effectiveness.

Combined Interventions

The preponderance of the research indicates that the most effective strategy for improving the social behavior of children with ADHD is to combine stimulant medication with either behavioral or cognitive-behavioral interventions. Most studies in which a combination of interventions are compared with only one treatment reveal that the combined packages at least ranked ahead of the sole interventions (Gittelman, et al., 1980; Hinshaw, Henker, & Whalen, 1984a; Pelham & Murphy, 1986; Pelham, Schnedler, Bologna, & Contreras, 1980; Whalen & Henker, 1991b). In addition, only children receiving combinations of interventions have shown clinically significant benefits (i.e., normalized behavior) (Gittelman et al., 1980; Hinshaw, Henker, & Whalen, 1984b; Pelham, Schnedler, Bologna, & Contreras, 1980). Therefore, it makes the most sense to make use of all of the best interventions in an effort to provide the best outcome for these children.

Conclusions regarding interventions for social problems

Hinshaw recommends that experts need to reformulate social skills interventions specifically for the severe motivational and behavioral problems that children with ADHD and aggression have. The difficult social behaviors, the learning problems, aggression and the extreme social rejection experienced by children with ADHD mandate the construction of intervention programs with the strongest possible components. These programs should include active behavioral cueing and reinforcement, strategies designed to enhance problem solving and alternatives to aggression, and the teaching of accurate self-monitoring and self-evaluation of social behaviors. Combining these programs with pharmacological treatments also will likely increase success rates. Overall, programs need salient motivational incentives and lengthy periods of administration before meaningful change can be produced. Treatments need to be individually tailored and delivered over years rather than months.

To enhance generalization, Hinshaw recommends that parents and teachers need specific knowledge of the intervention strategies to enable them to promote active problem solving. The children require overlearning of altered cognitive appraisals and alternative social behaviors so that skills can withstand difficult contingencies from peers who have come to expect trouble or discord. Since it is the generalization of social skills that is the goal of all social interventions, it seems likely that those interventions that use the most powerful procedures for promoting generalization will be those that are the most successful.

Generalization

Regardless of which intervention or combination of interventions are chosen, the behavioral improvement must generalize to different settings and across time for outcomes to be meaningful. That is, if a positive behavior change is achieved with an intervention, it will be important for that change to be maintained when the child is in the classroom, on the playground, or in their own home. By the same token, even if a change is observed in all settings, but only lasts a few weeks, this is not sufficient to declare the intervention successful. Generalization of behavior to different settings and across time must be taken into account when planning and evaluating interventions for social interactions.

Stokes and Baer (1977) identified nine procedures for assessing and promoting generalization of treatment effects. The first procedure described is called Train and Hope. Stokes and Baer (1977) found this to be the most frequent method of examining generalization. In this procedure, a behavior change is effected through manipulation of some response consequences. Any generalization across responses, settings, experimenters, or time is documented or noted, but is not actively pursued. That is, it is hoped that some generalization may occur, but no steps are taken to plan for generalization.

The second procedure is called Sequential Modification. In this procedure a behavior change is effected and generalization is assessed. If generalization is absent or deficient, procedures are initiated to accomplish the desired changes by systematic, sequential modification in each nongeneralized condition (i.e., across responses, subjects,

settings). The behavior analyst is likely to schedule consequences in every condition in which generalization is sought.

The third procedure is to Introduce to Natural Maintaining Contingencies. This procedure involves the transfer of behavioral control from the experimenter to stable, natural contingencies that will operate in the environment to which the child will return. This can be done by teaching behaviors that typically will be reinforced in the child's environment or by teaching the child to elicit reinforcement from the environment.

Train Sufficient Exemplars is the fourth procedure described. As the name suggests, this procedure involves simply teaching different exemplars of the same generalization lesson until generalization occurs. Stokes and Baer note that it is often the case that a very small number of exemplars is sufficient to achieve generalization.

The fifth procedure is to Train Loosely. Teaching is conducted in loose, variable conditions with little control over the stimuli presented and the correct responses allowed. This method is not often found in the literature since establishing tight control is often sought in scientific studies. Stokes and Baer suggest that it is this careful management of teaching techniques which may restrict generalization of the lessons being learned.

Use Indiscriminable Contingencies is the sixth procedure. If contingencies of reinforcement are made indiscriminable, then generalization may occur. Just as with intermittent reinforcement, the child may continue to perform the skill taught in different settings since he or she cannot discriminate when reinforcement will occur.

The seventh procedure is to Program Common Stimuli. If there are sufficient common stimuli occurring in both the training and generalization settings, generalization

may occur. One method of planning for generalization is to ensure that common and salient stimuli will be present in both settings. Stokes and Baer suggest that children's peers may represent suitable candidates for a stimulus common to both training and generalization settings.

The eighth procedure is to Mediate Generalization. In this procedure, a new response is taught which will likely be used in other situations. One example discussed by Stokes and Baer was the use of self-recording as a method of teaching self-control. A child is taught a method of self-recording which is then used in various settings. Although the behavior may be taught in a clinical setting, the use of the skill is easily transported to the home and school environments.

And finally, the ninth procedure is called Train to Generalize. In this procedure, generalization is considered as a response in itself. That is, behaviors which vary slightly from the one taught are reinforced, thereby encouraging the child to generalize the response. It is the generalization which is reinforced in this case.

Stokes and Baer concluded from the literature review that there are seven specific tactics for planning for generalization. One tactic is to look for a response that enters a natural community of reinforcement and/or teach the child to cue their community for reinforcement of desirable behaviors. Continuing to train more and diverse exemplars is another way to plan for generalization. They also suggest loosening experimental control by training different examples concurrently, varying instructions, discriminative stimuli, social reinforcers, and backup reinforcers. Generalization can be enhanced when the limits of training contingencies are unclear, possibly by delaying reinforcement. Another

tactic is to use stimuli that are likely to be found in both training and generalization settings, such as peers. Reinforcing accurate self-reports of desirable behavior and use self-recording and self-reinforcement techniques whenever possible also will enhance generalization. And finally, when generalization does occur, reinforce it at least some of the time.

All of the studies described above in the social skills intervention section used at least one of these procedures for planning for generalization. Although none of the studies clearly outline how generalization was planned for, it is obvious that some of the tactics described above were in place. All studies seemed to use modeling and role-plays, which suggests that they were attempting to enhance generalization by providing several and diverse exemplars. Since all training was conducted in groups, at least some of the stimuli that will be present in generalization settings are present (i.e., same age peers). An finally, by choosing to increase social skill competence suggests that the chosen response will enter a natural community of reinforcers. Again, since the researchers did not describe their specific procedures, it is not possible to know to what extent these tactics were utilized and if any of the other tactics described above were used.

Summary and Conclusions

ADHD seems to be a lifelong condition which causes numerous academic, behavioral and social problems. More than half of children with ADHD are thought to have significant problems with social relationships with peers (Pelham & Bender, 1982). The types of social problems seem to fall into five categories: response patterns, style of approach, social information processing, peer appraisal, and social standing. Although the

fact that these problems exist for this group of children is clear to all researchers, what to do about them remains questionable.

Interventions for social competence have included stimulant medication, cognitive-behavioral training, behavior modification, social skills training, and combinations of two or more of these. Although the literature on the efficacy of these interventions includes both successes and failures, studies have shown that combining stimulant medication with other interventions is more beneficial than medication alone. Specifically, combining social skills training with stimulant medication has resulted in at least some benefit for children with ADHD. Additionally, this intervention is a popular one in clinical settings, where their are numerous anecdotal reports of success for children who participate in these programs. Given the paucity of research examining social skills training with this population, further research is warranted before a strong statement about its effectiveness can be made.

The most important feature of any intervention for social competence is whether or not behavior change is maintained and generalizes to other settings. For children, the most frequent place that they interact with their peers is at school. Therefore, the generalization of social skills training to the school setting is an important outcome. If the skills learned in the training are not used with the peer group in the child's everyday experiences, then the intervention is not powerful enough to produce meaningful change in the child's behavior.

Among the studies which did find an effect of social skills training specifically for children with ADHD, only two of the studies demonstrated generalization. Sasso et al.

(1990) demonstrated that the social skills trained were observed in non-trained settings for one child with ADHD. Frankel et al. (1997) found general treatment gains as reported by parent and teacher ratings, which suggests that the skills are generalizing to the home and school settings. However, no direct measure of generalization was used in that study. Although Sheridan et al. (1996) did find that the skills learned during social skills training were demonstrated during analogue observations, the skills did not generalized to the natural setting (i.e., playground).

This study extends previous research in several ways. First, direct school observations were used in addition to parent and teacher ratings to document generalization of skills. Second, the skills taught during the training sessions were linked directly to the setting where the observations took place. That is, the skills taught were those most likely to be used in the school setting. Similarly, the behaviors observed for documenting generalization were those specific skills taught during the training sessions. And finally, the training given focused not only on the children with the social skills deficits, but also on their peers who were taught ways to encourage and reinforce the use of the skills taught.

Chapter III

Method

As outlined in the review of the literature, it is well known that many children with ADHD often have significant difficulties with social interactions. Although many interventions have been tried to improve the social competence of these children, the success rate of the interventions has been mixed at best. For any social skills intervention to be considered successful, there must be evidence that the increase in social competence generalizes to non-trained settings, such as the home and school. This study examined the effectiveness of a school-based social skills training program used with children with ADHD. It investigated the generalization of skills taught in small group and classroom social skills training sessions to non-trained settings.

The present study attempted to answer the following general research questions: Did skills learned in the social skills training group generalize to the school setting? Did teacher and parent perceptions of the child's social competence change by the end of the training cycle? Did teacher and parent perceptions of the child's ADHD symptoms change by the end of the training cycle?

From these research questions, the following hypotheses were developed:

Hypothesis #1: When directly observed in the playground setting, the frequency of prosocial behaviors will increase by 80% over baseline following social skills training. [If the behavior is not observed during baseline, an occurrence of the behavior at least one time per observation session would be expected; if behavior is observed one time per observation session during baseline, an increase to two times per observation session would be expected].

Hypothesis #2: Parent and teacher ratings of the child's social behaviors will increase in a positive direction following social skills training. Prior to treatment, this investigator determined that a strong positive change in perceived behavior on the SSRS would be defined as a change in standard score on any scale of one or more standard deviations (as listed in the SSRS manual) in the non-problematic direction. Since the SSRS did not include a system for determining change over time, this system was decided upon based on the methods used in other studies (i.e., Sheridan et al. 1996). This investigator decided that when a change did not meet the conventional one standard deviation difference that a moderate change was defined as .5 to .9 and a mild change was defined as .25 to .49 standard deviations in the non-problematic direction. Therefore, on the SSRS, a standard score change between 3.75-7.35 represents a mild change, 7.5-13.5 represents a moderate change, and greater than 15 points a strong change.

Hypothesis #3: Parent and teacher ratings of the child's ADHD symptoms will increase in a positive direction following social skills training. DuPaul, Power, et al. (1998) recommend using the Reliable Change Index (RCI), developed by Jacobsen and Truax (1991) to assess the clinical significance of treatment outcomes. The RCI is equal to the difference between the student’s pre- and post-treatment scores, divided by the standard error of the difference

(provided in manual) between the two scores. Significance is defined as a RCI that exceeds 1.96. Therefore, the RCI is a measure of the degree to which an improvement in functioning is likely due to the effects of the treatment rather than to imprecise measurement.

Setting

The participants were chosen from an elementary school in the southeastern United States. The school was chosen as a convenience setting because the investigator was employed as the school psychologist in that school. During the 2000-01 school year, the school had an enrollment of approximately 700 students from a rural, working class community. The student population was approximately 80% Caucasian, 10% African American, and 10% Hispanic. Although many of the children came from low-income homes, the school was not a Title I school and less than 50% of the students were eligible for free or reduced lunch. Several students with ADHD who were appropriate candidates for social skills training were identified at this school.

Participants

Four participants in grades two and three who had been identified as having ADHD and were experiencing social problems were chosen from those students enrolled at the elementary school. Potential participants were identified in three ways. First, the medication log kept by the school nurse was reviewed. Students who were taking stimulant medication were identified as possible participants. Second, teachers were informed that their school psychologist was conducting this research study. Several teachers reported that they had students in their classrooms who had ADHD and were experiencing social problems. Finally, the investigator, who also was the school psychologist at this school, was made aware of students with such difficulties through her

participation in the Intervention Assistance Team. This team consisted of various school professionals including general education teachers, exceptional student education teachers, the speech therapist, school social worker, guidance counselor and school psychologist. The team met as needed to assist teachers in responding to the needs of students who were referred to the team due to academic, behavioral or social problems. The team worked together to gather information about the difficulty being experienced by the child and to develop interventions to improve the child's functioning in the targeted area.

A number of criteria were used in the selection of participants for this study. First, the children were enrolled at the chosen elementary school for the 2000-2001 school year. Second, only children with a diagnosis of ADHD were considered for participation in this study. This included children for whom ADHD was only one of their diagnoses (i.e., ADHD and ODD, etc.) as well as those for whom ADHD was the only diagnosis. These children were prescribed medication to manage their ADHD symptoms. Although it was expected that most of the children would be taking stimulant medication, those taking other medications (i.e., antidepressants, etc.) also were considered for participation. Since stimulants are usually the preferred medications for children with ADHD, a potential implication of including those children might be that their ADHD symptoms might not be managed as effectively as those taking stimulants. This is because other medications are usually not considered unless stimulants have been found to be ineffective. Finally, the students must have been experiencing social problems which were recognized by their teachers at school. Social problems were operationalized as children having difficulty getting along with their peers three or more days per week. Children who were not taking medication to manage their ADHD symptoms were excluded from participating in the study.

Several sources of information were reviewed with regard to the diagnosis of ADHD. The primary source for confirming the diagnosis was student medical records which were reviewed by the investigator. Students who had medical documentation within their cumulative folder in the form of a letter from a physician and/or documentation on yearly health records signed by a physician were identified as potential candidates for this study. When available, prior psychological evaluation reports were reviewed by the investigator as well to provide additional documentation of the diagnosis of ADHD. Finally, the initial parent and teacher ADHD Rating Scale-IV (DuPaul, Power et al., 1998) for each child collected at part of this study was reviewed by the investigator. In reviewing the ADHD Rating Scale-IV, symptoms were considered present when the rater endorsed a 2 or 3 for a behavior (as recommended in DuPaul, Power et al., 1998). Table 1 shows the teacher and parent ADHD Rating Scale-IV results presented as symptoms. The DSM-IV recommends for a diagnosis the identification of a minimum of six of nine symptoms of inattention and/or hyperactivity-impulsivity. This was the criteria used in this study. This table shows that all four students met diagnostic criteria based on teacher reports on the ADHD Rating Scale-IV. Only Student 4 met diagnostic criteria based on parent reports. It should be noted, however, that all of the students were taking their prescribed medication which was intended to reduce the severity of their ADHD symptoms. With successful medical treatment, it would be expected that their ADHD symptoms would not be as problematic as when the disorder was originally diagnosed, particularly at home where ADHD symptoms are less problematic. Therefore, the results of the ADHD Rating Scale likely reflect the degree to which the medication is successfully reducing symptoms rather than the absence or presence ADHD.

Table 1

Symptoms rated as significant on the ADHD Rating Scale-IV

	Pre-Treatment					
	Informant					
Child	Teacher			Parent		
	H	I	T	H	I	T
1	9	7	16	2	1	3
2	8	8	16	4	3	7
3	6	9	15	3	4	7
4	6	8	14	4	7	11

Note. H=Hyperactive subscale, I=Inattentive subscale, and T=Total. Significance cutoffs: 6 of nine symptoms for subscales, 12 of 18 for Total Score.

Psychological evaluation reports were available for all students except Student 3 (see further description below). Medical records including a diagnosis of ADHD were available for all students. For Student 3, only the medical report and documentation by the school nurse that the student was taking stimulant medication were available. All four students' diagnoses were ADHD, Combined type; that is, all had significant involvement of hyperactive/impulsive as well as inattention symptomology as per medical documentation.

To determine if students were experiencing social problems, the Social Skills Rating System (SSRS) and behavioral observations were used. Tables 3 shows the pretreatment standard scores for each target student. Table 4 includes the pretreatment (baseline) mean scores for target behavioral observations for each target child and each comparison child (explained below). Inclusion criteria for participation in this study were that each student show significant problems on the three measures (i.e., ADHD Rating Scale IV, SSRS, teacher forms, and behavioral observations) prior to the social skills group training. Tables 2 and 3 show the SSRS pre-treatment standard scores for teachers and parents on the social skills and behavior problems scales. Students who did not show below average functioning on the three measures were excluded from participating in this study. Since the intervention was focused on social behavior at school, students were included in the study even if their parent forms were not significant.

