SOCIAL SELF-CONCEPT AND POSITIVE ILLUSORY BIAS IN BOYS AND GIRLS WITH
AND WITHOUT ATTENTION-DEFICIT/HYPERACTIVITY DISORDER

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Dissertation Prepared for the Degree of

DOCTOR OF PHILOSOPHY

UNIVERSITY OF NORTH TEXAS

August 2006

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This study examined differences in social self-concept, as measured by the Self-Perception Profile for Children (SPPC), between boys and girls with and without attention-deficit/hyperactivity disorder (ADHD) while controlling for internalizing symptoms. Ninety-six children between the ages of 8 and 13 participated in the study as part of a larger project. Teacher reports of social competence were collected using the Teacher Rating Scale (TRS). The results indicated ADHD children experienced more peer rejection than control children. ADHD girls appeared to be more susceptible to low social self-concept and competence than control children or ADHD boys. Inattentive symptoms were most predictive of teacher reports of competence. Positive illusory bias was not found to serve a protective function in children regardless of ADHD status. The implications of the current study and directions for future research are presented.
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CHAPTER 1

INTRODUCTION

ADHD and Social Impairment

ADHD affects between 3% and 7% of school-aged children (Diagnostic and Statistical Manual-IV: Text Revision [DSM-IV-TR]: American Psychiatric Association [APA], 2000). Children with ADHD are typically seen and treated in outpatient mental health clinics, and ADHD symptoms are the basis of over half of all childhood referrals (Cantwell, 1996; Hinshaw, 1994). ADHD has been shown to be associated with negative short-term outcomes, such as disruptive, mood, and anxiety disorders, substance abuse, family and peer relational difficulties, and educational difficulties (Greene et al., 1997; Weiss & Hechtman; Weiss, Hechtman, & Perlman, 1978; Wilson & Marcotte, 1996).

ADHD is listed in the DSM-IV-TR in the section for Disorders Usually First Diagnosed in Infancy, Childhood, or Adolescence in the (APA, 2000). In order to receive a diagnosis of ADHD, symptoms of clinical significance must be present for 9 months, appear in multiple settings before 7 years of age, and may not be the result of another psychiatric or medical disorder. The DSM-IV-TR divides the symptoms of ADHD into two essential symptom clusters— inattention and hyperactivity-impulsivity- and into three subtypes, Predominately Inattentive Type (ADHD/I), Predominantly Hyperactive-Impulsive Type (ADHD/HI), and Combined Type (ADHD/C).

Important clinical differences distinguish children with ADHD/I, ADHD/HI, and ADHD/C. Gaub and Carlson (1997a) conducted an epidemiological study of ADHD among a large sample of elementary school children and identified relatively independent areas of impairment for each diagnostic group. First, the ADHD/C group (i.e., children with a
combination of attention, hyperactivity, and impulsivity difficulties) exhibited the most pervasive impairment across several areas of functioning, with 82% of these children demonstrating social impairment, 90% demonstrating behavioral impairment, and 82% demonstrating academic impairment. Teachers rated the ADHD/C group as more impaired than any of the other groups (i.e., ADHD/I, ADHD/HI, controls) on the Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, and Total Problem Behavior scales of the Child Behavior Checklist ([CBCL; Achenbach, 1991] Gaub & Carlson). A similar pattern of results was obtained in the DSM-IV Field Trials conducted by Lahey et al. (1994). For example, among clinic-referred children, the ADHD/C group was rated as more globally impaired than the ADHD/I group and with more academic problems and peer difficulties than the ADHD/HI group.

With respect to ADHD/I children, they are characterized by problems in sustaining attention during activities and, therefore, tend to avoid activities where sustained attention is required. These children may also have trouble listening, organizing, and following directions. When completing tasks, children with ADHD/I often fail to pay attention to details, make careless mistakes, or do not finish. They are easily distracted and tend to be forgetful (APA, 2000). Gaub and Carlson (1997a) demonstrated that this group is impaired in major domains of functioning, with academic impairment most common among this group (76%). In addition to academic impairment, moderate rates of social (59%) and behavioral (58%) impairment were also evident in the Gaub and Carlson sample of ADHD/I children. However, ADHD/I children were perceived by teachers as displaying more appropriate behavior and less externalizing behavior than ADHD/C or ADHD/HI children (Barkley, 1998; Gaub & Carlson; Hinshaw, 1994). For example, compared to the ADHD/C group, teachers rated the ADHD/I group as less
impaired on several variables, including aggression, delinquency, externalizing behavior, and symptoms of Oppositional Defiant Disorder (ODD; Gaub & Carlson). Similarly, ADHD/I children had the lowest prevalence rates of ODD compared to the other two diagnostic groups in a Canadian sample of clinic-referred children (Lalonde, Turgay, & Hudson, 1998). With respect to peer relationships, ADHD/I children were rated as being more liked and less disliked by their peers than ADHD/C children (Gaub & Carlson). Moreover, ADHD/I children are more likely to be socially passive and neglected than rejected by their peers (APA, 2000, Maedgen & Carlson, 2000).

Children with the third ADHD subtype, ADHD/HI, are characterized by excessive motor movement and impulsivity. These children fidget or leave their seats during class. They tend to talk excessively, blurt out answers, interrupt others, and have trouble playing quietly. Often children with this subtype seem as though they are driven by a motor and have trouble waiting for their turn (APA, 2000). Gaub and Carlson (1997a) demonstrated that the ADHD/HI group is significantly impaired in behavioral functioning (80%), which is consistent with other research that has demonstrated that ADHD/HI children have higher prevalence rates of Conduct Disorder than do ADHD/C or ADHD/I children (Lalonde et al., 1998). Fifty-three percent of the ADHD/HI children in Gaub and Carlson’s sample exhibited impairment in social interactions. Academic difficulties, however, appear to be less common in ADHD/HI children than ADHD/C or ADHD/I children (Baumgaertal, Wolraich, & Dietrich, 1995; Gaub & Carlson). Only 23% of the ADHD/HI group exhibited academic impairment compared to 76% of the ADHD/I group and of the 82% ADHD/C group (Gaub & Carlson). Similarly, in their school-based sample of German elementary school students, Baumgaertel et al. (1995) found that only 12% of ADHD/HI children were rated by teachers as below average academically and none were failing
a grade. ADHD/HI children were not rated as significantly different from control children by their teachers on the CBCL Learning, Withdrawn, Somatic Complaints, and Internalizing Behavior scales. In addition, ADHD/HI children were rated as more hardworking than ADHD/I and ADHD/C children and happier than ADHD/C children (Gaub & Carlson). Taken together, results suggest that ADHD/HI children tend to primarily exhibit externalizing behaviors and peer relationship difficulties, rather than academic impairment or internalizing behaviors. In sum, research has affirmed the heterogeneity of children diagnosed with ADHD and provided initial support for the delineation of the 3 subtypes identified in the DSM-IV-TR.

**Peer Relations in Children with ADHD**

Socialization with peers has been viewed as one of the most important developmental tasks in childhood (Cohn, Patterson, & Christopoulos, 1991). Individuals who are rejected by their peers in childhood have poorer outcomes in adolescence and early adulthood than children who are accepted by their peers, including higher rates of psychological comorbidity, substance abuse, delinquency, unemployment and dropping out of school (Greene, Biederman, Faraone, Sienna, & Garcia-Jetton, 1997).

