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Pepperdine University
Graduate School of Education and Psychology

THE SOCIAL GOALS OF BOYS WITH ADHD: EFFECT OF TASK VARIABLES
AND THEIR RELATIONSHIP WITH PEER STATUS

A clinical dissertation submitted in partial satisfaction
of the requirements for the degree of
Doctor of Psychology

by

Michal Mayo-Dvir

November, 2009

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This clinical dissertation, written by

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under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

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DEDICATION

This dissertation is dedicated with love to my deeply cherished core family and to my precious extended human race family to whom I graciously wish internal, interpersonal, and international peace.

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I would like to express my sincere gratitude to several very important people without whom this dissertation would not have been completed. All of these special individuals have not only supported me through this particular professional journey but have also served a pivotal role in my life and have contributed tremendously to my personal and professional development and to the person, mother, and professional I am today. For that I will be eternally grateful.

To begin, I would like to extend my gratitude to the members of my dissertation committee for their unwavering support and commitment to this project. My deepest thanks to Dr. Drew Erhardt, my dissertation chairperson and academic advisor, for patiently guiding me through this very long journey. I not only respect the brilliant professional you are but admire and value your kind nature and pleasant personality. You have made this challenging process not only doable but also enjoyable and satisfying. My honest appreciation is therefore extended for all that you have done and all that you are. Special thanks go to Dr. Tony Johnson, a very dear and unique person for whom I have a special place in my heart. I am so happy that you have been sent my way and so honored to have been mentored by you. Your professional work has inspired me as a clinician and your words of encouragement have helped to keep me motivated and excited about seeing this project to its completion. In particular, I'm genuinely grateful to you for truly believing in me and for helping me develop independence and confidence in my clinical skills and in myself as a worthy human being. Thank you from the bottom of my heart to Dr. Anat Cohen who has consistently been there for me since the beginning of my doctoral studies and throughout my training journey as a psychotherapist. Your incredibly

insightful feedback has been very helpful and has greatly impacted my development as a clinician and shaped the person and professional I've become. Moreover, your support and confidence in my abilities as well as your words of wisdom and encouragement have been of tremendous value to me and greatly contributed to the completion of this project. I'm deeply grateful for the person and professional that you are and feel very blessed to have been your supervisee. In addition, I'm greatly indebted to Dr. Fred Frankel, the Principal Investigator of the research project from which the data for my dissertation have been drawn, for allowing me to be a part of this research project and for giving me permission to use the data drawn from it for my dissertation.

Most importantly, I wish to express my infinite gratitude and appreciation to my beloved family members whose belief in me has inspired and motivated me to see this project to its completion. I'm immensely grateful for having such a loving family and feel forever indebted for the emotional and physical support I was so blessed to receive throughout my life and particularly during my professional journey. First and for most I'm thankful beyond measures to my mother who has always been there for me and has sacrificed so much for my personal success and happiness. Your phenomenal wisdom, endless kindness, and un-conditional love have shaped me as a person, a mother, and a professional more than anything else in my life. My darling husband is another very important person who deserves my immense gratitude for being the unbelievable companion, father, son in law, and person that he is. Amir, I'm so grateful to you for making my life complete and specifically for devotedly accompanying and supporting me in my academic and professional path. Finally, I would like to extend my deepest gratitude to my amazing children, Itay and Adi who are the light and the love of my life.

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The list of thanks is incomplete without acknowledging the important role that my spiritual guides have had in my life. I am immensely grateful for being so in love with life and so passionate about what I do. These gifts and the gift of eternal learning which you have given me are endlessly and greatly appreciated.

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ABSTRACT

Peer rejection is a core difficulty experienced by children with attention deficit hyperactivity disorder (ADHD) that is associated with both concurrent and long-term maladjustment. The social goals endorsed by children with ADHD, have been proposed as being among the factors contributing to their relational difficulties. Although previous investigations have examined the social goals selected by ADHD-diagnosed children and their relationship to social status, no studies to date have examined the impact of task variables on the social goals they select or whether the relationship between their social goals and sociometric status is task dependent. This archival study compared the social goals and sociometric status of 29 ADHD-diagnosed boys who exhibit peer problems with 22 Comparison boys. Participants, who ranged in age from 6 to 11 years, were randomly assigned to dyads comprising a boy with ADHD and an unfamiliar Comparison boy. Dyads interacted in the context of either a cooperatively-oriented video game or a competitively-oriented card game. Data pertaining to social goals and sociometric status were collected through brief pre- and post-play interviews conducted individually with each participant. ADHD and Comparison boys were not found to differ with respect to their social goal ratings but did demonstrate an overall difference in the patterning of how they ranked social goals. Boys with ADHD and their non-diagnosed peers were further found to differ in their peer status, with the Comparison boys being rated as significantly more desirable as potential friends even after a brief period of interaction. However, peer status was not found to be related to social goals for either ADHD or Comparison boys. Although the task variable was found to have a significant effect on participants' social goals rankings, the specific predictions made with respect to which goals would be more

highly ranked in each game were generally not supported. Finally, the results failed to support the hypothesis that the nature of the task would moderate the link between social goals and peer status. Limitations and clinical implications of the findings are discussed along with recommendations for future research pertaining to social cognition and peer status among youth with ADHD.

Chapter I: Literature Review and Study Rationale

The Clinical Profile of Children Diagnosed with ADHD

Attention Deficit/Hyperactivity Disorder (ADHD) is the most recent diagnostic label specified by the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR, American Psychiatric Association [APA], 2000) for a condition characterized by a persistent, maladaptive, and developmentally inappropriate pattern of inattention and/or hyperactivity-impulsivity. The disorder represents one of the most common reasons children are referred for mental health treatment in the U.S. (Barkley, 2006) and occurs with a prevalence rate of 3% to 7% in school age children (APA; Barkley & Murphy, 1998). ADHD is more frequent in males than in females, with gender ratios ranging from 2:1 to 9:1, depending on the diagnostic subtype under consideration and the setting (e.g., community vs. clinic) from which the research sample was obtained (APA). According to the *DSM-IV-TR*, which classifies ADHD as a disorder with a childhood onset, symptoms typically have a chronic course, often persisting from childhood through adolescence and into adulthood with various manifestations and degrees of severity (APA; Barkley & Murphy; Greenhill, 1998; Henker & Whalen, 1989; Pelham, Wheeler, & Chronis, 1998; Weiss & Hechtman, 1993).

ADHD: Core Clinical Features

The three core clinical features of ADHD, as identified by the *DSM-IV-TR* (APA, 2000), are inattention, hyperactivity, and impulsivity. Each of these primary ADHD features is multidimensional with a variety of possible behavioral expressions. Inattention symptoms, for example, may be manifested not only in difficulties sustaining attention to tasks but also by failure to give close attention to details or making careless mistakes in

school, work, and other activities, difficulty following through on instructions, failing to organize and finish tasks, forgetfulness in daily activities, and a tendency to lose items, as well as by being easily distracted (APA). The excessive movement or hyperactivity that is the second feature of ADHD may appear as restlessness, fidgetiness, difficulty remaining seated, and also as excessive talking (APA; Barkley, 1995). Finally, impulsivity, which refers to a person's tendency to act before weighing the possible outcomes of his action, can take the form of blurting answers before questions have been completed, difficulty waiting for one's turn, interrupting or intruding upon others' conversations, play, or work, and also in problems inhibiting responses to social stimulation or provocation (APA; Barkley; Braswell & Bloomquist, 1991).

Although ADHD is commonly described as having the three core features noted above, factor analytic studies strongly suggest that it is actually comprised of two dimensions: Inattention and Hyperactivity-Impulsivity (Burns, Boe, Walsh, Sommers-Flanagan, & Teegarden, 2001; DuPaul, Powers, Anastopoulos, & Reid, 1998; Lahey et al., 1994). ADHD-diagnosed children display substantial variation in the patterning as well as the severity of their symptoms across these two dimensions (Barkley, 2006; Braswell & Bloomquist, 1991). In order to address this variability in symptom presentation, the *DSM-IV-TR* specifies three diagnostic subtypes: ADHD, Predominantly Inattentive Type; ADHD, Predominantly Hyperactive-Impulsive Type; and ADHD Combined Type (Anastopoulos, Klinger, & Temple, 2001; APA, 2000; Barkley & Murphy, 1998; Wheeler Maedgen & Carlson, 2000). The diagnosis of these subtypes requires an individual to present with at least six of nine items in either the inattentive domain (Predominantly Inattentive Type) the Hyperactive-Impulsive domain

(Predominantly Hyperactive-Impulsive Subtype) or both domains (Combined Type). Furthermore, a diagnosis of ADHD also requires that symptoms be evident in two or more settings, have an onset prior to age seven, and a duration of at least six months (Anastopoulos et al.; APA).

Comorbid Disorders

Individuals diagnosed with ADHD are at increased risk for developing other behavioral conditions and mental disorders (Anastopoulos et al., 2001; Braswell & Bloomquist, 1991; Cunningham & Cappelli, 1993). Among clinically diagnosed samples, as many as 87% of children with ADHD may have at least one other disorder with over 60% having at least two other disorders (Kadesjo & Gillberg, 2001). ADHD is most frequently associated with Conduct Disorder and Oppositional Defiant Disorder, the two other disruptive behavior disorders, identified by the *DSM-IV-TR* (APA, 2000; Henker & Whalen, 1989; Pelham et al., 1998). Other disorders that coexist with ADHD at elevated rates relative to the general population include mood and anxiety disorders (Anastopoulos et al.) as well as learning disorders (Barkley, DuPaul, & McMurray, 1990; Barkley & Murphy, 1998; Braswell & Bloomquist, 1991). In combination with ADHD, such comorbid conditions often increase the severity of an individual's overall psychosocial impairment, thereby making the prognosis for such individuals less favorable (Anastopoulos et al.).

Domains of Impairment

A childhood diagnosis of ADHD places individuals at increased risk for developing an array of functional impairments and psychosocial difficulties across the life span (Anastopoulos et al., 2001; Barkley, 2006; Braswell & Bloomquist, 1991).

Relative to their non-afflicted peers, children with ADHD have been found to exhibit difficulties related to personal safety, academic performance, and interpersonal functioning with peers, family members, and teachers (Barkley; Braswell & Bloomquist; Pelham et al., 1998). These impairments are presumed to be, at least in part, by-products of the primary symptoms of ADHD and to ultimately compound and perpetuate the child's difficulties (Braswell & Bloomquist; Whalen & Henker, 1985). Furthermore, the primary symptoms and secondary impairments which characterize ADHD also predict the development of serious problems and poor outcomes in adolescence and adulthood (Pelham et al.). For many of those who were diagnosed with ADHD as children, adolescence and adulthood continue to be laced with severe academic, occupational, behavioral, mental, and interpersonal impairments, as well as with poor self-esteem (Greenhill, 1998; Henker & Whalen, 1989; Mannuzza & Klein, 1999; Weiss & Hechtman, 1993).

Misconduct and risky behavior. Some of the most concerning immediate and longer-term outcomes associated with ADHD may be attributable to the impulse control problems, tendency for risk taking, and especially to the comorbid behavioral disorders that often characterize children with ADHD. In comparison to their peers, ADHD-diagnosed children are more prone to accidental injuries (Barkley, 1995; Hinshaw, 1991). They are also more likely to cause harm to people and property and, as a result, to be involved in the criminal justice system (Barkley; Mannuzza & Klein, 1999). The impulsiveness and concomitant disruptive behavior disorders associated with ADHD may also explain why teenagers with ADHD are more likely to engage in sexual indiscretions (Mannuzza, Klein, Bessler, Malloy, & LaPadula, 1993), reckless experimentations with

alcohol, cigarettes, and illegal substances (Barkley; Barkley & Murphy, 1998; Molina, Smith, & Pelham, 1997; Mannuzza et al.), traffic violations and accidents, and to have money management difficulties (Barkley).

Poor academic performance and occupational functioning. The primary symptoms of ADHD, as well as these youngsters' proneness towards coexisting learning disorders, tend to adversely impact their school performance, leading to academic underachievement and, in many cases, failure (Barkley, 1995; Braswell & Bloomquist, 1991). As they progress into adolescence, the school environment continues to pose difficulties for most children diagnosed with ADHD (Mannuzza & Klein, 1999). A review of follow-up studies into adolescence by Mannuzza and Klein reveals that, in comparison to non-diagnosed children, those who were diagnosed with ADHD in childhood failed more courses, obtained lower grades, were more likely to be expelled or repeat grades, and had higher drop-out rates from high-school. As they reach adulthood, many of those individuals continue to perform poorly in the academic and occupational arenas and are likely to be underemployed in their occupation and undereducated relative to their intellectual ability and family educational background (Barkley & Murphy, 1998).

Impaired social functioning. Among the most noteworthy concurrent and long-term impairments associated with a childhood diagnosis of ADHD are difficulties in the social arena (Barkley, 2006; Henker & Whalen, 1989). Despite the omission of peer relationship problems as a diagnostic criterion in the *DSM-IV-TR* (APA, 2000), it is widely recognized by researchers and clinicians that social disharmony is endemic to ADHD (Barkley; Henker & Whalen; Hodgens, Cole, & Boldizar, 2000; Pelham & Bender, 1982; Wheeler-Maedgen & Carlson, 2000). A large body of research provides

compelling evidence that the difficulties with activity level, sustained attention, impulse control, and self-regulation exhibited by ADHD-diagnosed children adversely affect their social relationships with their parents, siblings, teachers, and peers (Barkley; Cunningham & Cappelli, 1993; Erhardt & Hinshaw, 1994). These social problems are central and pervasive, and tend to be ranked by parents and teachers as among the most problematic behaviors exhibited by children with ADHD (Whalen & Henker, 1985).

Not only are the social impairments and poor peer relationships experienced by children with ADHD among the most disturbing and distressing features of the disorder, (Barkley, 1995, 2006; Braswell & Bloomquist, 1991; Cunningham & Cappelli, 1993; Henker & Whalen, 1989), they have also been found to be predictive of a variety of maladaptive outcomes in adolescence and adulthood across multiple domains of functioning (Hymel, Vaillancourt, McDougall, & Renshaw, 2002; Kupersmidt, Coie, & Dodge, 1990; Ollendick, Weist, Borden, & Greene, 1992; Parker & Asher, 1987). The high prevalence of peer relationship difficulties among children with ADHD, as well as the significant level of distress and poor prognosis associated with them, have led researchers to thoroughly investigate this area of impairment. Following is a brief review of the results of this research concerning the peer relationships of children with ADHD as well as their concurrent and long-term correlates.¹

The Social Functioning of Children Diagnosed with ADHD

Peer relationships are central for the development of social competence in young children (Green & Rechis, 2006). It is through early peer interactions that children receive emotional support as well as training in a range of social, emotional, and

¹ Although a thorough review of the literature on ADHD in children is beyond the scope of this document, scholarly work pertaining to this population is summarized in Appendix A.

cognitive skills, which are crucial to the development of a child's sense of self (Hartup & Abecassis, 2002) as well as to the facilitation of interpersonal relationships later in life (Asher & Hymel, 1981) and to optimal adjustment in general (Thurber, Heller, & Hinshaw, 2002).

Children diagnosed with ADHD are notorious for the poor quality of their peer relationships and for their greater risk for peer rejection (Barkley, 1995, 2006; Gottlieb, Semmel, & Veldman, 1978; Mannuzza & Klein, 1999; Pelham & Bender, 1982; Saborine & Kaufman, 1985; Stormont, 2001; Thurber et al., 2002). A considerable body of literature has identified children diagnosed with ADHD as having significant difficulties in creating and maintaining healthy relationships with peers (Barkley, 2006; Braswell & Bloomquist, 1991; Cunningham & Cappelli, 1993; Henker & Whalen, 1989) and, more specifically, as having fewer friends relative to their non-diagnosed Comparisons (Mannuzza & Klein). In addition, these children have been consistently found to experience peer rejection, which is defined as the active dislike, avoidance, or exclusion of a child by peers (Kupersmidt & DeRosier, 2004), at higher rates than their non-diagnosed peers throughout childhood and adolescence (Gaub & Carlson, 1997; Hodgens et al., 2000; Johnston, Pelham, & Murphy, 1985). The extensive research yielding these results reveals that, in comparison to their non-diagnosed peers, ADHD-diagnosed children are more likely to be rated as disliked and less likely to be rated as liked on sociometric measures (Braswell & Bloomquist; Gaub & Carlson; Pelham & Bender). Furthermore, the rejection commonly experienced by ADHD-diagnosed children has been found to emerge rapidly after a brief period of exposure to unacquainted peers and to persist over time with familiar peers (Barkley, 2006; Bickett & Milich, 1990; Coie &

Kupersmidt, 1983; Erhardt & Hinshaw, 1994; Henker & Whalen; Pelham & Bender). For example, results from investigations conducted by Erhardt and Hinshaw and by Pelham and Bender revealed that children diagnosed with ADHD were overwhelmingly rejected as early as the first encounter with unfamiliar peers.

Finally, despite the fact that some of the core symptoms and secondary impairments associated with a diagnosis of ADHD tend to subside with age (Barkley, 2006; Braswell & Bloomquist, 1991; Campbell & Ewing, 1990; Hart, Lahey, Loeber, Applegate, & Frick, 1995 as cited in Anastopoulos et al., 2001; Henker & Whalen, 1989, 1999), the peer rejection and other social difficulties exhibited by individuals diagnosed with the disorder have been shown to be stable over time, often persisting into adolescence and adulthood (Coie, Dodge, & Coppotelli, 1982; Johnston et al., 1985; also see Campbell & Paulauskas, 1979; Ross & Ross, 1982; & Waddell, 1984 as cited in Whalen & Henker, 1985). For many of these individuals, adulthood is associated with fewer and greater turnover of friendships and poorer quality of dating relationships as well as with a greater incidence of marital dissatisfaction (Barkley & Murphy, 1998; Barkley, Murphy, & Fischer, 2008; Henker & Whalen, 1989, 1999).

The social difficulties commonly experienced by children with ADHD are concerning not only due to the subjective distress they produce, their stability across time, and their tendency to deprive these children of emotional support and social learning opportunities, but also because these problems have been found to be associated with long-term maladjustment.

Maladaptive Outcomes Associated with Negative Peer Status

Considerable empirical study has identified peer rejection as a precursor of maladjustment not only in the social domain but across multiple areas of functioning. Decades of research on the concurrent and long-term correlates of social status has repeatedly underscored the predictive association between peer rejection and numerous negative outcomes, such as externalizing problems (e.g., aggression, substance abuse, criminality), internalizing problems (e.g., loneliness, low self-esteem, depression), poor academic performance (e.g., educational underachievement, grade retention, absenteeism, truancy, school dropout), relational difficulties, and an increased need for mental health services (Asher, Parkhurst, Hymel, & Williams, 1990; Coie, Lochman, Terry, & Hyman, 1992; Coie, Terry, Lenox, Lochman, & Hyman, 1995; Hymel et al., 2002; Kupersmidt et al., 1990; Kupersmidt & DeRosier, 2004; McDougall, Hymel, Vaillancourt, & Mercer, 2001; Ollendick et al., 1992; Parker & Asher, 1987; Parker, Rubin, Price, & DeRosier, 1995; Sandstorm & Zakriski, 2004).

Interestingly, peer rejection and a childhood diagnosis of ADHD appear to be associated with similar immediate impairments and long-term outcomes, suggesting that peer relationships may play an important mediating role in ADHD's poor long-term prognosis. Due in part to methodological challenges, studies that disentangle the influences of peer rejection and ADHD on these short- and long-term adverse outcomes have yet to be conducted. However, in a non-clinical school-based sample, DeRosier, Kupersmidt, and Patterson (1994) found that the presence of peer problems adds to the prediction of negative outcomes even after controlling for prior levels of externalizing behaviors (e.g., aggression, acting out). If it is the case, as appears likely, that peer

rejection and a diagnosis of ADHD contribute unique variance to the prediction of later maladjustment, then children with ADHD are at particularly increased risk for future problems given the frequency with which they experience peer relationship difficulties.

In summary, the poor peer relationships exhibited by ADHD-diagnosed children are among the most serious, chronic, and prognostically relevant of the impairments associated with the disorder. Though these findings are disconcerting, they also hold the promise that immediate and long-term maladjustment may be prevented or reduced if effective early intervention that targets social relations takes place. Because the development of such interventions depends on an understanding of the processes by which children with ADHD come to have peer relationship problems, the mechanisms by which these children come to be rejected has emerged as an important area of study.

Hypothesized Mechanisms Leading to Rejection

The durability of social difficulties and peer rejection, the emotional distress they cause, and the long-term adverse outcomes associated with them have spawned a significant effort to identify the specific concomitants and determinants of the unpopularity of ADHD-diagnosed children. Scientific inquiry in this area has focused on behavioral, cognitive, emotional, and other characteristics of the rejected individual, as well as on environmental and contextual factors (e.g., characteristics of the rejecting peers, situational demands) that may play a role in peer rejection. A brief review of findings related to behavioral correlates of peer status will be followed by a discussion of

some of the social cognitive variables (with a particular focus on social goals) that have been implicated or hypothesized as relevant to children's social functioning.²

Behavioral Mechanisms

Behaviors distinguishing rejected and accepted children. A plethora of investigations on the behavioral correlates of sociometric status conducted in the last three decades have yielded a fairly consistent picture of the social behaviors which distinguish positive from negative standing among peers (Cillessen & Mayeux, 2004; Coie, Dodge, & Kupersmidt, 1990; Hymel et al., 2002; Stormont, 2001). According to these investigations, compared with other status types, popular or well-accepted children have been found to demonstrate higher rates of pro-social, cooperative, friendly, helpful, considerate, and norm-abiding behaviors. These children have also been found to display a good sense of humor, act as constructive leaders, and exhibit lower rates of disruptive, aggressive, and solitary behaviors. Poorly accepted children, on the other hand, have consistently been shown to display high rates of aggression, non-compliance, argumentativeness, inappropriate and disruptive behaviors, as well as withdrawal and solitary off-task behavior. However, although aggression has emerged as the most potent and stable predictor of peer rejection among children in general (Coie et al.; Dodge, 1983; Hymel et al.) and ADHD-diagnosed children in particular (Barkley, 1995, 2006; Bickett & Milich, 1990; Erhardt & Hinshaw, 1994; Hinshaw & Melnick, 1995; Pelham & Bender, 1982), it is important to note that non-aggressive children with ADHD also experience significantly elevated rates of peer disapproval (Henker & Whalen, 1989;

² Additional academic texts on the social functioning and peer status of children in general and ADHD-diagnosed children in specific are summarized in Appendix B.

Melnick & Hinshaw, 1996; Pelham & Bender) due to their display of a host of other behaviors associated with poor peer status.

Behavioral correlates of peer rejection among children diagnosed with ADHD.

The peer rejection experienced by ADHD-diagnosed children is not surprising given that the social interactions of these children are characterized by increased rates of behaviors which are known to correlate with negative peer status (Henker & Whalen, 1989; Landau & Milich, 1988; Landau, Milich, & Diener, 1998; Pelham & Bender, 1982). A review of the social characteristics of children diagnosed with ADHD across multiple studies, utilizing different assessment methods (e.g., naturalistic observations, responses to hypothetical vignettes, questionnaires or interviews conducted pre and/or post manipulation) and informants (e.g., parents, teachers, peers, and self), reveals that these children are more likely than Comparison children to be disruptive, aggressive, defiant, domineering, intrusive, noisy, non-cooperative, non-compliant, immature, inattentive, off-task, energetic, overly talkative, quick tempered, silly, reckless, and help-seeking (Barkley, 2006; Barkley et al., 1990; Cunningham & Barkley, 1979; Erhardt & Hinshaw, 1994; Hinshaw & Melnick, 1995; Johnston et al., 1985; Pelham & Bender; Pope, Bierman, & Mumma, 1991; Stormont, 2001; Wheeler-Maedgen & Carlson, 2000). Additionally, these children are described as having difficulties in delaying gratification (e.g., impaired ability to wait one's turn), resisting distractions, inhibiting reactions, controlling impulses, and matching their behaviors to the demands of the situation (Barkley; Barkley & Murphy, 1998).