Student 1

Four students who met the above selection criteria were chosen to participate in the study. Student 1 was seven years old and was enrolled in the second grade. He was Caucasian and lived with his mother. Student 1 had been struggling academically and was evaluated a year before participating in this study by a school psychologist employed by the county. He was found to have characteristics of ADHD. Student 1 was diagnosed

Table 2

Pretreatment Standard Scores for the SSRS - Social Skills Subscale

	Informant	
Child	Teacher Pre-Treatment	Parent Pre-Treatment
1	84	116
2	59	85
3	68	95
4	89	99

Note. Average range is standard score of 90-110. Scores below 90 are in the problematic direction.

Table 3

Pretreatment Standard Scores for the SSRS – Behavior Problems Subscale

	Informant	
Child	Teacher Pre-Treatment	Parent Pre-Treatment
1	131	92
2	125	110
3	117	102
4	106	105

Note. Average range is standard score of 90-110. Scores above 110 are in the problematic direction.

Table 4

Pre-Treatment Behavioral Observation Data Means for Target and Comparison Students.

	Complimenting	Offering Help	Sportmanship	Sharing	Joining In	Reciprocation
	Pre	Pre	Pre	Pre	Pre	Pre
T1	0	0	0	0	1.59	1.28
T2	0	0	0	0.21	0.59	1.00
T3	0	0	0	0.37	0.32	0.84
T4	0	.09	.14	2.0	1.85	1.43
C1	.40	4.62	2.75	5.21	4.63	5.08
C2/3	.10	2.38	2.56	6.00	5.09	4.64
C4	.38	4.09	1.71	4.82	4.60	3.43

Note. T1, T2, T3, and T4 refer to the target students who participated in the social skills training. C1, C2/3, and C4 refer to a comparison student in the same class of each target student.

with ADHD by his pediatrician prior to the evaluation by the school psychologist and was only taking stimulant medication to control his ADHD symptoms. The medication prescribed to this student was a time-release variety that did not have to be taken at school. Therefore, weekly phone contact was made with his mother by the investigator to ensure that his medication was being administered each day of the week. Student 1's mother served as the informant for the parent dependent measures.

Student 2

Student 2 was eight years old and was enrolled in the third grade. He was Caucasian and lived with his mother. Student 2 had been struggling academically and was enrolled in the Personalized Education Program (PEP) at the time this study was completed. PEP is a general education program for student who are not achieving to their teacher's expectation. The class size is somewhat smaller than other general education classes and the teacher typically has a paraprofessional in the classroom for at least part of the day to assist with classroom duties and to assist students as needed. This allows for more individualized instructional opportunities and for students to work at their own pace. Student 2 was evaluated early in the school year by the investigator in her role as a school psychologist. He was found to have characteristics of ADHD, and he met the county criteria for the Specific Learning Disabilities (SLD) Program. Student 2 had been diagnosed with ADHD by his pediatrician prior to that evaluation and was only taking stimulant medication to control his ADHD symptoms. As with Student 1, the medication prescribed to Student 2 also was a time-release variety which did not have to be taken at school. Student 2's mother was contacted weekly by telephone by investigator to ensure that his medication was being administered each day of the week. Student 2's mother served as the informant for the parent dependent measures.

Student 3

Student 3 was eight years old and was enrolled in the third grade. He was African American and lived with his grandmother. As was the case with Student 2, Student 3 had been struggling academically and was enrolled in PEP at the time this study was completed. He had not been evaluated by a psychologist. Student 3 had been diagnosed with ADHD by his pediatrician and was only taking stimulant medication to control his ADHD symptoms. The medication prescribed for this student was administered at home in the morning and at noon each day in school. Weekly telephone contact was made by the investigator with Student 3's grandmother to ensure that his medication was being administered each morning of the week and the school medication log was checked weekly to ensure the noon-time dose was being administered. Student 3's grandmother served as the informant for the parent dependent measures.

Student 4

Student 4 was seven years old and was enrolled in the second grade. He was Caucasian and lived with his father and step-mother. Student 4 enrolled in this elementary school when his family moved to the local area from out of state during the first quarter of the school year. Included in his transferring documents were a completed psychological report and an Individual Education Plan for the SLD program. The results of the psychological evaluation were reviewed and Student 4 was found to have characteristics of ADHD, and he met the county criteria for the Specific Learning Disabilities Program. Student 4 was diagnosed with ADHD by his pediatrician prior to that evaluation and was taking stimulant medication to control his ADHD symptoms. The stimulant medication prescribed to this student was a time-release variety that did not have to be taken at school. No other medications were prescribed to this student at that time. This investigator contacted Student 4's step-mother weekly to ensure that his

medication was being administered each day of the week. Student 4's step-mother served as the informant for the parent dependent measures. Student 4's father also was asked to complete the measures, but only those completed by the step-mother were returned.

Dependent Measures

To assess the perceptions of significant adults in each child's life, the child's parent or guardian and the child's teacher were each asked to complete two behavior rating scales before and following social skills training. The scales were administered one week before social skills training began and one week after the entire cycle was completed. Perceptions of the children's social competence were assessed with the Social Skills Rating System (Gresham & Elliot, 1990), which was completed by both the parent (or guardian) and the teacher. The ADHD Rating Scale-IV (DuPaul et al., 1998) was completed by both the parent and teacher to assess perceptions of changes in ADHD symptoms. Direct observations of the children in the natural setting of their own school playground were conducted by this investigator to document the frequency of the use of the prosocial behaviors learned in the social skills training groups. These observations took place during physical education (P.E.) classes when interaction between peers was most likely. P.E. class was chosen since students do not participate in other regular social interactions such as daily recess. Therefore, the P.E. activities may have had an influence on behavior being observed since the activities were structured rather than "free play". However, this was taken into account when designing the social skills training (see below).

Social Skills Rating System (SSRS)

The Social Skills Rating System (Gresham & Elliott, 1990) is a behavioral questionnaire with forms for preschool, elementary, and secondary students. Only the elementary form was used for this study. Although there are different forms for parents,

teachers, and students, only the parent and teacher forms were used in this study. According to the authors, the SSRS provides a broad, multi-rater assessment of student social behaviors that may affect teacher-student relations, peer acceptance, and academic performance. The SSRS was designed to document the perceived frequency and importance of behaviors influencing the student's development of social competence and adaptive functioning at school and home. This scale was intended to be used for screening, classification, and intervention planning.

The three domains assessed by the SSRS are (a) social skills, (b) problem behaviors, and (c) academic competence. Each domain yields a standard score, a percentile rank and a behavior level description (Fewer, Average, or More). The Social Skills scale includes five subscales represented by the acronym CARES: Cooperation, Assertion, Responsibility, Empathy, Self-Control. Cooperation includes behaviors such as helping others, sharing, and complying with rules. The Assertion subscale includes initiating behaviors such as asking others for information, introducing oneself, and responding to others. Responsibility represents the ability to communicate with adults and regard for property and work. The Responsibility subscale is only included on the parent form. The Empathy subscale is only included on the student form and includes behaviors that show concern and respect for others. The Self-Control subscale includes behaviors that emerge in conflict situations and in nonconflict situations that require taking turns and compromising. Each item on this scale is rated for frequency (Never, Sometimes, or Very Often) and importance (Not Important, Important, or Critical).

The Problem Behaviors domain includes the subscales of Externalizing Problems, Internalizing Problems, and Hyperactivity. These are only included on the parent and teacher forms and are rated for perceived frequency. Externalizing problems include inappropriate behaviors such as verbal or physical aggression, poor control of temper,

and arguing. The Internalizing Problems subscale includes behaviors indicating anxiety, sadness, loneliness, and poor self-esteem. The Hyperactivity subscale includes behaviors such as excessive movement, fidgeting, and impulsiveness. Hyperactivity is only measured on the Elementary forms.

The Academic Competence domain includes a small number of items measuring reading and math performance, motivation, parental support, and general cognitive functioning. This scale is only included on the Teacher forms at the Elementary and Secondary levels. This domain yields a competence level of Below, Average, or Above.

As reported in the test manual, the internal consistency for all forms of the SSRS ranged from .83 to .94 for the Social Skills subscales, .73 to .88 for Problem Behaviors subscales, and was .95 for the Academic Competence scale (no subscales). Test-retest correlations for the teacher ratings were .85 for Social Skills, .84 for Problem Behaviors, and .93 for Academic Competence. Test-retest correlations were .87 for Social Skills, .65 for Problem Behaviors.

Several types of validity of the SSRS were included in the test manual. To determine content validity of the SSRS, experienced researchers nominated a pool of items. Teachers, parents and secondary students then rated the importance of each social skill on the SSRS. Criterion-related validity was examined through several studies of the SSRS and several other rating scales. The teacher form of the SSRS was compared to the Social Behavior Assessment (SBA), the Child Behavior Checklist-Teacher Report Form (CBCL), and the Harter Teacher Rating Scale (TRS). Correlations between the SSRS and the SBA were moderate to high (-.68 to -.55) and consistent with theoretical expectations. Relatively high correlations (.59 to .75) were found between the SSRS and the CBCL and moderate to high correlations (.44 to .70) were found between the SSRS and the TRS.

The parent form of the SSRS also correlated moderately to highly with the parent CBCL (.58 to .70).

The Standard Errors of Measurement (SEM) are reported in the manual for all three forms. For the elementary form, the SEMs for the Teacher form are 4 for the Social Skills scale, 5 for the Problem Behaviors scale, and 3 for the Academic Competence scale. For the Parent form the SEMs are 6 for girls and 5 for boys for both the Social Skills and Problem Behaviors scales.

For this study, the Social Skills and Problem Behavior subscale scores were included in the analysis. Specifically, the teacher ratings of each student's Social Skills and Behavior problems were evaluated using the predetermined criteria for mild, moderate to strong positive change as described below in the Chapter 4.

The ADHD Rating Scale-IV

The ADHD Rating Scale - IV (DuPaul, Power et al., 1998) is a questionnaire based on the Diagnostic and Statistical Manual, Fourth Edition (DSM-IV) diagnostic criteria for ADHD. According to the authors, normative data were collected from over 2,000 teachers and 4,500 parents in a national sample spanning all regions of the country and included ratings of children from a variety of ethnic backgrounds. The instrument is intended for children and adolescents between the ages of 5 and 18 years. Both the Home and School versions include the three scores of (a) Inattention Scale score, (b) Hyperactivity-Impulsivity Scale score, and (c) Total Score. The ADHD Rating Scale-IV is useful for assisting in the diagnosis of ADHD as well as for monitoring interventions targeting the symptoms of this disorder. Although this study did not target ADHD symptoms, this scale was included for informational purposes regarding the student's ADHD symptoms as well as in an effort to determine if a generalization to non-trained behaviors occurred.

DuPaul, Power, McGoey, Ikeda, and Anastopoulos (1998) examined the reliability and validity of the ADHD Rating Scale-IV. They reported internal consistency coefficients of .92 for the Total Score, .86 for the Inattention Factor, and .88 for the Hyperactivity-Impulsive Factor. Test-retest reliability was found to be .85 for the Total Score, .77 for the Inattention Factor, and .86 for the Hyperactivity-Impulsive Factor with a 4-week interval. Similarly, the school version had internal consistency coefficients of .94 for the Total Score, .96 for the Inattention Factor, and .88 for the Hyperactivity-Impulsive Factor. Test-retest reliability was reported to be .90 for the Total Score, .89 for the Inattention Factor, and .88 for the Hyperactivity-Impulsive Factor with a 4-week interval. Interrater agreement coefficients between parents and teachers were moderate (Total score = .41, Inattention = .45, Hyperactivity-Impulsivity = .40). When compared to the Conner's Rating Scales, validity coefficients ranged from .10 to .81 for the parent scales and .22 to .88 for the school versions.

The authors of this scale recommend calculating the Reliable Change Index (RCI) as a measure of the degree to which an improvement in functioning is likely due to the effects of treatment rather than to chance. This is done by subtracting the pretreatment scale score from the posttreatment score and dividing it by the standard error of difference, provided in the manual. For 8-10 year old children, the standard errors of difference are Total score = 6.93, Inattention = 3.99, and Hyperactivity-Impulsivity = 3.95 for boys and Total score = 5.64, Inattention = 3.42, and Hyperactivity-Impulsivity = 3.01 for girls.

Direct Observations

Direct observations in school settings were conducted daily during the baseline phase and three times per week during the treatment phase. Observations were collected during the students' regularly scheduled Physical Education (P.E.) periods and during

"teacher P.E.". Teacher P.E. occurred on days when students were not otherwise scheduled to have P.E. class. The regular classroom teacher would take her class out to the playground for physical activity, including group games (e.g., dodge ball) or to play on the playground equipment. The investigator conducted the school observations. Target behaviors included behaviors directly related to the skills taught during the group. These behaviors were chosen since they were most likely to be used in this P.E. setting. Appendix A lists the skills taught, the behaviors observed and the behavioral definition of each. Appendix B includes the observation form used by the observer during weekly observations. The observation method used was a frequency count method whereby every occurrence of the target behaviors was recorded with a tally mark in the box for that behavior on the observation form.

Observer training involved having the investigator and the guidance counselor practice observing students in school situations. The guidance counselor was asked to participate in this study as the group training presenter since she runs several groups at the school. A frequency count coding procedure was used. The investigator and the guidance counselor practiced until they reached 100% inter-observer agreement before the investigator began observing the participants in the study. This was calculated by comparing observation records of each observer to ensure 100% agreement of behaviors observed. To control for observational drift and bias, the guidance counselor participated in three inter-observer agreement checks (weeks 2, 4, and 6) for each subject. Each of these checks resulted in 100% agreement between observers.

All participants received medication as prescribed at the time of the observations and throughout the baseline and intervention phases of data collection. This was verified by asking the person at the school who dispensed the medication if the most recent scheduled dose was administered on that day and reviewing the medication log with her.

For children who received their medication at home, parents were contacted by telephone by the investigator weekly to verify that their child had received the scheduled daily dose.

Comparison Children

In each class in which a target child was observed, the classroom teacher was asked to identify a student who was judged to be a typical student in terms of social skills. This student was observed by this investigator, as was the target student in order to determine if the setting allowed for ample opportunity for the target behaviors to be demonstrated. It should be noted that these children were not chosen as "matched controls". The only criterion for these children to be included in this study was that the teacher informally judged them as "typical" in the area of social skills. The same comparison child was used for Students 2 and 3, since these students were in the same P.E. class.

Procedures

Permission to Conduct Research

Permission to conduct this study was obtained from the principal at the elementary school. A research proposal request also was submitted to the school district. Once a letter of approval was received, a proposal to conduct research was submitted to the Institutional Review Board (IRB) for the Protection of Human Subjects at the University of South Florida. Upon approval, students were selected as prospective participants and the planned research was explained to their parents in person or by telephone by the investigator. The investigator identified herself as the school psychologist at the elementary school. She also informed the parents that she was a doctoral candidate and was conducting a dissertation study involving social skills training of students diagnosed with ADHD. The parents were told that their child was identified as a possible participant for the training. They were told that they would receive a

detailed, written description of the study and permission forms to sign if they were willing to allow their child to participate. If they seemed interested in allowing their child to participate, a packet of information was sent home with the child that included the consent form (Appendix C). as well as the questionnaires to be completed. The consent form included permission for the child to participate in the weekly group training sessions, for direct observations to be conducted at the child's school and for the teacher to complete behavior rating scales on the child. If parental consent was obtained, the child was invited to participate. During the first session, the study was explained to the children and each child was asked to sign a Child Assent Form (Appendix D) to indicate his willingness to participate in the study.

The Social Skills Training Program

Curriculum. The training was conducted over an 8-week period. The social skills training curriculum used was adapted from the McGuinnis and Goldstein (1984) Skills-Streaming Model. The elementary school guidance counselor was recruited to run the group sessions. This guidance counselor had been trained to use the McGuinnis and Goldstein (1984) system in her graduate training and routinely used this system in social skill training groups she lead with the students at the school. A detailed session by session manual was developed by the investigator (Appendix E) based on McGuinnis and Goldstein (1984) for the guidance counselor to follow during her training sessions. The guidance counselor received additional preparation to conduct the small group instruction for this study from reviewing the prepared manual prior to beginning the training and prior to each training session.

Session 1 was an introduction that included an explanation of the purpose of the group, development of group rules, and discussion of the reward system. The students were told that they would be meeting weekly to learn about making and keeping friends.

Group rules were established with the input of all students but generally focused on respecting others. The students also were informed that they could earn prizes (e.g., pencils, stickers, small toys, etc.) by following the group rules, participating, and using the skills taught at home and at school. The use of the skill taught was determined by student report of situations in which they used skills taught and the completion of homework assignments.