Although children with ADHD/C seem to experience more difficulties with peer rejection than ADHD/I or ADHD/HI children, social difficulties are thought to be present in at least 50% of children diagnosed with ADHD, regardless of subtype (Gaub & Carlson, 1997a; Hinshaw & Melnick, 1995). Problems with interpersonal functioning are one of the most often reported difficulties by parents and teachers (Whalen & Henker, 1985). For children who experience rejection by their peers, this rejection can come quickly over a matter of hours or days (Erhardt & Hinshaw, 1994; Milich & Landau, 1982). Erhardt and Hinshaw found that in a sample of unfamiliar ADHD and comparison boys, boys with ADHD were rated significantly lower by
their peers on a friendship scale than comparison boys after one and three days of contact. Milich and Landau found that peers began withdrawing from play or other contact with ADHD children within 30 minutes. These negative reputations are also difficult to change and it is likely that negative peer relationships will continue unless interventions are made (Erhardt & Hinshaw). Children with ADHD may also act as negative social catalysts (Whalen & Henker, 1985), eliciting negative problem behavior from children around them and causing disruptions in the classroom. Therefore, peer relationship problems of children with ADHD can also affect the functioning of their peers and teachers (Whalen & Henker).

Three major categories of social behavior patterns have been hypothesized to exist in children with ADHD: (1) aggressive/assertive, (2) active/maladroit, and (3) reluctant/avoidant (Henker & Whalen, 1999). Henker and Whalen reported that these groupings are based on clinical observation and past research, but have not yet been empirically validated. First, children with ADHD who are “aggressive and assertive” tend to display oppositional behaviors toward adults and disruptive behavior when in situations with peers. These children appear to be motivated by the need to satisfy their own desires, rather than doing what is being asked of them by adults or what is being suggested by the social contexts. Thus, “aggressive and assertive” children with ADHD often violate social norms and have a comorbid diagnosis of Oppositional Defiant Disorder or Conduct Disorder (Henker & Whalen).

The second group of children with ADHD based on social behavior is labeled “active/maladroit” (Henker & Whalen, 1999). These children are characterized by social busyness. They are motivated by the desire to have social contact with others. However, their efforts to join a group of peers are often met with disdain because their initiations into groups are often ill-timed and take place independent of the context. For example, children without ADHD
will tend to observe the social norms of the group prior to introducing him/herself into the social context and will patiently wait for an appropriate time to enter the group. A child with ADHD with an “active/maladroit style” does not observe the group prior to entering, and often intrudes and immediately begins to redirect activity. These children do not take into account the desires of peers or the norms of the group. It is hypothesized that impulsivity may be preventing the “active/maladroit” child from being able to observe and process social cues. These children are often confused when their efforts to join a group are met with rejection. The social behavior of “active/maladroit” children and “aggressive/assertive” children is similar in that they are motivated by the desire to become socially involved. However, “aggressive/assertive” children additionally want the situation go their way (Henker & Whalen).

The third social behavior pattern observed in children with ADHD, the “reluctant/avoidant” style (Henker & Whalen, 1999), describes children who do not desire to be with other children. They also do not appear to receive enjoyment through social interaction. Children diagnosed with ADHD/I are often “reluctant/avoidant.” They are likely to display comorbid internalizing problems such as social anxiety, shyness, and withdrawal (Henker & Whalen; Hodgens, Cole, & Boldizar, 2000). In contrast to children in the “aggressive/assertive” and “active/maladroit group”, “reluctant/avoidant” children are not activity rejected and disliked by peers. They are, however, often neglected or ignored. Based on the higher prevalence of girls diagnosed with ADHD/I, girls may also be more likely to fit into the “reluctant/avoidant” group (Henker & Whalen).

*Social Information-Processing Theory as Applied to Children with ADHD*

Researchers examining the peer relationships of children with ADHD have attempted to delineate the cause of the social dysfunction experienced by so many of these children. Several
mediating mechanisms, including social information-processing deficits, are likely related to peer problems among this group of children (see Whalen & Henker, 1985, for a review). It is important to note that the majority of research in this area has sampled hyperactive boys, rather than girls or children with ADHD/I (e.g., Milich & Dodge, 1984; Moore, Hughes, & Robinson, 1992; Murphy, Pelham, & Lang, 1992).

Social information-processing (SIP) mechanisms are posited to contribute to the development and maintenance of social difficulties in children (Crick, 1995; Crick & Werner, 1998). Crick and Dodge (1994) reformulated the social information-processing model developed by Dodge (1986); in Crick and Dodge model, the researchers propose that social behavior is the result of sequential processing of social information according to six steps. First, children encode internal and external cues. During this step they select which environmental (e.g., actions of another child) or internal (e.g., feelings of anger) cues to attend to and encode them. Children then interpret those cues in step two. Interpretation of cues may involve identifying possible intentions of other, comparisons to past situations, and evaluations of self and other. In step three, children select a goal or desired outcome for the situation (e.g., making a new friend, staying out of trouble, obtaining a desired object). Then during steps 4, response access or construction, children recall or generate possible responses to the situation. Response Decision, Step 5, involves evaluation of the strategies produced during step 4 and choosing a response to enact. That is, the children evaluate each of the possible responses with consideration of outcome expectancy, self-efficacy evaluation, and response evaluation (i.e., moral evaluation) and then pick the solution that is evaluated most favorably. During the final step, behavioral enactment, children enact the chosen response (Crick & Dodge). Children who are able to execute each of
these steps skillfully are those with high social ability while deficits at any point in the
information-processing model can lead to social maladjustment (Nelson & Crick, 1999).

SIP skills have been widely studied among aggressive children. Given that SIP deficits
appear to be most prominent among the subgroup of aggressive youth who are impulsive,
hyperactive, and reactive (Dodge & Coie, 1987; Milich & Dodge, 1984), researchers have
applied models of SIP (e.g., Dodge, 1986; Crick & Dodge, 1994) to the study of ADHD children
as well. Unique social cognitive patterns have emerged among ADHD children, with deficits
evident in encoding and cue utilization, interpretation of social cues, response decision, and
behavioral enactment.

Milich and Dodge (1984) examined the social information-processing skills of
hyperactive boys with comorbid aggression. In order to assess encoding and cue utilization
biases, participants were presented with ambiguous hypothetical stories in which a peer may
have engaged in a hostile act (e.g., knocking over his bike) and are given the opportunity to listen
to up to four eye-witness testimonials as to what happened. Results indicated that
hyperactive/aggressive boys listen to fewer testimonials than other groups (i.e., hyperactive/non-
aggressive, non-hyperactive/aggressive, psychiatric controls, normal controls) before making a
decision whether or not the peer was guilty of committing the hostile act. Moore et al. (1992)
obtained a similar pattern of findings in their study of rejected and accepted hyperactive children.
Specifically, hyperactive-rejected children had difficulty attending to and encoding relevant
social cues. Furthermore, Zentall, Cassady, and Javorsky (2001) found that hyperactive children
gave more unrelated or tangential answers when asked to identify the problem in a story than
children who were not hyperactive. It was hypothesized that these hyperactive children had
difficulty attending to the appropriate cues. When the hyperactive children were asked to recall
the story they were presented with before answering questions about it, there were no significant
differences between the hyperactive and non-hyperactive children. Deficits at the first stage of
the social information-processing model posited by Crick and Dodge (1994) affect processing at
later stages. Subsequent errors in processing social information are likely to occur because
attributions and response decisions are made on the basis of limited social information (Milich &
Dodge).

Interpretation of social cues is the second step in the social information-processing model
Crick and Dodge (1994). Milich and Dodge (1984) assessed deficits at this step by asking
participants in an open-ended manner to explain the behavior of a peer in an ambiguous
provocation situation (i.e., the intent of a peer is unknown in a situation in which a negative
outcome occurs to the subject). They found that hyperactive/aggressive boys were more likely
than normal controls to attribute hostile intent to the peer’s behavior and to expect that the peer
would continue to demonstrate hostile behavior in the future. This result is consistent with the
robust finding that aggressive children exhibit a hostile attribution bias, as well (Dodge, 1980;
(2001) also found that hyperactive children gave fewer relevant or positive outcomes to the
stories; however, their responses were not significantly different than control children with
regards to aggression. Again, when the hyperactive children were asked to recall the story prior
to responding to the questions, the difference between groups was no longer present.