Because the social behaviors exhibited by children diagnosed with ADHD are often viewed as offensive, impolite, annoying, disruptive, and insensitive by others, they

tend to have adverse interpersonal consequences, including the rapid elicitation of negative affect, conflict, confrontation, and/or exclusion by peers (Barkley, 1995, 2006; Cunningham & Cappelli, 1993; Henker & Whalen, 1989, 1999). The long-term negative ramification of this behavioral profile and social experience is often chronic peer rejection (Henker & Whalen, 1999).

Social Cognitive Mechanisms in Children's Social Performance

In addition to investigating the behavioral correlates of rejection, researchers have made efforts to identify and illuminate the ways in which social cognitive processes are associated with social adjustment and the development of peer status (Crick & Dodge, 1994; Jarvinen & Nicholls, 1996). Social cognitions, the thought process an individual engages in as he interacts with others and relates to his social environment (Gifford-Smith & Rabiner, 2004), are often viewed by researchers as among the mechanisms leading to social behaviors and one of the bases of social adjustment and evaluations by others (Crick & Dodge; Ladd & Mize, 1983).

Social information processing. Multiple aspects of social cognition have been investigated as possible contributors to children's social maladjustment. These social cognitive components have been integrated by different researchers into several theoretical models (Crick & Dodge, 1994; Ladd & Crick, 1989; Rubin & Krasnor, 1986), the most influential of which has been the Social Information Processing (SIP) model of Crick and Dodge, which captures the complexities inherent in social situations. The SIP model of children's social competence consists of six non-linear steps that children are hypothesized to go through when responding to a specific social stimulus: (1) encoding

of cues (2) interpretation of cues (3) clarification of goals (4) response access or construction (5) response decision, and (6) behavioral enactment.

Crick and Dodge (1994) postulated that upon contact with a social stimulus, children focus on particular cues in the situation and encode them. At this time, latent mental structures (e.g., schemata or scripts), gained through past social experiences, are called from memory and used to guide the interpretation of the present social situation. Children then formulate or clarify a social goal and then access a data base of behavioral responses aimed at attaining that goal. Subsequently, children are thought to evaluate the behavioral strategies that were generated and select for enactment the social behavior they judge as most conducive to achieving their goals (Crick & Dodge; Kupersmidt & DeRosier, 2004).

Although the steps in this model appear to be sequential, Crick and Dodge (1994) emphasize that the ultimate behavioral response in a given situation is determined by an interplay between ongoing social cognitive processes and underlying cognitive structures (e.g., social schemas and memories) which occurs simultaneously and unconsciously within and across each of the model's mental steps. Furthermore, the social consequences (e.g., peer rejection) of the child's behavioral response are integrated via cognitive feedback loops into his/her social experience database and further inform his/her future social encounters.

In accordance with Crick and Dodge's (1994) model, each of the SIP steps is presumed to activate particular social information processes (e.g., cue utilization, intent attribution, self-efficacy perception, outcome expectations, beliefs about the legitimacy of the strategy) which are hypothesized to ultimately determine the ensuing behavioral

response which, in turn, will impact the child's social status. The link between social adjustment in childhood and these social information processes has indeed been compellingly supported by multiple studies and research reviews (Crick & Dodge; Erderly & Asher, 1999). Moreover, this link has been observed to be reciprocal, so that some aspects of cognitive processing (e.g., perceived self competence) not only impact social status but are also affected by a child's standing amongst his or her peers (Gifford-Smith & Rabiner, 2004).

The social information processing of children diagnosed with ADHD. The way in which individuals process social information varies based on their biological predispositions (e.g., attentiveness), past social history (e.g., rejection), moral values and beliefs about themselves, others, and the world, as well as the nature of the presenting social stimulus (Erderly & Asher, 1999). The core characteristics of children diagnosed with ADHD, specifically their impulsivity and attention difficulties, have been found to be associated with deficiencies or biases in all stages of the social information processing model (Dodge & Newman, 1981; Pope et al., 1991; Sandler et al., 1993).

Erroneous social processing at any of the SIP steps is hypothesized to adversely impact processing of the other steps and ultimately result in inappropriate social responses (e.g., aggression), which in turn may elicit increased social rejection toward the child (Crick & Dodge, 1994; Whalen & Henker, 1985). The experience of early rejection, either by confirming biased processing patterns or by limiting a child's ability to obtain needed social experience, leads to stronger cognitive biases, which contribute to the maintenance of the maladaptive behaviors exhibited by these children (Gifford-Smith & Rabiner, 2004; Thurber et al., 2002). For example, among the cue-utilization biases found

to be exhibited by ADHD-diagnosed children at the first stage of the SIP model are encoding fewer cues before concluding that they understand the social situation and tending to neglect salient benign cues while selectively attending to *conflict signaling* social cues (Dodge & Newman, 1981; Fraser, 1996; Milich & Dodge, 1984; Schippell, Vasey, Cravens-Brown, & Bretveld, 2003). An example of a bias that often occurs at the second (cue interpretation) stage of the SIP model is the hostile attribution bias. ADHD-diagnosed children who are aggressive have been found to manifest a tendency to erroneously assign hostile intent to neutral or ambiguous social cues (Barkley, 2006; Dodge & Newman; Fraser; Milich & Dodge; Murphy, Pelham, & Lang, 1992; Thurber et al.; Whalen & Henker).

The third SIP stage focuses on goal formulation and refinement. Within the social information processing framework, the formulation of social goals is considered a crucial motivating component for children's behavior, since behavioral strategies are generated, evaluated, and selected, in part, on the basis of the desired outcome (i.e., goal) for the situation (Erderly & Asher, 1999). The selection of a social goal is thought to be influenced by the child's goal orientation as well as by multiple social information processes that are activated during previous, present, and subsequent steps (Crick & Dodge, 1994; Erderly & Asher). Specifically, the selection of social goals has been hypothesized to be impacted by the following social cognitive features: intent attribution, self- and peer-perception, strategy knowledge, self-efficacy perceptions, outcome expectations, and beliefs about the appropriateness or legitimacy of certain behaviors. Depending on the aforementioned social cognitive constructs, children may either persist

with their original goals or revise them as the social exchange continues (Erderly & Asher).

Given the salient role of social goals in determining social behavior, this social cognitive process has been given considerable attention by researchers. Because the goals selected by children diagnosed with ADHD and their link to these children's social status will be the focus of the proposed study, they will be reviewed in the following sections.

Children's Social Goals

The formulation of social goals is a particular social cognitive process that has attracted the attention of many researchers who study peer relations in childhood (Chung & Asher, 1996; Crick & Dodge, 1994; Erderly & Asher, 1996; Renshaw & Asher, 1983; Rose & Asher, 1999). Specifically, investigators concerned by the maladaptive outcomes associated with the type of negative peer status typically experienced by children, diagnosed with ADHD, have been seeking to uncover whether social goals may be among the underlying motivating forces behind the non-socially-normative behavior (e.g., aggression) exhibited by these children (Melnick & Hinshaw, 1996).

Social Goals: Definition

Social goals have generally been defined in the literature as social objectives that individuals strive to attain or avoid (Chung & Asher, 1996; Crick & Dodge, 1994; Parkhurst & Asher, 1985; Renshaw & Asher, 1983; Rose & Asher, 1999). One important aspect of goals is the standards or criteria that define their attainment. Goals may be broadly defined, so that a wide range of outcomes will fall within the criteria set or highly specific so that only one or a very narrow range of outcomes will fit the criteria. In addition to their outcome specificity, goals may be defined based on their time focus and

degree of situational specificity (Parkhurst & Asher). For example, the goal of being a friend with a classmate may mean playing together at school for one child whereas for another child it may mean playing together after school. Finally and most importantly, social goals are believed to serve a crucial role in motivating children's behavior as well as in influencing their social standing among peers (Chung & Asher; Crick & Dodge; Erderly & Asher, 1996, 1999; Jarvinen & Nicholls, 1996; Lochman, Wayland, & White, 1993; Parkhurst & Asher; Renshaw & Asher; Rose & Asher).

Social Goals: Categories

Multiple social goals have been proposed as guiding the social behaviors of children. Researchers have proposed different classification schemes for these goals. Parkhurst and Asher (1985), for example, categorized goals into two groups; those oriented toward gaining or maintaining relationships (i.e., positive goals) and those oriented toward the avoidance or prevention of a certain social outcome, such as being made fun of by peers (i.e., avoidant goals). More recently, Ojanen, Gronroos, and Salmivalli (2005) proposed to categorize goals into agentic and communal goals. Agentic goals are aimed at controlling, dominating, and achieving respect from others while communal goals are aimed at developing or maintaining relationships. McDowell and Parke (2002) categorized goals as relational or instrumental. Relational goals are those aimed at maintaining relationships and minimizing conflict with peers, whereas the object of instrumental goals is related to the acquisition of desired outcomes and personal benefits. Similar to McDowell and Parke, Melnick and Hinshaw (1996) categorized goals as instrumental (i.e., oriented toward preserving or enhancing the performance, territory, or self-esteem in peer situations) and relational (i.e., oriented toward the development and

maintenance of relationships), but added a third category of sensation seeking goals (i.e., directed toward seeking excitement and disruption). Because these three categories have been adopted for the current investigation, they will be discussed further in a subsequent section of this dissertation.

The Impact of Social Goals on Social Behavior

Consistent with the SIP model, children's social goals have been found by numerous research studies and literature reviews to be significantly associated with their social behavior (Chung & Asher, 1996; Erderly & Asher, 1996, 1999; Erderly, Cain, Loomins, Dumas-Hines, & Dweck, 1997; Lochman et al., 1993; Melnick & Hinshaw, 1996; Ojanen, et al., 2005; Parkhurst & Asher, 1985; Rose & Asher, 1999). Empirical research on the role of social goals in children's social functioning has documented significant differences in children's behavioral strategies depending on their goal selection patterns (Erderly & Asher, 1999). Not surprisingly, the behavioral strategies children choose to enact have been reported to closely and meaningfully relate to the social goals they decide to pursue (Chung & Asher). In general, children whose goals are primarily oriented toward having positive relationships with peers tend to select pro-social strategies that either accommodate the needs of both parties or involve yielding to the needs of their partner, presumably in an effort to preserve relationships. On the other hand, children whose goals are primarily oriented toward revenge, dominance, or control over activities or possessions are strongly inclined toward hostile and coercive behavioral strategies. Finally, children whose goals are primarily oriented toward avoiding trouble have a proclivity toward pro-social and passive strategies (Chung &

Asher; Erderly & Asher, 1996; Fraser, 1996; Lochman et al.; Ojanen et al.; Renshaw & Asher, 1983).

The Impact of Social Goals on Peer Relationships

In addition to correlating with behavioral strategies, children's social goals have also been found to be meaningfully associated with their peer status (Chung & Asher, 1996; Erderly & Asher, 1996, 1999; Lochman et al., 1993; Melnick & Hinshaw, 1996; Ojanen et al., 2005; Parkhurst & Asher, 1985; Renshaw & Asher, 1983). Although, in broad terms, the relationship between social goals and peers status is mediated through the behaviors enacted to achieve goals, a more specific delineation of the mechanisms by which social goals might impact peer relationships is needed to clarify the importance of goals as a component of social cognition.

Parkhurst and Asher (1985) proposed several ways in which the nature of children's goals might be the source of their social difficulties. Specifically, they suggested that children may be subjected to peer rejection when they pursue anti-social or non-normative goals or when they refrain or minimally pursue pro-social goals. A variety of studies have indeed demonstrated that peer acceptance is significantly related to the formulation of relationship-enhancing goals such as friendliness, helpfulness, accommodation, and cooperation, whereas peer rejection and poor social adjustment relate to the endorsement of anti-social goals such as revenge, aggression, dominance, and disruption (Crick & Dodge, 1994; Erderly & Asher, 1996, 1999; McDowell & Parke, 2002; Ojanen, Aunola, & Salmivalli, 2007; Ojanen et al., 2005; Renshaw & Asher, 1983; Rose & Asher, 1999).

In addition to being associated with minimal endorsement of pro-social goals and the pursuit of anti-social goals, social maladjustment has been hypothesized to relate to children's difficulty in organizing and coordinating multiple goals simultaneously, especially when these goals are incompatible (Dodge, Asher, & Parkhurst, 1989; Ojanen et al., 2005; Parkhurst & Asher, 1985). Finally, social goals may have an adverse impact on peer relations not only because they are substantively inconsistent with having satisfying social relationships but because they fail to match the contextual demands of the situation (Parkhurst & Asher; Renshaw & Asher, 1982) or the goals of their companions (Parkhurst & Asher). For example, a child who selects the competitive goal of showing his playmate that he is better than him as the two engage in a cooperative game that requires collaboration is likely to elicit a poor sociometric appraisal from his game partner.³

The Social Goals Selected by Children Diagnosed with ADHD

The significant association that has been found between children's social goals and both their social behavior and sociometric status has prompted several researchers to examine the possibility that the negative peer status typically experienced by children diagnosed with ADHD is linked to their pursuit of non-normative or situationally inappropriate social agendas (Henker & Whalen, 1989; Melnick & Hinshaw, 1996; Whalen & Henker, 1985) as well as to difficulties they might have integrating or choosing between evenly appraised yet incompatible goals (Zentall, 2005).

³ A table summarizing the social goals literature in children is provided in Appendix C.

A review of literature on the social functioning of children diagnosed with ADHD conducted from a biogenetic perspective by Zentall (2005) revealed that, overall, children with ADHD have a primary propensity toward increasing stimulation and their social behaviors are mainly directed at the following, partially incompatible goals: (a) obtaining social relatedness, (b) attaining control or emotional responses from peers, and (c) being viewed as socially competent and better than others (performance goals). Given Zentall's findings which indicate that children diagnosed with ADHD pursue multiple social goals that are at least partially incompatible, it is plausible that the social maladjustment experienced by these children is linked to difficulties they might have in integrating or prioritizing among conflicting goals. Though this hypothesis has not yet directly been examined, past research has found that highly aggressive, ADHD-diagnosed boys and aggressive boys without ADHD differ from their low- aggressive and non-diagnosed peers in their goal prioritization. Specifically, Melnick and Hinshaw (1996) found that when presented with a peer interaction task designed to elicit the competing goals of competition, cooperation, and having fun, ADHD-diagnosed boys high in aggression prioritized fun and trouble seeking goals at the expense of rules to a greater extent than ADHD-diagnosed boys low in aggression and Comparison boys. Similarly, Lochman et al. (1993) found differences in the prioritization of goals between aggressive and non-aggressive boys. In this study, both groups were presented with hypothetical vignettes describing situations involving ambiguous peer provocation. The aggressive and non-aggressive boys did not differ in their selection of social goals, but rather in their prioritization of these goals. Specifically, the aggressive boys placed a higher value on goals of dominance and revenge, and lower value on affiliation goals in comparison to

their non-aggressive peers. Although the results from these studies cannot be generalized to the whole ADHD population, it is plausible to assume that the maladaptive behavior typical of highly aggressive ADHD-diagnosed boys and its consequent adverse effect on their standing among peers emerge, at least in part, because their pursuit of socially inappropriate goals (e.g., trouble seeking, dominance, and disruption) takes precedence over their pursuit of other, more socially enhancing, goals (e.g., affiliation with peers or following the rules).

In addition to potentially being associated with the prioritization or coordinating of multiple conflicting goals, the peer disapproval often experienced by children with ADHD may emanate from their emphasis on goals that are inappropriate to the situation. This hypothesis appears to make sense given both the well documented tendency of children with ADHD to have an impaired ability to match their behavior to the demands of the situation (Barkley, 1995, 2006; Braswell & Bloomquist, 1991; Henker & Whalen, 1989) and the significant association between goals and behavior (Chung & Asher, 1996; Erderly & Asher, 1996, 1999; Melnick & Hinshaw, 1996; Ojanen et al., 2005; Parkhurst & Asher, 1985; Rose & Asher, 1999). Interestingly, this hypothesis has not been empirically investigated to date.

Finally, the social maladjustment experienced by children diagnosed with ADHD has most commonly been hypothesized to relate to the nature of social goals they formulate and specifically to their pursuit of socially inappropriate social agendas (Henker & Whalen, 1989; Melnick & Hinshaw, 1996; Whalen & Henker, 1985). However, the results of several studies that have investigated differences in social goal selection between children diagnosed with ADHD and their non-diagnosed peers have

been mixed. Whereas some investigations found a significant difference between the type of goals pursued by children diagnosed with ADHD and Comparison children (Buhrmester, MacDonald, & Heller, 1989; Gallen, 1998), other studies have either not found such differences (Thurber et al., 2002) or, at least, have not found them for samples of ADHD-diagnosed children without comorbid aggression (Melnick & Hinshaw).

In response to hypothetical vignettes, girls diagnosed with ADHD and those in a Comparison group were found by Thurber et al. (2002) to endorse similar social goals (although they did differ with respect to their selection of behavioral strategies and their predictions of peer responses peers). Incongruently, an earlier study by Buhrmester et al. (1989) revealed that the social agendas of boys diagnosed with ADHD differed from those pursued by their non-diagnosed peers. Specifically, children diagnosed with ADHD were more inclined to pursue goals directed toward disruption, dominance, and excitement-seeking and less directed toward cooperation. Similarly, Gallen (1998) found significant differences between the goals of ADHD-diagnosed children and Comparison peers, with the former having a greater tendency to pursue aggressive or avoidance goals.

Finally, although Melnick and Hinshaw (1996) also found the goals of children with ADHD to be different from their non-diagnosed peers, these differences applied only to the subgroup of children with ADHD who exhibited comorbid aggression (i.e., the ADHD-low aggression group did not differ from the non-ADHD Comparison subjects with respect to their selection of social goals). Melnick and Hinshaw's study aimed to investigate the differences in social goals between three groups of subjects (high aggression ADHD-diagnosed boys, low- aggression ADHD-diagnosed boys, and Comparison boys) in the context of a small group peer interaction task (viz., a game of

foosball) that elicited the competing goals of cooperation, competition, and having fun. Another objective was to examine the association between children's social goals and their overall peer acceptance. Prior to engaging in the task, the participants were asked to rank order their social goals for the game. The goals presented to the children to choose from were divided into three categories: instrumental goals (e.g. "to win the game," "to be the best player," "to get better at the game," "to make the game more competitive"), relational goals (e.g. "to be liked by others," "to cooperate even if it means the game is not as much fun," "to be a good sport"), and sensation-seeking goals (e.g. "to make the game exciting," "to have fun even if it means breaking the rules or teasing the other kids," "to show others I'm not afraid of getting in trouble"). During the task, adult observers rated their impression of the children's social goals and behaviors. Peer sociometric nominations were also used to assess each participant's social status. Although goals as reported by the children were not significantly correlated with those inferred by adult observers, both methodologies independently revealed that the highly aggressive ADHD-diagnosed boys tended to seek domination, disruption, and trouble-making to a greater extent than the Comparison and the low-aggressive ADHD-diagnosed boys. In addition, the high-aggressive ADHD-diagnosed boys were found to differ from the low-aggressive ADHD-diagnosed and Comparison boys by ranking higher the goals related to having fun and not being afraid of getting into trouble and ranking lower the goal related to playing fair. No differences were found between the low-aggressive boys with ADHD and the Comparison group with respect to their selection of social goals. Finally, links were found between children's goal endorsements, particularly those related to not being afraid of getting into trouble and cooperation, and

their overall social acceptance, even when the effects of aggressive behavior or subgroup were controlled. Specifically, endorsing the goal of not being afraid of getting into trouble was related to poor peer acceptance whereas having a goal of wanting to cooperate was related to positive peer status. Though no behavioral differences between the groups were observed, the highly aggressive ADHD-diagnosed children were the least liked by their peers whereas the Comparison boys were the most liked.

The inconsistent results across research comparing the social goal selection of children diagnosed with ADHD with that of their non-diagnosed peers may, in part, be a function of the nature of the task or situation within which the social goals of these children have been examined. While many social situations or tasks are not clearly defined and allow for various types of goals to be pursued (e.g., ambiguous provocation) by different populations depending on their unique cognitive traits, other tasks or situations (e.g., competitive and cooperative) are more clearly defined and thus thought to elicit particular social goals in most individuals.

*Situated Cognition and Social Task Perspective on the Social Competence of Children
Diagnosed with ADHD*

Situated Cognition

A current trend in the social cognition field is to understand different thought processes (e.g., social goals) as emanating from multiple interrelated factors. This comprehensive and multilayered approach posits that in addition to the interplay between online social cognitive processes and latent cognitive structures which occurs within and across each of the social information processing steps, the goal selection and ultimate behavioral response in a given situation is also determined by the nature of the presenting

social cues (Crick & Dodge, 1994; Ojanen et al., 2007). In their critical review of past and current trends in social cognitive theory and research, Smith and Semin (2007) called into question the generally assumed belief that mental representations are abstract, stable, and context-independent and stressed the impact of contextual factors on different social cognitive processes. Recent research has amply documented the situation specificity and flexibility of many types of social cognitive processes, a phenomenon termed by Clark (1997) as “situated cognition.”⁴ Supporting this view, as it pertains to social goals, are results from a study conducted by Ojanen et al. (2007) which demonstrated that preadolescents display situation-specific goals. Specifically, these children’s selection of agentic and relational goals was impacted partially by individual characteristics and partially by the nature of the social situation. Children were most likely to endorse relational goals in a positive situation, less likely to do so in a conflict situation, and the least likely to do so in a victimization situation. Agentic goals, on the other hand, were most likely to be endorsed in a victimization situation, less likely to be endorsed in a conflict situation, even less likely to be endorsed in a positive situation, and the least likely to be endorsed in a group entry situation.

To date, social-cognitive processes have most intensively been investigated within three contexts: ambiguous provocation (e.g., Erderly & Asher, 1996; Underwood & Bjornstad, 2001), interpersonal conflict (e.g., Chung & Asher, 1996; Rose and Asher, 1999), and social failure (e.g., Erderly et al., 1997). However, these contexts provide a narrow view of childhood social relations and reflect neither the breadth nor the dynamic nature of children’s peer interactions (Hymel et al., 2002).

⁴ A more comprehensive summary of research on situated cognition and the task perspective on children’s social functioning is provided in Appendix D.

Game-play appears to represent an important, ecologically-valid context within which to examine children's social cognitive processes and their relationship with behavior and sociometric status. Games are a central aspect of children's play and probably the most common type of social interaction children engage in (Bay-Hinitz, Peterson, & Quilitch, 1994). Although games can be divided into many categories, one of the most commonly investigated distinctions is that between competitive and cooperative games.