Sessions 2 through 7 addressed six specific social skills that were chosen by the investigator because they were skills which were important during the social interactions the students typically engage in each day. The skills were presented weekly in the following order: 1) giving a compliment, 2) offering help to a classmate, 3) showing sportsmanship, 4) sharing, 5) joining in/initiating, 6) reciprocation (see Small Group Sessions section for more details on the skill training). This order of skills taught was chosen based on this investigator's belief that the earlier skills were more straight forward, with each skill becoming more complex as the training went on. The first five skills were selected from the McGinnis and Goldstein (1984) curriculum. In each case, the skills were taught using the steps as they were explained in that curriculum. The final skill taught, "Reciprocation," was meant to be an extension of the "Joining In/Initiation" skill whereby the child used the same steps from McGinnis and Goldstein (1984) to agree to join in when asked by another student.

Small group sessions. The group met for 45-minutes each Monday at 9:00 a.m. for eight weeks. The group consisted of 6 students, four participants in this study and two additional students included by the guidance counselor. The two students not included in the study were other students at the school who were having similar social skills difficulties who the guidance counselor wanted to receive the benefit of the training as well. They completed a total of eight training sessions. The sessions were conducted by

the school guidance counselor at the elementary school. As noted above, the guidance counselor had received training in conducting social skills lessons through her graduate preparation. In addition, she had conducted social skills groups using this model in her work with students throughout her career. Each session followed the components of structured learning outlined in the McGinnis and Goldstein (1984) curriculum as follows: (1) modeling, (2) role-playing, (3) performance feedback, (4) transfer of training.

At the beginning of each session, a general discussion of what social skills are and the importance of using good social skills was led by the guidance counselor. Students were asked to generate reasons for using good social skills.

Next, the leader gave a didactic presentation of the skill that was being taught during that session. For example, the first skill to be taught was Giving a Compliment. A discussion of the skill and why it is important was initiated by the leader. The students were encourage to participate in the discussion. For Giving a Compliment, the leader discussed why this is a good social skill and how it may help the students make and keep friends. Next, the leader discussed how both the giver and receiver might feel (e.g., pleased, embarrassed) when a compliment is given. The steps to the skill were discussed and written on the chalkboard as a visual reminder. Each step was discussed in detail. For example, the steps to giving a compliment were identified as: (1) Decide what you want to tell the other person; (2) Decide how you want to say it; (3) Choose a good time and place; and (4) Give the compliment in a friendly way. For step one, the leader discussed possible compliments the students may want give to a peer (e.g., appearance, behavior, an achievement, special skills). For step two, several examples and non-examples of compliments were given. For step three, how to choose a good time was discussed (e.g., when the receiver is not busy, when not many others are around). And for step four, an emphasis was placed on making sure the compliments were sincere and not mechanical.

Appropriate body language, facial expression, and tone of voice were discussed and demonstrated. Once the steps of the skills were discussed, some situations when the skill might be used were presented. The playground situation was always included in the examples of when skills should be used in an effort to increase the chances that the children would use the skills in that setting. With giving a compliment, the leader gave an example of complimenting another student when he or she scores in basketball or makes a good play. An example of a compliment in that situation would be "great shot!" after a teammate has scored a goal.

Once the skill had been discussed and the children had no more questions, the leader modeled the skill. Typically, the first example was of one person not using the skill and the second was of the person using the skill. Following each demonstration, the group members were asked to give performance feedback. That is, they would tell the actors positive things that they observed in their role-play, and offer suggestions for improvement. The leader also participated in this to model appropriate ways to give feedback as well as bring out points that the participants may have missed.

After the group observed the modeling of the skill, members of the group were chosen to participate in a role-play with the leader. Again, the other members gave performance feedback to the actors following the role-play.

Finally, the students were given homework assignments to complete. Every week, the homework assignment was to practice using the skill taught during group. Homework was given orally at the end of each session (i.e., "For homework this week, I want you to practice giving compliments at home and at school."). The students were prompted to give examples of opportunities that they might have to use the new skill during that week. The assignment was for each student to practice using the skill and to report back to the group during the following session on their success. Each student was rewarded for

completion of homework assignments. Further, the situations in which the student reported they used the skills were reviewed with the group as additional examples. Completion of homework assignments was based solely on student report. It was possible that students said they completed assignments when they did not. Opportunities to practice were validated by observing the comparison students.

A reward system was used as a behavioral and motivational system. Participants earned points by being present for group, participating, and completing homework assignments. They lost points for interrupting or otherwise being disruptive. The guidance counselor, who ran the group, kept track of the points using a tally sheet. Students were informed by the guidance counselor as they earned and lost points. Points were exchanged for prizes (e.g., stickers, pencils, small toys, etc.) at the end of each session.

Classroom training. In addition to the weekly small group social skills training, classroom social skills training also was incorporated. The school guidance counselor presented the weekly skill taught during small group training to the entire class in the group during her routine classroom guidance lessons. These lessons took place on Tuesdays of each week for eight weeks. Each lesson lasted approximately 30 minutes. The format of the training was similar to that of the small group. First a discussion of what social skills are and why they are important was led by the counselor. Next, the skill for the week was presented. The counselor then modeled the skill for the entire class of students. After a few demonstrations, the counselor chose students to role-play with her. The child in the class who also participated in the small group training was always chosen to role-play at least one time per classroom guidance lesson. And finally, the students gave performance feedback.

The purpose of the classroom training was twofold. First, classroom training allowed the target students another opportunity to practice and be exposed to the training in a setting where the skills were expected to generalize. The second purpose of classroom training was to train the target students' peers in appropriate ways to model and reinforce the use of the skills. It was hypothesized that this would increase generalization of the skills taught in the small group training.

Treatment Integrity of Training

In order to ensure treatment integrity of training, two methods were used. First, the guidance counselor recorded on her copy of the training manual that all steps were followed and instructed to the students. This was done both during the small group sessions as well as during the classroom training sessions. To further document that training was following the procedures as described in the manual, this examiner observed the trainer on four occasions (two small group sessions and two classroom sessions) and recorded that all steps of the manual were followed as written. In all cases, all steps of the training procedures were accurately followed.

Chapter IV

Results

In order to assess the effect of the social skills training program on the students' behaviors, behavior checklists were administered to the students' parents and teachers and the students were observed during a physical education (P.E.) class. The results of these dependent measures are presented below. First, perceptions of the students' behavior using the behavioral checklists are presented along with an analysis of findings for both teacher and parent. Then the results of the direct observations of student behavior follow, including figures representing each student's demonstration of target behaviors.

Teacher and Parent Perceptions

ADHD Rating Scale-IV. DuPaul, Power, et al. (1998) recommend using the Reliable Change Index (RCI), developed by Jacobsen and Truax (1991) to assess the clinical significance of treatment outcomes. The RCI is equal to the difference between the student's pre- and post-treatment scores, divided by the standard error of the difference (provided in manual) between the two scores. Significance is defined as a RCI that exceeds 1.96. Therefore, the RCI is a measure of the degree to which an improvement in functioning is likely due to the effects of the treatment rather than to imprecise measurement. The authors of the ADHD Rating Scale-IV calculated the standard errors of difference for the Inattention, Hyperactivity, and Total scores according to age and gender groupings for both the teacher and parent forms.

Table 5 presents the RCIs for each student as rated by the teacher and parent or guardian. As can be seen by this table, none of the RCIs reached the 1.96 cutoff point for significance. As rated by their teachers, Students 1 and 3 showed virtually no effect from treatment on the ADHD Rating Scale-IV. Student 2 showed some improvement in hyperactive symptoms, but the degree of the improvement did not reach significance. Similarly, Student 4 showed improvement in all three factors of the ADHD Rating Scale-IV, but none reached the cutoff for significance. In sum, no statistically significant change was found between the pre- and post-treatment teacher perceptions of the students' ADHD symptoms as measured by the ADHD Rating Scale-IV.

The parent perception of Student 1's ADHD symptoms showed a significant negative effect. That is, Student 1's mother reported a significant change in the problematic direction for Student 1's inattention and Total scores. Student 2 showed some improvement in hyperactive symptoms, but the degree of the improvement did not reach significance. Students 3 and 4 showed no significant change in ADHD symptoms as rated by their parents. Therefore, no statistically significant change was found between the pre- and post-treatment parent perceptions of the students' ADHD symptoms as measured by the ADHD Rating Scale-IV.

SSRS. Each of the students' teachers and parent or guardian completed the SSRS pre- and post-treatment. Results of pre- and post-measures are included in Tables 6 and 7 for comparison. The SSRS uses standard scores which have an average range between 90 and 110. Scores below the average range are considered problematic on the Social Skills subscale, while scores above the average range are considered problematic on the

Table 5

RCIs for ADHD Rating Scale-IV

	Informant					
Child	Teacher			Parent		
	H	I	T	H	I	T
1	.28	0	.31	-1.36	-2.53	-2.98
2	1.00	.25	.72	1.44	.28	.93
3	0	.25	.14	.72	.56	.74
4	1.11	1.56	1.53	1.02	.72	.93

Note. Cutoff for significant difference of RCI=1.96. Negative values represent a negative change.

Table 6

Pre- and Post Treatment Standard Scores for the SSRS - Social Skills Subscale

Child	Informant							
	Teacher				Parent			
	Pre	Post	SS Change	SD Change	Pre	Post	SS Change	SD Change
1	84	80	-4	-.26	116	96	-20	-1.33
2	59	70	+4	.26	85	88	+3	.20
3	68	79	+11	.73	95	98	+3	.20
4	89	95	+6	.40	99	102	+3	.20

Note. A standard deviation score (according to the SSRS manual as 15 points) change between .25-.49 represents a mild change, .5-.9 represents a moderate change, and greater than 1.0 represents a strong change. Lower scores indicate more social skill deficits on this subscale, i.e., a positive change direction is desired.

Table 7

Pre- and Post-Treatment Standard Scores for the SSRS – Behavior Problems Subscale

Child	Informant							
	Teacher				Parent			
	Pre	Post	SS Change	SD Change	Pre	Post	SS Change	SD Change
1	131	125	-6	-.40	92	108	+16	+1.07
2	125	123	-2	-.13	110	108	-2	-.13
3	117	115	-2	-.13	102	105	+3	.20
4	106	106	0	0	105	104	-1	-.07

Note. A standard deviation score (according to the SSRS manual as 15 points) change between .25-.49 represents a mild change, .5-.9 represents a moderate change, and greater than 1.0 represents a strong change. Higher scores indicate more behavior problems on this subscale, i.e., a negative change direction is desired.

Behavior Problems subscale. Prior to treatment, the investigator determined that a strong positive change in perceived behavior on the SSRS would be defined as a change in standard score (according to the SSRS manual as 15 points) on any scale of one or more standard deviations in the non-problematic direction. Since the SSRS did not include a system for determining change over time, this system was decided upon based on the methods used in other studies (i.e., Sheridan et al. 1996). The investigator decided that when a change did not meet the conventional one standard deviation difference that a moderate change was defined as .5 to .9 and a mild change was defined as .25 to .49 standard deviations in the non-problematic direction. Therefore, on the SSRS, a standard score change between 3.75-7.35 represents a mild change, 7.5-13.5 represents a moderate change, and greater than 15 points a strong change.

Table 6 lists the standard scores for the Social Skills scale of the SSRS as completed by each of the students' teachers and parent or guardian. Within the Social Skills domain, teachers perceived that Students 2, 3, and 4 all showed improvement in their social skills functioning. Students 2 and 3 both showed a moderate improvement while Student 4 showed a mild improvement in social skills functioning as perceived by their teachers. Student 1 showed a mild negative change. Parents perceived that Students 2, 3, and 4 showed no change in their behavior in these areas. The parent of Student 1 perceived a strong negative change on both scales. The Problem Behavior scale of the SSRS is presented in Table 7. As can be seen in this table, Students 2, 3, and 4 showed virtually no change on the Problem Behavior scale as rated by their teachers. That is, the teachers for Students 2, 3, and 4 perceived their behavior just as problematic following

social skills training as they did prior to training. Student 1 showed a mild improvement in the area of Problem Behavior. Parents perceived that Students 2, 3, and 4 showed no change in their behavior in the area of Problem Behavior. The parent of Student 1 perceived a strong negative change on both scales.

Overall, no strong positive change was found for any of the target students. There was some indication of possible improved social skills functioning for students 2, 3, and 4. Teachers perceived improvement for each of these students' social skills functioning as measured by the Social Skills scale. However, no change in their problematic behaviors was perceived as measured by the Problem Behavior scale. Student 1's teacher perceived mild improvement in behavior, but a mild negative change in social skills functioning. No improvement in behavior or social skills was perceived by the participants' parents in the home setting. The parent of Student 1 actually perceived a strong negative change in behavior in the home setting for her child.

Direct Observations

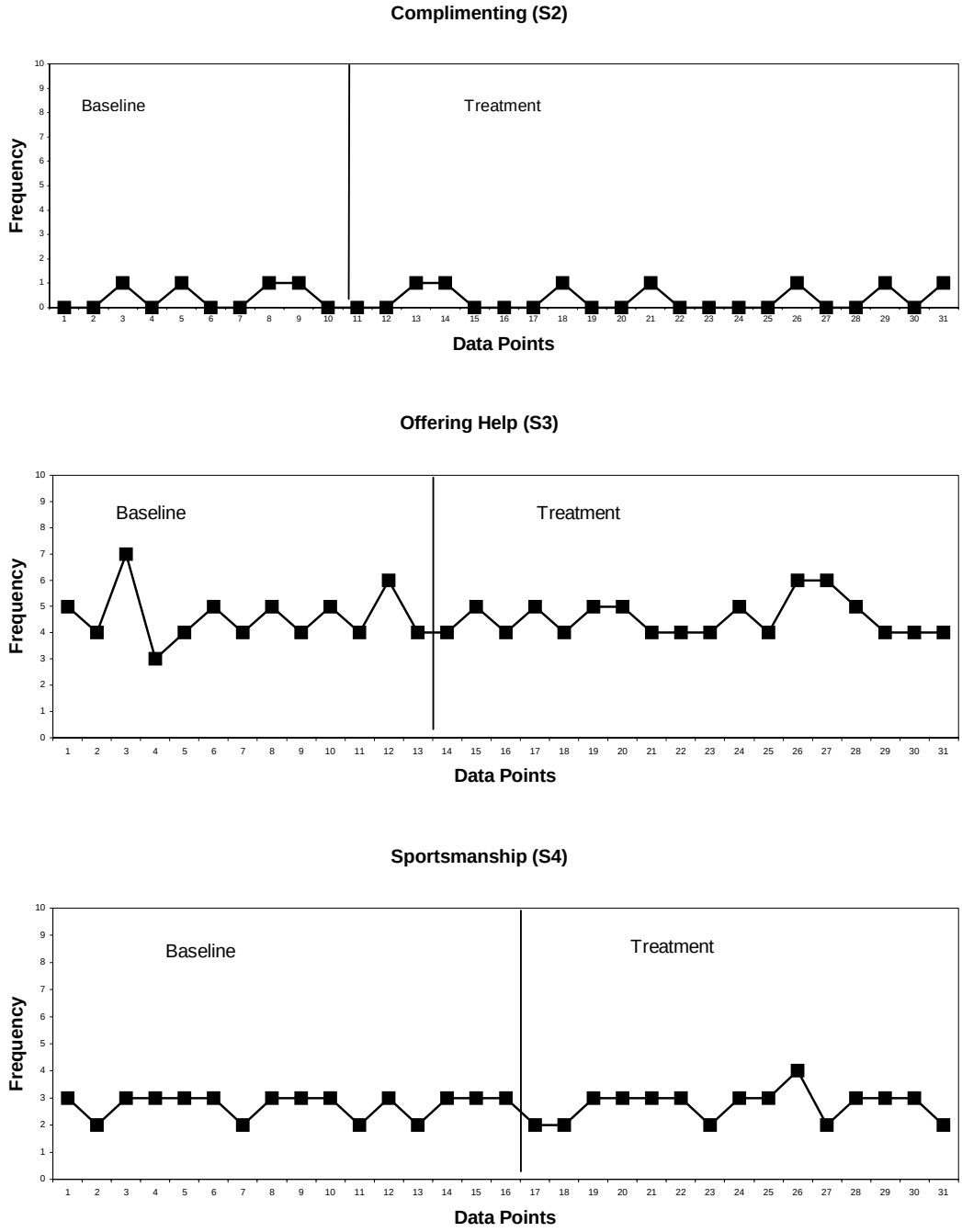
A multiple baseline design across behaviors was used to assess the effectiveness of the SST program. This design was chosen since the purpose of the study was to track the progress and outcomes of a school-based social skills training program on individual children with ADHD. Multiple behaviors and multiple individuals were tracked across time. Behavioral observation data were collected three times per week throughout the treatment phase with a total of 24 data points. Baseline data were collected daily for seven consecutive school days. Student 4 was absent on days 6 and 7; therefore, only 5 baseline data points could be recorded prior to the first day of treatment. Since the first

week of treatment did not involve any actual social skills training, but rather just an introduction to the group, the three data points collected that week also serve as baseline data prior to the onset of actual training. The group training and classroom training began for all participants during week two. Behavioral observation data were analyzed using visual analysis. Changes in level and trend between baseline and treatment were analyzed.