In order to assess deficits at the response decision stage of Crick and Dodge’s (1994)
social information-processing model, Milich and Dodge (1984) assessed boys’ decisions about
how they would respond behaviorally to an ambiguous provocation by a peer they identified as
aggressive (e.g., getting hit in the back by a ball thrown by the peer). They found that
hyperactive/aggressive boys were more likely than normal controls and other psychiatrically referred boys to report that they would aggressively retaliate against a peer in such a situation.

Behavioral enactment is the final stage of Crick and Dodge’s (1994) social information-processing model. Whalen and Henker (1998) posit that children with ADHD may be knowledgeable of the basic steps of an interpersonal encounter; however, they seem less competent than their non-ADHD peers at enactment when they are excited, frustrated, or provoked. That is, children with ADHD may demonstrate appropriate behaviors, but the “timing, target, or context” for those behaviors may be inappropriate (e.g., blurting out a question while the teacher is presenting material to the entire class; Whalen & Henker, 1992, p. 398). Wheeler and Carlson (1994) concur, but argued that hyperactive children in particular (e.g., ADHD/HI, ADHD/C) have this type of social performance deficit. That is, impulsivity and hyperactivity prevent these children from using their social knowledge appropriately. In contrast, the anxiety, shyness, and social withdrawal that typically characterizes children with ADHD/I may result in limited social interactions, which prevents them from obtaining sufficient social knowledge. This lack of social knowledge reflects a true social skills deficit, rather than the social performance deficit characteristic of children with hyperactivity (Wheeler & Carlson). In sum, social information-processing deficits may contribute to the peer difficulties common to children with ADHD.

Although social information processing deficits were identified in children with ADHD, they were only present in the first two steps of the model, and when the children were asked to recall the story prior to responding to the questions there were no significant differences between groups. With increased attention to the cues of the story, the children are able to adequately interpret the situation and respond appropriately. The differences in the remaining steps of the
social information processing model were only significant for ADHD children with aggression.

Children with ADHD who did not have comorbid aggression were not significantly different than controls. The results reviewed above do not support a social information processing deficit for children with inattention, hyperactivity, and impulsivity without aggression.

Possible Causes of Social Impairment in ADHD Children

Several factors have been supported as contributing to the social impairment of children with ADHD including cognitive inattention, hyperactivity, and lack of emotional control (Sandler et al., 1993; Saunders & Chambers, 1996; Zentall et al., 2001). In addition, Wheeler and Carlson (1994) asserted that ADHD/C children experience social performance deficits while ADHD/I children experience both social performance and social knowledge deficits. They hypothesized that the social passivity that ADHD/I children exhibit may keep them from interacting with others to gain social knowledge. Meadgen and Carlson (2000) supported social performance deficits in ADHD/C and ADHD/I in comparison to normal controls; however, the types of deficits varied by subtype. Children with ADHD/C were rated as more aggressive while ADHD/I children were rated as more passive.

Erhardt and Hinshaw (1994) found that in forming initial sociometric impressions, factors like intelligence, physical attractiveness, motor skills, and academic achievement did not significantly contribute; rather, aggression and noncompliance (i.e., behaviors that interrupt activities and rule breaking) accounted for 32% of the variance in negative peer nominations. Using teacher ratings, Sandler et al. (1993) found that children with cognitive inattention (i.e., children with ADHD/I or ADHD/C) were rated as having more peer difficulties than children with only hyperactivity (i.e., ADHD/HI) or learning problems. Furthermore, they also found that
cognitive inattention and hyperactivity positively predicted peer difficulties, and that cognitive inattention accounted for variance in social difficulties above hyperactivity.

Another factor that has received support as a possible source of social impairment in ADHD children is poor self-regulation of emotion (i.e., ability to modulate one’s degree of emotional arousal; e.g., excitability, irritability, overarousal; see Barkley 1998 for a review). Although poor emotional regulation is not specifically listed as one of the associated features of ADHD in the DSM-IV-TR, low frustration tolerance, temper outbursts and mood lability are listed (APA, 2000). Poor self-regulation affects several areas of social functioning including communication and reciprocity (Hubbard & Dearing, 2004). For example, children with ADHD are more negative and emotional when communicating with their peers than are control children (Hinshaw & Melnick, 1995). ADHD children also showed greater negative emotion than control children during a learning task (Rosenbaum & Baker, 1984). Melnick and Hinshaw (2000) found that ADHD boys with low aggression and control boys did not differ in their ability to tolerate frustration during an impossible task; however, boys with ADHD and high aggression exhibited significantly less emotional coping. Moreover, in a study of preschool children, teacher-reported emotional intensity was negatively correlated with teacher and observer ratings of social skill level and peer acceptance (Eisenberg et al., 1993).

The prize or disappointing gift paradigm is often used to study emotional regulation (Cole, 1986; Davis, 1995; Maedgan & Carlson, 2000). In the paradigm, children receive a disappointing or an acceptable gift and emotional responses are observed and coded. This procedure is based on socialized display rules (i.e., you should act happy when you receive a present; Maedgan & Carlson, 2000). Maedgen and Carlson found that ADHD/C children displayed more positive affect after an acceptable or pleasing gift and more negative affect after
a disappointing gift than ADHD/I and control children. This paradigm has led to significant findings with regard to gender differences in emotional regulation. Specifically, emotional dysregulation may be more likely to occur in boys with ADHD than girls with ADHD. For example, preschool girls are better at hiding disappointment when given an undesirable gift than boys, even if an incentive is offered (Cole, 1986; Davis, 1995). Cole, Zahn-Waxler, and Smith (1994) found a positive correlation between ADHD symptoms and negative affect in boys. This correlation was not present for girls in their sample. In summary, difficulties with emotional regulation affect children’s abilities to appropriately interact with their peers and contribute to the rejection they experience (Vosk, Forehand, & Figueroa, 1983).

**Gender Differences in ADHD and Social Relation**

The prevalence rates of ADHD indicate a higher frequency in males than females. According to the DSM-IV-TR, the male to female ratios range from 2:1 to 9:1 depending on subtype and referral source (APA, 2000). Within a clinically referred sample, ratios ranged from 2:1 to 10:1, \( M = 6:1 \), whereas epidemiological studies reported ranges between 2.5:1 and 5.5:1 \( M = 3.4:1 \); Barkley, 1998). However, recent research indicates that this gender discrepancy may be an artifact of lower referral rates for girls with ADHD symptoms. That is, boys with ADHD display more disruptive, aggressive behaviors as compared to girls with ADHD, which may contribute to increased referral rates for boys with ADHD (Berry, Shaywitz, & Shaywitz, 1985). Given that girls with ADHD exhibit impaired attention more than motor hyperactivity, inclusion of criteria for ADHD/I in the DSM-IV has facilitated increased identification of impaired girls (Lahey et al., 1994). As a result, the discrepancy of the gender ratio of youth diagnosed with ADHD/I is less pronounced than with ADHD/C and ADHD/HI (APA).
In two meta-analyses of gender differences in ADHD, girls with ADHD showed lower intellectual functioning, less hyperactivity, and fewer externalizing behaviors than boys with ADHD (Gaub & Carlson, 1997b; Gershon, 2002). No gender differences were found in impulsivity, academic performance, social functioning, or motor control (Gaub & Carlson). In addition, Gaub and Carlson found that community-referred females with ADHD showed lower levels of aggression, inattention, and internalizing behaviors than community-referred boys with ADHD; no gender differences were found for these variables in the clinically referred sample. In contrast to Gaub and Carlson’s findings, Gershon (2002) found girls with ADHD showed more internalizing behaviors than boys with ADHD. Moreover, girls with ADHD displayed fewer inattentive and impulsive behaviors than boys with ADHD regardless of referral source. The inclusion of unpublished and more recent studies in the Gershon study may account for the differences between the two meta-analyses. Although ADHD girls reportedly display lower intellectual functioning, it is interesting to note that there was no difference found in terms of academic performance between ADHD girls and boys (Gaub & Carlson; Gershon).