Competitive and Cooperative Games: Definition

A competitive game is one in which there are losers and winners. Such games tend to motivate individuals to win by taking action to achieve the game objective and preventing their opponent from doing the same. Cooperative games, on the other hand, require coordinated efforts of more than one player to successfully accomplish a mutual goal. In that sense, cooperative games encourage each player to invest not only in his success but also in the success of the other participants (Bay-Hinitz et al., 1994; De Los Santos, 2006). The main feature which distinguishes between competitive and cooperative games is therefore the style of players' interaction. While both tasks motivate children to attain a certain objective, the outcome in a cooperative game depends on the collaboration between the players, whereas in a competitive game the outcome of one player is inversely related to that of his opponent (Vonk, 1998). Thus, while many social situations or games are not clearly defined and allow for various types of goals to be pursued (Chung & Asher, 1996), competitive and cooperative games appear to elicit certain goals and behaviors. However, while competitive and cooperative games and tasks have been investigated in relation to the behavior they elicit from children, to the

author's knowledge, no research has been done to date on the way in which the nature of these games impact the social goals of children in general and ADHD-diagnosed children in particular. Furthermore, no research has yet addressed whether the relationship between social goals and peer status may be dependent upon the context (viz., competitive vs. cooperative) in which children are interacting.

The Impact of Competitive and Cooperative Games on Children's Behavior

A substantial body of research demonstrates a link between the nature (competitive vs. cooperative) of games and children's behavior while playing them. In summary, this research reveals that competitive tasks tend to elicit competitive behaviors and aggression whereas cooperative tasks tend to elicit cooperative behaviors such as sharing and to also contribute to peer acceptance and self-esteem (Bay Hinitz et al., 1994; Orlick, 1981). For example, in a study conducted by Hom, Berger, Duncan, Miller, and Blevin (1994), students who were assigned to receive a tangible reward for working cooperatively completed the task faster, interacted more positively, and viewed their peers as more helpful and the task as easier than those students who were rewarded for working individually. In another study, Schmidt, Ollendick, and Stanowicz (1988) found that children became more competitive in a game situation when they were told to win. Similarly, in a study conducted by Bay-Hinitz et al., children were found to exhibit an increase in aggressive behavior and a decrease in cooperative behavior when playing a competitive game; conversely, during cooperative games they demonstrated an increase in cooperative behavior and a decrease in aggression. Cooperative and competitive games included both board games (e.g., *Max* or *Candy Land*) and games that require physical activity (e.g., *musical chairs*). Thus, the results of numerous studies suggest that the

behavioral responses of children are influenced by the type of game or task they engage in and, more specifically, by whether the task or game is organized cooperatively or competitively.

Social Task Perspective on Social Competence

Similar to the situated cognition approach, the social task perspective on children's social competence contends that social competence should be assessed in relation to specific social situations or social tasks rather than globally. According to this perspective children who have peer relationship problems are not pervasively incompetent, but rather exhibit social difficulties that differentiate them from their peers when engaged in particular social tasks (Cillessen & Mayeux, 2004; Coie & Cillessen, 1993; Erderly & Asher, 1999; McFall, 1982).

ADHD: Impaired ability to match behavior to task demands. As previously noted, social competence is not determined solely by the type of goals a child pursues but also by the child's ability to match his/her behavior to the expectations and demands of a situation and take on different roles given different task requirements (Stormont, 2001). Excessive task irrelevant activity or activity poorly regulated to the demands of a situation is one of the hallmarks of children diagnosed with ADHD (Barkley, 1995, 2006; Braswell & Bloomquist, 1991; Henker & Whalen, 1989, 1999; Wheeler-Maedgen & Carlson, 2000). Indeed, these aspects of ADHD are often what cause children diagnosed with the disorder the most trouble in their everyday lives, including difficulties interacting successfully with peers (Barkley, 1995, 2006).

ADHD: Situational variability in symptom presentation. Consistent with the social task perspective which contends that the behavior of maladjusted children is not pervasively incompetent (Erderly & Asher, 1999), the propensity of ADHD-diagnosed children to exhibit impaired capacity to regulate their behavior to the demands of the situation appears to occur only in certain contexts. In fact, it has been consistently reported in the literature that the manifestation of symptoms by ADHD-diagnosed children is subject to considerable situational variability. The degree of symptom expression has been found to change markedly as a consequence of the nature of the situation, including the degree of structure, amount of activity permitted, and overall level of stimulation in the setting (Barkley, 2006; Braswell & Bloomquist, 1991; Zentall, 2005). Specifically, multiple studies have found that the primary symptoms of ADHD are more likely to be evident during tasks that restrict activity as well as in the scope of highly repetitive, boring, protracted, or familiar situations than in those that are novel, brief, stimulating and require taking on an active as opposed to passive role. Symptoms are also more likely to be expressed in non-reinforcing situations as well as when delayed or infrequent reinforcement is dispensed than when consistent and immediate rewards are offered for positive behavior. Additionally, children with ADHD are less likely to manifest their symptoms (and, consequently, to be less negatively judged by peers) in free play or one-on-one situations than in structured group settings and conditions where they are required to sit still and work independently (Anastopoulos et al., 2001; Barkley; Barkley & Murphy, 1998; Braswell & Bloomquist; Greenhill, 1998; Grenell, Glass, & Katz, 1987; Landau & Moore, 1991; Stormont, 2001; Zentall).

Moreover, various researchers comparing ADHD-diagnosed children with their non-diagnosed peers have demonstrated that the performance of ADHD-diagnosed children can often be normalized depending on the nature of the task they engage in. While ADHD-diagnosed children were found to perform poorly on boring, repetitive, and action-restrictive tasks, their performance was generally found to be similar to their non-diagnosed peers when the task was modified to allow a more active mode of response, greater intratask stimulation, and consistent rewarding (Barkley, 1995; Braswell & Bloomquist, 1991; Landau & Moore, 1991; Zentall, 1989). Also, ADHD-diagnosed children were not observed to differ from their non-diagnosed peers in free play situations in which the child's activity is not under the constraint of any particular task requirements (Grenell et al., 1987).

Most relevant to the proposed research are studies on the behavior of ADHD-diagnosed children and unpopular children in the context of competitive and cooperative tasks. In a study conducted by Clark, Cheyne, Cunningham, and Siegel (1988) the behavior of children diagnosed with ADHD was found to be similar to Comparison children when engaged in a cooperative task. Similarly, in a study by Gelb and Jacobson (1988), unpopular children who were gaining entry into a competitive task were more likely than the popular children to break rules, emit silly noises, and appeal to authority. Conversely, in gaining entry into a cooperative task (described by the authors as benign and tension-free atmosphere) the unpopular children exhibited less negative and immature behavior and their peers were more tolerant toward them than during the competitive game. These findings suggest that the nature of the task ADHD-diagnosed

children engage in is not only likely to elicit particular goals but also to impact their display of behavioral symptoms associated with negative peer appraisal.

In summary, both the situated cognition approach and the social task perspective underscore the importance of considering contextual factors when studying social competence and social cognition (including social goals). Thus, the development of a comprehensive understanding of the factors associated with the social relationship difficulties exhibited by children diagnosed with ADHD requires attention to these children's goals and behaviors in the context of particular social situations.

Purpose of Proposed Study

As reviewed above, previous research has found a link between the tasks children engage in and their selection of social goals (e.g., Ojanen et al., 2007). However, thus far no study has examined whether task variables (e.g., competitive vs. cooperative) impact the social goals selected by ADHD-diagnosed boys. Furthermore, though the link between social goals and peer status has been previously investigated among children with ADHD (e.g., Melnick & Hinshaw, 1996), no research to date has explored whether the relationship between social goals and sociometric status is moderated by task variables. For example, it possible that the same goals (e.g., to intensify excitement) that contribute to negative peer appraisals in the context of certain tasks (e.g., a cooperative, timed group assignment) may have neutral or even positive relationships with peer status in the context of other tasks (e.g., an outdoor competitive game).

Therefore this archival study had five primary objectives: (a) to compare the social goals selected by children diagnosed with ADHD with those of their non-diagnosed peers in the context of naturalistic peer interactions, (b) to replicate previous

findings regarding sociometric status differences between boys with and without ADHD, (c) to evaluate the relationship between children's social goals and their peer status, (d) to determine if task variables (competitive vs. cooperative) impact the social goals selected by boys with ADHD or Comparison boys, and (e) to examine whether the relationship between social goals and sociometric status is task dependent.

This study extends previous research in several important ways. A unique contribution is in examining the impact of task variables (competitive vs. cooperative) on social goals among ADHD-diagnosed and Comparison boys as well as in evaluating whether the established relationship between social goals and sociometric status is task dependent. Furthermore, as opposed to the majority of the studies which utilized hypothetical vignettes to examine the social goals formulated by children, the current study employed a more ecologically valid methodology based on naturalistic dyadic interactions between children with and without ADHD.

Research Hypotheses

1. ADHD and Comparison boys would not differ in their selection of social goals for naturalistic peer interactions. As noted above, results of prior research comparing the social goals of ADHD-diagnosed children with their non-diagnosed peers have been mixed. However, in light of the influence of contextual variables on social goals (see discussion of situated cognition above), the clearly defined nature of the competitive and cooperative tasks used in the current study, and the research-informed presumption (Barkley, 2006; Melnick & Hinshaw, 1996; Whalen & Henker, 1985) that the social knowledge of children with ADHD is sufficient to enable them to endorse situationally appropriate goals (even if their behavior is not ultimately consistent with those goals),

it seemed justified to predict that the self-reported social goals of boys with and without ADHD in the current study would not differ significantly.

2. Boys diagnosed with ADHD would receive lower sociometric ratings than Comparison boys. Specifically, it was predicted that, in Comparison to their non-diagnosed peers, boys with ADHD would be rated as less desirable as potential friends by their play-partners. This prediction was based on past research (reviewed above) demonstrating that, in Comparison to their non-diagnosed peers, ADHD-diagnosed children are more likely to be rejected and rated as disliked by peers on sociometric measures even after a brief period of exposure (Barkley, 2006; Bickett & Milich, 1990; Braswell & Bloomquist, 1991; Coie & Kupersmidt, 1983; Erhardt & Hinshaw, 1994; Gaub & Carlson, 1997; Henker & Whalen, 1989; Pelham & Bender, 1982).

3. Children's social goals would correlate significantly with their social status. Specifically it was expected that the endorsement of certain sensation-seeking and instrumental goals (viz., "to do better at the game than my partner," "to show my partner that I'm better than him," "to make the game more exciting," "to have fun even if it means breaking the rules," and "to show my partner that I'm not afraid to get in trouble") would negatively correlate with peer acceptance whereas the endorsement of relational goals (viz., "for me and my partner to do well at the game," "to get along with my partner," "to be liked by my partner," and "to cooperate even if it means that the game is not as much fun for me") would relate positively to social standing. This hypothesis was based on prior research findings (reviewed above) supporting a link

between the endorsement of particular social goals and peer status (Chung & Asher, 1996; Erderly & Asher, 1996, 1999; Lochman et al., 1993; McDowell & Parke, 2002; Melnick & Hinshaw, 1996; Ojanen et al., 2005; Ojanen, et al., 2007; Parkhurst & Asher, 1985; Renshaw & Asher, 1983; Rose & Asher, 1999).

4. The nature of the task would impact the social goals selected by both boys with and without ADHD. Specifically it was expected that, for both groups, the competitive task would be positively linked to the endorsement of the instrumental goals “to do better at the game than my partner,” and “to show my partner that I’m better than him.” Conversely, it was expected that for both groups the cooperative task would be associated with the endorsement of the following relational goals: “for me and my partner to do well at the game,” “to be a good sport,” “to get along with my partner,” “to be liked by my partner,” and “to cooperate even if it means that the game is not as much fun for me.” These predictions were based on the purported situational specificity of social cognitive processes (Clark, 1997; Crick & Dodge, 1994; Smith & Semin, 2007) and the extant research supporting the idea of situated cognition (e.g., Ojanen et al., 2007), both reviewed above.

5. A prior hypothesis (#3 above) predicted a significant relationship between children’s social goals and their sociometric status. However, it was further hypothesized that this relationship would be moderated by the nature of the task. Specifically, it was predicted that the instrumental goals (viz., “to do better at the game than my partner,” “to show my partner that I’m better than him,”) would correlate more positively with

sociometric status in the context of the competitive game than in the context of the cooperative game. Conversely, it was predicted that the relational goals (viz., “for me and my partner to do well at the game,” “to get along with my partner,” “to be liked by my partner,” and “to cooperate even if it means that the game is not as much fun for me”) would correlate more positively with peer status in the context of the cooperative game than in the context of the competitive game.

These predictions relate to the idea that the congruence between the demands of the task and the social goals formulated by the ADHD-diagnosed boys would impact their sociometric status. More specifically, the better the match between the nature of the task (e.g., cooperative) and the social goals selected (e.g., “to get along with my partner”), the greater the likelihood that the child acting in accordance with those goals would be positively appraised by his play partner. As noted previously, one component of social competence in children that is likely to be associated with more favorable peer status is their ability to match their behavior to the expectations and demands of the situation they are in (Stormont, 2001). Thus, it appeared reasonable to predict that ADHD-diagnosed boys who select task-congruent goals would be positively appraised by peers, whereas those who endorse task-incongruent goals would be negatively regarded by their play partners.

Chapter II: Method

Context of the Proposed Research

The archived data for this dissertation were collected as part of a five year *Social Skills Training for Medicated ADHD Children* research project (Principal Investigator: Fred Frankel, Ph.D., Co-Investigator: Drew Erhardt., UCLA IRB# 00-05-092-02) conducted at the University of California–Los Angeles (UCLA). Funded by the National Institute of Mental Health, the *Social Skills Training for Medicated ADHD Children* project was designed to investigate the impact of a parent- assisted social skills training program on ADHD-diagnosed children who were partial responders to medication. The specific data used for the current dissertation were drawn from a secondary study pertaining to the social goals of ADHD and Comparison children that was embedded within the main research project. The data for the archived sub-study were gathered in the context of an after-school program which was offered on a complimentary basis to participants in the *Social Skills Training for Medicated ADHD Children* research project. The 28-week after-school program, which took place Mondays through Fridays from 3:30 pm until 6:00 pm, was housed at a public elementary school in Culver City, CA. The daily after-school program consisted of multiple activities including: homework preparation, indoor and outdoor play activities, and enrichment sessions. This dissertation utilized a portion of the data from the secondary *social goals* study. Specifically, these data consisted of self-reported social goals and sociometric ratings collected during naturalistic dyadic play interactions occurring in the context of two distinct games. The methodology and procedures for this archival study are presented in the following

sections: (a) research approach and design, (b) participants, (c) procedures, (d) instrumentation, and (e) data management.

Research Approach and Design

The *Social Skills Training for Medicated ADHD Children* project from which the data for this dissertation were derived employed a quasi-experimental between-subjects design. Quasi experiments are frequently used when a researcher is interested in studying behaviors in their naturally occurring social settings. Quasi-experimental designs include a control and experimental group, but unlike true experimental designs, do not employ random assignment into these groups (Shavelson, 1996). The secondary *social goals* study which yielded the archival data used in this research utilized an ex-post-facto design, in that it examined the relationship between specific variables after data related to those variables had already been collected. The independent variables for this study included group status (viz., ADHD vs. Comparison group) and the type of task the children engaged in (viz., video game vs. card game). Dependent variables included the selection of either relational, instrumental, or sensation seeking goals as well as the sociometric status of the child. The measures used to assess these variables are described in a subsequent section.

Participants

The subjects for this archival study were drawn from the group of children who participated in the after-school component of the *Social Skills Training for Medicated ADHD Children* project. These participants included: (a) children with peer relationship problems who also met criteria for ADHD and (b) well-behaved Comparison children who did not meet the criteria for ADHD. Participation in the Comparison group was

restricted to children within elementary schools in the Culver City Unified School District (CCUSD). This group was recruited through informational flyers distributed to CCUSD elementary school teachers as well as to the general Culver City community. Specifically, the teachers were asked to distribute informational flyers to the parents of the five children in their class who they considered to be the best behaved. Recruitment of the ADHD group occurred by means of informational flyers distributed to CCUSD elementary schools as well as to local pediatricians and mental health clinics. In addition to flyers, posters were also placed in pediatricians' offices, so that they could be read by interested parents.

The coordinator of the *Social Skills Training for Medicated ADHD Children* research project conducted the initial phone screenings with the parents of the participants in the ADHD group. Subsequently, research project staff administered structured interviews in order to confirm that these children both met diagnostic criteria for ADHD and had peer relational difficulties. A battery of assessment measures incorporating parents, teachers, and children was used to determine children's eligibility to participate in the ADHD group based on inclusion and exclusion criteria established by the principal investigator. These measures included the Diagnostic Interview Schedule for Children – 4th Ed. (DISC-IV; Fisher et al. 1997) Swanson, Nolan, and Pelham Rating Scale (SNAP-4; Swanson, 1992), Swanson, Conners, Loney, & Milich scale (SCLAM,; Swanson, 1992); Social Skills Rating Scale-Parent (SSRS-P; Gresham & Elliot, 1990a), Quality of Play questionnaire (QPQ, Frankel, 2002), Achenbach Child Behavior Checklist (parent version, CBCL; Achenbach, 1991), Children's Depression Inventory (CDI; Kovacs, 1992), Multidimensional Anxiety Scale for Children (MASC; March,

1998), Pupil Evaluation Inventory-Teacher (PEI; Pekarik, Prinz, Liebert, Weintraub, & Neale, 1976), and the Wechsler Intelligence Scale for Children – 3rd Ed. (WISC-III, Wechsler, 1991). Prospective subjects for the ADHD group were excluded from the study based on the presence of Obsessive-Compulsive Disorder, Autism or any other Pervasive Developmental Disorder, or any type of psychotic disorder. Additional exclusionary criteria included any current or prior history of suicidal behavior, a failure to meet criteria for a *DSM-IV* (APA, 1994) diagnosis of ADHD, or a full scale intelligence quotient (IQ) below 85.

The initial screening and evaluation procedures described above were also applied by project staff to children in the Comparison group in order to determine their eligibility for the study and to confirm the absence of significant ADHD symptoms. Inclusionary criteria for these well-behaved Comparison group children also included the absence of significant dysfunction in peer relationships, prior enrollment in a special class, special education, or any kind of psychosocial therapy. Additional inclusionary criteria consisted of a full scale IQ above 85, failure to meet criteria for any *DSM-IV* (APA, 1994) diagnosis based on diagnostic interviews administered to parents, and failure to meet cutoffs for clinically significant levels of symptoms on the MASC and CDI. All the individual assessment measures which were described above in relation to the ADHD group were also administered in order to determine the eligibility of children to participate in the Comparison group. An additional measure administered exclusively to prospective participants in the Comparison group was the teacher version of the Social Skills Rating Scale (SSRS-T; Gresham & Elliot, 1990b).

The presence of seizure disorders, gross neurological disease, or other medical disorders were exclusionary criteria that were applied to both the ADHD and Comparison groups. A physician gathered medical history and conducted a physical exam to prospective participants of both groups in order to rule out any of these conditions as well as to evaluate the need and suitability for a medication trial for participants in the ADHD group.

From the main research project, 29 boys with ADHD and peer problems and 22 Comparison boys not meeting criteria for any *DSM-IV* diagnosis and without either behavior or peer difficulties between grades 2 and 5 (ages 6-11 years) were recruited for the *social goals* study. Although the larger research project included both female and male ADHD and Comparison children, the *social goals* study recruited only male subjects both for the purpose of replicating previous research findings and due to the limited number of girls with ADHD in the program. The overall sample population of the *social goals* study was ethnically diverse, comprising of 37.25% (19) Hispanic, 25.49% (13) Caucasians, 17.64% (9) Other, 15.68% (8) African-American, and 3.9% (2) Asian. The ADHD and Comparison samples did not differ significantly from one another with respect to the demographic variables of ethnicity, grade level, socio-economic status (SES), or Full-Scale IQ (see Table 1).

Table 1

Demographic Variables Assessed by Group^a

Variable	ADHD (n = 29)	COMPARISON (n = 22)	<i>p</i> ^b
Ethnicity			.405
Caucasian	9 (31%)	4 (18%)	
African-American	4 (14%)	4 (18%)	
Hispanic	11 (38%)	8 (36%)	
Asian-American	0 (0%)	2 (9%)	
Other	5 (17%)	4 (18%)	
Grade			.512
2	8 (28%)	3 (14%)	
3	8 (28%)	6 (27%)	
4	8 (28%)	6 (27%)	
5	5 (17%)	7 (32%)	
SES	33.8 (13.9)	33.0 (14.4)	.834
FS IQ	100.3 (12.0)	113.1 (10.9)	.506

Note. ADHD = Attention-Deficit/Hyperactivity Disorder; SES = Socioeconomic status as measured by the Hollingshead Four Factor Index (Hollingshead, 1975); FS IQ = Full-Scale IQ as measured by the Wechsler Intelligence Scale for Children – 3rd Ed. (Wechsler, 1991).

^aFrequencies and percentages corresponding to each category are provided for Ethnicity and Grade. Means and standard deviations are provided for SES and FS IQ.

^bBased on two-tailed independent sample *t* tests for Ethnicity and Grade or chi-square tests for SES and FS IQ.

Procedures

Subjects for the *social goals* study were recruited through flyers distributed to parents of children in the after-school program (described above). These flyers contained information about the nature of the study as well as the activities in which the children would participate (see Appendix E). These flyers also assured parents that their child's participation was voluntary and that their enrollment in either the after-school program or the larger social skills training project would not be affected by whether or not they agreed to participate in the *social goals* study. Investigators met with parents who expressed interest in the study in order to inform them about the purpose of the study, review the informed consent form, and to obtain their written consent. Prospective child participants were also informed about the study, the voluntary nature of their participation, and the activities and interviews they would be engaging in, prior to attaining their written assent. Children's written assent and parents' written consent (see Appendix F) were also obtained by the principal investigator (viz., Fred Frankel, Ph.D.) for all the participants in the main research project from which the sample for the study was drawn.

The data for the archival study were collected in the context of multi-stage sessions comprising a game-orientation, a pre-play interview, a game interaction, and a post-play interview. Each of these sessions took approximately 30-40 minutes to complete. Pairs of similarly aged children who had very limited or no previous exposure to one another were randomly assigned to dyads comprising a boy with ADHD and a well-behaved Comparison boy. Initially, the two boys were pulled out of the after-school program and brought together to a private room where a staff member informed them

about the nature, object, and rules of the game they were about to play through a short discussion and demonstration (see Appendix G). Immediately thereafter, they were separated into two private rooms where a trained staff member gathered each boy's self-report of his goals with respect to the game he was about to play with a peer. Next, the children were brought together to play one of two interactive games: (a) "Space Invaders," a Nintendo-based video-game which was designed to be played cooperatively, or (b) a card matching memory game based on the game "Concentration" which was designed to be played competitively. With the exception of four ADHD-diagnosed boys, all children in the ADHD group played both games, each time paired with a different Comparison group boy. Due to logistical and scheduling constraints, four boys in the ADHD group only played the video game but did not have the opportunity to play the card game. Each boy in the Comparison group played each game at least once but was never paired with the same ADHD-diagnosed boy more than one time. The game played first by the boys in the ADHD group was counterbalanced in order to control for order effects. Following the game interaction, children were separated again and interviewed by the same staff member who conducted the pre-play interview regarding both their perception of their play partner's social goals and their sociometric impressions of that play partner. At the end of the post-play interview the research staff members returned the children to their ongoing after-school program activities. Although the ADHD-group boys who participated in the *social goals* study did participate in medication trials as part of the larger social skills training project, data for the proposed archival study were collected only on days when these children were un-medicated.