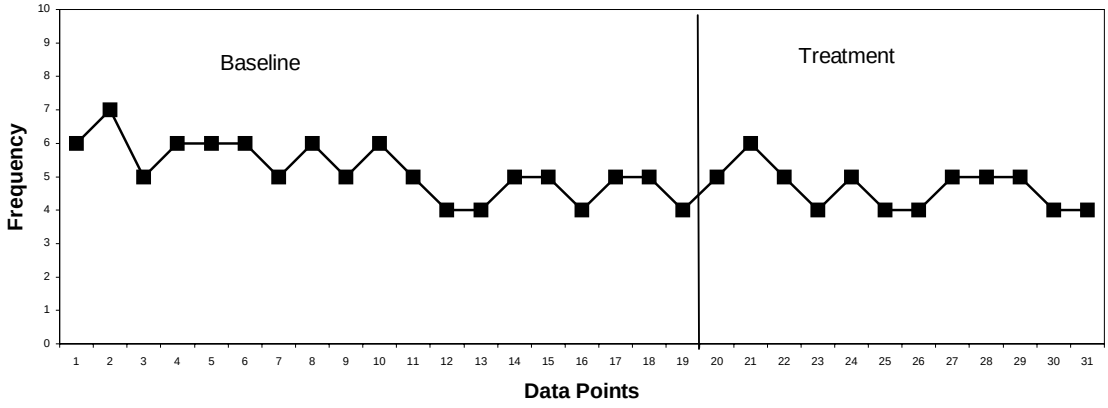
In an effort to examine whether or not these children had an opportunity to demonstrate the target behaviors, the behavior of a comparison child in each class was observed. Since two of the target children (Students 2 and 3) were in the same P.E. class, only one comparison child was observed in this class. As can be seen in Figures 1, 2, and 3, visual analysis of the target behaviors suggest that they were exhibited two to three times as often by these children as compared with the children with ADHD. Therefore, it seems that there was ample opportunity for students to demonstrate these skills since others in their class did so. The only exception to this was the complimenting behavior, which seemed to be a behavior rarely exhibited by any of the children.

Visual analysis of the target behaviors indicated that the target behaviors were stable by the start of treatment for all children. Stability was determined using guidelines described in Tawney and Gast (1984). Specifically, they recommend that data be considered stable when 80-90% of the data points of a condition fall within a 15% range of the mean level of all data point values of a condition. Since the baseline data for each of the four students met the criteria outlined in Tawney and Gast (1984), the baseline data were determined to be stable and treatment began.

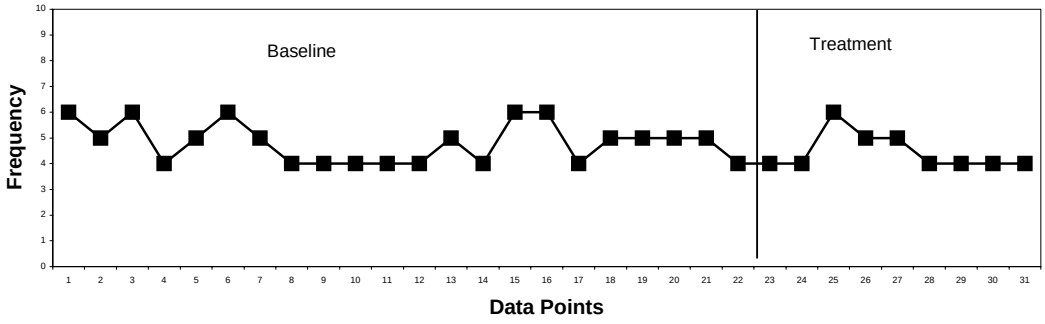
Figure 1. Frequency of target behaviors observed on the playground by Comparison Student 1.



Share/Take Turns (S5)



Joining In (S6)



Reciprocation (S7)

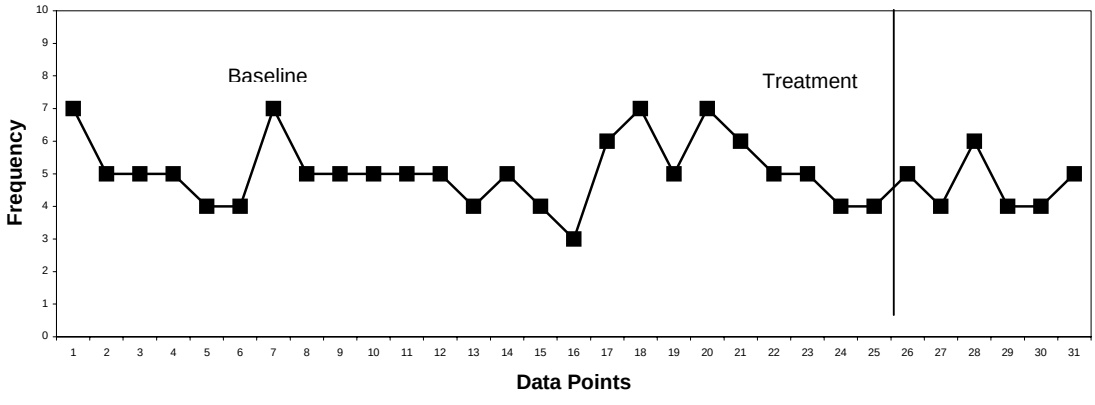
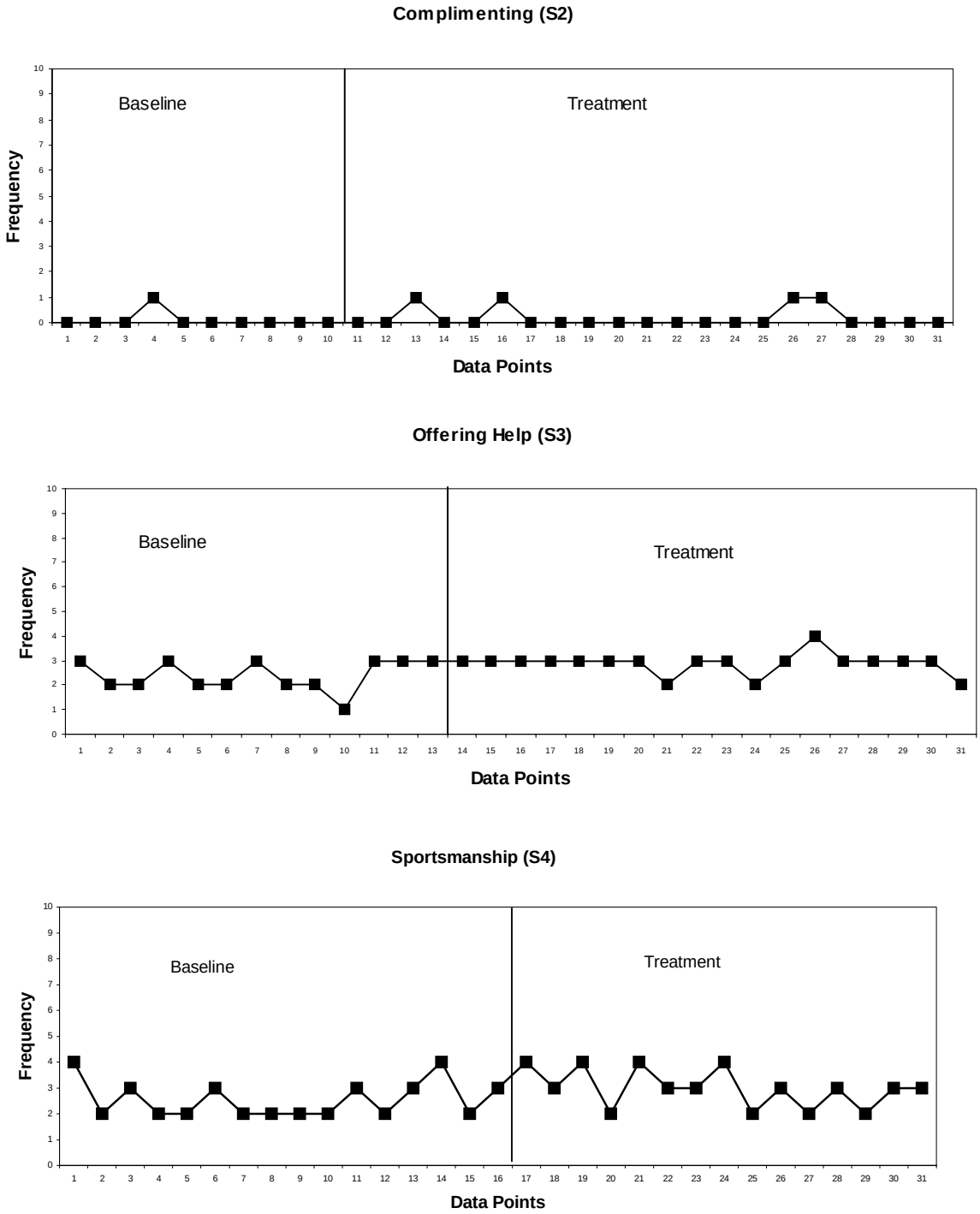
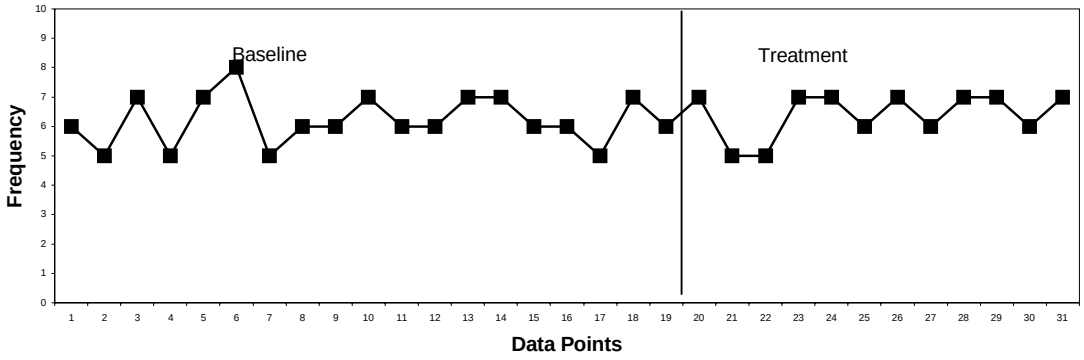


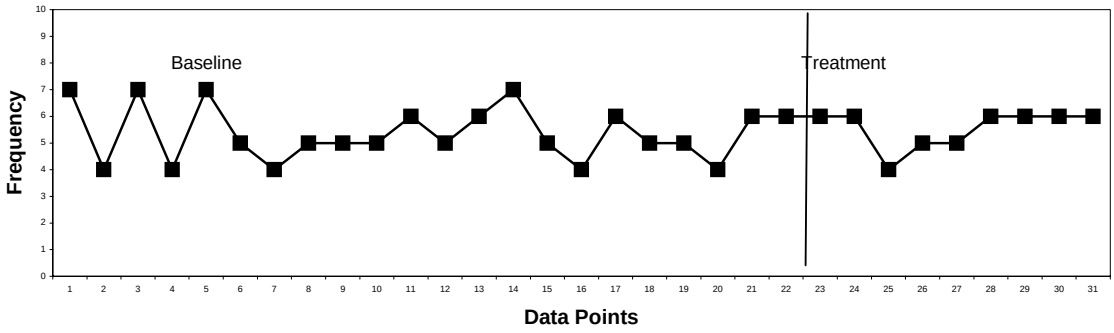
Figure 2. Frequency of target behaviors observed on the playground by the Comparison Student for Students 2 and 3.



Share/Take Turns (S5)



Joining In (S6)



Reciprocation (S7)

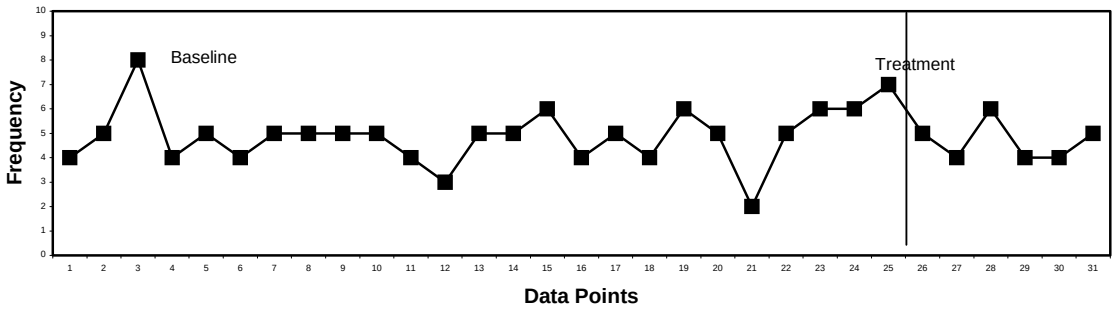
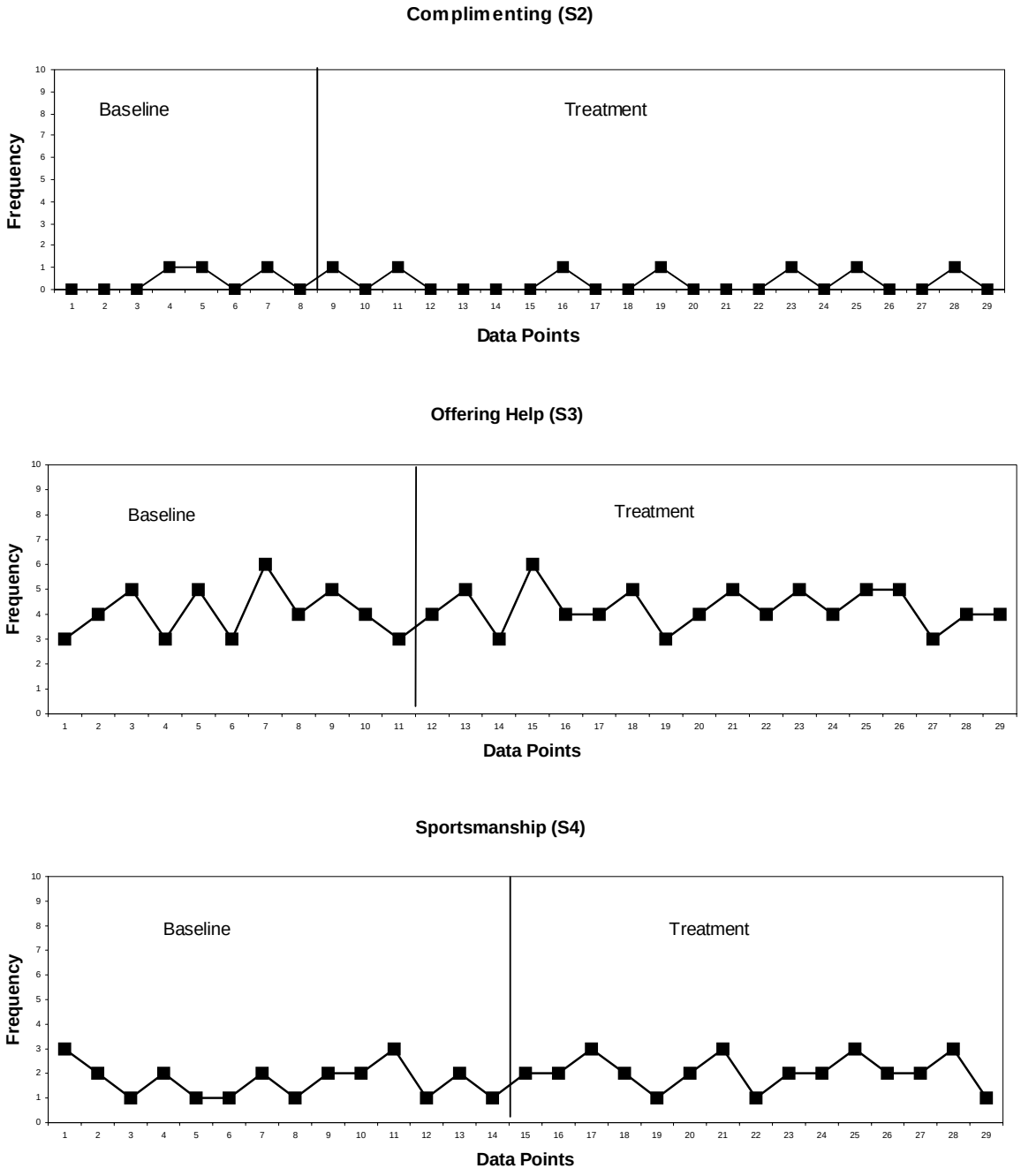
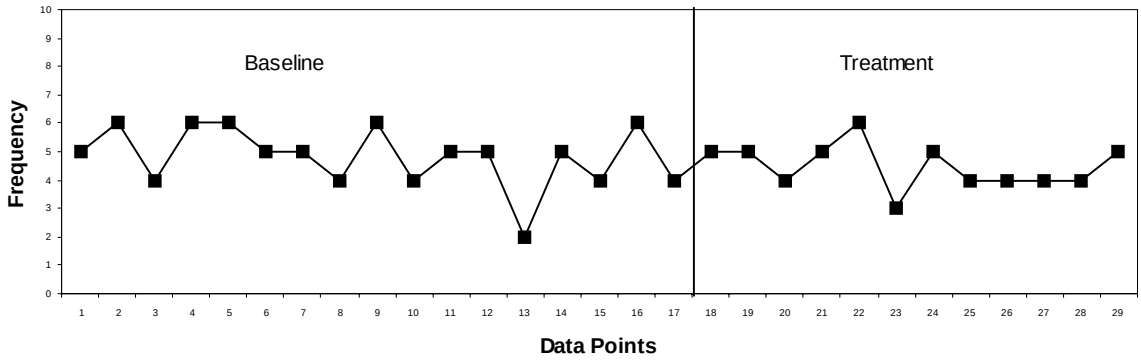