With regard to gender differences in social relations, studies have yielded inconsistent results. In one recent study, girls, regardless of ADHD status, reported lower peer acceptance and more loneliness than boys, regardless of ADHD status (Kaminski, Smith, & Trammell, 2003). In contrast, DeHass (1996) found that while both hyperactive boys and girls had more difficulty with peer relations (i.e., received more negative nominations) than control boys and girls, hyperactive boys received significantly more negative nominations than hyperactive girls. Hyperactive boys were also seen as being more hyperactive and as having more conduct problems than the other groups. Similarly, Sandler et al. (1993) found that regardless of ADHD status, boys received higher teacher ratings of peer problems than did girls and that ADHD
children received higher teacher rating of peer problems than did control children. There was no interaction effect between gender and ADHD. Gaub and Carlson (1997b), however, found no gender differences in social functioning in children with ADHD.

Self-Concept

Overview of Self-Concept

Self-concept is the combination of a person’s perceptions, thoughts, and feelings regarding themselves (Marsh & Shavelson, 1985; Shavelson, Hubner, & Stanton, 1976). Until Shavelson et al. (1976) called for a more unified definition of self-concept, there was little agreement on its structure or components and the definition varied widely by study. Shavelson et al. did a meta-analysis including studies based on the five most commonly used self-concept measures at that time in order to develop a cohesive definition of self-concept. They used common elements of the pre-existing definitions to form one model of self-concept that could then be validated. Based on this work, self-concept was narrowed to the individual’s evaluation of their worth rather than including outside observers’ evaluations.

Shavelson et al. (1976) proposed seven key features that defined self-concept. Self-concept was defined as both descriptive and evaluative in nature. In addition to self-concept being a description of the self, it also inherently includes an evaluation (i.e., positive or negative value) of those descriptions. They believed that self-concept was multidimensional rather than unidimensional in nature. That is, in addition to a global self-concept (e.g., “I like myself”), they proposed that there were specific domains of self-concept (e.g., “I am good at math”) that could be measured. The basic organization was proposed to be a hierarchy with global self-concept at the apex that could be broken down into an academic and non-academic self-concept. Shavelson et al. further conjectured that academic and non-academic self-concept could be further broken
down into more specific domains (e.g., school subjects and peer relations). In analyzing the studies, Shavelson et al. noted that higher agreement was achieved between self-reported self-concept and inferred self-concept (i.e., a parent or teacher reporting on the self-concept of a child), when reporting on global self-concept than when reporting on domain specific self-concept. That is, a student report and a teacher report about the same student are more likely to be similar at the level of global self-concept than at academic self-concept.

Shavelson et al. (1976) thought global self-concept was a stable construct. That is, from day to day, global self-concept remains consistent; however, at the domain specific level, self-concept is more vulnerable to situational events and is, therefore, less stable than global self-concept. Change in global self-concept, however, may occur when consistent contradictory feedback is received over a period of time about a specific self-concept domain or general self-worth. Marsh (1988) tested the stability of self-concept with a 6 month interval between administrations of the Self-Description Questionnaire-I. As hypothesized, self-concept was found to be stable across time. Shavelson et al. also believed that self-concept had a developmental component that began as soon as children are able to differentiate themselves from their environment and others. Finally, according to Shavelson et al., self-concept is separate and distinguishable from other constructs.

Although self-concept has become a more unified construct, the measures currently used in self-concept research continue to have shortcomings. Specifically, the measures do not account for individual, family, or cultural differences (Harter, 1999). That is, abilities that are seen as more important in a given context are likely to influence a person’s view of themselves more than abilities that are seen as unimportant (Harter). For example, a child who grew up in a family or a culture where athletic ability was praised and put in a place of importance may have
physical abilities affect their global self-concept more than a child who grew up in a household where sports were not considered important. Due to the universal development of social relations, social self-concept is more likely to remain a domain of emphasis regardless of society or culture (Schneider, 1999). However, an individualist and a collectivist society may have different social expectations. Current self-concept measures are unable to account for these differences and may not even tap into abilities that are seen as contextually important.

**Purpose of Self-concept**

In general, self-concept across the life span serves three functional roles 1) organizational, 2) motivational, and 3) protective (Harter, 1999). First, self-concept provides a basis for organizing experiences that a person faces (Harter). It provides a structure for classifying and understanding events and allows predictions to be made about the environment. Interpretations and meaning may also be derived from experiences based on a person’s self-concept. For example, a student with a positive self-concept in writing is likely to use negative feedback about a term paper to improve their writing; however, a person with a negative self-concept in regard to writing is likely to take negative feedback as an indication that they are indeed a poor writer and are likely to feel more discouraged in future endeavors. Self-concept also aids in self-regulation and determining appropriate social behavior. Based on a person’s understanding and ability to make predictions about their environment, they pick behaviors from their repertoire that are appropriate for the situation. Second, self-concept helps motivate by providing goals and encouraging self-improvement (Harter). Self-concept allows a person to identify domains they would like to improve and provides a standard in achieving their goals. Finally, a positive self-concept helps maintain a favorable impression of the self and serves to minimize pain and maximize pleasure. A positive self-concept serves as a protective factor and
encourages growth towards happiness; however, when a negative self-concept is present the purpose is not fulfilled (Harter).

*Development of Self-concept*

Formation of one’s self-concept is a social-emotional developmental task that begins at the time a child is able to differentiate between themselves and others and continues through adulthood (Crain & Bracken, 1994; Shavelson et al., 1976). This development includes both cognitive and social components because while children are active agents in their environment, they are also often at the mercy of those with whom they interact (Harter, 1999). Self-concept is primarily a social construct that is created through interactions with others (Harter; Rogers, 1951). Typically, children’s first social interactions are with their parents. During interactions, parents share opinions and appraisals, which become the basis of the child’s opinions and appraisals about herself and others. Parents who are nurturing, affectionate, supportive, and approving of their children have children who have positive views of themselves (Lord, Eccles, & McCarthy, 1994; Rogers; Scott, Scott, & McCabe, 1991). The approval of the parent is accepted and internalized by the child, and the child then approves of herself. However, if a parent is neglectful and rejecting, the child will internalize these messages and view themselves negatively (Harter; Kohut, 1977). As a child receives feedback from alternative, social interactions their view of themselves may be altered (Harter). For example, a child who was rejected by a parent but is taken under the wing of a teacher may have improved self-concept. The cognitive development of self-concept occurs over time as the child’s cognitive abilities increase. Two of the primary cognitive tasks that affect the development of self-concept are increased abilities to differentiate and integrate information (Harter). As a child gains the ability to differentiate, they are able to evaluate themselves in more specific domains and each domain
is evaluated increasingly more independent from the others (Boivin et al., 1992). In addition, the
ability to differentiate allows a child to have both real and ideal self-concepts (Harter).
Integration is the ability to combine specific behaviors into a generalization about the self that
then forms the self-concept. For example, a child who demonstrates a high level of skills in
making and maintaining friends may then generalize that to peer relation self-concept.