Instrumentation

Pre-Play Social Goals Interview

Children's social goals for each game session were assessed at the pre-play interview using a standardized forced-choice procedure (see Appendix H for interview script and score sheet). These interviews, like the post-play interviews, were conducted by masters and doctoral level graduate students who were trained by the study co-investigator, a licensed clinical psychologist. The interviewers were blind to the children's diagnostic status. At the beginning of the interview, children were told that they would be asked some questions about their goals for the game they were about to play followed by a brief structured discussion designed to ensure that each child understood the meaning of the word *goal*. Each child was also assured of the confidential nature of his responses. Children were then asked to identify their goals for the upcoming game in an open-ended format. Subsequently, children were asked to rate eleven pre-selected goals by placing poker chips into different sized cups labeled to reflect the following responses: *not at all important*, *a little important*, and *very important*. The list of goals was drawn from prior research on the social goals of ADHD-diagnosed children (Buhrmester et al., 1989; Melnick & Hinshaw, 1996) and reflected the following three dimensions (a) instrumental goals (e.g., "to get better at the game"), (b) relational goals (e.g., "to get along with my partner"), and (c) sensation-seeking goals (e.g., "to make the game more exciting"). After rating each of the eleven pre-selected goals, children were asked to rank order their first through fourth choices of social goals from among the goals they rated as *very important*. The goals were presented in counterbalanced order across the interviews.

Post-Play Social Goals Interview

Immediately following the play session, children were individually interviewed by the same staff person who administered the pre-play interview (see Appendix I for interview script and score sheet). This interview format was similar to the pre-play interview described above, except the focus was not on the child's own goals but rather on his perception of his partner's social goals during their recently completed interaction. Following an open-ended inquiry, each child was asked to rate how important he thought each of the eleven pre-selected goals were to his play partner. Children were then asked to rank order the four social goals that they believed were most important to their partner during the game.⁵

Post-Play Peer Sociometric Interview

At the conclusion of the post-play interview, children provided sociometric data by rating how much they liked their play-partner, how cooperative they perceived their playmate to have been during the game session, and how much they would like to have their play partner as a friend (see appendix J for interview script and score sheet). Participants were guided to provide their ratings by using the previously described poker chips and cups procedure. However, the labels on the cups were modified to reflect the following choices: *not at all, a little bit, and very much.*

Data Management

The data collected for the social goals study were recorded by project staff on response sheets which were then stored in charts labeled with the subject's name. Each child was subsequently assigned an identification number which was stored in his/her

⁵ These peer-inferred ratings and rankings of social goals were the focus of another study and will not be commented on further in this report.

chart. The data collected during the interviews were entered into a computer database using the child's identification number. To protect the subjects' anonymity, names and other potentially identifying information were not included in the computerized database. All raw data have been stored in a secured, locked location in UCLA which was accessible only to the project's principal investigator and coordinator. Written permission to access the archived, anonymous, password-protected computerized data pertaining to the current study was obtained from its principal investigator, Fred Frankel, Ph.D. (see Appendix K).

Chapter III: Results

This chapter reviews the results of the current study. First, an overview is provided of the statistical approach adopted in response to some of the challenging aspects of the data. Subsequently, the primary findings are presented, organized around the five study aims identified at the conclusion of the first chapter of this manuscript.

Description of Statistical Approach

A number of aspects of the data collected for the current study generally precluded the use of standard general linear model (GLM) analyses of the social goal ratings as had been originally planned. As discussed in the description of the study's methods, a three-point scale was used to gather rating data for children's social goals. Although selected based on developmental considerations, the three-point scale resulted in a restricted range of responses. This restriction in the variability of the rating data made finding significant effects unlikely. Thus, most of the analyses were based on the social goal rankings data rather than these rating data (with exceptions for those instances where the rating data were required to address one of the research questions posed). The study procedures had subjects rank their most highly rated goals by their relative importance. The rankings were reverse coded such that subjects' first choices were assigned a 4 and their fourth choices were assigned a one. Goals that were not ranked were assigned a zero. In addition to creating non-independent but exchangeable observations and yielding goal mean scores where higher values reflected higher rankings, this scoring approach essentially produced a five point (0-4) scale. The wider range of responses among the rankings as opposed to the ratings created greater

variability in these data, meaning that the likelihood of detecting significant effects was increased.

However, like the rating data, the ranking data are heavily right skewed, as every participant rated exactly one of the 11 goals with a 4, a 3, a 2, and a 1 but rated 7 goals with a zero. In addition to violating the assumption of a normal distribution associated with standard GLM analyses, such skewed data can exacerbate problems associated with the use of the type of mixed GLM analyses required for the current study (Pinheiro & Bates, 2000).⁶ A number of steps were taken in response to these issues. First, because a normal distribution would not approximate the distribution of the current data (meaning that tests based on the normal distribution would likely yield misleading results), the Poisson distribution was used for the error terms within the GLM. The Poisson distribution is considered to be a good approximation to use when data are skewed as it yields the best estimate of p values and results in the greatest statistical power. Second, the Markov Chain Monte Carlo simulation (MCMC) was used as a re-sampling approach to approximate the true empirical distribution function of the parameter estimates so as to obtain more reliable and accurate estimates of the p values. Specifically, a Markov Chain with 10,000 replications and a burn-in period of 1,000 replications that were discarded was used. In order to ensure that the Markov Chains converged, each result was replicated five times and evaluated if there were major discrepancies in the results and the convergence patterns (Gilks, & Spiegelhalter, 1996). This approach had the additional advantage of avoiding the unsolved problem of the correct degrees of freedom for the F-tests in mixed GLM analyses. For the mixed-model GLM analyses, the goals were

⁶ The use of the ranking data also violates the assumption of independent observations given that once a goal has been ranked (e.g., as the most important), no other goal can be placed in that category.

modeled as multiple observations on the same subjects. Additionally, the fact that subjects had multiple observations was controlled for by including an effect specific to each participant as a random factor. These mixed GLM analyses used to address a number of the current research questions also incorporated the type of game played, the partner each subject played with, and the self-reported goals assessed prior to each game-playing period.

For research questions related to peer status, the sociometric variable used for all analyses consisted of responses to the post-play interview question related to how much each participant would like to have his play partner as a friend (with responses based on a three point scale ranging from *not at all* to *very much*). An alpha level of .05 was used for all statistical tests.

Do ADHD and Comparison Boys Differ in their Selection of Social Goals?

It was hypothesized that ADHD and Comparison boys would not differ in their selection of social goals for the naturalistic peer interactions used in this study. The general statistical approach described above was not directly applicable to testing this hypothesis due to the nature of the scoring of the ranking data. Essentially, because the average score across all goals is the same for every boy (viz., $4+3+2+1+(7*0)/11 = .9$), it was inevitable that there would be no group effect. Thus, despite the aforementioned problems associated with their limited range and right skewed distribution, rating scale data were analyzed using a profile analysis approach based on a mixed model GLM in order to address whether the groups differed in their social goal selections. Specifically, the goals were modeled as multiple observations on the same subject and the fact that each subject had multiple observations was controlled for by including an effect specific

to each participant as a random factor. Findings from these analyses supported the hypothesis as there were no differences between the ADHD and Comparison groups with respect to their social goal ratings ($F(1, 44) = .77, p = .39$).

In addition, a mixed model ANOVA analysis of the ranking data utilizing the aforementioned approach of adopting the Poisson distribution and utilizing the MCMC simulation to determine the significance of the test statistic was conducted. This approach accounts for the inherent non-normality of the ranking data by directly estimating the empirical distribution function of the test statistic instead of approximating it with an F distribution. This more accurate approach was adopted because the non-standard structure of the data would have otherwise lead to biased results. Results of this analysis, which essentially compared the profile (or average ranking across the goals) of goal rankings across the two groups (*Group by Goal* interaction), suggest that there is an overall difference in the patterning of how goals were ranked across the two groups ($p = .012$). However, post-hoc analyses are unable to identify which specific goals differ between the two groups. The nature of this finding is conveyed in Figure 1. Although the effect cannot be localized to specific goals, it appears that generally small differences between the groups on many of the social goals, when considered collectively, translate to a significant difference in the overall patterning of goal rankings.

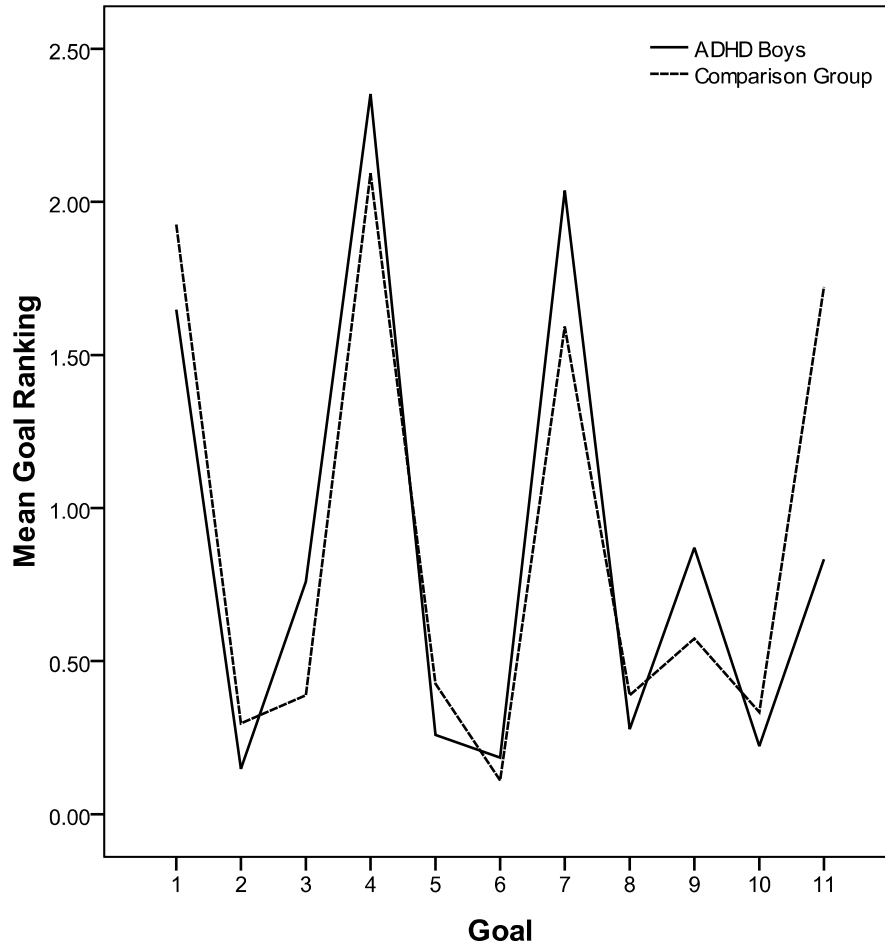


Figure 1. Profile of Mean Social Goal Rankings for ADHD and Comparison Boys.

Do Boys with and without ADHD Differ with Respect to their Peer Status?

The hypothesis that boys with ADHD would receive lower sociometric ratings than Comparison boys was supported. The two groups differed significantly on the sociometric variable, $F(1, 1114) = 41.71, p < .001$, with the Comparison boys being rated as significantly more desirable as potential friends than the ADHD-diagnosed boys (difference in mean scores = .48).

Are Boys' Social Goals Related to their Peer Status?

In contrast to the study's hypothesis, results of the mixed GLM analyses (described above) indicated that, at least within the context of this study, there was not a significant relationship between self-reported social goals and peer status. Moreover, the interaction effect between group (ADHD vs. Comparison) and social goal ranking score was non-significant, meaning that the absence of a significant relationship between self-reported social goals and peer status held for both the ADHD and Comparison boys.

Do Task Variables Impact the Social Goals Selected by Boys with and without ADHD?

In the mixed GLM analysis relevant to this research question, task variables are represented by the *Game* variable (i.e., whether subjects were playing the video or card game). Results of this analysis suggest that task variables do impact the social goals selected by both groups of boys as there was a significant main effect for the *Game* variable ($p < .001$). The specific nature of this effect is discernable from the significant *Game* by *Goal* interaction effect ($p = .047$), which revealed that the following goals were ranked significantly higher in the card game than in the video game (or, conversely, significantly lower in the video game than the card game): (a) "to do better at the game than my partner," (b) "to make the game more exciting," (c) "to get along well with my partner," (d) "to have fun, even if it means breaking the rules," and (e) "to cooperate (follow the rules and try to get along with my partner), even if it means the game is not as much fun for me." With the exception of the goal, "to do better at the game than my partner" being ranked more highly in the card game, these findings were not consistent with the study's hypotheses.

Is the Relationship between Social Goals and Peer Status Task Dependent?

This question was examined through the *Game by Social Goal Ranking Score* interaction effect that was tested in the mixed GLM analyses pertaining to the sociometric variable. Given that the use of the MCMC to approximate the real test statistic shows that these interaction effects are not significant (the omission of F statistics is intentional as F tests were not conducted), the results of these analyses failed to support the hypothesis that the nature of the task would significantly moderate the relationship between social goals and peer status.

Chapter IV: Discussion

This archival study had the following aims: (a) to investigate potential differences in the social goals selected by boys with ADHD in comparison to their non-diagnosed peers, (b) to replicate previous findings regarding sociometric status differences between boys with and without ADHD, (c) to evaluate the relationship between children's social goals and their peer status, (d) to examine whether task variables (competitive vs. cooperative) impact the social goals selected by boys with ADHD or Comparison boys, and (e) to explore whether any relationship found between social goals and sociometric status is task dependent. The hypotheses corresponding to these aims were as follows: (a) ADHD and Comparison boys would not differ in their selection of social goals for the naturalistic peer interactions occurring in the current study, (b) boys diagnosed with ADHD would receive lower sociometric ratings than Comparison boys, (c) children's social goals would be significantly related to their peer status, (d) the nature of the task would impact the social goals selected by both boys with and without ADHD, and (e) the relationship between children's social goals and their sociometric status would be moderated by the nature of the task.

The following section of this chapter will discuss the findings of the current study, including their convergence or divergence with previous literature, organized by the five hypotheses reviewed above. Next, limitations of the study will be reviewed. Finally, clinical implications of the findings will be discussed and directions for future research related to the area of social cognition and peer status among youth with ADHD are identified.

Summary of Key Findings

The results of this study supported the first hypothesis in that no significant difference emerged between ADHD and Comparison boys with respect to their self-reported ratings of social goals. Although the clearly defined nature of the two interactive tasks used in this study may have contributed to the groups not differing in their social goal ratings, this finding is also consistent with the research-informed contention (Barkley, 2006; Melnick & Hinshaw, 1996; Whalen & Henker, 1985) that the social knowledge of children with ADHD is unimpaired and similar to their peers (even if their behavior is not ultimately consistent with their social goals). However, caution should be exercised when interpreting these results given that, as discussed previously, the rating scale data both suffered from restricted range and violated the assumption of a normal distribution.

As the results of prior investigations of differences in social goal selection between children diagnosed with ADHD and their non-diagnosed peers have been mixed, the current results converge with past studies finding no group differences (Thurber et al., 2002) while diverging from those with results suggesting that these two groups do indeed differ in their selection of social goals (Buhrmester et al., 1989; Gallen, 1998). Research conducted by Melnick and Hinshaw (1996) may help to both identify one of the bases for the mixed findings in this area and support the results of the current study. As reviewed earlier in this report, Melnick and Hinshaw found significant differences in the rankings of social goals between ADHD-diagnosed boys who were high in aggression and both low-aggressive ADHD boys and Comparison boys without ADHD. Of note, the low aggressive ADHD-diagnosed boys and non-diagnosed Comparison boys did not differ

from one another with respect to their social goal rankings. These findings, especially when considered in conjunction with other results suggesting that aggressive and non-aggressive youth differ at least with respect to their prioritization of social goals (e.g., Lochman et al., 1993) suggest that aggression may be more germane than ADHD in boys' selection of inappropriate social goals. Noteworthy in this regard is the fact that neither the Burhmester et al. or the Gallen study subdivided their ADHD participants on the basis of aggression, which raises the possibility that unexamined differences in aggression among their samples accounted for the observed differences in social goals rather than ADHD per se. With respect to the current study, it is possible that the sample of ADHD-diagnosed boys was generally non-aggressive and similar in nature to the low aggression ADHD group from Melnick and Hinshaw's study. If the sample of ADHD-diagnosed boys in the current study was indeed generally non-aggressive, as was suggested by unsystematic reports from the study staff, then the present results further support the contention that ADHD per se (in the absence of comorbid aggression) is not associated with differences in social goals.

Due to the aforementioned methodological limitations of the rating data, the social goal ranking data, which produced a wider range of responses, were also analyzed. As described in the previous chapter, this analysis essentially compared the profile (or average ranking across the goals) of goal rankings across the ADHD and Comparison groups. Results indicated that there was an overall difference in the patterning of how goals were ranked across these two groups but it was not possible to localize this effect to specific goals. It appears possible that this significant group difference reflects the combined effect of generally small differences between ADHD and Comparison boys on

their rankings of many of the social goals assessed. Thus, these findings hint at the possibility of a subtle group difference that might be better localized with greater power or, alternatively, if social goals were more distinctly defined or grouped together.

Considered together, the results of analyses based on the rating and ranking data suggest that although children with ADHD select similar social goals to their non-diagnosed peers, their prioritization of these goals may differ. If valid, this interpretation supports the hypothesis, raised by multiple researchers, that difficulties in coordinating and prioritizing between multiple social goals are one of the mechanisms leading to social maladjustment in children with ADHD (Dodge et al., 1989; Ojanen et al., 2005; Parkhurst & Asher, 1985).

The results supported the study's second research hypothesis, that boys diagnosed with ADHD would receive lower sociometric ratings than their non-diagnosed peers. Specifically, following a very brief interaction with an unacquainted peer, boys with ADHD were rated as significantly less desirable as potential friends by their non-diagnosed play-partner than were boys in the Comparison group as rated by their ADHD-diagnosed partner. These results are consistent with previous findings demonstrating that, in comparison to their non-diagnosed peers, ADHD-diagnosed children are more likely to be rejected and rated as disliked by peers on sociometric measures even after a brief period of exposure (Barkley, 2006; Bickett & Milich, 1990; Braswell & Bloomquist, 1991; Coie & Kupersmidt, 1983; Erhardt & Hinshaw, 1994; Gaub & Carlson, 1997; Henker & Whalen, 1989; Melnick & Hinshaw, 1996; Pelham & Bender, 1982).

Considering the results of the first two research questions in light of the findings that children's social status relate to their behavior (Cillessen & Mayeux, 2004; Coie et al., 1990; Hymel et al., 2002; Stormont, 2001), it is plausible that the peer disapproval experienced by children with ADHD may emanate not only from potential problems in coordinating and prioritizing multiple goals, but also from difficulties in regulating their behavior so that it is consistent with their social goals. It may well be that the clinical symptoms exhibited by children with ADHD (e.g., inattention, impulsivity) and their dearth of positive social experiences impair their ability to regulate their actions and apply behavioral strategies in accordance with their stated goals. This proposition is congruent with the notion that the deficits ADHD-diagnosed children exhibit do not lie in their social knowledge ("knowing what to do") but rather in their enactment of socially appropriate strategies ("doing what they know") and ability to regulate their behavior (Barkley, 1997; Melnick & Hinshaw, 1996; Whalen & Henker, 1985). Indeed, the suggestion that children with ADHD endorse socially appropriate goals but fail to execute them is consistent with the results obtained by Thurber et al. (2002) who found that girls with and without ADHD responded to hypothetical vignettes with similar goals but differed in their responses regarding their choice of actions to obtain the goals.

In contrast to previous findings (Chung & Asher, 1996; Erderly & Asher, 1996, 1999; Lochman et al., 1993; McDowell & Parke, 2002; Melnick & Hinshaw, 1996; Ojanen et al., 2005; Ojanen, et al., 2007; Parkhurst & Asher, 1985; Renshaw & Asher, 1983; Rose & Asher, 1999), the study's third hypothesis, that children's endorsement of certain social goals would correlate significantly with their social status, was not supported by the results. In other words, within the context of this study, self-reported

social goals did not have a significant effect on children's social standing as measured by their play partner's interest in becoming their friend. The lack of significant association between social goals and sociometric status applied for the sample as a whole as well as for the ADHD and Comparison boys when considered separately.

Several methodological factors may contribute to the disparity between the current and prior studies with respect to the relationship between social goals and social status. First, the majority of prior studies that found an association between social goals and social status employed hypothetical vignettes (Chung & Asher, 1996; Erderly & Asher, 1996; Lochman et al., 1993; Ojanen, et al., 2005; Renshaw & Asher, 1983; Rose & Asher, 1999) as opposed to the naturalistic interactions used in the current study. Although hypothetical vignettes examine children's social knowledge, this methodology does not incorporate behavior enacted in naturalistic interactions that is likely to be the primary basis for sociometric appraisals by peers. Because the current methodology involved peer appraisals being based not only on reported social goals but also on displayed behavior that may or may not correspond with those goals, the relationship between social goals and social status may have been attenuated (albeit in ways that may better reflect the reality of children's social interactions). Second, in contrast to the current investigation, many prior studies finding an association between social goals and social status, despite using hypothetical vignettes, involved more emotionally charged contexts such as ambiguous provocation (e.g., Erdely & Asher) and interpersonal conflict (e.g., Chung & Asher; Rose & Asher). The generally benign context of interactive game play used in the current study may have reduced the likelihood that children would select the type of defiant, antisocial goals that have been found to be associated with poor peer

status in prior studies. Third, in addition to the possible role played by the nature of the tasks used in the current study, the type of social goals presented to participants may have contributed to the non-significant association between social goals and social status. Specifically, the 11 goals presented to participants, which were chosen to ensure methodological consistency with the Melnick and Hinshaw (1996) study, did not include many of the strongly anti-social goals that have previously been associated with poor peer status (e.g., revenge, coerciveness). Fourth, the relative homogeneity of social goal rankings in the current study may have contributed to social goals not being significantly associated with peer status. There was not a high degree of variability within the data with respect to which goals were ranked high and low and participants from both groups demonstrated a general inclination to rank highly the kind of cooperative, pro-social goals (e.g., “to get along well with others”) that have been linked to positive peer status in prior studies. Finally, it is important to note that these results should be interpreted with caution as it is unclear whether they reflect a true finding related to the lack of association between social goals and social status or inadequate power to detect a relationship that may exist. Nevertheless, it does appear reasonable to speculate that, at least as it pertains to the type of social goals presented in this study, any effect that self-reported goals may have on sociometric status is likely to be relatively small and of limited clinical significance.

One of the unique features of the current study was a methodology that allowed the examination of children’s social goals across two distinct tasks: a competitive card game and a cooperative video game. The fourth hypothesis asserted that the nature of the task would impact the social goals selected by both boys with and without ADHD.

Although the task variable was found to have a significant effect on the subjects' ranking of social goals, the specific predictions made as to which goals would be more highly ranked in each game were generally not supported. The lone exception is that, as predicted, the goal "to do better at the game than my partner" was ranked more highly in the card game than in the video game. This finding is unsurprising given that the card game was set up as a competitive task and the instructions emphasized that the goal was to do better ("find more pairs" of matching cards) than one's partner in order to win. The predictions that the instrumental goal "to show my partner that I'm better than him" would be ranked higher in the competitive card game and that the relational goals "for me and my partner to do well at the game," "to be a good sport," "to get along with my partner," "to be liked by my partner," and "to cooperate even if it means that the game is not as much fun for me" would be ranked higher in the cooperative video game were not supported. Instead, the instrumental goals "to make the game more exciting" and "to have fun, even if it means breaking the rules," as well as the relational goals "to get along with my partner," and "to cooperate, even if it means that the game is not as much fun" were ranked higher in the competitive card game than in the cooperative video game.