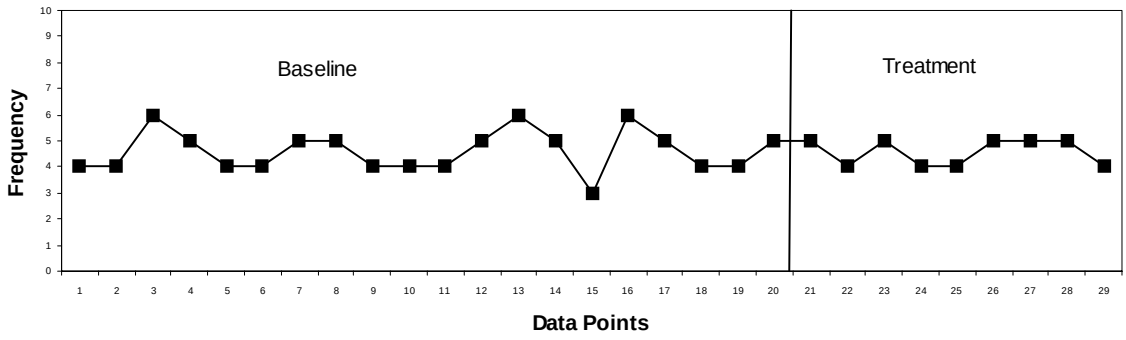
Figure 3. Frequency of target behaviors observed on the playground by Comparison Student 4.



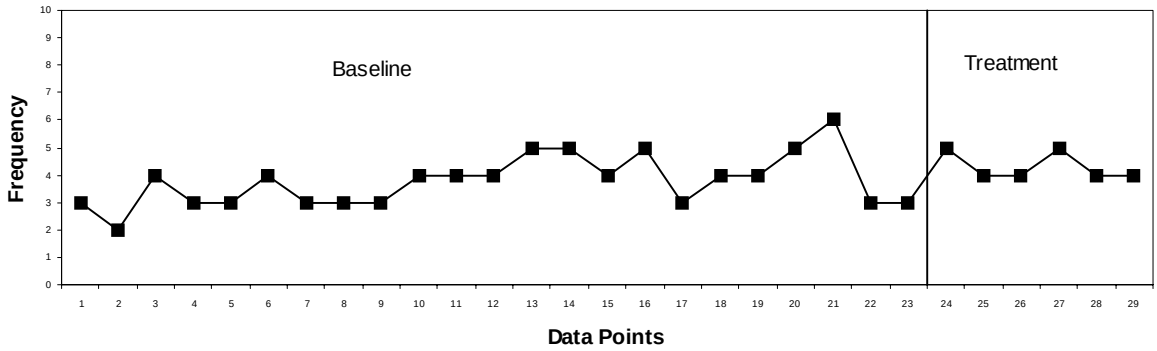
Share/Take Turns (S5)



Joining In (S6)



Reciprocation (S7)



Overall, for both baseline and treatment conditions, the four target student participants tended to exhibit very few occurrences of any target behaviors at all. In fact, the first three skills taught (complimenting, offering help, and sportsmanship) were not exhibited at all by Students 1, 2, and 3. Table 8 shows the pre-and post-treatment mean scores for all students and Figure 4 shows the frequency of target behaviors for Student 1. As mentioned above, the skills of complimenting, offering help, and sportsmanship were not observed during baseline or during the treatment phase. The target behaviors of joining in and reciprocation were observed to be consistent during baseline and treatment, indicating no significant increase following treatment. However, Student 1 did demonstrate the target behavior of sharing following treatment (M=.5), despite not exhibiting that behavior during baseline (M=0).

Therefore, the increase of greater than 80% meets the predetermined criteria for a significant positive change in that behavior following treatment. However, by the end of treatment, he was back to zero, therefore this change was not meaningful.

Figure 5 shows the frequency of target behaviors of Student 2. Again, this student did not exhibit the target behaviors of complimenting, offering help, or sportsmanship during baseline or during the treatment phases. For the target behavior of sharing, Student 2 seemed to exhibit this behavior less during the treatment phase than during baseline. Student 2 was observed to share one time during more than half of the baseline data points. However, during treatment, Student 2 was observed to share once during two data points. It should be noted that these two occasions did occur following the introduction of

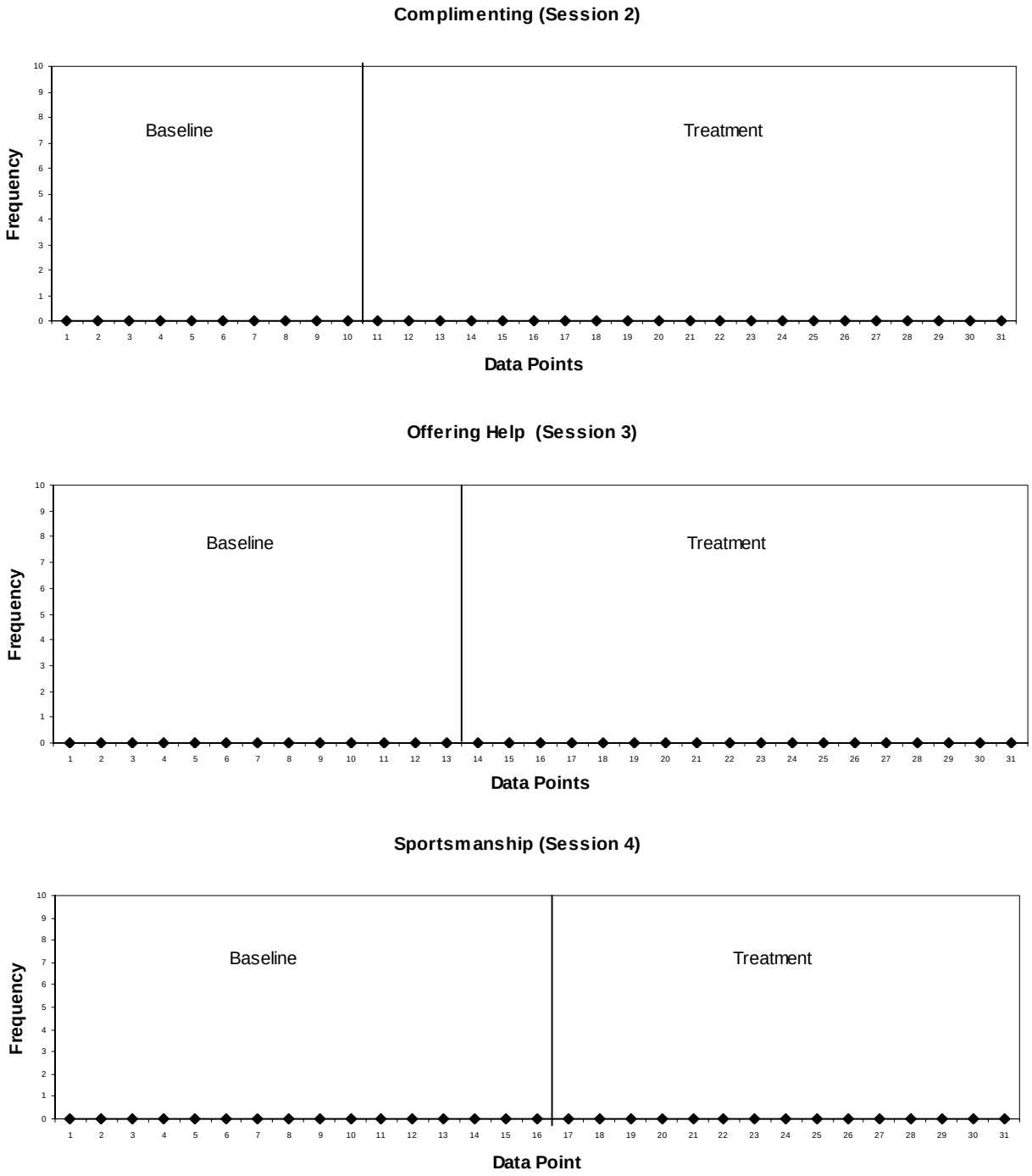
Table 8

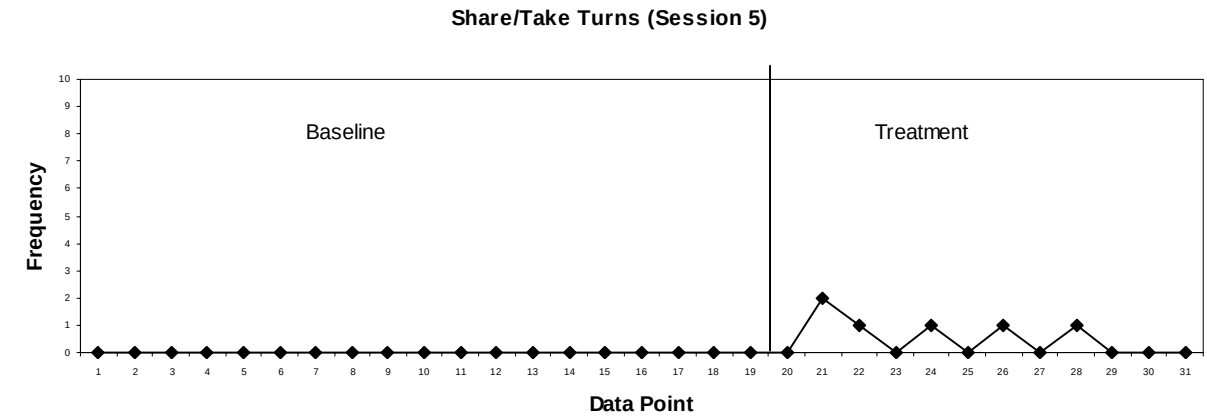
Pre- and Post-Treatment Treatment Behavioral Observation Data Means for Target and Comparison Students.

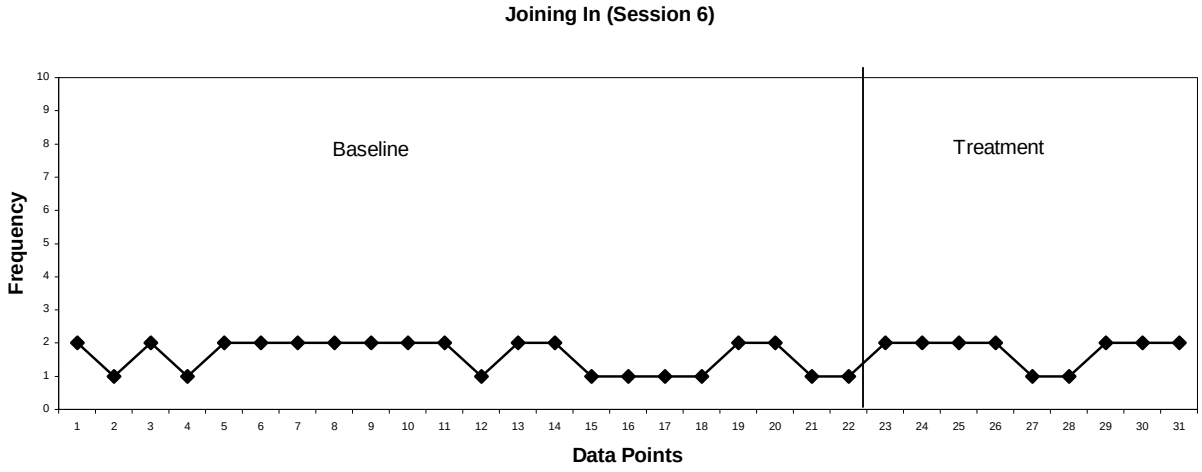
	Complimenting Pre/Post	Offering Help Pre/Post	Sportmanship Pre/Post	Sharing Pre/Post	Joining In Pre/Post	Reciprocation Pre/Post
T1	0/0	0/0	0/0	0/0.50	1.59/1.78	1.28/1.33
T2	0/0	0/0	0/0	0.21/0.17	0.59/0.78	1.00/1.00
T3	0/0	0/0	0/0	0.37/0.67	0.32/0.33	0.84/1.83
T4	0/0	0.09/1.16	0.14/0.20	2.0/1.75	1.85/2.33	1.43/2.00
C1	0.40/0.33	4.62/4.67	2.75/2.73	5.21/4.67	4.63/4.44	5.08/4.67
C2/3	0.10/0.19	2.38/2.89	2.56/3.00	6.00/6.42	5.09/5.56	4.64/4.67
C4	.38/.33	4.09/4.28	1.71/2.07	4.82/4.50	4.60/4.56	3.43/3.67

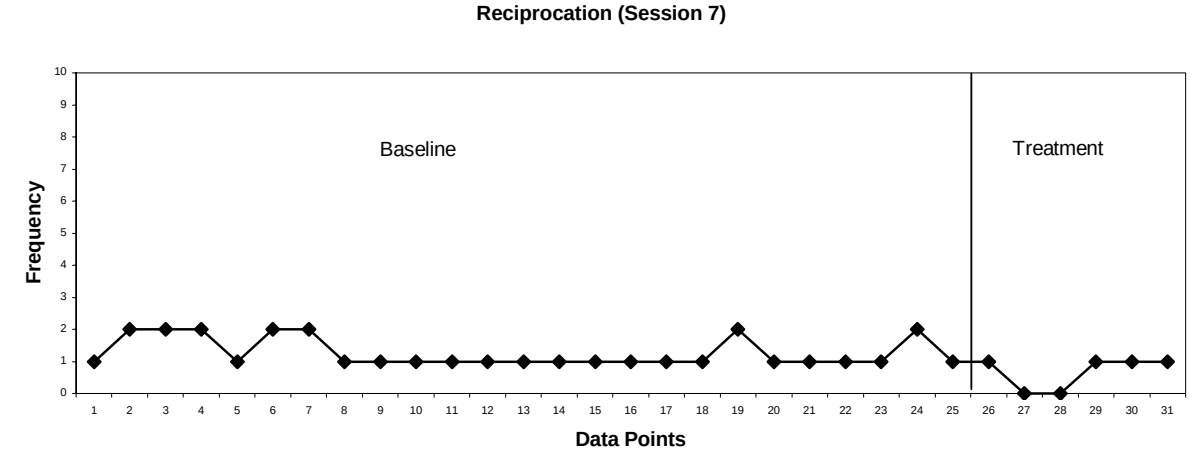
NOTE. T=Target Student; C=Comparison Student.

Figure 4. Student 1 frequency of target behaviors in the playground setting during baseline and treatment phases of social skills training.