At each stage of development, self-concept serves a purpose and possible roadblocks to
maintaining a positive self-concept are encountered (Harter, 1999). As a toddler, mastery
produces feelings of self-efficacy and positive self-concept. However as a toddler’s cognitive
abilities develop, they also realize they are separate from others and therefore do not control their
environment. This realization can decrease self-concept. In addition, at this age children are
unable to differentiate much further than good or bad so a child of this age may characterize
themselves as “all good” or “all bad”. Typically, preschool children view themselves as
competent, and it is at this age that the highest level of self-concept is reported (Harter & Pike,
1984).

In middle childhood, children begin to differentiate between various components of their
self-concept and a hierarchy of self-concept domains appears (Boivin et al., 1992; Byrne &
Gavin, 1992; Marsh & Yeung, 1997). Around age 7 or 8 a child cannot only report on general
self-concept and general academic self-concept, but can now report on separate domains of
school (Harter, 1999). For example, a child might consider themselves good at English, bad in
math, and good in science. These evaluations of competency along with evaluations of other
classes generalize into the child’s general academic self-concept, which is a component of their
overall self-concept. The child who reports being good in two subjects and bad in one is likely to
report good general academic self-concept. As children gain the abilities to differentiate and integrate, their evaluations of themselves become increasingly more accurate in nature (Harter).

During middle childhood, children gain the ability to compare themselves to others and interpersonal relationships become increasingly important (Damon & Hart, 1988; Ruble, Boggiano, Feldman, & Loebl, 1980). Children spend more time away from their parents and receive more feedback from peers and teachers than when they were younger. Thus, social comparisons become increasingly more important in forming self-concept (Butler, 1992). In both children and adolescents, self-concept can be high in comparison to some peers and low in comparison to others (Harter, 1999; Hoge, Smit, & Hanson, 1990). While preschool aged children generally report positive self-concept, 25% of 9 and 10 year olds reported negative self-concept on three Self-Perception Profile for Children (SPPC; Harter, 1985) scales (i.e., academic, social and global; Cole, 1991).

Finally, in middle childhood, children gain the ability to take the perspective of others and to compare their own ideal self with their real self (Harter, 1999). The ability to perspective-take allows the child to realize the expectations and opinions of others. By comparing themselves to expectations of others, as well as expectations of themselves (i.e., ideal self), children are able to identify domains where they exceed or fall short in their abilities. These appraisals are incorporated to self-concept.

Children’s global self-concept becomes more resistant to change during middle childhood (Harter, 1999). Whereas preschool children’s self-concept is highly influenced by situational and domain-specific events, children in middle childhood require feedback that is consistently contradictory in order to change their self-concept.
During adolescence, abstract thinking, introspection, and self-reflection allow for further differentiation of self-concept. Adolescents begin looking for one identity that includes all the different and sometimes conflicting elements of the self (Marcia, 1991). This attempt at full integration causes problems for adolescents. As they are often unable cognitively to complete the task, they may develop several views of the self and confusion as to which is the “real” self (Harter, 1999).

**Gender and Age Differences in Social Self-concept**

Although most studies of age, gender, and self-concept report gender and age differences on measures of global and/or domain specific self-concept (Crain & Bracken, 1994; Marsh, 1984; Marsh, 1989; Marsh et al., 1991; Piers, 1984), effect sizes are small. Such little variance is accounted for (e.g., .66% to 2%) by these two demographics that neither appears meaningful in accounting for clinical differences in self-concept. In addition, although most studies found gender differences in some area of self-concept (Bracken, 1992; Marsh, 1984; Marsh et al., 1991; Wilgenbusch and Merrell, 1999), only one study found any gender differences in social self-concept (Marsh, 1989). Specifically, Marsh (1989) found that for the preadolescent portion of the sample (grades 7-11), boys rated themselves higher on social self-concept than girls did.

Wilgenbusch and Merrell (1999) did a meta-analysis that included only studies that conceptualized self-concept as a multidimensional construct. In elementary school children (1st to 6th grade), boys reported significantly higher levels of self-concept than girls on 5 of 10 domains. These were global, academic/scholastic, mathematics, family/relations with parents, and psychomotor coordination. However, girls reported higher levels of verbal self-concept than did boys. No differences were found in social self-concept.
Research using a cross-sectional design has consistently supported a slight but measurable decline in self-concept between the ages of 7 and 10 (Bracken, 1996; Marsh, 1988, 1989; Marsh et al., 1991). Marsh et al. also found a decrease in appearance, peer relations, and general school self-concept between the ages of 5 and 8. In addition to the decline in self-concept that appears to occur with age during preadolescence, an increase in differentiation has also been supported (Byrne & Shavelson, 1996; Crain & Bracken, 1994; Marsh, 1984, 1989). However, the age at which increased differentiation occurs is unclear.

Outcomes of Low Self-concept

Children with low self-concept have been shown to have more peer difficulties (Hymel, Rubin, Rowden, & LeMare, 1990), higher occurrence of psychological disorders (Button, Songua-Burke, Davis, & Thompson, 1996; Garber, Robinson, & Valentiner, 1997), more antisocial behavior (Dubow, Edwards, & Ippolito, 1997; Pisecco, Wrister, Swank, Silva, & Baker, 2001), and poorer academic performance (Marsh & Yeung, 1997) when compared to children with high-self concept. In addition, individuals with poor self-concept have been found to have poorer outcomes in adolescence and young adulthood (Slomkowski, Klien, & Mannuzza, 1995). Moreover, Slomkowski et al. (1995) asserted that self-concept in adolescence was positively correlated with eventual outcomes in educational and occupational achievement. It appeared this relationship was mediated by problems in psychosocial adjustment and academic performance.

ADHD and Self-concept

One group that is likely to experience significant trouble with low self-concept is children diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD). Children with ADHD have poorer peer relationships (Henker & Whalen, 1999; Whalen & Henker, 1985) and poorer parent-
child relationships (Danforth, Barkley, & Strokes, 1991) when compared to non-ADHD children. These negative relationships are likely to result in negative interactions and increased sense of failure. This negative feedback is internalized by the child and forms the basis of their self-concept (Harter, 1999; Kohut, 1977; Lord et al., 1994; Rogers, 1951; Scott et al., 1991). In addition to relational difficulties, studies have shown difficulties in school performance, sports, and high rates of comorbid psychological disorders, which may also contribute to negative self-concept formation (Greene, et al., 1997; Hinshaw, 1994; Frick et al., 1991; Weiss & Hechtman, 1993).

Research on Self-concept and ADHD

The relationship between ADHD and self-concept, however, is unclear. Two studies found children with ADHD have lower global self-concept and lower specific domain self-concept than children without ADHD (Bussing, Zima, & Perwin, 2000; Ialongo, Lopez, Horn, Pascoe, & Greenberg, 1994). However, Dumas and Pelletier (1999) found children with ADHD at an outpatient treatment clinic reported lower self-concept than control children on the scholastic competence, social acceptance, and behavioral conduct scales of the Self-Perception Profile for Children (SPPC; Harter, 1985), but no differences were found for global self-concept. Similarly, Barton and Kaminski (2004) found that ADHD children reported lower academic, social, and athletic self-concept than control children (global self-concept was not investigated in this study).

Similarly, Hoza and colleagues (Hoza, Dobbs, Owens, & Pillow, 2002; Hoza, Pelham, Milich, & McBride, 1993) did not find differences in global self-concept between ADHD and non-ADHD boys, but reported that the SPPC Behavioral Conduct subscale was significantly lower in boys with ADHD. However, when Hoza and colleagues (1993) controlled for
internalizing disorders, there were no significant differences in self-concept between ADHD and non-ADHD boys. Boys with ADHD and comorbid internalizing behaviors reported significantly lower global self-concept than non-ADHD boys while no significant difference was found between ADHD-only boys and non-ADHD boys (Hoza et al., 2002). It appears that internalizing symptoms that are comorbid with a diagnosis of ADHD may contribute to or account for the self-concept differences that are present between ADHD and non-ADHD boys.