The fact that the expected associations between tasks and goals generally did not emerge, may imply that the tendencies children have toward certain goals are fairly robust and not swayed much by the social context. This line of reasoning is consistent with Crick and Dodge's (1994) perspective that children enter peer situations with relatively stable, trait-like goal orientations that may be modified in response to immediate social stimuli. For most youth, these stable goal orientations may be comprised largely of a variety of pro-social or relational goals. Indeed, regardless of the

task they were about to engage in, both the ADHD and the Comparison children tended to rank highly pro-social goals such as “for me and my partner to do well at the game,” “to be a good sport,” and “to get along well with others,” whereas both groups tended to assign low rankings to more instrumental, less pro-social goals such as “to do better at the game than my partner,” “to show my partner that I’m better than him,” and “to show my partner that I’m not afraid of getting into trouble.” This pre-existing social goal orientation may be highly generalizable across contexts and its impact on children’s goals selection may surpass the influence made by the competitive vs. cooperative nature of the tasks used in the current study.

In addition to the competitive vs. cooperative dimension, other characteristics of the games may have contributed to some of the unexpected findings with respect to task effects on social goals. For example, although the card game was set up as competitive and the video game as cooperative, the fact that both of these situations involved the generally positive context of game play without intentionally introducing negative experiences such as provocation, conflict, or failure, as was done in previous research (Chung & Asher, 1996; Erderly & Asher, 1996; Rose & Asher, 1999), may have further contributed to the endorsement of generally positive, relational goals across both tasks. In other words, it is possible that the positive *game play* aspect shared by both contexts may have been more impactful on children’s social goal selection than the *cooperative* vs. *competitive* dimension.

Furthermore, despite the fact that the instructions to the video game were designed to trigger cooperation, the context did involve the two participants playing simultaneously controlling separate joysticks. The fact that this set up is highly similar to

the familiar context where boys are competing against one another in a video game may have lessened the impact of the cooperative instruction set. This may have contributed to the unexpected finding that the goals “for me and my partner to do well at the game” or “to cooperate even if it means that the game is not as much fun for me” were not ranked more highly in the video game than the card game.

Finally, a fairly salient distinction between the two game contexts (likely more salient than the *cooperative vs. competitive* dimension) was the fact that the video game was relatively fast-paced and stimulating whereas the card game was slower and, for most boys, likely less engaging. This difference may have contributed to the unpredicted findings that the sensation-seeking goals “to make the game more exciting” and “to have fun, even if it means breaking the rules” were ranked more highly in the card game than in the video game. To the extent that the participants found the video game inherently more fun and exciting than the card game (which appears likely to have been the case), then such sensation-seeking goals would be less relevant to the video game context.

A final aim of the current study was to assess whether the relationship between social goals and sociometric status is task dependent. However, this line of inquiry was rendered largely moot by the fact that no relationship was found between social goals and sociometric status in the current study. Thus, it is of no surprise that, in contrast to what was hypothesized, the nature of the task was not found to moderate the (nonexistent) relationship between social goals and peer status. It is worth reiterating the point here that, in light of the lack of variability in the data with respect to the ranking of social goals, the current study may have lacked adequate power to identify any effect of social goals on sociometric status or any moderating role played by task variables. Thus, the

current results need to be interpreted with caution. Nonetheless, these results may indicate that peer appraisals are not highly influenced by the congruence between their peers' social goals and the nature of the task at hand but rather by the degree to which their peers' behavior corresponds with both the demands of the task and with socially normative goals (e.g., cooperation, being liked).

Limitations

The results of the current study are limited by a number of factors, including some associated with its status as archival research. Archival research is associated with a number of methodological limitations (Shaughnessy & Zechmiester, 1994) Among these is the investigator's lack of control over the design or selection of measures, procedures for data collection, sample size, and sample characteristics.

With respect to the sample, because the subjects in the present study consisted only of males between the ages of six and eleven, the generalizability of the results to girls and to children of both genders outside the sample age range is unknown. In addition, although the sample in the current study is ethnically diverse and fairly representative of the ethnic composition of school-aged children in California, the generalizability of the findings to less diverse populations or to those with different ethnic compositions is unknown.

It is also possible that some of the hypothesized differences between ADHD and Comparison children did not emerge in the current study due to the ADHD sample being only moderately representative of the ADHD population. Although not assessed systematically, staff and investigator observations suggested that the ADHD sample in the current study presented as less symptomatic, more cooperative, and less aggressive

and disruptive than typical samples of boys with ADHD. To the degree such perceptions were accurate, the non-representativeness of the ADHD sample may have made it less likely to detect group differences that would emerge with more typical ADHD samples. It is noteworthy, however, that despite the possibility that the clinical sample in the current study manifested lower levels of ADHD and other externalizing symptoms, they nonetheless received lower sociometric ratings than their non-diagnosed peers.

Another limitation relates to treating the ADHD sample as homogeneous as opposed to dividing it into subgroups based on factors that might impact the variables of interest in this study (viz., social goals, sociometric status). With respect to their established or purported relationships with social goals and peer status, such subgrouping might have been based on diagnostic subtype, levels of aggression, or comorbid Oppositional Defiant Disorder (ODD), as these variables have been demonstrated to impact the social information processing and/or the specific peer difficulties experienced by children diagnosed with ADHD (Melnick & Hinshaw, 1996; Zentall, 2005). The absence of such subtyping in this and other investigations of social information processing and peer status among children with ADHD may have obscured meaningful differences on these variables within study samples and be a significant factor contributing to the contradictory findings emerging from investigations in this area (Henker & Whalen, 1989).

With respect to design and methodology, the correlational nature of this study precludes any conclusions regarding causality. Additional methodological factors may have reduced statistical power and, thus, contributed to some of the study's non-significant results. For example, as previously noted, the utilization of a 3 point rating

scale for assessing social goals (viz., *not at all important, a little important, very important*) likely decreased the likelihood of finding significant effects by restricting the range of the social goals rating data. Issues related to the clarity and distinctiveness of the social goals presented to subjects in this study might also have diminished the likelihood of identifying group differences with respect to social goals and possible relationships between social goals and sociometric variables. Although chosen to be consistent with those used in Melnick and Hinshaw's (1996) study of social goals and peer status among boys with ADHD, changes to the number of goals assessed and to the wording of goals (e.g., "to cooperate, even if it means that the game is not as much fun for me") might have improved both the validity of the social goals assessment procedure and the likelihood of identifying significant effects related to those goals.

Also relevant to the potential validity of the social goal data is the possibility of social desirability bias. The study's procedures, which involved an interaction between child participants and adult research assistants, could have influenced the children to select social goals not necessarily based on their true personal agendas but rather based on their perception of social norms. If operative, such bias would further homogenize the social goals selected by the participants, contributing further to the restriction of range in the social goal data that would decrease the power of the study to detect significant relationships and group differences.

Clinical Implications

The peer relationship problems commonly experienced by children with ADHD have emerged as an important area of study in recent years, in recognition of the significant role they have been demonstrated to play in the prediction of concurrent and

long-term maladjustment (Parker & Asher, 1987). Specifically, understanding the pathways to peer rejection and developing effective preventive and remedial treatment programs that address children's interpersonal difficulties have been the subject of extensive research. These studies have identified multiple mechanisms leading to peer disapproval and social disharmony in children in general and in those with ADHD in particular. However, unlike past research efforts which focused on single factor explanations, the field appears to be increasingly recognizing the need to consider the combined effects of multiple factors, both in theoretical models related to peer status and in the design of intervention programs. These combined effects inevitably involve a complex, dynamic interplay between idiosyncratic child factors (e.g., social cognitive processes, behaviors, emotions) and contextual factors (e.g., situational demands, task characteristics, as well as responses of peers, parents, and other supervisory adults).

The current study aimed to better understand the interactive role of some of these child-based (viz., the social-cognitive process of social goals) and contextual (viz., two game situations that varied in a number of dimensions, including whether they were competitive or cooperative) factors as they relate to peer status. Although numerous aforementioned factors warrant that the results be interpreted cautiously, a number of potential implications for intervention efforts related to peer difficulties among children with ADHD can be considered.

Although the selection of inappropriate or maladaptive social goals has been previously proposed as one source of children's social difficulties (Crick & Dodge, 1994; Erderly & Asher, 1996, 1999; McDowell & Parke, 2002; Ojanen et al., 2005; Ojanen et al., 2007; Parkhurst & Asher, 1985; Renshaw & Asher, 1983; Rose & Asher, 1999), the

results of the current study, consistent with some but not all prior investigations in this area, suggest that children with ADHD (in the absence of high levels of aggression), do not differ from their peers with respect to their selection of social goals. Thus, for children with ADHD in the absence of other comorbid externalizing problems (e.g., aggression, ODD features), intervention efforts that focus on the nature of their social goals may be misguided.

Instead, based on well-established evidence that sociometric status is linked to particular social behaviors (Cillessen & Mayeux, 2004; Coie et al., 1990; Hymel et al., 2002; Stormont, 2001), the most impactful interventions are likely to be those that focus on reducing those socially aversive behaviors (e.g., aggression, noncompliance) and increasing those pro-social behaviors (e.g., cooperation) that have been identified as contributing to peer status. With respect to social goals, the current findings as well as previous claims by multiple researchers (Dodge et al., 1989; Ojanen et al., 2005; Parkhurst & Asher, 1985), suggest that there may be merit to focusing treatment efforts on helping children with ADHD to effectively prioritize and coordinate the multiple goals they are likely to adopt and to enact behavioral strategies that are consistent with their most important social goals. For example, an intervention designed to restructure goal priorities might consist of presenting children with a random list of social goals (e.g., getting along with others, winning a game, doing better than others on a task) and asking them to create a hierarchy based on each goal's relative impact on children's social standing among peers. Following, a review of children's hierarchies and feedback about the accuracy of their responses should take place in an effort to confirm their accurate judgments and disconfirm their misconceptions about the link between their goals and

appraisal by peers. Subsequent efforts might have children select from a range of potential behaviors those that would be most conducive to achieving the previously identified goals, with therapists and or peers providing feedback on their choices.

Furthermore, interventions that aim to teach children how to generate behavioral strategies that correspond with their socially appropriate goals may focus on assisting children to evaluate whether their current actions help them to achieve their identified goals by guiding them to collect information on the reactions of their social partners. Children can then be taught to effectively select behaviors that best promote their pro-social agendas. Moreover, while clinical attention might be productively focused on teaching children to identify the behavioral tactics which best relate to the attainment of their pro-social goals, it appears that techniques focusing on improving behavioral regulation through various means would also be effective in promoting positive peer relationships for children with ADHD. The two primary treatment modalities utilized to promote better behavioral regulation in children with ADHD are psycho-stimulant medications (e.g., methylphenidate) and a variety of contingency management strategies (e.g., token systems) which aim to reinforce pro-social behaviors (e.g., taking turns, complimenting peers) and suppress aversive or maladaptive behaviors (Frankel & Myatt, 2003; Plumer & Stoner, 2005). However, while these interventions have been shown to be efficacious in enhancing rates of academic productivity and reducing behavioral difficulties in children with ADHD (MTA Cooperative Group, 1999), they have not been demonstrated to be completely effective in remediating peer difficulties among these children (Mrug, Hoza, & Gerdes, 2001; Whalen et al., 1989).

In addition to contingency based interventions, children with ADHD might benefit from treatment methods that focus on changing antecedents. Specifically, it is suggested that efforts directed towards improving the social functioning of children with ADHD include a focus on restructuring tasks. Despite the fact that the magnitude and nature of the impact of task variables on social goals was different than originally anticipated, the link between task variables and the social goal rankings found in the present study adds to the accumulating evidence that contextual factors do have some effect on social goals. These results in addition to the well-established impact of task variables on the behavior exhibited by children with ADHD (Anastopoulos et al., 2001; Barkley, 2006; Barkley & Murphy, 1998; Braswell & Bloomquist, 1991; Clark et al., 1988; Greenhill, 1998; Grenell et al., 1987; Landau & Moore, 1991; Stormont, 2001; Zentall, 2005), stress the need to consider context in intervention efforts that target social-cognitive processes and behaviors related to peer status. Such interventions should promote interactions between children with ADHD and their peers in situations which are likely to elicit pro-social goals and behaviors that are conducive to peer acceptance. This might be particularly important in the initial social contacts between ADHD-diagnosed children and their peers, given the impact and durability of initial sociometric impressions. Specifically, efforts might be made to minimize peer interactions involving children with ADHD in boring, repetitive, and action-restrictive contexts in favor of more active, stimulating, reward-rich, and feedback-intensive contexts as the latter tend to diminish the expression of ADHD symptoms associated with negative peer appraisals.

Moreover, provided they are adequately stimulating, cooperative activities are recommended given that, in contrast to competitive tasks, they are more likely to

decrease aggression and elicit the type of pro-social behaviors and mutually positive interactions conducive to peer acceptance (Bay-Hinitz et al., 1994; Clark, et al., 1988; Gelb & Jacobson, 1988). This suggestion is consistent with that offered by Bay-Hinitz et al. who note that, to the degree that the roots of aggression lie in the failure to learn and practice positive social behaviors in early childhood, educational environments that promote the widespread use of cooperative games (coupled with limitations on competitive games) may play an important preventative role by reducing children's tendencies to respond aggressively and promoting their utilization of pro-social strategies which, in turn, are likely to result in more positive peer appraisals.

Furthermore, although not substantiated in the current study, it appears reasonable to assume that positive peer appraisals are more likely to occur when there is a congruence between the nature of the task children engage in and both their social goals and behaviors. Thus, it might be beneficial for intervention efforts to help children to regulate their behavior in response to shifting task demands and, as referenced above, to more effectively prioritize and coordinate their social goals in response to such demands.

It is also evident that those involved in treating the peer relationship difficulties of children with ADHD need to consider the heterogeneity of this population in designing their interventions. Since factors such as comorbid aggression, the presence of ODD features, and diagnostic subtype have been found to impact the social information processing (SIP) and peer relations of children with ADHD (Knight & Chao, 1989; Melnick & Hinshaw, 1996; Schmidt et al., 1988; Zentall, 2005), a generic approach to treatment that fails to consider the heterogeneity of this population with respect to factors that impact SIP and peer status is likely to be ineffective for many children with the

disorder. Rather, in order to optimize the efficacy of treatment programs aiming to remediate peer relational difficulties, it is recommended that clinicians adopt an individualized approach that carefully identifies and addresses the particular social-cognitive and behavioral factors likely to contribute to peer difficulties for a given child. For example, children whose social problems result from difficulties in prioritizing between incompatible social goals would require a different intervention approach than those who fail to encode sufficient social cues when interpreting situations and inferring a peer's intent or those who are prone to access and enact non-social (e.g., aggressive) response strategies. When multiple SIP stages are contributing to a child's problems - as would often be the case - intervention would need to address compromised processing at these different stages. These treatment goals are often accomplished via coaching and social skills training in individual and group formats in which children are trained to modify the cognitive processes that precede and accompany overt behavior, thereby helping them to accurately encode and interpret the situation at hand, develop appropriate goals, choose behavioral strategies that match their goals, and regulate performance until completed (Dopheide, 2001). However, thus far, though the SIP framework has been prominent in research on children's peer relations, few studies have been conducted on the efficacy of treatments that target social information processing difficulties in children with ADHD. It is interesting to note that a recent study that investigated whether pharmacotherapy improves the SIP in children with ADHD (King et al., 2009) found that children with ADHD who were medicated generated more aggressive responses to a provocation even though they were not more likely to make hostile attributions than their non-medicated ADHD and non-diagnosed peers.

Finally, in addition to direct interventions with ADHD-diagnosed children, treatment efforts should also target adults who play a major role in their lives. Specifically, the understanding supported by the current findings, that children with ADHD endorse socially appropriate goals but fail to execute them, underscores the importance of educating parents and teachers about their children's behavioral regulation difficulties. The aim of this intervention would be to dispel the commonly held belief that children with ADHD are defiant by nature and deliberately misbehave. Educating caregivers may lead them to become more tolerant of and patient with these children, decrease their negative feedback, and modify their punitive disciplinary approach, which itself may well contribute to distress and behavior problems.

Conclusions and Future Directions

In summary, the results of the archival study suggest the following conclusions: (a) boys with ADHD (at least those without high levels of aggression) do not appear to differ from their peers in their selection of social goals but may exhibit subtle differences with respect to their coordination and prioritization of social goals, (b) consistent with prior findings, children with ADHD tend to suffer from lower peer status than their non-diagnosed peers even after very brief periods of interaction, (c) though it is reasonable to believe that any link between social goals and sociometric status is mediated by behavior, the nature and the magnitude of the relationship between social goals and sociometric status remains unclear, and (d) although task variables appear to have some impact on social goals, there is also evidence to suggest that many social goals may have stable, state-like properties that are relatively robust to contextual changes.

A number of directions for future research can be identified on the basis of the current study. With respect to the methodology employed by future studies of social goals among children with ADHD, it is recommended that a broader scale (e.g., 5- or 7-point as opposed to the 3-point scale used in the current study) be used for ratings of social goals. The resulting expansion of the range of potential responses should yield more variability among the social goals data and, thus, increase the likelihood of identifying any true effects related to social goals. Future investigators in this area should also strongly consider subtyping their ADHD sample on the basis of variables (particularly aggression) identified or purported to relate to social goals and related variables of interest (e.g., peer status). Additionally, future studies interested in clarifying the nature of the relationship between social goals and sociometric status should include behavioral measures (e.g., observations, rating scales). The inclusion of such behavioral measures would allow for a closer examination of the relationship between children's social goals and their behavioral strategies as well as comparing their relative contributions to peer status.

In light of results of the present and prior studies suggesting that children with ADHD are not differentially prone to selecting socially inappropriate goals, the field might investigate further the hypothesis that some of the behavioral and social difficulties experienced by this population may relate to difficulties in prioritizing and coordinating their goals (as well as in generating behavioral strategies consistent with them). The current findings related to the sample's ranking of their social goals hinted at possible differences in the prioritization of goals between ADHD and non-ADHD boys. Substantiating both the existence and the nature of these differences in future research

might be facilitated by the use of measures that define social goals more distinctly and or group together thematically-related goals.

The ability to match behavioral strategies with social goals has been proposed to be related to developmental maturation (Schmidt et al., 1988). Thus, future studies might test the hypothesis that developmental delays are related to ADHD-diagnosed children's difficulties in coordinating their behaviors with their stated goals. This could be achieved by comparing (in both vignette- and naturalistic interaction-based methodologies) the ability of ADHD and non-ADHD children to match self-reported goals with behavioral strategies across different age ranges.

Additional future studies should be designed to illuminate the role that contextual factors play in shaping social cognitive constructs (e.g., social goals) and related behaviors among children with and without ADHD. Our understanding of the degree to which environmental factors impact social cognition and the nature of their influence is significantly lacking. Further insight into the extent to which both context and other aspects of the social information processing model (e.g., encoding and interpretation of social cues, intent attribution, self- and peer-perception, strategy knowledge, self-efficacy perceptions, outcome expectations, and beliefs about the appropriateness or legitimacy of certain behaviors) are relevant to the development and maintenance of peer problems in ADHD-diagnosed children could prove valuable for intervention and treatment efforts.

Finally, the results of this and related studies support the current trend toward adopting a more holistic approach to understanding the development and maintenance of children's peer difficulties and, more specifically, the idea that skill deficits or problems in social information processing are not sufficient to explain the social problems

exhibited by children with ADHD. Future study in this area should thus avoid investigations of single-cause explanations in favor of examining how multiple factors interact to account for these children's social difficulties. This more complete, albeit more complex, level of understanding should lead to the development of more sophisticated and effective interventions to address the peer relational problems that so commonly plague children with ADHD.

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APPENDIX A

Table 2: Literature Review - ADHD in Children

Author	Year	Title	Type of Resource Sample/Design	Content Summary / Main Findings	Comments
American Psychiatric Association	2000	Diagnostic and statistical manual of mental disorders (4 th ed. Text Revision).	Diagnostic Manual	-Diagnostic criteria and clinical profile of Attention Deficit Hyperactivity Disorder.	
Anastopoulos, A. D. Klinger, E.E. Temple, E. P.	2001	Treating children and adolescents with attention deficit hyperactivity disorder.	Book Chapter	-An overview of assessment, diagnosis, and treatment of ADHD.	
Barkley, R. A.	1995	Taking charge of ADHD: The complete authoritative guide for parents.	Book	-An authoritative guide for parents on ADHD.	-Excellent resource for parents.
Barkley, R. A.	2006	Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment (3rd ed.).	Book	-A comprehensive review of the research on ADHD.	-Excellent professional resource.
Barkley, R. A. Murphy, K. R.	1998	Attention deficit hyperactivity disorder: A clinical workbook (2 nd ed.).	Clinical Workbook	-A brief introduction on the main features of ADHD and a comprehensive section of assessment and treatment tools.	
Braswell, L. Bloomquist, M. L.	1991	Cognitive behavioral therapy with ADHD children.	Book Chapter	- History of the ADHD diagnosis - Primary & secondary symptoms -Comorbid disorders -Etiological factors -Outcome & prognosis	

(table continues)

Author	Year	Title	Type of Resource Sample/Design	Content Summary / Main Findings	Comments
Cunningham, C. E. Cappelli, M.	1993	Attention deficit hyperactivity disorder.	Book Chapter	-Brief introduction on the essential and secondary features of ADHD. -Chapter focuses mainly on assessment and treatment of the disorder.	
Greenhill, L. L.	1998	Attention-deficit/ hyperactivity disorder.	Book Chapter	-A psychopharmacological perspective on ADHD: diagnostic and treatment guidelines.	An informative and un-complex pharmacological guideline for ADHD treatment.
Henker, B. Whalen, C. K.	1989	Hyperactivity and attention deficits.	Journal Article: Qualitative Critical Review	-Brief review of evolving conceptualization of ADHD. -Research summary on natural course and outcomes. -Authors advance the hypothesis that cognitive and social difficulties of ADHD children may be better understood in terms of motivational and self-regulatory processes than as deficiencies in basic information processing. -Outline efficacy research on medications as a treatment strategy for ADHD.	Stresses the importance of the dysfunction in the social realm on the life of the ADHD child.
Hinshaw, S. P.	1991	Stimulant medications and the treatment of aggression in children with attention deficits.	Journal Article: Literature Review	-Recent investigations utilizing behavioral observation methodologies revealed clinically significant reductions of aggressive behavior with stimulant treatment. -In light of the fact that aggression was	

(table continues)

Author	Year	Title	Type of Resource Sample/Design	Content Summary / Main Findings	Comments
				found to be the primary behavioral predictor of peer rejection (Erhardt & Hinshaw, 1994), results are encouraging. However, Whalen et al. (1989) found that despite the decrease in aggression and non-compliance, the peer acceptance of ADHD children wasn't normalized.	
Hinshaw, S. P. Henker, B. Whalen, C. K. Erhardt, D. Dunnington, R. E.	1989	Aggressive, prosocial, and nonsocial behavior in hyperactive boys: Dose effects of methylphenidate in naturalistic settings.	Journal Article: Experimental design. N=25, 6-12 year-old ADHD boys. N=15, 6-12 year-old comparison boys.	-Methylphenidate decreased non-compliance as well as physical and verbal aggression in ADHD boys. -The medication decreased aggression to levels comparable with those of the comparison boys. -There were no medication effects on the frequency of nonsocial or pro-social behaviors.	NCT
Mannuzza, S. Klein, R. G.	1999	Adolescents and adult outcomes in attention deficit/hyperactivity disorder.	Book Chapter	-A summary of controlled, prospective follow up studies on the adolescent and adult outcomes of ADHD.	
Mannuzza, S. Klein, R. G. Moulton, J. L.	2003	Persistence of attention-deficit/hyperactivity disorder into adulthood: What have we learned from the prospective follow-up studies?	Journal Article: Critical Review of the Literature	- The article focuses on exploring the factors that may account for the inconsistent findings about the persistence of ADHD into adulthood. These include: Ascertainment procedure, attrition rates, reporting resources, and disorder criteria.	NCT

(table continues)

Author	Year	Title	Type of Resource Sample/Design	Content Summary / Main Findings	Comments
Pelham W. E. Wheeler, T. Chronis, A.	1998	Empirically supported psychosocial treatment for attention deficit hyperactivity disorder.	Journal Article:	-Behavioral interventions in the classroom and behavioral parent training were found to be well established as efficacious, while cognitive interventions haven't met such criteria.	- A concise review of treatment outcome studies.
Whalen, C. K. Henker, B. Buhrmester, D. Hinshaw, S. P. Huber, A. Laski, K.	1989	Does stimulant medication improve the peer status of hyperactive children?	Journal Article: N=25 ADHD, N=15 Controls, 6-12 year-old boys.	-Methylphenidate significantly enhanced the social standing made by peers of ADHD boys, increasing nominations of hyperactive boys as best friends, cooperative, and fun to be with. -These medication-related improvements didn't normalize peer appraisals on most outcome categories, even though noncompliance and aggression had been normalized.	NCT -Acceptance may depend less on the absence of non-compliance and aggression and more on the display and quality of pro-social behaviors.