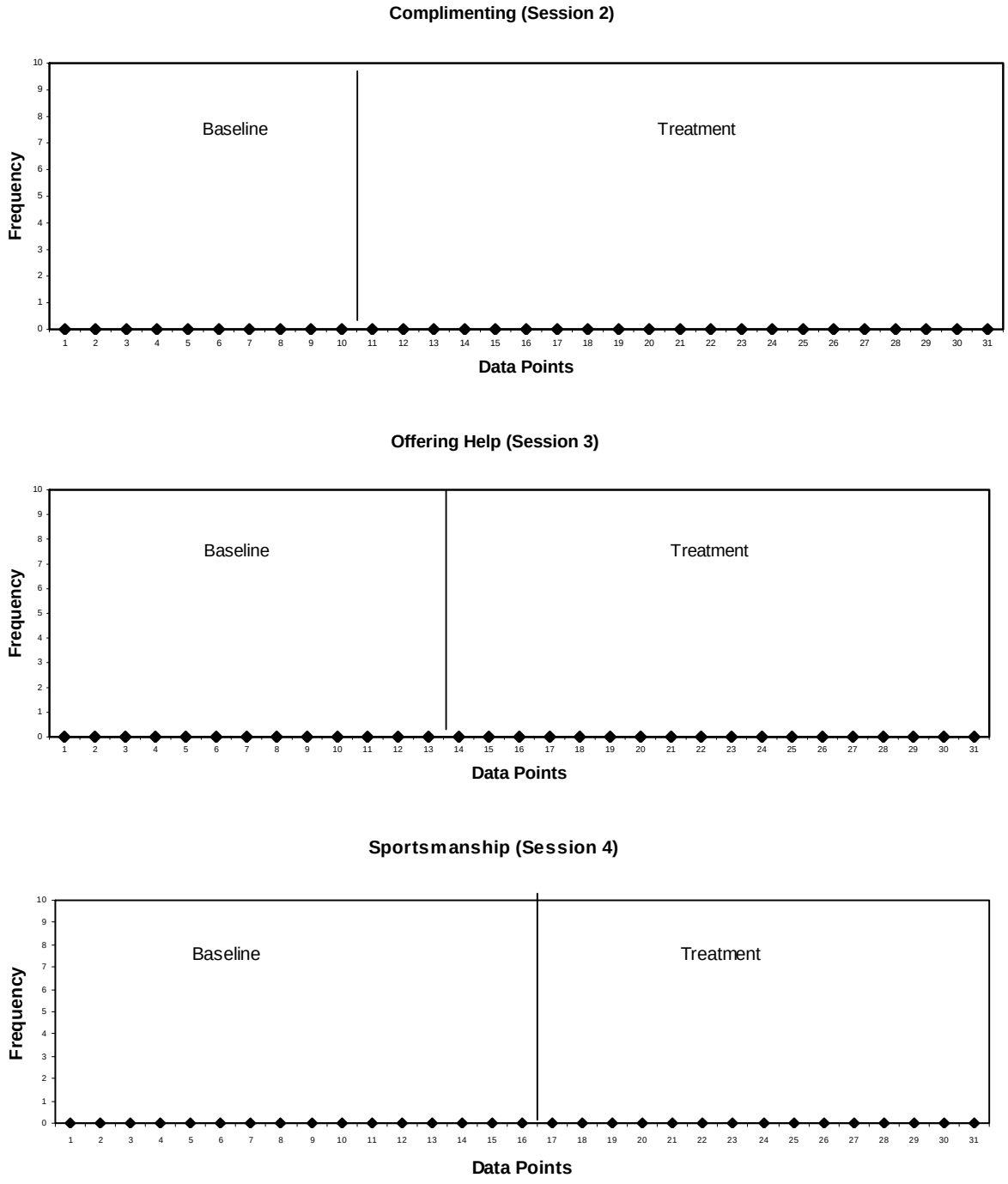


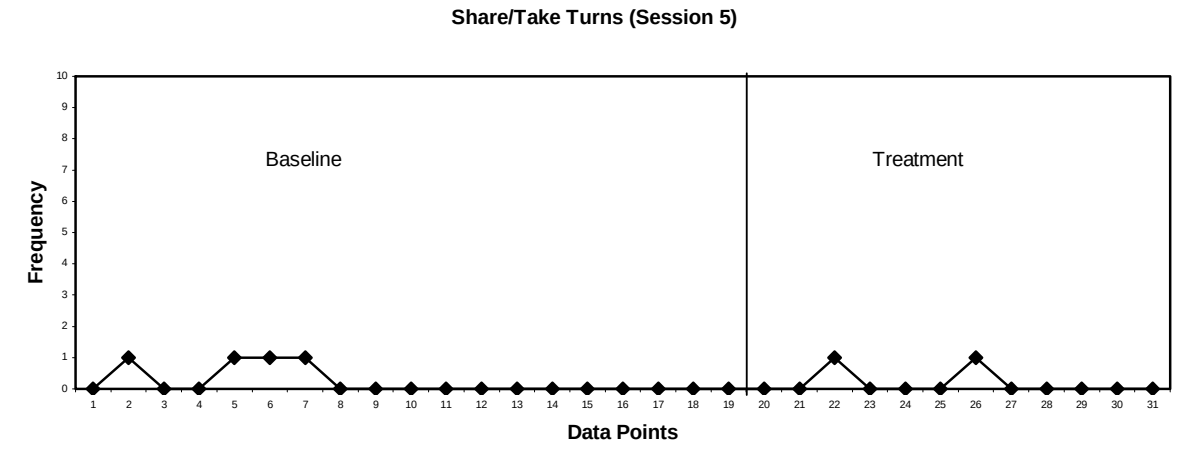


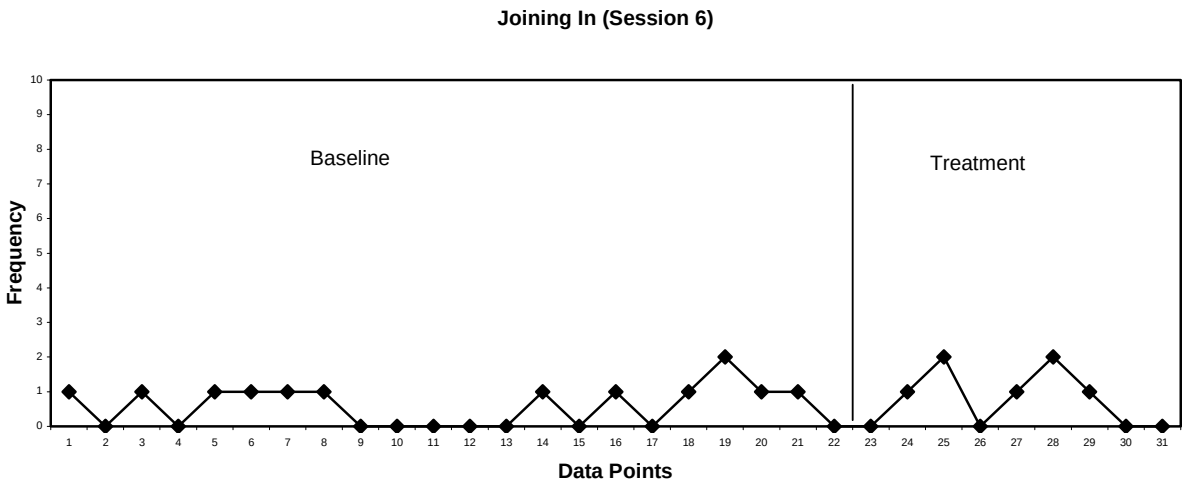


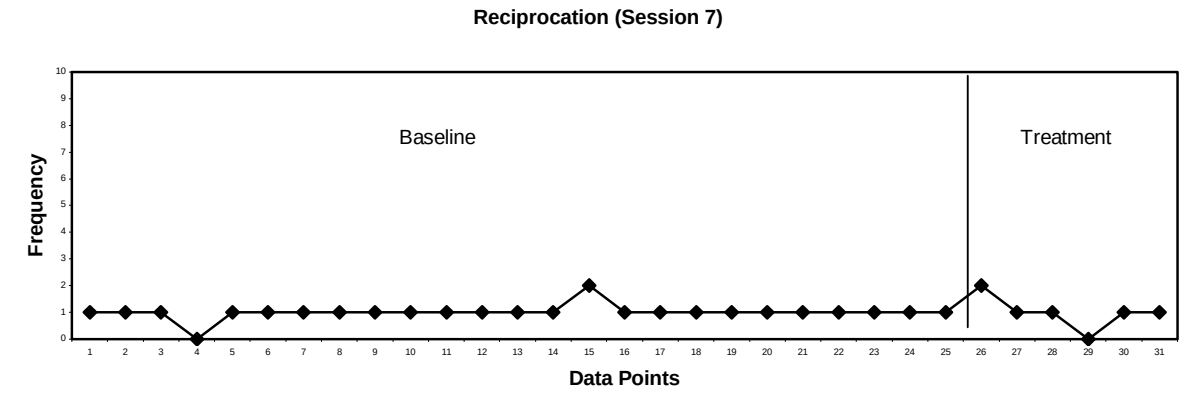
Note. The first seven data points were collected on consecutive school days and the remaining data points were collected three times per week.

Figure 5. Student 2 frequency of target behaviors in the playground setting during baseline and treatment phases of social skills training.







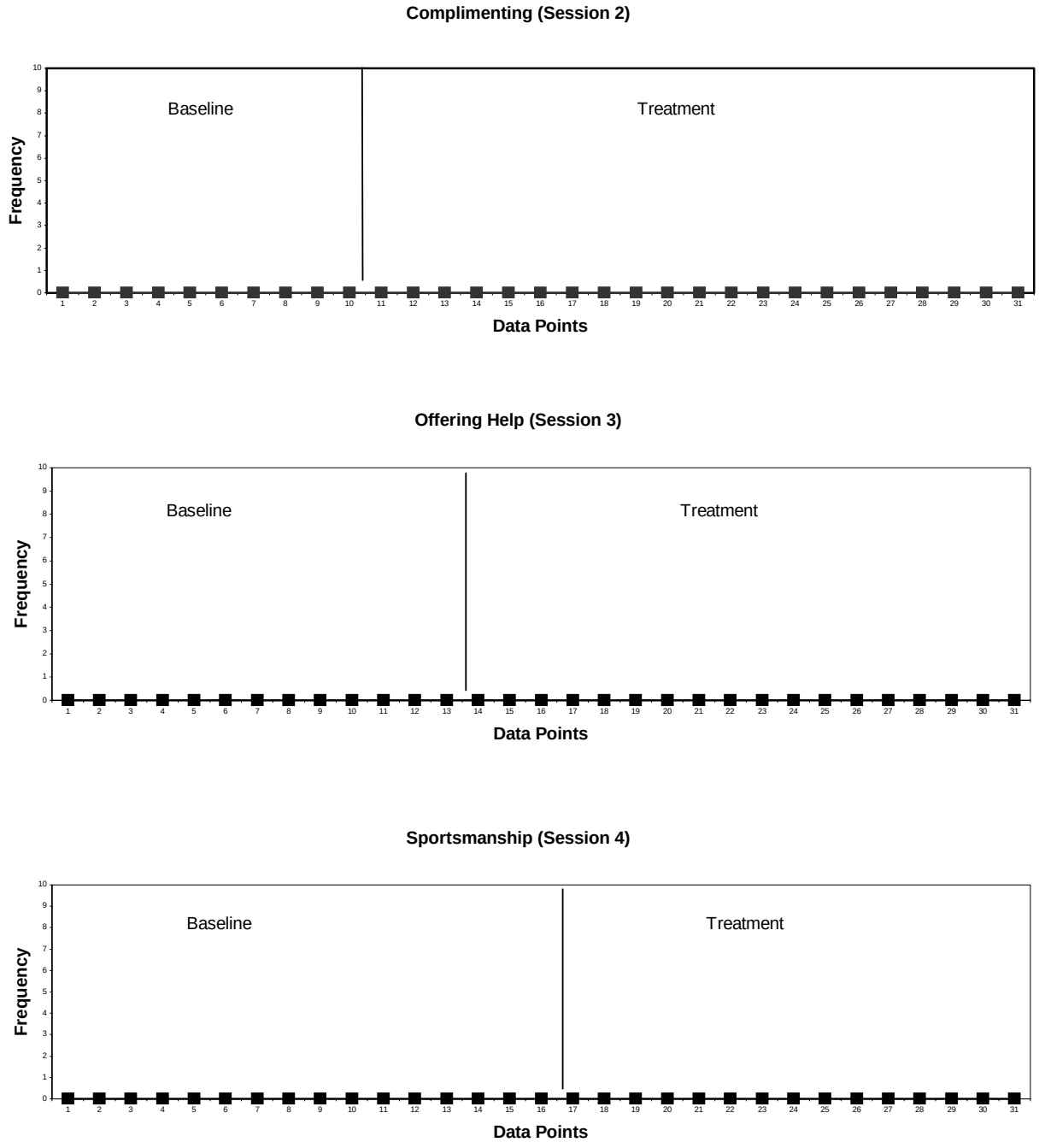


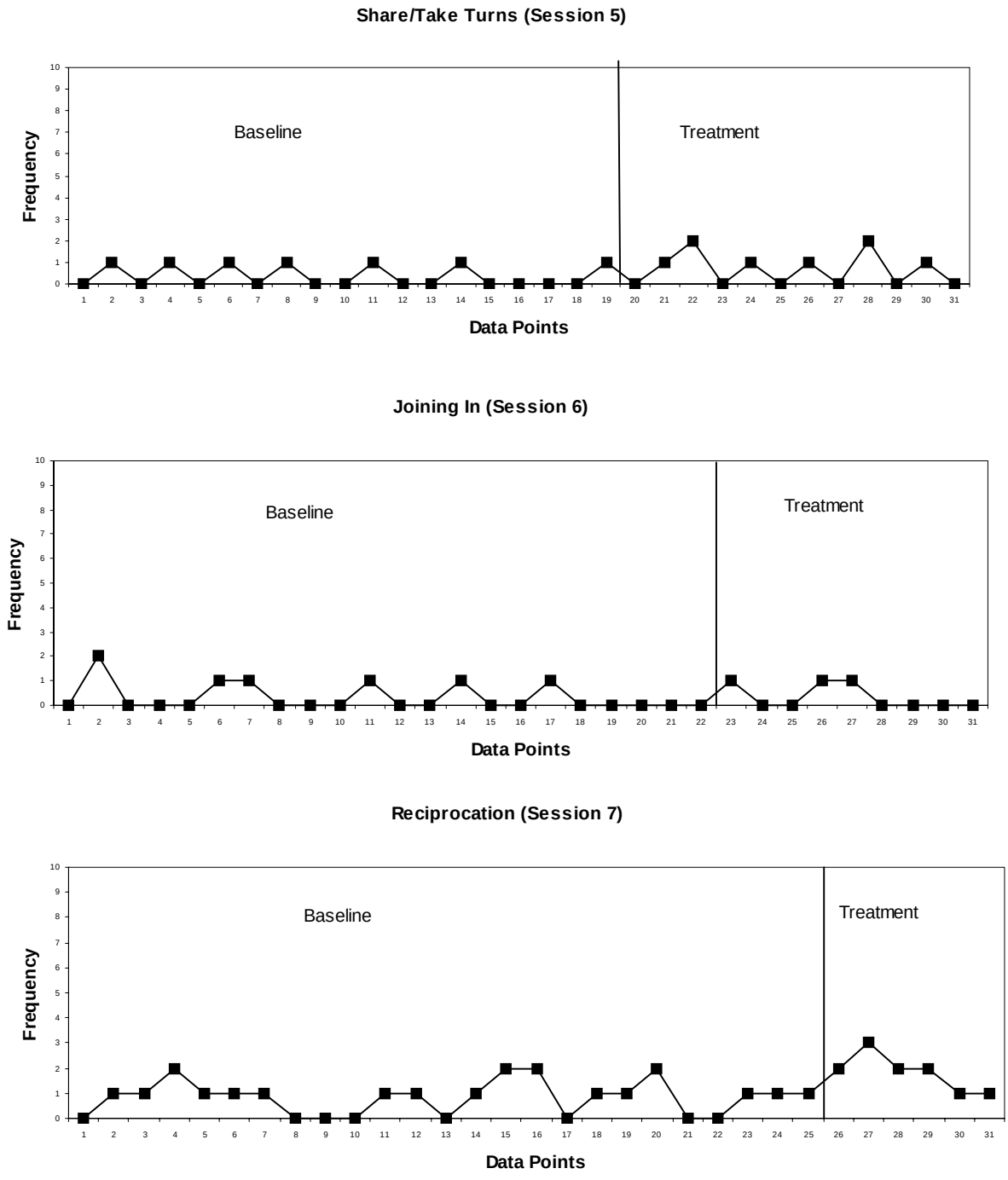
Note. The first seven data points were collected on consecutive school days and the remaining data points were collected three times per week.

this skill during group. No significant change in frequency of joining in or reciprocation was observed. The frequency of target behaviors exhibited by Student 3 is shown in Figure 6. As with Students 1 and 2, the first three skills introduced during treatment were never observed during baseline or following treatment. The target behaviors of sharing and joining in were observed to remain consistent from baseline through treatment, indicating no significant change following treatment. However, the target behavior of reciprocation increased from baseline (M=.84) to treatment (M=1.83). This is an increase of greater than 80% over baseline indicating a significant positive change based on the predetermined criteria.

The frequency of target behaviors exhibited by Student 4 is shown in Figure 7. As mentioned above, this student was absent on the last two days of baseline data collection, therefore only five data points could be collected on this student prior to the first group session. The target behavior of complimenting was not exhibited at all by Student 4. The target behaviors of offering help and sportsmanship were not exhibited at all during baseline but were exhibited on a few occasions following treatment. However, this increase did not meet the predetermined criteria for a significant positive change in these behaviors. The target behaviors of sharing, joining in and reciprocation remained consistent during baseline and following treatment. Therefore, Student 4 did not demonstrate a significant behavioral change following treatment.