Bussing et al. (2000) used a sample of 102 boys and girls from special education classrooms who met criteria for ADHD. Forty-one non-ADHD children from special education classrooms were included as controls. Over half of the ADHD children in the sample were diagnosed with more than one psychiatric disorder. ADHD children reported significantly lower global self-concept on the Piers-Harris Self-Concept Scale than children without ADHD. However, both groups were within the normal range for self-concept. Children with internalizing behaviors and ADHD reported significantly lower self-concept than ADHD only children and non-ADHD children.

Ialongo et al. (1994) conducted a double-blind study on the effects of psychostimulant medication on 48 children with ADHD. Regardless of medication status, ADHD children reported significantly lower scholastic competence, behavioral conduct and global self-worth on the SPPC than non-ADHD children. In addition, non-medicated ADHD children reported lower social acceptance than non-ADHD children.

The main difference between studies that found either global or specific domain self-concept differences between ADHD and non-ADHD children and studies that found no difference in self-concept was the inclusion or exclusion of girls. Studies that did not include girls (i.e., Hoza et al., 1993, 2002) also did not find differences in self-concept while studies that
included both genders (i.e., Bussing et al., 2000; Dumas & Pelletier, 1999; Ialongo et al., 1994) did find self-concept differences between children with and without ADHD. In addition, it appears that controlling for internalizing behaviors may alter whether self-concept differences are present. This is consistent with research that supports children with depression report lower self-concept (Kaslow, Brown, Mee, 1994). Further, when children are treated for the depressive symptoms, they show an increase in self-concept (Tems, Stewart, Skinner, Hughes, & Emslie, 1993).

Although research with children has not resulted in consistent findings, research has consistently found that adolescents and young adults diagnosed with ADHD as children report lower self-concept than adolescents and young adults without a history of an ADHD diagnosis (Dooling-Litfin & Rosén, 1997; Hetchman & Weiss, 1983; Hechtman, Weiss, & Perlman, 1980; Slomkowski et al., 1995; Waddell, 1994). This finding remained even when the participants no longer met criteria for any psychiatric disorder.

*Positive Illusory Bias*

With the lack of consistent self-concept differences between ADHD and non-ADHD children, the focus of this area of research has turned to explanations for why children with more social and academic difficulties (i.e., those with ADHD) may not report lower self-concept than children without these difficulties (i.e., control children). One explanation that has received attention is the positive illusory or self-protective bias (PIB; Diener & Milich, 1997; Hoza et al., 2002; Hoza, Waschbusch, Pelham, Molina, & Milich, 2000; Ohan & Johnston, 2002). PIB is a tendency to report more positive self-concept than actual ability would warrant (Hoza et al., 2002). Although it is likely that PIB helps children function despite difficulties in multiple areas,
it is unclear whether the overly positive reports are a product of conscious inflation, misperception, or nonconscious psychological defense (Hoza et al., 2002).

PIB theory has been expanded from research done with medical patients to self-concept in ADHD children. Taylor and Brown (1988) identified three components of positive illusion in their work with medical patients who displayed a positive illusion regarding their illness. Two of the three components, “unrealistically positive views of the self” and “unrealistic optimism” (pp. 194), will be discussed in relation to self-concept.

Unrealistic positive views of the self have been supported through research that determined that most people view themselves more positively than observers and than what is statistically possible. First, normal subjects choose more positive than negative personality characteristics to describe themselves (Alicke, 1985; Brown, 1986). In Alicke’s study, college students rated themselves and the “average college student” on characteristics that had been previously determined to be either positive or negative and controllable or uncontrollable. Subjects rated themselves as more positive than the average student, particularly on characteristics that were seen as controllable. When negative characteristics were endorsed by subjects, they tend to be uncontrollable characteristics. Thus, students attributed positive characteristics to their own control and negative characteristics as outside their control. Campbell (1986) conducted a similar study with rating personal abilities rather than personal characteristics. Subjects overestimated the commonality of their weak abilities and underestimated the number of people who shared their strong abilities. These estimates were more discrepant with abilities that were highly valued by the subject. When negative characteristics or abilities were acknowledged, they were seen as less important than positive aspects and were labeled as common difficulties in the population (Campbell, 1986). Because
statistically it is impossible to have most people score better than average, it can be assumed that people are overestimating their abilities. Further support for unrealistic positive self-views comes from studies that compared subject ratings of themselves to independent observers. Non-depressed college students rate themselves as having more positive characteristics than observers rated them as having (Lewinsohn, Mischel, Chaplin, & Barton, 1980). Depressed people, however, tended to report self-ratings that were more similar to observers’ ratings (Brown, 1986; Lewinsohn et al., 1980). They also were more accurate than non-depressed people when comparing their own abilities to those of others (Brown, 1986; Lewinsohn et al., 1980).

Unrealistic optimism is the belief that the future will hold more positive things for the individual than negative things (Taylor & Brown, 1988). For example, college students are more likely to predict that they will get a job than have trouble finding a job (Weinstein, 1980). Furthermore, subjects also believed that they were more likely to have positive things happen and less likely to have negative things happen than were their peers (Weinstein). In addition to overestimating positive future events, both children and adults overestimated how well they will do on a future task (Irwin, 1944). Similar to patterns found with unrealistic positive self-views, people were more likely to overestimate their future performance if the task was rated as highly valued to them (Irwin).

Although unrealistic self-views and optimism lead to a general overestimate of characteristics and abilities, neither construct provides a mechanism that would allow for maintaining positive self-concept in the face of frequent negative feedback. Children with ADHD who receive consistent negative feedback may use several methods to maintain their positive illusory bias with regards to competence. In normal adults, social interaction can be a way of maintaining positive self-concept. Individuals intentionally elicit feedback when they
believe it will be positive (Swann & Reed, 1981). Feedback that is negative is more likely to be closely analyzed, seen as inaccurate, and discredited by recipients than is positive feedback (Swann & Reed). ADHD children may also attempt to elicit positive feedback (e.g., classmates laughing when they make a joke). Swann (1984) also found that people associate with those who are similar in ability to them but who are less competent in domains that are most salient to them. This may explain why children with behavior problem associate with other children who have similar problems. Another way people maintain positive self-concept is to recall information from their past that is congruent with their positive self-beliefs (Taylor & Brown, 1988). For ADHD children, their behavior during preschool may not have been as discrepant from peers or noticeable to adults; therefore, they may be able to recall receiving positive or neutral feedback regarding social interactions that contribute to a positive social self-concept during middle childhood. This mechanism could keep potentially negative feedback from being integrated or accepted by the child (Taylor & Brown). When self-concept has been influenced by negative feedback, individuals may then put less emphasis on that domain or avoid that area of activity all together (Campbell, 1986). Due to the amount of negative social feedback children with ADHD experience from peers and teachers, some may attempt to avoid socialization and isolate themselves from other children (Erhardt & Hinshaw, 1994; Milich & Landau, 1982; Whalen & Henker, 1985). In this case, children may acknowledge low self-concept in the social domain but maintain a positive global self-concept.