Note. NCT= Source reviewed but not cited in text.

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APPENDIX B

Table 3: Literature Review – Children’s Peer Relations

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Bellanti, C. J. Bierman, K. L.	2000	Disentangling the impact of low cognitive ability and inattention on social behavior and peer relationships.	Journal Article: N=387, kindergarten children (assessed during the first two years of formal schooling).	<ul style="list-style-type: none"> -Cognitive ability and inattention contributed unique variance to the prediction of social behavior and peer relationships. -Low cognitive ability was predictive of pro-social skill deficits -Social behavior mediated the relation between cognitive ability and social preference. -Inattention predicted both pro-social skill deficits and elevated aggressive-disruptive behavior problems. -Behavior problems partially mediated the relation between inattention and social preference. -Low cognitive ability correlated with low peer acceptance, while inattention correlated with peer disliking. 	ADHD NCT
Bickett, L. Milich, R.	1990	First impressions formed of boys with learning disabilities and attention deficit disorder.	Journal Article: N=201, 4 th -5 th grade boys.	<ul style="list-style-type: none"> -Boys with either ADHD or LD were devalued relative to controls on a variety of variables (e.g., popularity). -Contributing factors: situational demands and physical attractiveness. 	ADHD -Varied situational demands.
Cillessen, A. H. N. Mayeux, L.	2004	Sociometric status and peer group behavior: previous findings and current directions.	Book Chapter	-One of the current directions in peer relationship research is to distinguish between the causes and the consequences of peer relationships in childhood.	

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
				- Chapter summarizes literature on the behavioral correlates of social status and addresses different methodological issues in the sociometric field (e.g. use of categorical status types vs. continuous dimensions of peer status).	
Coie, J. D. Dodge, K. A. Coppotelli, H.	1982	Dimensions and types of social status: A cross-age perspective.	Journal Article: N=311, 3 rd , 5 th , and 8 th grade children.	-Social preference was highly positively related to cooperativeness, supportiveness, and physical attractiveness and negatively related to disruptiveness and aggression. -Five distinct sociometric groups: popular, rejected, neglected, controversial, and average.	-Introduced the need to consider controversial children as a distinct group.
Coie, J. D. Kupersmidt, J. B.	1983	A behavioral analysis of emerging social status in boys' groups.	Journal Article: N=40, 4 th grade boys.	-Ten groups of 4 boys each met for six play sessions. -Within three play sessions the social status of the boys in each of the ten groups was highly correlated with their school-based status. This occurred for both the familiar and unfamiliar groups. - Distinct patterns of social interaction was found for each of the social status types: -Rejected: Active & aversive. -Popular: Norm setting and pro-social behaviors. -Neglected: Least interactive & aversive.	-Findings underscore the importance of the distinction between behaviors associated with the emergence of social status and behaviors that contribute to the maintenance of social status.

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Dodge, K. A.	1983	Behavioral antecedents of peer social status.	Journal Article: N=48, 2 nd grade, previously unacquainted boys.	<ul style="list-style-type: none"> - The behavior of boys during initial encounters with peers significantly predict their acquired social status. -Pro-social behaviors are linked to acceptance by peers, whereas anti-social behaviors are linked to peer rejection. -Behavioral patterns evolved over a period of eight sessions and yielded a unique profile for each of the 5 types of social status groups: rejected, neglected, controversial, popular, and average). Rejected children engaged in inappropriate play behaviors (e.g. disrupting ongoing peer activities) and physical aggression more than any other group. -Rejected children engaged in relatively high frequencies of anti-social acts, including insults, threats, contentious statements, exclusions of peers from play, and outright physical aggression. -Rejected children were viewed by peers as unwilling to share, highly aggressive, and poor leaders. -Rejected children initially approached peers frequently, but were rebuffed at relatively high rates. -With time, rejected children approached peers less and became more isolated. 	Examination of the behavioral mechanisms involved in the acquisition of social status in children's peer groups.

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
				-The difference in the frequency of interactive, cooperative play and social conversation between rejected children and other boys also became greater over time.	
Dodge, K. A. Coie, J. D. Pettit, G. S. Price, J. M.	1990	Peer status and aggression in boys' groups: Developmental and contextual analyses.	Journal Article: N=144, 1 st and 3 rd grade boys.	-23 groups of 5-6 unfamiliar boys met for five free-play sessions. - Social preference in the play groups correlated significantly with classroom social preference after the third play session for the third graders and after the fourth play session for the first graders. - Four types of aggressive behaviors were related to peer status in the following way: -Rough play: Not related. -Reactive aggression & instrumental aggression: significantly related. -Bullying: Relation varied with age.	NCT
Erhardt, D. Hinshaw, S. P.	1994	Initial sociometric impressions of ADHD and comparison boys: Predictions from social behaviors and non-behavioral variables.	Journal Article: N= 25, 6-12 year-old boys with an ADHD diagnosis N= 24, 6-12 year-old comparison boys.	- In the first day of interaction, ADHD and comparison boys displayed a significant difference in social behavior, and the children with ADHD were overwhelmingly rejected. - Though with low magnitude of prediction, pro-social behaviors were found to independently predict friendship ratings during the first week of interaction.	ADHD Social Behaviors: non-compliance, aggression, pro-social actions, and isolation. Non-behavioral variables: physical attractiveness, motor

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
				-Aggression and noncompliance strongly predicted negative nominations, even with non-behavioral, group status, and other social behaviors controlled statistically.	competence, intelligence, and academic achievement.
Hartup, W. W. Abecassis, M.	2002	Friends and enemies.	Book Chapter	-Formation, maintenance, and long-term outcomes of friendships and enmities. -Friendships and enmities are contrasted with peer-status (i.e. acceptance and rejection). -Comparative studies reveal that peer status, and more specifically, peer rejection, accounts for greater amount of unique variance than having friends or occupying a central role in the social network. Peer rejection was found to be a stronger predictor of a wide range of social behaviors and long-term maladjustment than friendlessness.	
Henker, B. Whalen, C. K.	1999	The child with attention deficit hyperactivity disorder in school and peer settings.	Book Chapter	-Profiles of social dysfunction in children with ADHD. -Social information processing.	ADHD
Hinshaw, S. P. Melnick, S. M.	1995	Peer relationships in boys with attention-deficit hyperactivity disorder with and without aggression.	Journal Article: N=101, ADHD diagnosed boys. N=80, comparison boys.	-Parent and teacher estimates showed moderate correspondence with peer nominated social preference. -ADHD boys were more likely than their non-diagnosed peers to accept	-Self-reported social goals of sensation seeking nature and observed

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
				<p>other ADHD age mates.</p> <ul style="list-style-type: none"> -Aggression and non-compliance predominated as self-reported reasons for rejecting peers in the ADHD and comparison groups. - The high-aggressive subgroup of ADHD boys showed markedly worse peer sociometric status than did ADHD boys without aggression. 	<p>emotional reactivity characterized high-aggressive boys with ADHD and predicted end of program peer disapproval.</p>
Hymel, S. Vaillancourt, T. McDougall, P., Renshaw, P. D.	2002	Peer acceptance and rejection in childhood.	Book Chapter	<p>Chapter covers:</p> <ul style="list-style-type: none"> -A review of different sociometric measures (i.e nomination & rating). -Concurrent and long-term correlates of peer rejection. 	
Johnston, C. Pelham, W. E. Murphy, H. A.	1985	Peer relationships in ADDH and normal children: A developmental analysis of peer and teacher ratings.	<p>Journal Article: Cross-sectional design Total N=607, 1st-5th grade children. N= 42, 1st-2nd grade ADHD children. N= 37, 3rd-5th grade ADHD children.</p>	<ul style="list-style-type: none"> -ADHD children received more nominations on the aggression and withdrawal factor of the PEI and fewer on the likeability factor. -Younger and older ADHD diagnosed children were perceived by peers as equally deviant. -Peer ratings were useful in discriminating between ADHD and normal boys. -Low to moderate correlations were found between peer and teacher ratings of ADHD boys. 	<p>ADHD</p> <ul style="list-style-type: none"> -The lack of age changes in peer relations suggests that peer relations may play an important mediating role in ADHD long-term maladjustment .

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Kupersmidt, J. B. DeRosier, M. E.	2004	How peer problems lead to negative outcomes: An integrative mediational model.	Book Chapter	-An integrative model that explains the mechanisms by which peer rejection and social problem are linked to future maladjustment. -Past social experience; intrapersonal, interpersonal, & environmental contexts; social cognitive factors; and problematic behavioral and affective responses interact and determine a person's individual adjustment.	
McElwain, N. L. Olson, S. L. Volling, B. L.	2002	Concurrent and longitudinal associations among preschool boys' conflict management, disruptive behavior, and peer rejection.	Journal Article: N=53, preschool boys from Head Start classrooms.	-Individual differences in conflict management are associated with disruptive behavior and social rejection during early childhood. -Boys who engaged in higher rates of conflict and exhibited greater aggression and avoidance during peer conflicts tended to be rejected by peers and perceived as disruptive by teachers and peers. -Conflict strategies made unique contributions to disruptive behavior, whereas the frequency of conflict did not. -In contrast, both conflict rate and avoidant behavior during conflict predicted peer rejection over time.	NCT -Study stresses the potential risk of avoidant conflict strategies for social maladjustment.

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
McFadyen-Ketchum, S. A. Dodge, K. A.	1998	Problem in social relationships.	Book Chapter	-Chapter provides a rationale for focusing on social relationship problems in children, describes the assessment process of peer relational problems, and focuses on reviewing the behavioral, social-skills, and stimulant medication interventions for preschool and young school-age children and their adjunctive use with family interventions, as well as evaluate their scientific merit.	NCT
Ollendick, T. H. Weist, M. D. Borden, M. C. Greene, R. W.	1992	Sociometric status and academic, behavioral, and psychological adjustment: A five year longitudinal study.	Journal Article: -Baseline N=296, Follow-up N=267, 4 th grade students.	-Rejected and controversial children fared more poorly on indices of long term adjustment than children classified as popular, neglected, and average. -Rejected children were perceived by peers as less likable, more aggressive, and by their teachers as having more conduct problems, aggression, motor excess, and attentional problems. Also, they reported external locus of control, and higher levels of conduct disturbance and substance abuse. Moreover, they performed less well academically, failed more grades, and were more likely to drop out of school and to commit delinquent acts. -The controversial children did similar to the rejected children on most of the academic, behavioral, and social	-The results support the utility of peer sociometric nominations and ratings as valid predictors for future adjustment. -For rejected, controversial, average, and popular children, but not for neglected children.

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
				measures, except their teachers viewed them as less conduct disordered, and they were less likely to drop out of school in the long run.	
Parker, J. G. Asher, S. R.	1987	Peer relations and later personal adjustment: Are low accepted children at risk?	Journal Article: Literature Review	-Analysis supports the hypothesis that children with poor peer adjustment are at risk for later life difficulties. -Supported predictors: low acceptance and aggressiveness. -Most supported outcomes: dropping out and criminality.	
Pelham, W. Bender, M.	1982	Peer relations in hyperactive children: Description and treatment.	Book Chapter	-Peer interaction items on the SNAP, a rating scale based on DSM-III criteria that includes a peer interaction component, were as effective as items focusing on the three core symptoms of ADHD (Inattention, impulsivity, and hyperactivity) in distinguishing ADHD children from non- ADHD children....	ADHD -Seminal article in the fields of ADHD and peer relations.
Pope, A. W. Bierman, K. L. Mumma, G. H.	1991	Aggression, hyperactivity, and inattention-immaturity: Behavior dimensions associated with peer rejection in elementary school boys.	Journal Article: N=362, 3 rd -6 th grade boys.	-Aggression, hyperactivity, and inattention-immaturity were associated with peer rejection. -Inattention-immaturity significantly negatively linked with peer acceptance. -Hyperactivity and immaturity appear to have a negative influence on peer relations, which are distinct from the peer problems fostered by interpersonal aggression.	ADHD

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Sandstorm, M. J. Zakriski, A. L.	2004	Understanding the experience of peer rejection.	Book Chapter	-Chapter focuses on the subjective experience of peer rejection and covers individual and contextual factors that may impact a child's awareness of his status, the importance he places on it, and his emotional, cognitive, and behavioral response to it.	A relatively new trend in the field of social functioning.
Stormont, M.	2001	Social outcomes of children with ADHD: Contributing factors and implications for practice.	Journal Article: Literature Review	-Children with ADHD are more rejected and less accepted by their peers. -Possible contributing factors to rejection: Inappropriate social behavior, social knowledge deficits and biases, and negative interactions with peers and teachers.	ADHD -Summary of literature on the social behaviors of children with ADHD and the link b/w those characteristics and their social status.
Whalen, C. K. Henker, B.	1985	The social worlds of hyperactive (ADHD) children.	Journal Article: Literature Review	-Article delineates the typical social difficulties exhibited by ADHD-diagnosed children and domains of normal functioning. -Possible mediating mechanisms for dysfunctional social behavior and poor social status: social cognition, vicarious learning, behavioral styles, reinforcement sensitivity, interpersonal agendas.	ADHD -Gaps in empirical knowledge.

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Wheeler- Maedgen, J. Carlson, C. L.	2000	Social functioning and emotional regulation in the attention deficit hyperactivity disorder subtypes.	Journal Article: N=16, ADHD-C, N=14, ADHD-I, N=17, Controls children.	-Qualitative differences in patterns of social dysfunction between the subtypes of ADHD: - ADHD-C: aggression and emotional dysregulation. - ADHD-I: passivity, withdrawal, and more deficits in social knowledge. -Regression analyses revealed that social performance, emotional regulation, and to a lesser degree, social knowledge, were predictive of social status	ADHD

Note. NCT= Source reviewed but not cited in text; ADHD= Source addresses the social relations of children with ADHD.

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APPENDIX C

Table 4: Literature Review – Children’s Social Information Processing and Social Goals

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Chung, T., & Asher, S. R.	1996	Children's goals and strategies in peer conflict situations.	Journal Article: N=142, 4 th -6 th grade children (80 boys, 62 girls).	<ul style="list-style-type: none"> - Children's strategies in response to peer conflicts differed according to their goals orientation. - Children's strategies further correlated with peer acceptance, but linkage differed between boys and girls. - Peer acceptance was <u>negatively related</u> to hostile/coercive strategies for girls, and to adult seeking behaviors for boys. 	<ul style="list-style-type: none"> -Peer conflict situations. -12 Hypothetical vignettes.
Crick, N.R. Dodge, K. A.	1994	A review and reformulation of social information-processing mechanisms in children's social adjustment.	Journal Article	<ul style="list-style-type: none"> -Crick and Dodge's Social Information Processing (SIP) model, which is considered as one of the most influential and comprehensive social cognitive models consists of six non-linear steps that children are hypothesized to go through when responding to a specific social stimulus: (1) encoding of cues (2) interpretation of cues (3) clarification of goals (4) response access or construction (5) response decision, and (6) behavioral enactment. -Research on the relationship between social information processing and social adjustment in childhood is reviewed and interpreted within this SIP model. - Research review provides strong support to the relations between different cognitive processing styles and social adjustment. -Model also discusses factors that may moderate the relation between social 	

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
				information processing and social adjustment (e.g. gender, age, and social contexts) and examines statistical, design, and methodological issues.	
Erderly, C. A. Asher, S. R.	1996	Children's social goals and self efficacy perceptions as influences on their responses to ambiguous provocation.	Journal Article: N=781, 4 th -5 th grade students.	<ul style="list-style-type: none"> -Children who varied in their behavioral responses to ambiguous provocation (i.e. aggressive, withdrawn, and pro-social), differed in their social goals, regardless of having similar attributional processes (benign or hostile). -Aggressive children in both hostile and benign intent groups were characterized by anti-social goals and differed from both the withdrawn and pro-social children who pursued more similar pro-social goals. -children's behavior in response to ambiguous provocation was influenced not only by their goals but also by their feelings of self-efficacy in being able to fulfill their goals. 	
Erderly, C. A. Asher, S. R.	1999	A social goals perspective on children's social competence.	Journal Article: Literature Review.	<ul style="list-style-type: none"> - The link between social goals, social behavior, and peer status. - The difference in social goals between socially well-adjusted and maladjusted children. - Social cognitive factors impacting the goal selection process: attribution of peer intent, strategy knowledge, self-efficacy perceptions, outcome expectations, and 	

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
				beliefs about the legitimacy or appropriateness of certain behaviors. -The implications of a social goals perspective for interventions.	
Erderly, C. A. Cain, K. M. Loomins, C. C. Dumas-Hines, F. Dweck, C.	1997	Relations among children's social goals, implicit personality theories, and responses to social failure.	Journal Article: Two experiments 1. N=63, 4 th -5 th grade children (33 boys, 30 girls). 2. N=348, 5 th -6 th grade children (170 boys, 178 girls).	-Children's goals in social situations are associated with their responses to past social failures and can be predicted by children's beliefs about their personality. - Children who believe that their attributes are nonmalleable/fixed or focus on performance are apt to experience cognitive and affective reactions to social rejection that leave them vulnerable to helpless responding. - In contrast it seems that children who enter a challenging social situation with a focus on learning goals in which they seek to improve their social skills and develop relationships are more likely to react to a failure in a mastery oriented manner. These children were significantly more likely to attribute failure to not trying hard enough, an attributional style that seems to contribute to enhanced efforts.	Performance goals: individuals seek to obtain positive judgments of themselves and to avoid negative evaluations. Learning or mastery goals: Individuals-seeking to improve their social skills and develop relationships.
Fraser, M. W.	1996	Cognitive problem solving and aggressive behavior among children.	Journal Article: Literature Review	-Review the deficits in cognitive processes associated with aggressive behavior. -Thoroughly reviews the Social Information Processes leading to an aggressive behavior.	

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Gallen, R. T.	1998	An examination of social goals of boys and girls with attention-deficit hyperactivity disorder: Do they want what we want?	Dissertation: N=41, 9-13 year-old, ADHD-diagnosed children. N=92, 9-13 year-old, non-diagnosed comparison children.	<p>-Significant differences were found between children with and without ADHD in their self reports of social cognitions in social failure situations.</p> <p>-ADHD children endorsed aggressive and avoidance social goals more, provided higher overall ratings for all social goals, and endorsed more aggressive behaviors.</p> <p>-Boys and girls with ADHD were found to differ in the goals they predicted to successfully achieve:</p> <ul style="list-style-type: none"> -Girls: Avoidance goals. -Boys: Performance goals. -Boys: Endorsed more aggressive and problem-solving behaviors. 	ADHD
Gifford-Smith, M. E. Rabiner, D. L.	2004	Social information processing and children's social adjustment.	Book Chapter	<p>-Reviews the multiple aspects of social-cognition which were investigated as possible contributors to children's maladjustment.</p> <p>-The Social Information Processing (SIP) model of Crick and Dodge (1994) is described.</p> <p>- (SIP) is examined in relation to different social and mental outcome (e.g. aggression, social rejection, anxiety, and depression).</p>	

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Jarvinen, D. W. Nicholls, J. G.	1996	Adolescents' social goals, beliefs about the causes of social success, and satisfaction in peer relations.	Journal Article: Factor Analysis N=266, 9 th grade students (~14 years of age).	<ul style="list-style-type: none"> - The six goals pursued by adolescents in their relationship with peers: intimacy, nurturance, dominance, leadership, popularity, and avoidance. - The six beliefs about behaviors or circumstances that lead to success in peer relations: having status, pretending to care, being sincere, being responsible, being tough, and entertaining others. -A link was found between goals and beliefs. - Pro-social goals were positively associated with satisfaction with peer relationships but not related to peer sociometric nominations. 	
Lochman, J. E. Wayland, K. K. White, K.J.	1993	Social goals: Relationship to adolescent adjustment and to social problem solving.	Journal Article: N= 92, boys.	<ul style="list-style-type: none"> - A consistent association was found between a range of delinquent, substance using, and behavioral difficulties, and endorsement of high goal values for dominance and revenge and low goal values for affiliation. - Aggressive boys differed from non-aggressive boys in their goal selection, with aggressive boys placing a higher value on goals of dominance and revenge, and lower value on affiliation goals. 	<ul style="list-style-type: none"> - Hypothetical vignette. - Ambiguous peer provocation.

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Melnick, S. M. Hinshaw, S. P.	1996	What they want and what they get: The social goals of boys with ADHD and comparison boys.	Journal Article N=27, ADHD boys. N=18, comparison boys.	-Highly aggressive ADHD boys prioritized trouble-seeking and fun at the expense of rules significantly more than the ADHD low aggressive and comparison boys. -Self reported goals of defiance and cooperation predicted boy's end of program social standing, even with interactional behavior and subgroup status controlled statistically.	ADHD
Ojanen, T. Gronroos, M. Salmivalli, C.	2005	An interpersonal circumplex model of children's social goals: Links with peer-reported behavior and sociometric status.	Journal Article: 1. N=276, 11-12 year-old children (142 boys, 134 girls). 2. N=310, 11-13 year-old children (167 boys, 143 girls).	-Authors aimed to develop an inventory for children's social goals – based on the adults' interpersonal circumplex model - Results implies that similar constructs may be used to assess social goals in pre-adolescence and adulthood, which would allow investigators to take a broader life span perspective on interpersonal goal strivings. -Communal goals were found to be associated with pro-social behavior, which is associated with peer acceptance. -The effects of goals on aggression and withdrawal, were found to be moderate.	- Current results support the hypothesis (Erderly & Asher, 1996) that social behaviors mediate the relation between social goals and sociometric status.
Parkhurst, J. T. Asher, S. R.	1985	Goals and concerns: Implications for the study of children's social competence.	Book Chapter	-Goals and concerns in relation to children's social competence and peer approval. - Identify ways in which children's goals interfere with their social performance: antisocial goals, lack of goals, incompatible goals, and situationally inappropriate goals.	