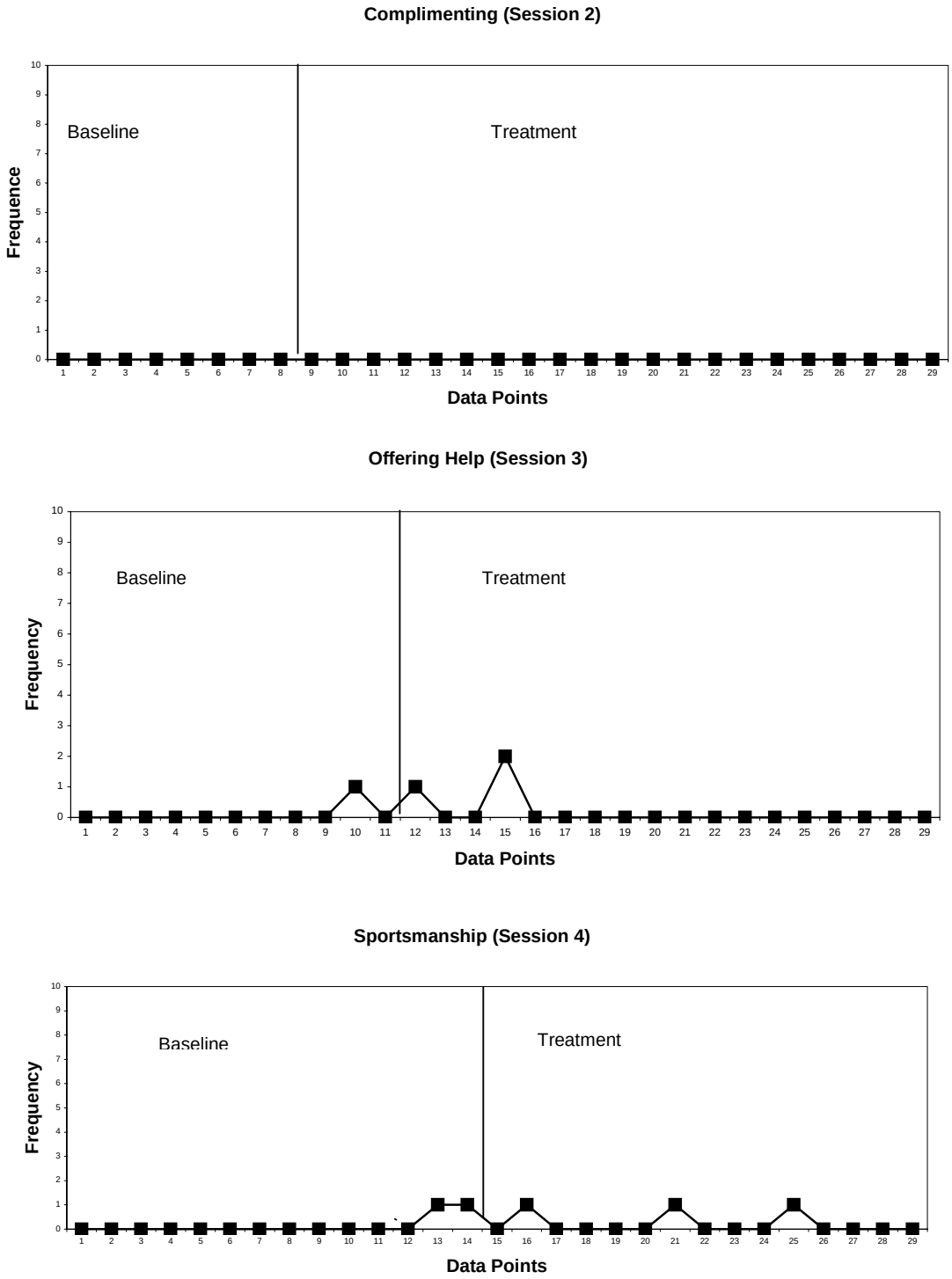
Figure 6. Student 3 frequency of target behaviors in the playground setting during baseline and treatment phases of social skills training.

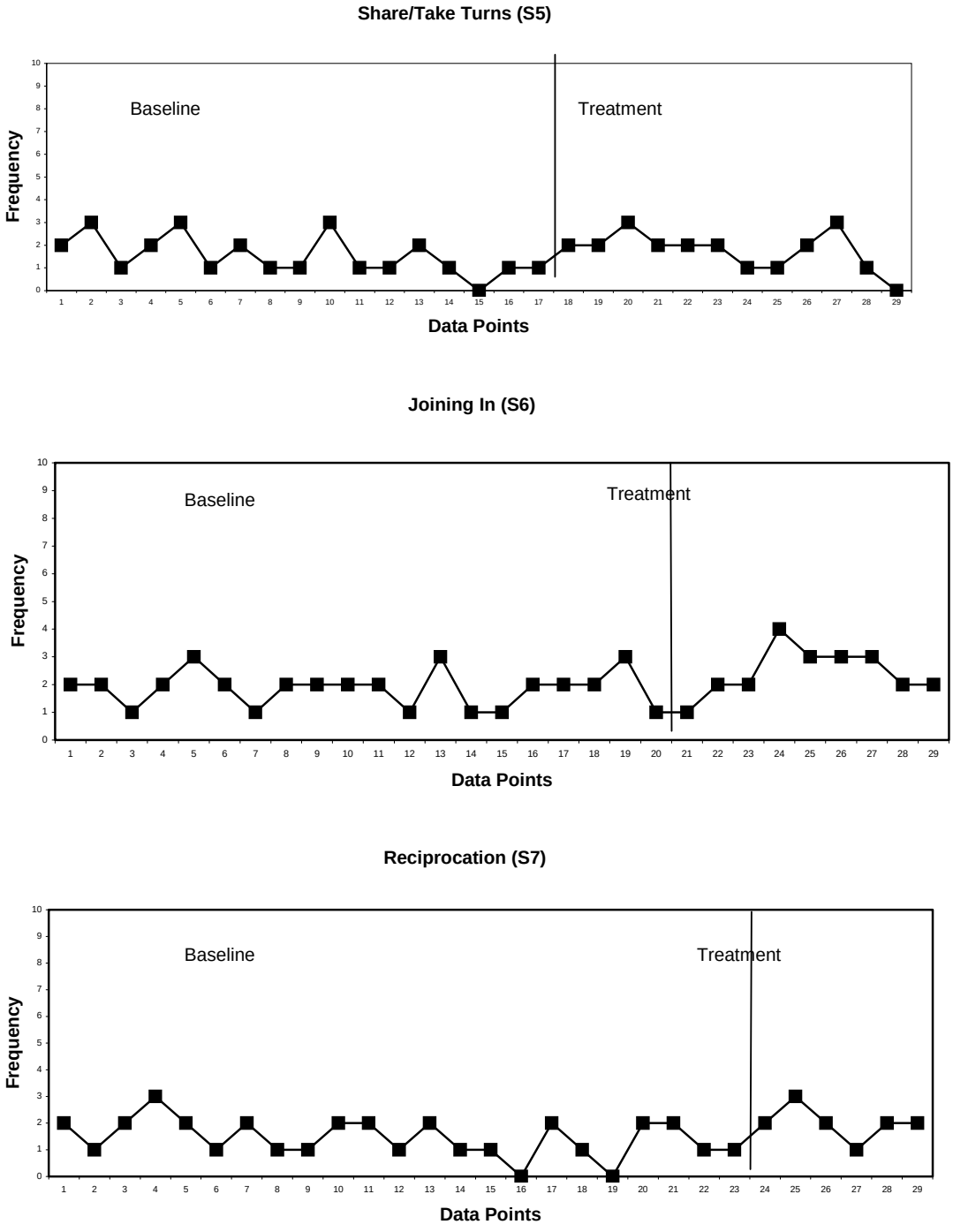




Note. The first seven data points were collected on consecutive school days and the remaining data points were collected three times per week.

Figure 7. Student 4 frequency of target behaviors in the playground setting during baseline and treatment phases of social skills training.





Note. The first five data points were collected on consecutive school days and the remaining data points were collected three times per week.

Chapter V

Discussion

The purpose of this study was to examine a school-based social skills training program for children with ADHD. The results of this investigation will be discussed below in terms of the research questions that this study proposed to address.

Did teacher and parent perceptions of the child's social competence change by the end of the training cycle?

Overall, there was some evidence on teacher ratings of the Social Skills Rating System of improved social skills functioning for students 2, 3, and 4. Teachers perceived improvement for each of these students' social skills functioning as measured by the Social Skills scale. Although the improvement seen did not indicate "normalized" social functioning, the fact that some improvement was found might suggest that the training had produced the intended effect.

Other researchers have documented improvement in the social behavior of children with ADHD following social skills training using behavior ratings scales (Pelham et al., 1988; Sheridan et al., 1996; Frankel et al., 1997; MTA Cooperative Group, 1999). Therefore, the present study is consistent with other research in this area in that rating scales were used to address the effects of social skill training. However, as will be discussed below, the observational data did not indicate significant improvement following treatment.

In contrast to the teacher ratings, parent ratings of their children's social behaviors showed no change. The lack of improved scores on rating scales completed by parents may be due to the fact that this training program focused on school social behaviors, specifically playground behaviors. Parents did not have the opportunity to observe their child's behaviors in the school setting. It is also hypothesized that parents may not have had the chance to observe their child's behaviors during interactions outside of the school setting. However, this measure was included to document possible generalization of skills taught at school to the home setting; therefore these data are informative in that they indicate that the social behaviors did not generalize to the home setting.

Did teacher and parent perceptions of the child's ADHD symptoms change by the end of the training cycle?

No change was found on the ADHD Ratings Scale-IV based upon either teacher or parent report. This may be because the focus of the intervention was on social behaviors and not specifically on the symptoms of ADHD. That is, the targeted skills chosen for the training sessions were social skills. Since the core symptoms of ADHD do not include social skills, it is not surprising that the ADHD Rating Scale-IV showed no change for parents or for teachers. This measure was included as an indicator of generalization of training across skills; results based on this scale indicate no such generalization occurred. Most of the studies examining social skills training did not look specifically at ADHD symptoms. The MTA Cooperative Group (1999) study did include a measure of ADHD symptoms. The results of that study indicated that all research groups showed sizable reductions in ADHD symptoms over time. For most ADHD

symptoms, the combination treatment (medication and behavioral interventions) and the medication management groups showed greater improvement than the intensive behavior therapy group and the community care group. It should be noted that the social skills interventions in the MTA study lasted for a minimum of 8 weeks.

An interesting note is the finding that even on medication to manage their ADHD symptoms, all students' teachers reported significant ADHD symptoms in the school setting while parents reported few in the home setting. These findings raise questions regarding the efficacy of medication management for the symptoms of ADHD in these participants. These results warrant further investigation of the use of medication for these specific students.

Did skills learned in the social skills training group generalize to the school setting?

Significant behavior changes were not apparent when examining the behavioral observation data for the playground setting. That is, there is no evidence from this study that social skills training improved the targeted social behaviors of children with ADHD. This pattern of results was similar to those reported by Sheridan et al. (1996). In that study, Sheridan indicated that a possible reason for these results was that "the social difficulties of children with ADHD are quite intractable" (p.54).

Although the lack of change in targeted behaviors likely represents the failure of the treatment to produce change for this population of students, another hypothesis is that the observation tool designed for this study was not broad or sensitive enough to assess changes in these behaviors. That is, perhaps social behaviors are difficult to identify in the narrow fashion of behavioral observations. When examining only the results of the

naturalistic observational data as presented in graphic form, one might conclude that the target students were not engaged in any interactions with their peers or even participating in the activities at all. This was not the case. The target students actively engaging in playground activities and interacting with their peers, but their behaviors were not those included on the observational system used in this study. For example, when looking at the skill of sharing/taking turns, the data might appear to suggest that the students were not participating in the activity. On the contrary, they were participating. Rather than taking turns as instructed by their teacher, the target students often went out of turn, took the ball away from other students, and engage in other inappropriate behaviors. Therefore, they were engaged in the activities but were not demonstrating the prosocial skills being observed for data collection in this study.

Since social behaviors are very complex, social behavioral change may be detected more easily through broader measures of behavior such as behavior rating scales. Although behavior rating scales represent the rater's "perception" of the child's behavior, these measures may be appropriate for assessing change in social behavior because certain social skills are not discrete behaviors that can be included on a behavioral observation form. The few studies which report positive outcomes of treatment for social problems in children with ADHD (Pelham et al., 1988; Frankel et al., 1997) used behavior ratings scales as their dependent measure of choice.

Finally, it is hypothesized that perhaps the observational system used in this study was not sufficient to capture treatment effects. This study used a frequency count procedure whereby each discrete occurrence of the target behaviors was counted. Perhaps

a broader measure of observed social behavior would have produced different results. Abikoff et al. (2004) used the Social Interaction Observation Code (Revised) during observations of children with ADHD during physical education. This assessment instrument records spontaneously initiated and reactive positive, negative, and neutral social behaviors. However, the reader is reminded that this measure did not reveal positive outcomes for social skills training in that study.

Another aspect to consider when analyzing social skills training programs is the issue of skill versus performance deficits. As discussed in the literature review, studies have shown no measurable difference between the prosocial skills of children with ADHD as compared to children without this disorder (Buhrmester et al. 1992; Hinshaw et al. 1989). Therefore, it is very likely that children with ADHD already know the prosocial behaviors but do not use them, or perform them, when they should. Determining whether the social problems of children with ADHD are due to skill or performance deficits is important since the interventions used for each are different. When the problem is due to skill deficits, remediation involves teaching strategies such as modeling, coaching, and direct instruction. However, when the problem is due to performance deficits the intervention should include features such as prompting, shaping and direct reinforcement of social behaviors. Gresham et al. (2004) discussed the fact that many commercially available social skills programs assume that all participants have skill deficits. These programs seem to ignore the possibility that social skills deficits may result from lack of reinforcement for appropriate social behavior rather than lack of knowledge or skills. This possibility was considered when developing this social skills

program by planning for generalization in several ways, which are discussed below. However, it is hypothesized that additional prompting and cueing of the skills taught by all individuals in the students' environment may have resulted in the participants performing the skills they learned.

Contributions of this Study

Despite the fact that social skills training is commonly used in schools, very little research has examined its effectiveness. In addition to simply adding to the research base on social skills training, this social skills training program was developed with specific attention given to the limitations found in previous research studies. Every effort was made to improve upon and take into account limitations of prior social skills research studies.

Naturalistic Observations. As discussed in Chapters 1 and 2, most research into social skills interventions did not use a direct measure of social behavior. Typically, outcome measures used were in the form of teacher and/or parent behavioral rating scales. In some cases, observations were conducted, but in analogue or contrived settings rather than in naturally occurring social settings. This study attempted to improve upon prior research by including direct observations in the child's actual playground setting.

Behaviors linked to setting. All other studies reviewed failed to show a direct link between the skills being taught and the setting where the skills were expected to be used. In the present study, the skills taught during the training sessions were linked directly to the setting where the observations took place. That is, the skills taught were those most likely to be used in the school setting. Similarly, the behaviors observed for documenting

generalization were those specific skills taught during the training sessions.

Peer Training. No other studies reviewed included a peer training component. The present study not only administered social skills training in the small group setting with the targeted students, but training also was given to the target students' entire class. The training focused not only on the children with the social skills deficits, but also on their peers who were taught ways to encourage and reinforce the use of the skills taught.

Planning for Generalization. Any intervention is only as good as its ability to produce generalization to settings outside of the treatment setting. It is for this reason that this study focused on planning for and promoting generalization of social skills trained to the natural setting. Stokes and Baer (1977) identified nine procedures for assessing and promoting generalization. These procedures were carefully considered when developing the social skills program used in this study. Effort was made to include naturally maintaining reinforcement contingencies in the environment by first focusing on social skills themselves, which when properly executed, should elicit natural reinforcement by improving social interactions with peers. Specific skills taught were chosen because of their likely use in the school playground setting. Role-play examples and homework assignments were targeted toward the school playground setting. Further, the classroom training focused not only on teaching the skills to the target students' peers, but also on teaching all students how to reinforce the use of these skills through role-play and feedback exercises. Therefore, attention was given to planning for generalization by setting up circumstances whereby the students' environment would provide maintaining reinforcement.

A second procedure for promoting generalization of treatment effects which was considered in this study was to train sufficient exemplars. The social skills training itself provided varied and numerous examples of the target behavior. Through demonstration, role plays and feedback, both in small group and classroom training, students were exposed to many exemplars of the behavior expected to be generalized.

A third procedure used in this study was to program common stimuli. As described above, the skills and examples used for demonstration and role-plays were chosen because of their similarity to behaviors expected in the playground setting. Most of the role-plays focused on specific playground situations that the students were likely to encounter each day.