Thus far, attempts to understand the source and function of the illusory bias in children with ADHD have focused primarily on boys. Several studies have provided limited support for a positive illusory bias in social self-concept (Diener & Milich, 1997; Hoza et al., 2000; Hoza et al., 2002; Ohan & Johnston, 2002). Diener and Milich found that ADHD boys who received
positive feedback after a peer interaction gave lower performance evaluations than ADHD boys who received neutral feedback, but no significant differences were reported for predictions of future interactions. However, Ohan and Johnston (2002) found after receiving positive feedback regarding a social interaction with a teacher, ADHD boys’ predictions for future interactions were significantly lower than before the feedback. It was hypothesized that after receiving positive feedback, ADHD boys were able to relax their psychological defenses and give more accurate reports of their performance (Diener & Milich; Ohan & Johnston). In both studies, a social interaction task was used. For example, boys were instructed to give a prediction of how much they would be liked by a confederate peer or teacher with whom they were about to play or work. In the peer task, after the two boys played, they were each asked to give the administrator feedback about how much they liked playing with the other boy. Then based on random assignment, the participant boys were given either positive (i.e., the peer liked playing with them) or neutral (i.e., they appreciated the boys’ participation) feedback. Finally, the boys were told they would be playing with another peer and were asked to give another prediction about how much they would be liked by that peer. In similar study, Hoza et al. (2000) found no significant differences between ADHD and control boys who received positive feedback. However, if given negative feedback during the first trial, ADHD boys gave significantly higher ratings than control boys on two out of five questions. This difference was not present if the negative feedback was given on the second trial. Thus, if ADHD boys had been given positive feedback during the first trial and then negative feedback during the second trial, no significant differences were found. In addition to giving higher self-ratings after the first trial, ADHD boys gave significantly higher ratings of their partner than did control boys (Hoza et al., 2000). This finding suggests that positive illusory bias may extend beyond a self-protective appraisal to
perceptions of their peers. As further support for positive illusory bias, it is important to note that independent observers rated ADHD boys as less socially effective than non-ADHD boys in all three studies reviewed (Diener & Milich; Hoza et al.; Ohan & Johnston).

Ohan and Johnston (2002) looked for evidence of a positive illusory bias in academic self-concept. They gave ADHD and non-ADHD boys a series of mazes to complete and asked them to predict how well they would do. Regardless of ADHD status, boys increased their estimates of performance after receiving positive feedback. Ohan and Johnston concluded that illusory bias was absent when reporting academic self-concept. However, the use of mazes may not have tapped into a child’s academic self-concept as they are not similar to the school-tasks. On the WISC-III, the mazes subtest was reported to tap into planning ability and perceptual organization but had a low correlation with the Full Scale Intellectual Quotient ($r = .31$; Sattler, 1992).

Hoza et al. (2002) also examined evidence for an illusory bias by comparing the ADHD boys’ reported self-concept on the SPPC with teacher reports. ADHD boys reported significantly higher abilities, relative to teacher reports, in scholastic, social, and behavioral self-concept than non-ADHD boys. Furthermore, ADHD boys tended to overestimate the most in areas where their teacher-reported functioning was the worst.

Owens and Hoza (2003) conducted a similar study focusing solely on academic self-concept that compared children with inattentive symptoms (IA) and hyperactivity/impulsive or combined symptoms (HICB). Positive illusory bias was examined using two criterion 1) comparisons to achievement scores in math and reading and 2) comparisons to TRS scholastic competences scores. When the reading achievement scores were used to examine illusory bias, HICB children (8 girls, 51 boys) significantly overestimated their scholastic abilities compared
to IA children (14 girls, 24 boys) who underestimated their competence (i.e., rated themselves lower than actual achievement scores). When math achievement scores were used HICB significantly overestimated their math abilities compared to control children and there was a trend in the same directions towards significance when compared to IA children. In addition when math achievement scores were used, there was a main effect for gender; girls overestimated their scholastic abilities more than boys.

When teacher ratings of competence were used HICB children overestimated scholastic competence compared to control children who underestimated their ability (i.e., rated themselves lower than teacher ratings; Owens & Hoza, 2003). In addition regardless of group, girls overestimated their scholastic competence significantly more than boys. Higher depressive symptoms were associated with less overestimation of competence regardless of the comparison criteria that was used.

Gresham, Lane, MacMillan, Bocian, and Ward (2000) looked at positive and negative illusory bias in academic and social self-concept with a sample of 3rd graders. Boys and girls were included in the sample, but no demographics were provided on the number of girls in the sample or per group, and gender was not used as a variable in any of the analyses. Groups were determined by a discrepancy between the child’s self-report and peer acceptance (i.e., sociometric ratings by peers). Four possible groups were identified. First, the positive illusory bias group (PIBG), these were children whose teachers’ rated them as having low competence in a particularly domain (i.e., academic or social) while the children reported a high level of self-concept in the same domain. Next, the negative illusory bias group (NIBG) was composed of children who reported having low self-concept in a domain despite their teachers’ reporting a high level of competence in the same domain. Finally, the positive (PNG) and negative
nondiscrepant groups (NNG) were children whose self-report self-concept was commensurate with their teachers’ reports either in the high competence or low competence direction.

Children in the PIB and NNG (i.e., children rated negatively by their peers) were rated by their teachers as having fewer social skills and more problem behaviors than children with NIBG and PNG (Gresham et al., 2000). The NIBG and NNG placed more importance on social interactions than PIBG and PNG, but only children in the NNG group reported feeling lonely. However, the NIBG and NNG reported lower self-image scores than the PIBG and PNG. It appears that children who see themselves as less socially competent (regardless of actual peer reports of acceptance) also have lower general self-concept.

Barton and Kaminski’s (2004) results did not support the notion of an illusory bias in ADHD children. Instead, the self and teacher evaluations of ADHD children were as similar as that of control children even though ADHD children were rated less positively than the control children by their teachers. Moreover, ADHD children and their teachers reported lower self-concept and competence than control children on all domains tested—academic, social, and athletic. While an illusory bias did not appear to be operating for ADHD children, boys and girls disagreed with their teachers regarding athletic and social abilities. Specifically, boys showed a positive bias and girls demonstrated a negative bias. Although ADHD children were not employing an illusory bias when reporting self-concept, boys, however, may. There are several possible explanations for the difference in findings between this study and previous studies in the area of PIB in children with ADHD including the inclusion of girls, use of a different self-concept measure, and a community-based rather than clinically based sample.

In studies that use teacher-child comparisons of competence, there is an assumption that teacher reports are more reflective of reality than the children’s report of self-concept. However,
whether or not a positive illusory bias is present for the child, their perceptions of the world and their self-concept are the basis for their behavior, interpretations and predictions of the world, and ultimately how they approach life. The illusory bias may, in fact, be a highly adaptive strategy used by a majority of individuals (Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000). Previous research done with terminally ill individuals suggests that the positive illusory bias protects against negative psychological effects (Taylor & Brown, 1988). Specifically, Taylor and Brown found that the positive illusions were particularly helpful when receiving negative feedback. Children with ADHD who employ a positive illusory bias may be using an appropriate adaptive tool that may protect themselves from negative feedback and further psychological difficulties.

Effects of Stimulant Medication on Self-concept

Taking a stimulant medication for ADHD may affect a child’s burgeoning self-concept. Many researchers feared that medication would decrease self-concept in children with ADHD because they would attribute positive changes (e.g., higher school grades, being punished less) to the medication rather than something they were doing (Barkley, 1998). However, stimulant medication either has no effect (Bussing et al., 2000; Ialongo et al., 1994) or increases self-concept in children with ADHD (Alston & Romney, 1992; DuPaul, Anastopoulos, Kwasnik, Barkley, & McMurry, 1996; Frankel, Cantwell, Myatt, & Feinberg, 1999; Pelham et al., 1992).