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Pomeranz, E. M. Ruble, D. N. Frey, K. S. Greulich, F.	1995	Meeting goals and confronting conflict: Children's changing perceptions of social comparison.	Journal Article: Longitudinal Study N=106, children in kindergarten through second grade.	- As children progress in years, they become increasingly aware of the negative and positive aspects of social comparison and adjust their behavior in response to this awareness, as well as to increasingly salient self-evaluation goals. - Overt forms of social comparison were more frequent among younger children, whereas subtle forms of social comparison were most frequent among older children.	NCT -Examined over three consecutive years.
Rabiner, D. L. Gordon, L. V.	1992	The coordination of conflicting social goals: Differences between rejected and non-rejected boys.	Journal Article: N=58, 4 th -5 th grade boys (9-12 years old).	-Aggressive rejected boys and rejected boys who are neither highly aggressive nor highly submissive were found to be less able than non rejected boys to coordinate individual and relational goals in their social interaction strategies. - The above results were true regardless of whether automatic or reflective social reasoning processes were evoked. -Submissive rejected boys were not found to display goal coordination deficits.	NCT
Rajagopalan, V. R.	1999	Social competence and social cognition of children with attention deficit hyperactivity disorder.	Dissertation: N=41, ADHD children. N=42, Comparison children.	- ADHD children and comparisons did <u>not significantly</u> differ on social skills, social knowledge, and social competence. - Teachers and parents rated ADHD children lower than the comparisons on social skills and higher on the problem behaviors domains.	ADHD NCT

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Renshaw, P. D. Asher, S. R.	1983	Children's goals and strategies for social interaction.	Journal Article: N=74, 3 rd -4 th grade children (34 boys, 40 girls). N=47, 5 th -6 th grade children (23 boys, 24 girls).	<ul style="list-style-type: none"> - Significant differences were found in the formulation of social goals between popular and unpopular children and between older and younger children- across multiple situations (utilizing four hypothetical vignettes). -Older and higher status children were friendlier in the goals they formulated. - Considerable similarity was found across age and level of sociometric status in children's recognition of appropriateness of various goals. 	
Rose, A. J. Asher, S. R.	1999	Children's goals and strategies in response to conflicts within a friendship.	Journal Article: N=696, 4 th -5 th grade children.	<ul style="list-style-type: none"> - Children's goals were highly related to their strategies. - Children's goals and strategies were predictive of real-life friendship adjustment. -Pursuing the goal of revenge was most strongly associated with low number and poor quality of friendships. 	<ul style="list-style-type: none"> -Friendship vs. peer acceptance. -30 Hypothetical vignette. -Task: conflict.
Salmivalli, C. Ojanen, T. Haanpaa, J. Peets, K.	2005	"I'm OK but you're not" and other peer-relational schemas: Explaining individual differences in children's social goals.	Journal Article: N= 489, 4 th -5 th grade children (279 girls, 310 boys).	<ul style="list-style-type: none"> - Self perception predicted variance in agentic goals. - Peer perception predicted variance in communal goals. - Self and peer perception interacted in influencing social goals. - Results suggest that children's dual perceptions (i.e. peer relational schema) better predict social behavior. 	NCT

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Thurber, J. R. Heller, T. L., Hinshaw, S. P.	2002	The social behaviors and peer expectation of girls with attention deficit hyperactivity disorder and comparison girls.	Journal Article: N=49, ADHD N=30, Comparison 6-12 year-old girls.	<p>-No difference was found between the social goals of ADHD girls vs. comparison girls- but differed with respect to selection of social behaviors in peer interactions and predictions of the types of responses peers will give them.</p> <p>-Girls with ADHD generated higher rates of aggressive responses to the hypothetical vignettes than did comparison girls.</p> <p>-Comparison girls generated a larger number of negotiating behaviors than the ADHD sample.</p> <p>-The ADHD girls anticipated negative peer response and the comparison group anticipated positive reactions from peers.</p> <p>-These perceived peer responses were associated with girl's naturalistic social behavior and peer sociometric status.</p>	ADHD Girls Self-described social goals, self-generated actions, and perceived peer response to hypothetical vignettes.
Underwood, M. K. Bjornstad, G. J.	2001	Children's emotional experience of peer provocation: The relations between observed behavior and self-reports of emotions, expressions, and social goals.	Journal Article: N= 565, children (approximate ages 8, 10, and 12 years old).	- Significant but <u>modest</u> correlations between children's self reported emotional behavior and their behavior as coded by researchers.	<p>-Peer Provocation.</p> <ul style="list-style-type: none"> - loosing at a computer game, - being taunted by a peer. <p>- Real life methodology.</p>

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Zentall S. S.	2005	Contributors to the social goals and outcomes of students with ADHD with and without LD.	Journal Article: Literature Review	<p>Major purpose of article: To profile the social and emotional outcomes of children with ADHD and the mediators of these outcomes:</p> <ul style="list-style-type: none"> -Article lists the biogenetic factors which alter the behavioral style, social goals, and social outcomes of these children. - Article describes the circular process in which the behavioral choices of children with ADHD alter their social context which leads ultimately to certain outcomes: increased emotionality and sensitivity to positive and negative social feedback, negative future expectations, as well as decreased social and academic participation and pro-social response. -What differentiate individuals with ADHD from students with LD is a greater than normal need for stimulation or lack of tolerance for suboptimal states of biological activation. These physiological differences contribute to a behavioral and attentional style that is associated with a set of social goals and social emotional outcomes. 	ADHD

Note. NCT= Source reviewed but not cited in text; ADHD= Source addresses the social relations of children with ADHD.

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APPENDIX D

Table 5: Literature Review - Task Perspective on Children's Social Functioning

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Bay-Hinitz, A.K. Peterson, R. F., Quilitch, H. R.	1994	Cooperative games: A way to modify aggressive and cooperative behaviors in young children.	Journal Article: N=70 preschool children (4-5 years old). -Experimental (multiple baseline & reversal design).	-During cooperative games cooperative behavior increased and aggression decreased -Competitive games were followed by increase in aggressive behavior and decrease in cooperative behavior. -Effects also generalized into the free play periods which followed the exposure to each type of task.	-The behavioral response of preschool children is influenced by the characteristics of the task they engage in.
Bonino, S. Cattelino, E.	1999	The relationship between cognitive abilities and social abilities in childhood: A research on flexibility in thinking and co-operation.	Journal Article: N=152, 7 years old children.	-The more flexible children are the more able they are to cooperate with their peers, take turns, and verbalize about topics unrelated to the task. -Flexibility is defined as the ability to suppress a response in order to find a new one.	NCT -Task: conflict. -Flexibility: also see Schmidt et al. -Wisconsin Card Sorting Task was used to evaluate flexibility.
De Los Santos, N. F.	2006	An examination of adolescent social interactions during a competitive task: Social ability and gender differences.	Master Thesis: N=108, 8 th grade children.	-Adolescents at risk for emotional behavioral difficulties (EBD) and adolescents not at risk didn't differ in their pro-social behavior, however, differences emerged in their negative behaviors. -Gender differences in pro-social and negative behaviors were found as well.	Task: forced competition.

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Gelb, R. Jacobson, J. L.	1988	Popular and unpopular children's interactions during cooperative and competitive peer group activities.	Journal Article: N=24, 4 th grade children (12 popular, 12 un-popular).	-In gaining entry into the competitive task unpopular children were more likely than the popular children to break rules, emit silly noises, and appeal to authority. -In gaining entry into the cooperative task (described by the authors as benign and tension-free atmosphere) the unpopular children exhibited less negative and immature behavior and their peers were more tolerant toward them than during the competitive game.	-The findings suggest that contextual factors influence the social skills exhibited by the unpopular children. -Gaining entry to a competitive vs. a cooperative task. -Previously acquainted children.
Gelpi-Lomangino, A., Nicholson, J. Sulzby, E.	1999	The influence of power relations and social goals on children's collaborative interactions while composing on computer.	Journal Article: N=40, 1 st grade students.	-The following social goals were found to guide children while engaging in a collaborative task on the computer: - appearing competent to peers - dominating peers - creating solidarity with peers -Differential status within the partnership was reflected in the variation in types of social behaviors that children displayed. -While engaging in a task children may work to advance their social standing. This goal may not be influenced by the type of task they are presented with.	NCT -A cooperative task doesn't necessarily trigger cooperative, pro-social goals and behaviors.

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Georgiou, I. Becchio, C. Glover, S. Castiello, U.	2007	Different action patterns for cooperative and competitive behaviour.	Journal Article: N=16, 19-40 year-old adults.	<p>-Individual's motor strategy was found to be context sensitive.</p> <p>-Specific, identifiable, and measurable kinematic patterns / motor strategies were observed for cooperation and competition.</p> <p>-Individual intentions (i.e. to cooperate or compete) are reflected by the motor strategy he adopts as he engages in a certain action.</p> <p>-This may explain the mechanism by which peers can identify not only what other children are doing but also the prior intentions motivating their actions (or more specifically, peer can identify competitiveness or cooperativeness as guiding their peer behavior).</p>	NCT
Green, V. A. Rechis, R.	2006	Children's cooperative and competitive interactions in limited resources situations: A literature review.	Literature Review	<p>-Authors define social competency in a limited resource situation as the ability to achieve the right balance between meeting one's own needs and maintaining positive relations with others by utilizing a range of pro-social and coercive strategies (negotiation and problems solving skills).</p> <p>-Individual and contextual factors contribute to the difference in social competence between children.</p>	

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Hijzen, D. Boekaerts, M. Vedder, P.	2006	The relationship between the quality of cooperative learning, students' goal preferences, and perceptions of contextual factors in the classroom.	Journal Article: N=1,920, adolescent students in secondary vocational schools in the Netherlands.	<p>-Social support goals had the strongest relation with the quality of cooperative learning.</p> <p>-The quality of cooperative learning was best predicted by a combination of social support goals, evaluations of the extent that students were taught cooperation skills, perception of teacher monitoring behavior, and the availability of academic and emotional support.</p> <p>-Female: stronger preference for mastery and social goals.</p> <p>-Male: stronger preference for superiority goals.</p>	NCT
Hom, H. L. Berger, M. Duncan, M. K. Miller, A. Blevin, A.	1994	The effects of cooperative and individualistic reward on intrinsic motivation.	N=60, 5 th grade children (29 boys, 31 girls).	<p>-Students who were assigned to receive a tangible reward for working cooperatively completed the task faster, interacted positively, and viewed their peers as helpful and the task as easier than those students who were rewarded for working individually.</p> <p>-There was little evidence that the controlling functions of reward or ego-threat were factors in producing the outcome.</p>	<p>-Cooperative task promoted pro-social behavior</p> <p>-The nature of a cooperative task is consistent with pro-social goals and doesn't involve a threat to one's self-worth (as would a competitive task).</p>

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Knight, G. P. Chao, C. C.	1989	Gender difference in the cooperative, competitive, and individualistic social values of children.	Journal Article: Study #1: N=130, 3-12 year-old children (59 girls, 71 boys). Study #2: N=44, 36-71 month-old children (18 girls, 26 boys).	Study #1: -The girls more often preferred individualistic resource distribution and less often preferred relative resource distribution compared to the boys. -When children preferred relative resource distribution, girls most often preferred cooperative resource distribution (i.e. equality) and boys most often preferred competitive resource distribution (i.e. superiority). Study #2: Gender differences similar to those observed among the older children were revealed when the young children completed a modified form of the task that reduced the cognitive demands of the task. -Focus on Resource Distribution.	NCT <i>Cooperative:</i> -Equality: minimizes differences between self and peer. -Group: maximizes resources of the group regardless of how it is divided to its members. -Altruism: maximizes peer resources regardless of impact on self. <i>Competitive:</i> - Superiority: maximizes personal resources relative to peers. -Rivalry: minimizes resources of peer regardless of impact on one's own resources. <i>Individualism:</i> Maximizes personal resources regardless of the impact on peer resources.

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Ojanen, T. Aunola, K. Salmivalli, C.	2007	Situation specificity of children's social goals: Changing goals according to changing situations?	Journal Article: N=310, 11-13 year-old children.	<ul style="list-style-type: none"> -Children's selection of agency & relational goals was impacted partially by individual characteristics and partially by the nature of the social situation. -Variation of goals due to individual characteristics: <ul style="list-style-type: none"> * Agency goals: Boys > girls + self perception > - self perception * Relational goals: <ul style="list-style-type: none"> + peer perception > - peer perception -Variation of goals due to situation specificity: <ul style="list-style-type: none"> * relational goals: (+)situation > conflict > victimization * Agency goals: <ul style="list-style-type: none"> victimization > conflict & (+)situation > group entry - Correlation was found b/w endorsement of agency goals and rejection and between relational goals and acceptance. 	<ul style="list-style-type: none"> -Seminal study - The impact of both individual characteristics and situational contexts on social goals. selection and social status - Doesn't focus on: comparing ADHD and comparison children or cooperative vs. competitive tasks; examination in real life situation (vs. a response to a hypothetical vignette).
Schmidt, C. R. Ollendick, T. H. Stanowicz, L. B.	1988	Developmental changes in the influence of assigned goals on cooperation and competition.	Journal Article: N=42, 2 nd -4 th grade children (20 boys, 22 girls). N=44, 5 th -6 th grade children (28 boys, 16 girls).	<ul style="list-style-type: none"> -Older children were more flexible in adapting their social strategies to fit assigned goals. - No developmental differences in the overall levels of cooperation and competition have been observed. 	<ul style="list-style-type: none"> -Being able to adapt behavior to the demands of the task may be age related/ developmentally determined.

(table continues)

Author	Year	Title	Resource Type Sample/Design	Content Summary/ Main Findings	Comments
Smith, E. R. Semin, G. R.	2007	Situated social cognition.	-Critical Theoretical Review - Past & current trends in social cognitive theory and research	- Past trend in social cognition theory: Mental representations (e.g. stereotypes) are abstract and stable. They are activated and applied by relatively automatic, context-independent processes - Current trends suggest that social cognitive processes are adaptive to the perceiver's current social goals, communicative contexts, and bodily states.	-A comprehensive, multi-causal approach emphasizing the interdependence b/w contextual-environmental-external factors and internal-personal factors. Viewing all factors as similarly significant.

Note. NCT= Source reviewed but not cited in text; ADHD= Source addresses the social relations of children with ADHD.

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APPENDIX E

Social Goals Research Study Flyer

UCLA Children's Friendship After School Program

Social Goals Research Study

This study will be looking at how well the social goals of boys with and without ADHD are matched to different types of games, and how social goals may affect friendships.

The study will take place during the regular hours of the after school program and will take no longer than 20 minutes per game (including interviews). The play sessions will be scheduled during enrichment and play periods so that children do not miss out on homework time.

PARTICIPATION IN THIS STUDY IS COMPLETELY VOLUNTARY AND DOES NOT AFFECT CHILDREN'S ENROLLMENT IN THE UCLA CHILDREN'S FRIENDSHIP AFTER SCHOOL PROGRAM.

Boys who take part in the study will be asked to do the following:

- Play a computer game and a board game with another boy
- Answer some questions about their social goals before they play each game
- Answer some questions about their playmate after they play each game

To have your child take part in this study, please call
Kristel Renenger
Project Coordinator

Principal Investigator: Fred Frankel, Ph.D.
Department of Child Psychiatry

UCLA IRB#: G02-08-007-04
Expiration Date:

APPENDIX F

Consent Form to Participate in Research

Informed Consent for ADHD Children

Social Goals of Boys in the UCLA Children's Friendship After School Program

We would like to ask your child to participate in a research study conducted by Fred Frankel, Ph.D., from the Psychiatry Department at the University of California, Los Angeles. Your child was selected as a possible participant in this study because he has Attention Deficit Hyperactivity Disorder (ADHD) and is enrolled in the UCLA Children's Friendship After school Program. Your son's participation in the study will last approximately 20 minutes. This study will enroll approximately 60 boys, 30 boys with ADHD and 30 children without ADHD. Your son's participation in this study is entirely voluntary. You should read the information below, and ask questions about anything you do not understand before deciding whether or not to allow your child to participate.

Your child's participation in this research is VOLUNTARY and DOES NOT affect their enrollment in the UCLA Children's Friendship After School Program. If you choose for your child not to participate, that will not affect your relationship with the UCLA Children's Friendship After School Program.

• BACKGROUND

A great deal of research has been devoted to understanding some of the factors that predict whether children are accepted or rejected by other children their age. Although a child's popularity among his peers is determined by a lot of different factors, the way in which the child behaves during play certainly plays a large role in determining whether he is accepted or rejected by others. The term "social goals" refers to what a child wants to get out of a social situation or what he wants to have happen. Examples of social goals include "winning at all costs," "having fun," "getting along well with my playmate," or "showing my playmate that I'm better than he is." A number of research studies have found that the type of social goals a child has relates to both his behavior and to how well he is liked and accepted by other children his age. Additionally, research studies have shown that boys with ADHD, who are often less well accepted socially than children without ADHD, tend to have different social goals than their more popular peers. Therefore, a closer examination of the social goals of children with ADHD during their interactions with well-functioning children may well shed light on some of the reasons why they experience social difficulties.

• PURPOSE OF THE STUDY

This study will have four aims: 1) To see if children's social goals change when they are playing games against each other compared to when they are playing games together as a team. 2) To see if boys with and without ADHD have different goals. 3) To see whether the type of goals a child has during play affects whether other children like him and want to be his friend; and 4) To see how well children's reports about their own social goals correspond to their playmates best guesses about their goals.

- **PROCEDURES**

Your son will take part in two interviews and play sessions, during which he is paired with different boy each time with whom he is unfamiliar. Each pair of boys will consist of one boy with ADHD and one boy without ADHD. Your child will play with a different boy chosen at random (like flipping a coin) in each play session. The play sessions and interviews should take a total of approximately 20 minutes each. The play sessions will not occur at a time when your child is doing their homework.

One play session will use a video game as this is thought of as being a “good match” for children with ADHD in that it will be a fast paced, visually oriented game that provides high rates of stimulation and performance feedback. The video game will be played simultaneously by boys and they will be encouraged to be cooperative. They will be told, “the object of the game is for you and your partner to score as many total points against the computer as possible.”

The other play session will use the board game, “concentration.” This game is a “poor match” for children with ADHD as it is a slower-paced game requiring turn taking, vigilance, and suppression of impulsive responses. In this play session your child and his playmate will be encouraged to be competitive. They will be told, “the object of the game is to solve the puzzle before your partner.”

Each play session will be as follow:

A research assistant will take your child to a private room, tell him what the rules are for the game he is about to play and show him how to play it. Then, we will ask him some questions about what his goals are going to be when is playing that game. Your child will be asked to select and rank their top 3 goals from a sheet containing a list of 11 global social goals. The goals selected were generated from previous research and are divided into 3 groups. The first group of goals relates to one’s performance during the game (“to get the most points as a team,” “to do better at the game than my partner,” “to get better at the game”). The second group of goals involve one’s relationship with the play partner (“to be liked by my partner,” “to be a good sport,” “to get along well with my play partner,” “to show my partner that I’m better than him”). The third group of goals relates to ways to make the game more stimulating (“to make the game more exciting,” “to have fun, even if it means breaking the rules,” “to show my partner that I’m not afraid of getting into trouble”). Your child will be asked to rank their choices for each of the 3 sets of goals. Your son will then be brought to the room with the game and play it for 10 minutes.

After he has finished the game we will take him back to the private room and ask him what he thought the other boy’s goals were and how much he liked playing with him. Your son will be asked about his impressions of his play partner’s social goals during the just-complete game. For this interview, your child will be asked to rate how important he thinks each of the 11 social goals shown to him earlier were to his partner during their play session. Then, your son will be asked how much he liked the other boy: e.g. “How much fun they were to play with?”; “How well they cooperated during the game?”; and “How much they would like to have them as a friend?”

- **POTENTIAL RISKS AND DISCOMFORTS**

Potential risks and discomforts are minimal. They include those normally associated with playing a game with another child, such as not liking their playmate or the game.

Your child may stop the play session at any time.

- **POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY**

1. Your child may receive no direct benefit from participation in this study.
2. This study may demonstrate the benefit of assessing social goals in ADHD children and using this information to better understand how these goals impact the ability of ADHD children to make and keep friends.

- **PAYMENT FOR PARTICIPATION**

There will be no payment for participation in this study.

- **EMERGENCY CARE AND COMPENSATION FOR INJURY**

If your child is injured as a direct result of research procedures not done primarily for your child's own benefit, your child will receive treatment at no cost. The University OF California does not provide any other form of compensation for injury.

- **CONFIDENTIALITY**

No information about your child, or provided by your child during the research will be disclosed to others without your written permission, except if necessary to protect your rights of welfare (for example, if your child is injured and needs emergency care): or if required by law.

When the results of the research are published or discussed in conferences no information will be included that would reveal your child's identity.

Personal information and research data will be kept in locked files with access available only to staff involved in the project. Data will also be stored on computers but without your name or your child's name (only ID numbers). Computer files will be password protected, with only project staff having access to passwords and computers. Your child's name will be deleted from all records after 5 years from the end of the study.

- **PARTICIPATION AND WITHDRAWAL**

Your child's participation in this research is VOLUNTARY and DOES NOT affect their enrollment in the UCLA Children's Friendship After School Program. If you choose for your child not to participate, that will not affect your relationship with the UCLA Children's Friendship After School Program. If you decide to allow your child to participate, you are free to withdraw your consent and discontinue their participation at any time without prejudice to your child's future enrollment in the UCLA Children's Friendship After School Program. If you choose for your child to participate please explain the assent form to your child. If you have any questions concerning this form or any other aspect of the study contact the Principal Investigator and/or research staff. Their contact information is listed below.

• **IDENTIFICATION OF INVESTIGATORS**

If you have any questions or concerns about the research, please feel free to contact
Principal Investigator, Fred Frankel, Ph.D. at (310) 825-0776
Co-Investigator, Drew Erhardt, Ph.D. at (818) 501-1608
Project Coordinator, Kristel Renenger at (310) 267-4973

After normal business hours, contact (310) 825-0511 and have Dr. Frankel paged.

The address is 300 UCLA Medical Plaza, suite 1404, Los Angeles, CA 90095-6967

• **RIGHTS OF RESEARCH SUBJECTS**

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights, or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact the Office for Protection of Research Subjects, 2107 Ueberroth Building, UCLA, Box 951694, Los Angeles, CA 90095-1694, (310) 825-8714.

SIGNATURE OF PARENT OR LEGAL GUARDIAN

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

Name of Child

Name of Parent or Legal Guardian

Signature of Parent or Legal Guardian

Date

SIGNATURE OF INVESTIGATOR

In my judgment the subject is voluntarily and knowingly giving informed consent and possesses the legal capacity to give informed consent to participate in this research study.

Signature of Investigator

Date

Informed Consent for Non-ADHD Children

Social Goals of Children in the UCLA Children's Friendship After School Program

We would like to ask your child to participate in a research study conducted by Fred Frankel, Ph.D., from the Psychiatry Department at the University of California, Los Angeles. Your child was selected as a possible participant in this study because he is enrolled as a non-Attention Deficit Hyperactivity Disorder (ADHD) child in the UCLA Children's Friendship After school Program. Your child's participation in the study will last approximately 20 minutes. This study will enroll approximately 60 boys, 30 boys with ADHD and 30 children without ADHD. Your child's participation in this study is entirely voluntary. You should read the information below, and ask questions about anything you do not understand before deciding whether or not to allow your child to participate.

- **BACKGROUND**

A great deal of research has been devoted to understanding some of the factors that predict whether children are accepted or rejected by other children their age. Although a child's popularity among his peers is determined by a lot of different factors, the way in which the child behaves during play certainly plays a large role in determining whether he is accepted or rejected by others. The term "social goals" refers to what a child wants to get out of a social situation or what he wants to have happen. Examples of social goals include "winning at all costs," "having fun," "getting along well with my playmate," or "showing my playmate that I'm better than he is." A number of research studies have found that the type of social goals a child has relates to both his behavior and to how well he is liked and accepted by other children his age. Additionally, research studies have shown that boys with ADHD, who are often less well accepted socially than children without ADHD, tend to have different social goals than their more popular peers. Therefore, a closer examination of the social goals of children with ADHD during their interactions with well-functioning children may well shed light on some of the reasons why they experience social difficulties.