Finally, every attempt was made to train to generalize. In this study, this was done through homework assignments. Each week, the students were expected to use the skills taught and report back the following week about their experiences. Completion of homework was rewarded with prizes and verbal praise from the trainer. However, students were rewarded for completion of homework assignments based on their own report. There was no other measure of whether or not the students' actually completed the assignment. Therefore, it is possible that they did not actually complete the assignments.

Limitations

A number of limitations are present within this study. First, several components of this study may have limited the generalizability of the results. One limitation may have been how participants were selected. Since the participants were chosen from only one school, they did not represent the entire population of children with ADHD. Second,

since the school was chosen due to convenience, this may also limit generalization to other school settings. Third, a single-subject design was used with only four children in this study also limiting the generalizability of the results.

Second, the frequency and duration of the observations may not have allowed for all behaviors to be observed. It may be that the skills were not used during the 30 minute observation periods that the children were observed, but were used at other times. By including behavior ratings scales, an attempt was made to minimize this limitation.

Third, it may be that the length of the intervention was not sufficient to see change large enough to be measured. Sheridan et al. (1996) suggested that the training used in that study (10 weeks long) possibly was too short to produce long-range effects. The present study also used brief training (8 weeks), as is often the case with interventions in the school setting. Typically, when students are identified in the school setting as requiring a long-term intervention, they are referred out to private or public mental health agencies for treatment. Most school psychologists' job descriptions indicate that they should, when appropriate, engage in brief therapy with students. However, long-term therapy should be referred to outside agencies according to procedures. When students are involved in special education programs, such as those in Sasso et al. (1990), long-term treatment can be provided through their self-contained classrooms and listed in their individual education plans. However, the overwhelming majority of students with ADHD do not receive special education services and only have access to typical guidance and school psychological services offered to all students. Therefore, the school setting may be limited in its ability to provide the comprehensive

treatment necessary to produce change in performance and generalization of social skills in students with ADHD.

There may have been other factors which impacted teacher perceptions of the students' social behaviors as they completed the behavior rating scales. It is possible that since the teachers knew the students were participating in a research study they were biased to see improvement following training. Also, since they were invested in the educational and social development of the student as well, this may have impacted their responses to the rating scales.

Parents may not have had an opportunity to observe the student interacting with peers. Therefore, results of the parent rating scales may not reflect actual evidence of social skills behavior. Rather that the parents simply did not have an opportunity to see the child interact with his peers.

The time of year that this study was completed may have been a limitation in this study. This study took place near the end of the school year. It is possible that the students' peers already had established negative relationships with the target students and perhaps negative perceptions of their behavior. Therefore, this may have altered the peers behavior toward these students and prohibited the target students from having the opportunity to perform many of the social skills presented. For example, if the other students in the class had a history of negative interactions with the target student, this might make it more difficult for the target student to interact with them than if they had just met.

Future Research Needs

This study is one of a limited number of studies which attempted to investigate the effects of a social skills intervention package for children with ADHD. There are a number of suggestions that can be offered to further explore this line of research.

An area for further research is to study comprehensive programs that are believed to be successful. For example, one such program might be social skills training offered in schools to students in special education classes throughout the entire school year. Another possible setting might be community or private mental health clinics where social skills training is completed over the course of several months or even several years. These settings have the benefit of offering more comprehensive and/or longer courses of treatment that are often not possible in the school setting with students in general education. These external programs typically are run by full-time practitioners who do not engage in research on a day-to-day basis. By the same token, individuals who conduct research typically do not engage in this type of long-term, comprehensive therapy. Getting these two different types of practitioners together will be important in documenting the success of these programs so that others can learn from them and use them to help children in the schools.

Finally, school based social skills training intervention research should investigate the optimal setting within the school for training. That is, it needs to be determined whether typical “pull-out,” small group training with only students with social problems is the best setting for training. Or, is completing training as part of a general education guidance lesson format a better method? Since schools typically restrict the amount of

time devoted to such activities, maximizing the time given to the most effective means of training is vitally important.

Conclusion

The social problems of children with ADHD continue to be a very serious matter. School psychologists continue to grapple with what to do to help these students in the school setting. Although studies to date have produced disappointing outcomes, researchers should not shy away from this very critical problem. Instead, more research should be conducted to determine the best strategies to enhance the skills and performance in the area of social skills for students with ADHD.

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Appendices

Appendix A

THE SOCIAL SKILLS TRAINING AND BEHAVIORAL DEFINITIONS

Week #	Skill	**Behavior(s) expected to be observed**	**Behavioral Definitions**
1	Introduction		
2	Giving a Compliment	Compliments	A positive comment about another
3	Offering Help	Offering Help	Providing assistance to another or verbally offering to.
4	Sportsmanship	Sportsmanship	Words or actions indicating encouragement and/or congratulations to another member of a game or activity.
5	Sharing	Sharing	Allowing another to use his/her belongings.
6	Joining In/Initiation	Initiation	Initiation of social contact – Beginning an interactions with one or more individuals.
7	Reciprocation	Reciprocation	Responds to an attempt by another child or children to initiate a social interaction.
8	Wrapping Up		

Appendix B

Name: _____ Date: _____

Compliment	Offering Help
Sportsmanship	**Sharing**
Initiation	**Reciprocation**

Appendix C
Parent Information Letter

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

Dear Parent,

I am a doctoral candidate in the University of South Florida School Psychology Program. I am also the school psychologist at your child's school. I will be conducting a research study as part of my doctoral training at your child's school titled "The effects of a school-based social skills training package on children with ADHD: Generalization to the school setting." I would like your child to be among those to participate in this study.

The purpose of this study is to examine the effects of social skills training on children with ADHD. Participation in this study will take 45 minutes per week of your child's time. During that time your child will be taught social skills which are important to use at school. He will be taught these skills in a small group setting as well as in his classroom setting. At a different time, your child will be observed at his school for approximately one-half hour per week by me or the school guidance counselor. Observations will take place weekly for the duration of the social skills training, approximately 8 weeks. I also would like for you and your child's teacher to complete two brief behavior rating scales both before and after the training is completed. While at the school site, I would like to ask the school nurse if your child has taken his medication. Confidentiality will be maintained by concealing your child's name in reporting of results of the observations and ratings scales. The potential benefit to your child for participating in this study will be improved social skills. You will not be paid for participation in this study. Finally, there are no anticipated risks associated from your participation in this study.

Authorized research investigators, the department of Health and Human Services, and the USF Institutional Review Board may inspect your child's records as part of this research project. The results of this study may be published, but it will not include your child's name, or any other information that may identify your child.

Your permission for me to include your child in this study is voluntary. If you do not want to give permission, you or your child will not be penalized in any way. Please read the Rights of Participants in Research statement on the next page. Then fill out the form on the last page and return it to your child's school. At any time you may withdraw your child from the study by calling me at the school site prior to or during the study.

Appendix C (Continued)

If you would like more information or if you have any questions, please feel free to contact me at your child's school or by leaving me a message on my voicemail (813-273-7308). You also may speak with my research supervisor, Dr. Kathy Bradley-Klug (813-974-9486). If you have any questions about your or your child's rights as participants in this research study, you may contact a member of the Division of Research Compliance at USF at (813) 974-5638.

Thank you very much for your help. I believe this study will give us important information about children with ADHD and social skills training.
I have carefully explained to the parent the nature of the above protocol. I hereby certify that to the best of my knowledge the parent signing this consent form understands the nature, demands, risks and benefits involved in participating in this study.

Tricia Rudolph, Ed.S.	Kathy Bradley-Klug, Ph.D.
Doctoral Candidate	Dissertation Chairperson

INSTITUTIONAL APPROVAL OF STUDY AND INFORMED CONSENT

This research project/study and informed consent form were reviewed and approved by the USF Institutional Review Board for the protection of human subjects. This approval is valid until the date provided below. The board may be contacted at (813) 974-5638.

Appendix C (cont.)

KEEP THIS PAGE FOR YOU RECORDS ** KEEP THIS PAGE FOR YOUR RECORDS

Rights of Participants in Research

1. Participation is completely voluntary. No changes in your child's education will result if you decide not to have your child participate.
2. No risks or discomforts are foreseen.
3. Information about your child's performance will not be available to anyone other than you or your child's teacher. No identifying information (e.g., names of students, school personnel, school buildings, etc.) will be used for data analysis or in any written products that may result from this study.

Appendix C (cont.)

Parent Consent Form

CONSENT FOR PARTICIPATION IN A RESEARCH STUDY

Your permission for me to work with your child is voluntary. If you do not want to give permission, you or your child will not be penalized in any way. **Please check the appropriate line below, sign the form, and return it to the school**. You may also indicate that you do not want your child to participate by calling me at the school at any time prior to or during the study. Your child will not be denied any education or benefits if you choose not to participate.

By signing this form I agree that:

- I have fully read or have had read and explained to me in my native language this informed consent form describing a research project.
- I have had the opportunity to question one of the persons in charge of this research and have received satisfactory answers.
- I understand that I am being asked to allow my child to participate in research. I understand the risks and benefits and I freely give my consent to participate in the research project outlined in this form, under the conditions indicated in it.
- I have been given a signed copy of this informed consent form, which is mine to keep.

____Yes, my child **WILL** participate in the study described in this letter.

____No, my child **WILL NOT** participate in the study described in this letter.

Name of child:_____

Name of parent/guardian:_____

Signature of parent/guardian:_____

Date:_____

Appendix D
Child Assent Form

Student Informed Consent

I am interested in studying how students make friends and get along with others. You have been chosen to participate in this study. You will be part of a small group which meets weekly to learn new social skills. Your parents know about it and have agreed to allow you to participate. Please check below indicating whether or not you agree to participate in this study.

____Yes, I will participate in this study.

____No, I will not participate in this study.

Print your name:_____

Signed:_____

Date:_____

Appendix E

Social Skills Training Manual for ADHD SST Group Spring 2001

Week 2

Giving a Compliment

1. Introduce the skill and discuss why it is a good social skill and how it may help them make and keep friends.

2. Discuss how the giver and receiver of a compliment might feel (e.g., pleased, embarrassed).

3. Introduce the steps and discuss each in detail:

    1. Decide what you want to tell the other person – discuss what you may want to compliment on (e.g., appearance, behavior, an achievement, special skills).
    2. Decide how you want to say it – give several examples and non-examples of compliments.
    3. Choose a good time and place – when the receiver is not busy, when not many others are around.
    4. Give the compliment in a friendly way – make sure it is sincere and not mechanical; use appropriate body language and facial expression, and tone of voice (demonstrate).

4. Discuss situations when the skill might be used. Include P.E. as a situation and give examples. E.G., when another student makes a good play in basketball "great shot!" or "good job".

5. **Model** the skill – Show example and non-example.

6. Get the children to give **performance feedback**. Point out any additional things they might have missed.

7. Have the children participate in a **role-play**.

8. Give **homework** assignment – practice skill this week.

Appendix E (cont.)

Week 3

Offering Help to a Classmate

1. Review homework.

2. Introduce the skill and discuss why it is a good social skill and how it may help them make and keep friends.

3. Discuss how a person might feel when helping someone or being helped.

4. Introduce the steps and discuss each in detail:
    1. Decide if the person may need and want your help – Discuss how to determine if another person needs help: How does he/she look? What is he/she doing or saying? (Use P.E. examples: Is the child having trouble turning the rope for jump rope? Is the child having trouble hitting the ball?).
    2. Think of what you may do to help – Encourage them to observe the other child to decide what to do.
    3. Decide how to ask if you may help – Give examples of how to offer help (Want me to show you how? Can I help?)
    4. Ask yourself "Is this a good time to offer help? – Remind them to be sure it is OK to offer help (i.e., not during a test).
    5. Ask the person in a friendly way if you may help – Discuss body language and nonverbal communicators as well as a friendly voice that shows a friendly attitude. Emphasize not feeling hurt or offended if the person says no or asks someone else for help. Also emphasize waiting for the person to say "yes" they want help.
    6. Help the person – Discuss the importance of following through on helping.

5. Discuss situations when the skill might be used. Include P.E. as a situation and give examples. E.G., showing another child how to turn the jump rope, showing another child how to swing the bat, reminding another person of the rules of the game, etc. Get the children to give examples.

6. **Model** the skill – Show example and non-example.

7. Get the children to give **performance feedback**. Point out any additional things they might have missed.

8. Have the children participate in a **role-play**.

9. Give **homework** assignment – practice skill this week.

Appendix E (cont.)

Week 4

Showing Sportsmanship

1. Review homework.

2. Introduce the skill and discuss why it is a good social skill and how it may help them make and keep friends.

3. Discuss how a person might feel when the child shows sportsmanship.

4. Introduce the steps and discuss each in detail:

    1. Decide how you and the other person played the game – discuss evaluating one's own level of skill and an opponent's.
    2. Think of what you can honestly tell the other person or group (Emphasize sincerity), e.g., congratulations, you played a good game, you're getting a lot better at this game, good try.
    3. Act out your best choice – discuss body language and nonverbal communicators that show a friendly, sincere attitude.
    4. Help the other person put the game or materials away.

5. Discuss situations when the skill might be used. Include P.E. as a situation and give examples. E.G., the child loses at a game or wins at a game; the child does well at an activity (hitting the ball at P.E.) or has trouble. Get the children to give examples.

6. **Model** the skill – Show example and non-example.

7. Get the children to give **performance feedback**. Point out any additional things they might have missed.

8. Have the children participate in a **role-play**.

9. Give **homework** assignment – practice skill this week.

Appendix E (cont.)

Week 5

Sharing

1. Review homework.

2. Introduce the skill and discuss why it is a good social skill and how it may help them make and keep friends.

3. Discuss how a person might feel when they share with them.

4. Introduce the steps and discuss each in detail:

    1. Decide if you want to share something – discuss how the other person might feel if the students does or does not share.
    2. Decide whom you want to share with – discuss how others may feel left out.
    3. Choose a good time and place – i.e., when another person needs or might enjoy using something of his.
    4. Offer to share in a friendly and sincere way – remember body language and facial expressions again.

5. Discuss situations when the skill might be used. Include P.E. as a situation and give examples. E.G., jump ropes, balls, etc.

6. **Model** the skill – Show example and non-example.

7. Get the children to give **performance feedback**. Point out any additional things they might have missed.

8. Have the children participate in a **role-play**.

9. Give **homework** assignment – practice skill this week.

Appendix E (cont.)

Week 6

Joining In

1. Review homework.

2. Introduce the skill and discuss why it is a good social skill and how it may help them make and keep friends.

3. Discuss how a person might feel when they join in.

4. Introduce the steps and discuss each in detail:

    5. Decide if you want to join in – do they really want to participate or just disrupt the group?.
    6. Decide what to say –e.g., "can one more play?" "would it be okay with you if I played too?".
    7. Choose a good time – e.g., during a break in the activity or before it begins.
    8. Say it in a friendly way – remember body language and facial expressions again.

5. Discuss situations when the skill might be used. Include P.E. as a situation and give examples. E.G., jumping rope, basket ball game, etc.

6. **Model** the skill – Show example and non-example.

7. Get the children to give **performance feedback**. Point out any additional things they might have missed.

8. Have the children participate in a **role-play**.

9. Give **homework** assignment – practice skill this week.

Appendix E (cont.)

Week 7

Reciprocation

1. Review homework.

2. Introduce the skill and discuss why it is a good social skill and how it may help them make and keep friends.

3. Discuss how a person might feel when they reciprocate a social interaction.

4. Introduce the steps and discuss each in detail:

    1. Decide if you want to join in – do they really want to participate or just disrupt the group?.
    2. Decide what to say –e.g., "yes, I would like to play?" "no thanks, I am working on something else right now".
    3. Say it in a friendly way – remember body language and facial expressions again.

5. Discuss situations when the skill might be used. Include P.E. as a situation and give examples. E.G., another student asks if they want to jump rope, join in a basket ball game, etc.

6. **Model** the skill – Show example and non-example.

7. Get the children to give **performance feedback**. Point out any additional things they might have missed.

8. Have the children participate in a **role-play**.

9. Give **homework** assignment – practice skill this week.

About the Author

Tricia Rudolph is a native of Chalmette, Louisiana, a suburb of New Orleans. She earned a Bachelor of Arts degree in Psychology and a Master of Arts degree in General/Experimental Psychology from Southeastern Louisiana, located in Hammond, Louisiana. Following her training there, she was employed at Therapy and Child Assessment Group, an outpatient clinic in Baton Rouge, Louisiana. There she worked with children and adolescents with ADHD and related academic and behavioral disorders. She then entered the University of South Florida School Psychology program, where she is currently a doctoral candidate. She also currently is employed by the School District of Hillsborough County in Tampa, Florida as a school psychologist at an inner city middle school. Tricia is married and has three children.