- **PURPOSE OF THE STUDY**

This study will have four aims: 1) To see if children's social goals change when they are playing games against each other compared to when they are playing games together as a team. 2) To see if boys with and without ADHD have different goals. 3) To see whether the type of goals a child has during play affects whether other children like him and want to be his friend; and 4) To see how well children's reports about their own social goals correspond to their playmates best guesses about their goals.

- **PROCEDURES**

Your child will take part in one of two play sessions, during which he is paired with a boy who has ADHD. Your child will also participate in one on one private interviews with project staff immediately before and immediately after the play session. For the play

session your child will be randomly assigned to a game and randomly paired with a boy drawn from a group of boys with ADHD. The randomization will make sure that boys are paired with playmates of a similar age, but not boys with whom they have a pre-existing friendship. The play session and accompanying interviews should take a total of approximately 20 minutes each. Although the play sessions will require your child to be pulled out of ongoing after-school program activities, the play sessions will not occur at a time when your child is doing their homework. Also, they will be scheduled for days when other after school program assessments are due. Therefore, your child will not miss out on time allocated for them to do their homework. Also, no extra attention will be drawn to your child when they are requested to interrupt their play or enrichment activities to go with a staff member to play sessions.

Project staff will take your child to a private room, where another trained staff member will brief your child as to the nature, object, and rules of the game to be played. They will also be given a short demonstration of the game. Project staff will then ask your child about his social goals with respect to the game that he is about to play with a peer. Staff will then read a list of 11 goals to your child. After each goal your child will be asked to rate how important this goal is to him. Finally, your child will be asked to rank the 4 goals that are most important to him from the 11 goals on the list. The goals selected were generated from previous research and are divided into 3 groups. The first group of goals relates to one's performance during the game ("to get the most points as a team," "to do better at the game than my partner," "to get better at the game"). The second group of goals involve one's relationship with the play partner ("to be liked by my partner," "to be a good sport," "to get along well with my play partner," "to show my partner that I'm better than him"). The third group of goals relates to ways to make the game more stimulating ("to make the game more exciting," "to have fun, even if it means breaking the rules," "to show my partner that I'm not afraid of getting into trouble").

After the interviews, your child will be brought together with his assigned playmate to play one of two interactive games. The games were selected to differ with respect to how well their characteristics (e.g., rules, pace, level of stimulation, rate of feedback) match the typical behavioral temperamental characteristics (e.g., tempo, impulse control, attention span) found in children with ADHD. One play session will involve a video game as this is thought of as being a "good match" for children with ADHD in that it will be a fast paced, visually oriented game that provides high rates of stimulation and performance feedback. The video game will be played simultaneously by boys and they will be encouraged to be cooperative i.e. both boys playing against the computer (e.g., "the object of the game is for you and your partner to score as many total points against the computer as possible"). This type of cooperative scenario is thought to reduce socially undesirable thoughts and behaviors among ADHD children such as "win at all costs" agendas at all costs" agendas and rule violations.

The other play session will involve a board game, such as "concentration" as a "poor match" for ADHD children. This game is a "poor match" in that it is a slower-paced game requiring turn taking, vigilance, good morning, and suppression of impulsive responses. In this play session your child and his playmate will be encouraged to be

competitive, by following the traditional objectives and rules for the game (e.g., “the object of the game is to solve the puzzle before your play partner”).

Immediately after each game, your child will go with a trained staff member to a private room for a brief one on one interview. Your child will be asked about his impressions of his play partner’s social goals during the just-completed game. For this interview, your child will be asked to rate how important he thinks each of the 11 social goals shown to him earlier were to his partner during their play session. Your child will also be asked which 4 goals he thinks were most important to his play partner. Then your child will be asked to answer questions regarding how much fun they had with their play partner, how well their play partner cooperated during the game, and how much they would like to have the play partner as a friend. This brief interview is a shortened version of the standard peer acceptance interview used for assessment in the UCLA Children’s Friendship After School Program. Your child will then be escorted back to their ongoing after-school program activities.

- **POTENTIAL RISKS AND DISCOMFORTS**

Potential risks and discomforts are minimal. They include those normally associated with playing a game with another child, such as not liking their playmate or the game.

Your child may stop the play session at any time.

- **POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY**

1. Your child may receive no direct benefit from participation in this study.
2. This study may demonstrate the benefit of assessing social goals in ADHD children and using this information to better understand how these goals impact the ability of ADHD children to make and keep friends.

- **PAYMENT FOR PARTICIPATION**

There will be no payment for participation in this study.

- **EMERGENCY CARE AND COMPENSATION FOR INJURY**

If your child is injured as a direct result of research procedures not done primarily for your child’s own benefit, your child will receive treatment at no cost. The University OF California does not provide any other form of compensation for injury.

- **CONFIDENTIALITY**

No information about your child, or provided by your child during the research will be disclosed to others without your written permission, except if necessary to protect your rights of welfare (for example, if your child is injured and needs emergency care): or if required by law.

When the results of the research are published or discussed in conferences no information will be included that would reveal your child’s identity.

Personal information and research data will be kept in locked files with access available only to staff involved in the project. Data will also be stored on computers but without your name or your child's name (only ID numbers). Computer files will be password protected, with only project staff having access to passwords and computers. Your child's name will be deleted from all records after 5 years from the end of the study.

- **PARTICIPATION AND WITHDRAWAL**

Your child's participation in this research is VOLUNTARY and DOES NOT affect their enrollment in the UCLA Children's Friendship After School Program. If you decide not to allow your child to participate, that will not affect your relationship with the UCLA Children's Friendship After School Program. If you decide to allow your child to participate, you are free to withdraw your consent and discontinue their participation at any time without prejudice to your child's future enrollment in the UCLA Children's Friendship After School Program. If you choose for your child to participate please explain the assent form to your child. If you have any questions concerning this form or any other aspect of the study contact the Principal Investigator and/or research staff. Their contact information is listed below.

- **IDENTIFICATION OF INVESTIGATORS**

If you have any questions or concerns about the research, please feel free to contact Principal Investigator, Fred Frankel, Ph.D. at (310) 825-0776
Co-Investigator, Drew Erhardt, Ph.D. at (818) 501-1608
Project Coordinator, Kristel Renenger at (310) 267-4973
After normal business hours, contact (310) 825-0511 and have Dr. Frankel paged.
The address is 300 UCLA Medical Plaza, suite 1404, Los Angeles, CA 90095-6967

- **RIGHTS OF RESEARCH SUBJECTS**

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights, or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact the Office for Protection of Research Subjects, 2107 Ueberroth Building, UCLA, Box 951694, Los Angeles, CA 90095-1694, (310) 825-8714.

SIGNATURE OF PARENT OR LEGAL GUARDIAN

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

Name of Child

Name of Parent or Legal Guardian

Signature of Parent or Legal Guardian

Date

SIGNATURE OF INVESTIGATOR

In my judgment the subject is voluntarily and knowingly giving informed consent and possesses the legal capacity to give informed consent to participate in this research study.

Signature of Investigator

Date

APPENDIX G

Video and Game Card Instruction Sheets

UCLA Friendship Program
Social Goals Study

“Concentration Game Instruction Sheet

I. Materials Needed

- a. 2 sets of matched cards (to include jokers from both suites). 1 set to be used during the game, 1 set to be used during the demonstration game.
- b. 1 pair of matched cards from another suite
- c. A coin
- d. A timer or a watch with a minute hand
- e. Video camera, table microphone, and appropriate video tapes

II. Introduction

- a. Set out 1 of the matched sets of cards as a demo spread of cards. Lay the cards facedown in a 4x7 grid.
- b. When setting out the cards make sure that both RA’s know where at least 4 matches are. i.e. the game is “stacked” so that during the demonstration pairs of cards can be found quickly by the RA’s.
- c. Have the single pair of matched cards on the table, face down but to the side of the 4x7 grid.
- d. Bring both boys into the room where the game has been set up and have them sit down at the table.
- f. Say: “In a little while you will be playing a card game together. First, I’m going to tell you a little bit about the game. Then, you’ll each have a brief interview. After that, you’ll meet back here and play the game.”
- g. Say: “These cards have been mixed up and put face down on the table. The object of the game you will be playing is to find pairs of cards that match. The winner of the game is the one who makes the most pairs, so you will be playing *against each other*.”

III. Instruction Mode

- a. Say: “Now look at the cards we have placed face down on the table. To find the matching pairs you turn 2 cards face up to see if they make a pair, like these 2 cards match (turn over demo single pair of cards, not cards from the 4x7 grid). These cards match because they have the same number on them. The suit or color of the card doesn’t matter; you just have to match the number.”
- b. “You are only allowed to turn 2 cards over at a time. If the cards match and make a pair you are allowed to pick them and keep them and you also get another turn at flipping over 2 more cards. If the cards don’t match you have to turn them back over again and wait for your next turn before you can flip over any more cards”.
- c. “When you play together you are going to take turns flipping the cards and we’ll toss a coin to decide who gets to go first.

- d. "The game is over when all the cards have been matched up or I announce that time is up. The person who has collected the most pairs is the winner".

IV. Additional Instructions -Say the following:

- a. "Remember you will be playing against each other and you should try and find as many pairs as possible. Also, when you turn over the cards, be sure to leave them on the table so everyone can see them."
- b. "When cards get flipped over that don't match it is helpful to try and remember where they are in case you find its matching card on your next turn. This might help you to find more pairs than your partner and win the game."
- c. "Are there any questions about the game and the rules?, (answer questions) OK, now we are going to give you a quick demonstration of how you play (start playing with demo cards on table). For this part you just watch us playing.
 - i. Note: Remind the boys that a different set of cards will be used for their game and the cards will be in different places.

V. Pre-Play Interviews & Play Session:

- a. Separate boys and conduct interview to assess self-report of social goals.
- b. After the completion of the interviews, bring the boys back into the room with the card game and them sit down at the game. Start video recording (hit the record button on the camera) and have them sit down on the same side of the table. (Remember to position yourself so that you do not block the camera).
- c. Say, "Remember, the object of this game is to take turns and find as many pairs of matching cards as possible," and start the game.
- d. Begin timing so that you can announce the end of the game after 5 minutes if the game has not already ended at this point.

VI. Reminders for the Research Assistant

- a. Remember to videotape each game and be sure the procedures to identify each boy on the tape have been followed. Remember to turn off the video camera after announcing that the game is over.
- b. Remember to flip a coin to decide which boy gets to take his turn first.
- c. Remember to start the timer or stopwatch immediately after the game begins. If, after 5 minutes have elapsed, there are still cards remaining announce that time is up and end the game.
- d. Count up the number of pairs that each boy has and announce the winner of the game. Complement both boys on their play.

“Space Invaders” Video Game Instruction Sheet

II. Instructions

- a. Bring both boys into the room where the Playstation has been set up and have them sit down at the table.
- b. Say: “In a little while you will be playing a fun video game together. First, I’m going to tell you about the game. Then, we’ll take each you alone to ask some questions. Then you’ll meet back here and play the game.”
- c. Say: “Today you’ll be playing “Space Invaders.” The object of this game is to shoot invading spaceships and score as many points *as a team* as possible. You will each have your own controller [show one controller].
- d. These two gray buttons on the left [point to lateral controls] move your ship from side to side and this red button with an ‘X’ on it [point to ‘x’ button] is your main firing button and this button [point to Δ button] will also sometimes shoot.”
- e. “A box in the upper corner will tell you how many ships you have left and how many points you made. You may discover other rules during the game as you play. The game ends when all of your ships are gone or when I announce that time is up. I will sometimes help you stay in the game by pressing the start button on your controller.”
- f. “Remember, the object of the game is for you and your partner to score as many points *as a team* as possible. Even though you will each be wearing headphones to hear the game, you may talk to your partner as you play.”

III. Pre-Play Interviews:

- a. Separate boys and conduct interview to assess self-report of social goals.
- b. After the completion of the interviews, bring the boys back into the room with the Playstation, have them sit down.

III. Game play:

- a. Have them put on their headphones.
- b. Say, “Remember, the object of this game is to shoot invading spaceships and score as many points *as a team* as possible.”
- c. Start the Videotape [Remember to position yourself so that you do not block the camera].
- d. Give each boy a controller and press the “X” button on one controller to start the game.
- e. Start the timer or stopwatch immediately after the game begins.
- f. Watch the game play. Occasionally announce the boys’ approximate *combined* score so as to emphasize the cooperative nature of the game. Press the “start” button towards the middle of a boy’s controller when the “press start” prompt appears on the screen.
- g. Announce at 4 ½ minutes that there is 30 seconds left.
- h. Announce at 5 minutes that time is up.

- i. Monitor the scores and be sure to jot down and announce the two players combined score before the game is turned off.

IV. Post-Play Interviews:

- a. Separate boys and conduct interview to assess each boy's report of his play partner's social goals.
- b. Have boys taken back to after school activity.
- c. Remove videotape and identify each boy on the tape. (replace videotape for next session).

APPENDIX H

Pre-Game Session Interview – Social Goals

PRE-GAME INTERVIEW: SOCIAL GOALS

CHILD NAME: _____ CHILD ID: _____

INTERVIEWER: _____ DATE: _____

GAME TO BE PLAYED: _____

INTRODUCTION

Before we have you play the game, I want to ask you some questions about your goals for the game you're about to play. Do you know what a goal is?

Definition: A goal is something you want to get or something you want to have happen. For example, if you're skateboarding, your goal might be to learn a new trick, not to get hurt, or just to have fun. People can often have more than one goal at a time, but usually some goals are more important to them than others. Do you have any question about what a goal is?

SELF REPORT OF GOALS

I want to find out from you what are your goals for the game that you are about to play.

***Note Confidentiality:* I want you to know that your answers will be kept private. We will not share them with your play partner or with any of the other kids in the program.**

Now, tell me in your own words what are your goals for the game that you are about to play. *If the child pauses or seems to complete his answer, ask* Do you have any other goals for the game?

Goals:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

TRAINING SESSION

We are going to use these cups to help us answer some questions about your goals. As you can see, the biggest cup is labeled “Very important,” the next biggest is “A little important,” and the smallest one is “Not important.” You’re going to answer the questions I ask by putting a chip into one of the three cups.

Let’s do a couple of examples first so that you get the hang of it. Let’s say you are getting dressed in the morning for school. When you are getting dressed for school, some things are very important, some things are a little important, and some things are not at all important.

- **For instance, if I were to ask you how important it is to put your socks on before your shoes, where would you put the chip?**

*If the child responds with “very important,” reinforce and praise that answer. If not, gently correct the child by saying something like, “It’s **very important** to put your socks on before your shoes because if you put your shoes on first, there would be no way to get your socks on your feet!” Repeat the question and ask the child to put a chip in the proper cup. Correct him if the chip didn’t go into “very important” cup.*

- **If I were to ask you how important it is to wear clothes with stripes, where would you put the chip?**

*If the child responds with “not at all important,” reinforce and praise that answer. If not, gently correct the child by saying something like, “It’s **not important** to wear stripes to school because there’s no need to wear stripes and nothing bad is going to happen if you don’t wear stripes.” Repeat the question and ask the child to put a chip in the proper cup. Correct him if the chip didn’t go into “very important” cup.*

- **Now, if I were to ask you how important it is to wear a watch to school, what would your answer be?**

*If the child responds with “a little important,” reinforce and praise that answer. If not, gently correct the child by saying something like, “It’s a **little important** to wear a watch to school. It’s sometimes helpful to have a watch so you can always know what time it is but most of the rooms at school have clocks on the wall so you don’t absolutely need to wear a watch.” Repeat the question and ask the child to put a chip in the proper cup. Correct him if the chip didn’t go into “very important” cup.*

Then, proceed to provide the child with a mixture of items from each of the categories. Praise and reinforce correct answers. Gently correct incorrect responses by providing the explanations following each item. Continue only as long as is necessary to ensure that the child understands the rating procedure:

- Wearing a shirt: very important- If you don't wear a shirt, you'll be sent home from school.
- Wearing a necktie: Not important- There's no need to wear a necktie to your school, you won't be very comfortable in a necktie, and nothing bad is going to happen if you don't wear a necktie.
- Wearing a belt: A little important- Sometimes you might need a belt to keep your pants up but lots of times pants will stay up on their own without a belt.
- Wearing the right shoe on the right foot: Very important- If you wear your shoes on the wrong feet it will be very uncomfortable, you'll probably walk funny, and other kids might make fun of you.
- Wearing clothes with pockets: A little important- Pockets can be helpful for holding things but you can also keep stuff in your backpack.
- Wearing clothes that are green: Not at all important- Green is a nice color but it's not at all important to wear green clothes to school and nothing bad is going to happen if you don't wear green.
- Wearing clothes that fit: Very important- If you don't wear clothes that fit, you'll be uncomfortable all day and it's hard to learn anything when you're uncomfortable.

PRE-GAME SOCIAL GOALS INTERVIEW

I'm going to describe a goal that someone may have when playing the game that you are about to play (*name of game*). Using your chips to answer, tell me how important each of these goals is to you. Remember, because some goals are going to be very important to you, some goals a little important, and some goals not important, you should be putting your chips in more than one cup.

In order to discourage "response sets," – do the following: If the child provides the same response to the first three items (i.e., puts all three chips in the same cup); First say to the child, "Remember, not all goals can be the same in terms of how important they are to you; some will be more important than others. Let's go back and redo these first few goals." Then, re-administer items 1-3. (Provide this prompt and re-administration only if the response set occurs on the first three items).

HOW IMPORTANT IS IT FOR YOU

Note: Substitute (my partner) with the partner's name.

	NOT AT ALL IMPORTANT	A LITTLE IMPORTANT	VERY IMPORTANT
1. For me and (my partner) to do well at the game as a team			
2. To do better at the game than (my partner)			
3. To make the game more exciting			
4. To be a good sport			
5. To get better at the game			
6. To show (my partner) that I'm better than him			
7. To get along well with (my partner)			
8. To have fun, even if it means breaking the rules			
9. To be liked by (my partner)			
10. To show (my partner) that I'm not afraid of getting into trouble			
11. To cooperate, even if it means that the game is not as much fun for me*			

**If the child does not seem to understand this question, consider rephrasing, e.g., "To follow the rules and try to get along with (name of play partner), even if it means that I won't have as much fun."*

PRE-GAME GOALS PRIORITIZATION INTERVIEW

Now I want to know which goals are most important to you. These are the goals that you said are “Very important” (or a little important”) to you. *Read these goals aloud.*

Out of these (#) goals, tell me which one is most important to you?

Goals prioritization:

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

APPENDIX I

Post-Game Session Interview – Social Goals

POST-GAME INTERVIEW: SOCIAL GOALS

PEER GOALS SCORE SHEET

CHILD NAME: _____ CHILD ID: _____

INTERVIEWER: _____ DATE: _____

GAME PLAYED: _____

Before you played the game, I asked you about your own goals. Now that the game is over, I want to ask you what do you think (partner’s name)’s goals were during the game. So what I want to know is what you think (partner’s name) wanted to get out of the game or what he wanted to have happen. Does that make sense? *Provide clarification if needed.*

***Note Confidentiality:* I want you to know that your answers will be kept private. We will not share them with your play partner or with any of the other kids in the program.**

First, tell me in your own words what you think (partner’s name)’s goals were for the game. *If the child says “I don’t know,” or otherwise fails to answer, prompt him by saying, “I know you don’t know for sure what (partner’s name)’s goals were, but what do you think they were,” and/or “It’s okay to guess.” If the Child pauses or seems to complete his answer, ask:*

Did (partner’s name) has any other goals for the game?

Goals:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

POST-GAME SOCIAL GOALS INTERVIEW

I'm going to describe a goal that someone may have when playing the game (name of game). Using your chips to answer, tell me how important you think each of these goals was to (partner's name). Remember, because some goals were probably very important to (partner's name), some goals a little important, and some goals not important, you should be putting your chips in more than one cup.

In order to discourage "response sets," – do the following: If the child provides the same response to the first three items (i.e., puts all three chips in the same cup); First say to the child, "Remember, not all goals can be the same in terms of how important they were to (partner's name); some were probably more important than others. You should be using more than one cup for your answers. Let's go back and redo these first few goals." Then, re-administer items 1-3. (Provide this prompt and re-administration only if the response set occurs on the first 3 items).

HOW IMPORTANT WAS IT FOR (Partner's Name)

	NOT IMPORTANT	A LITTLE IMPORTANT	VERY IMPORTANT
1. For you and him to do well at the game as a team			
2. To do better at the game than you did			
3. To make the game more exciting			
4. To be a good sport			
5. To get better at the game			
6. To show you that he is better than you			
7. To get along well with you			
8. To have fun, even if it meant breaking the rules			
9. To be liked by you			
10. To show you that he was not afraid of getting into trouble			
11. To cooperate, even if it meant that the game was not as much fun for him*			

**If the child does not seem to understand this question, consider rephrasing, e.g., "To follow the rules and try to get along with you, even if it meant that he didn't have as much fun."*

POST-GAME GOALS PRIORITIZATION INTERVIEW

Now I want to know which goals you think were most important to (partner's name). These are the goals that you said were "Very important" (or "a little important") to (partner's name). *Read these goals aloud.*

Out of these (#) goals, tell me which one you think was most important to (Partner's name)?

If the child says "I don't know," or otherwise fails to answer, prompt him by saying, "I know you don't know for sure what (partner's name)'s goals were, but what do you think they were," and/or "It's okay to guess."

Goals prioritization:

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

APPENDIX J

Post-Game Session Interview – Peer Sociometrics

POST GAME INTERVIEW: PEER SOCIOMETRICS

Sociometric Rating

Now, I'm going to ask you three questions about (partner's name) during the game. Answer using your poker chips, but notice that the labels on the baskets have changed a little bit. Review labels on each basket. The biggest basket is labeled "Very much," the slightly smaller basket is labeled "A little bit," and the smallest basket is labeled "Not at all."

Note Confidentiality: Once again, I want you to know that your answers will be kept private. We will not share them with your play partner or with any of the other kids in the program.

1. How much fun was (partner's name) to play with?
 - Very much
 - A little bit
 - Not at all

2. How well did (partner's name) cooperate during the game?
 - Very much
 - A little bit
 - Not at all

3. How much would you like to have (partner's name) as a friend?
 - Very much
 - A little bit
 - Not at all

APPENDIX K

Letter of Approval for Use of Archived Data

January 12, 2009

To Whom It May Concern:

I was the Principal Investigator (PI) on an NIMH-sponsored grant project entitled “Social Skills Training for Medicated ADHD Children.” Dr. Drew Erhardt and I were co-principal investigators on a sub-study entitled, “The Social Goals of Boys with ADHD,” the subjects for which were recruited from the larger social skills training project. Data collection has been completed on both of these studies.

This letter is to inform you that I am granting Michal Mayo-Dvir access to archival research data related to our Social Goals Study, conditional upon Pepperdine University’s Graduate and Professional Schools IRB approval of her dissertation. These data are currently maintained in a secure fashion at UCLA. Michal Mayo-Dvir will only be granted access to de-identified data that are relevant to her dissertation.

Please feel free to contact me if you have any questions or concerns regarding this manner.

Sincerely,

Fred Frankel, Ph.D., ABPP
Professor & Director
UCLA Children’s Friendship Program
UCLA – Semel Institute for Neuroscience & Human Behavior