Medication has consistently been shown to improve behavior in children with ADHD (e.g., Forness, Swanson, Cantwell, Guthrie, & Sena, 1992; Hechtman, Weiss, & Perlman, 1984; Pelham et al., 1992; Spencer et al., 1996). The short-term effects of medication include increased compliance, attention, persistence, responsivity to interactions with others, vigilance, fine-motor coordination, and reaction time and decreased motor activity, aggression, impulsivity, and
restlessness (Forness et al., 1992; Hechtman et al., 1984; Pelham et al., 1992; Spencer et al., 1996). Parents and teachers increase the amount of praise and positive feedback to ADHD girls and boys when negative behaviors decrease (Barkley, 1990; Pelham, Walker, Sturges, & Hoza, 1989). For example, Whalen, Henker, and Dotemoto (1980, 1981) found a positive relationship between medication use and teacher-child interactions. When children with ADHD were on medication, teacher-child interactions were rated as more positive by independent observers. Medication may also contribute to improved peer interactions by decreasing negative (e.g., interrupting) and aggressive behaviors (Barkley, 1998). Given more positive feedback and social relationships, an increase in the child’s self-concept may occur.

Various studies found that ADHD children taking low doses (.15 mg/kg - .40 mg/kg) of methylphenidate (MPH) reported higher global self-concept (Pelham et al., 1992), higher behavioral self-concept (DuPaul et al., 1996), and higher academic self-concept (Alston & Romney, 1992) than ADHD children who were not medicated or ADHD children who were on high doses (.42 mg/kg – .80 mg/kg) of MPH. Frankel et al. (1999), however, found a positive correlation between medication (i.e., MPH, dextroamphetamine, premoline) dose and level of reported self-concept, such that higher doses of medication were associated with higher global, behavioral, social and academic self-concept.

Statement of Problem

Low self-concept and poor peer relationships have been associated with increased difficulties in children and poorer outcomes as adults (Button et al., 1996; Dubow et al., 1997; Garber et al., 1997; Hymel et al., 1990; Marsh & Yeung, 1997; Pisecco et al., 2001; Slomkowski et al., 1995) when compared to children and adults with high self-concept and positive peer
relationships. One group that may be especially likely to have low self-concept and poorer peer relationships are children with ADHD.

The purpose of the current study is to compare children’s self-report of social self-concept with their teacher’s report of social competence to assess whether children with ADHD are more likely than others to have a positive illusory bias or if there is another subgroup where PIB is more likely to occur (i.e. boys, younger children, or Caucasian children). A second aim of this study is to investigate the purported self-protective function of a PIB by comparing the psychological adjustment of “low competence” (per teacher report) children who employ it and those who do not. In addition, previous studies have focused almost exclusively on boys; the inclusion of girls may give us more clues about social self-concept and the source and function of the illusory bias in children with ADHD.

Hypotheses

**Primary Hypotheses**

*Hypothesis 1.* ADHD children will have lower teacher rated social competence than control children.

*Hypothesis 2.* ADHD children will be rated as more disliked and less liked than control children by their peers.

*Hypothesis 3.* ADHD status, gender, and rater will interact such that boys will show an ADHD status X rater interaction while girls will not show an ADHD status X rater interaction. ADHD and comparison girls will show no social self-concept differences across rater.

*Hypothesis 4.* Regardless of ADHD status, children that employ an illusory bias will have better psychological adjustment than children who do not have a positive illusory bias.
Hypothesis 5. There will be a significant negative correlation between age and social self-concept. Older children will have lower social self-concept than will younger children regardless of ADHD status.

Hypothesis 6. ADHD children who are currently taking medication will report higher social self-concept than non-medicated ADHD children.

Exploratory Analyses

Research Question 1. No previous research has looked at differences in PIB and self-concept among children of different ethnic backgrounds. In this study, it is expected that there will be a large enough sample of Caucasian and Hispanic boys and girls to examine ethnic difference in social self-concept and illusory bias.

Research Question 2. If a teacher reported a child as having low social competence and peers rated the child as socially rejected, but the child reported high social self-concept, they will be studied individually (and as a group if there is a large enough sample). PIB would suggest that the child would also be reporting low depression and likely minimize other symptoms as well. Using the CBCL as a measure of psychological functioning, however, it is expected that there would be areas of psychological distress reported by the child’s parent.
CHAPTER 2
METHOD

Participants

Participants included 96 girls and boys from the White Settlement Independent School District (WSISD), along with one of their parents/guardians and each child’s homeroom teacher. The children’s ages ranged from 8 years to 13 years old ($M = 10.05, SD = 1.19$). As seen in Appendix A, Tables 1 and 2, the overall sample was primarily Caucasian (88% of children; 83% of parents) and the median family income was $40,000 - $50,000. According to the WSISD Instruction Office (personal communication, February, 18, 2005), the ethnic breakdown of children in WSISD are as follows: 67% Caucasian, 21% Hispanic, 10% African American, and 2% Asian. Forty-two percent of the children come from families who are identified as economically disadvantaged by the district.

Forty-eight children (31 boys, 17 girls) in the study were previously diagnosed with Attention-Deficit/Hyperactivity Disorder, Combined Type (ADHD/C, 29%), Attention-Deficit/Hyperactivity Disorder, Primarily Hyperactive/Impulsive Type (ADHD/HI, 6%), or Primarily Inattentive Type (ADHD/I, 21%). Approximately 44% of parents with ADHD children did not know their child’s subtype. Twenty-six of the children diagnosed with ADHD (54%) were prescribed some form of stimulant medication (e.g., Adderall, Concerta, Dexedrine, Methylphenidate). In addition, five children were taking a new non-stimulant medication for ADHD (i.e., Straterra). It is important to note that 16 of the children diagnosed with ADHD (17 %) were also diagnosed with at least one other psychiatric disorder (see Appendix A, Table 3). This is considerably lower than the estimate that as many as two-thirds of children with ADHD are diagnosed with some other psychiatric diagnosis (Cantwell, 1996).
Forty-eight children (31 boys, 17 girls) without ADHD, who were matched on grade in school and gender, served as the comparison group. One child in the comparison group was reported to have a learning disorder. No other psychiatric diagnoses were reported for comparison children. A complete listing of psychiatric diagnoses in the ADHD and the comparison group can be seen in Appendix A, Table 3.

Statistical comparisons were made between the ADHD group and the comparison group on all relevant demographic information (i.e., parent and child gender, education level, ethnicity, and family income level) and no significant differences were found. Descriptive statistics, as well as results of $t$-tests and Chi Squares, can be seen in Appendix A, Tables 1 and 2.

**Measures**

*Demographic Questionnaire*

The “Background Information Form” (see Appendix B) was completed by the child’s participating parent/guardian. Basic demographic information was collected with this form, such as parent and child gender, age, ethnicity, estimated family income, and parents’ education level. Information regarding diagnostic information (i.e., ADHD) and medical information, including current medications, was also obtained with this questionnaire.

Teachers provided information about themselves (e.g., age, gender, ethnicity) and about their teaching experience (e.g., number of years taught, grade) on a Teacher Background Information Form (see Appendix C). For an extra source of student demographic information (in case consenting parents fail to return questionnaires), teachers completed a Child Background Information Form (see Appendix D) including selected items from the parent Background Information Form.
Measures to confirm diagnoses of ADHD

Three measures were used to confirm diagnoses of ADHD: the ADHD Rating Scale-IV: Home Version (ADHD-RS-IV: HV; DuPaul, Power, Anastopoulos, & Reid, 1998), the ADHD Rating Scale-IV: School Version (ADHD-RS-IV: SV) (DuPaul et al., 1998) and the Child Behavior Checklist (CBCL/4-18; Achenbach, 1991). The ADHD-RS-IV: HV was completed by the child’s guardian. The ADHD-RS-IV: HV consists of 18 items that were empirically derived from the ADHD diagnostic criteria in the Diagnostic and Statistical Manual-IV (DSM-IV; American Psychiatric Association [APA], 1994). For each item, the frequency of the child’s behavior at home within the last 6 months was rated on a 4-point Likert scale (“0 = never or rarely,” “1 = sometimes,” “2 = often,” “3 = very often”). Subscales of the ADHD-RS-IV: HV include a 9-item Inattention subscale and a 9-item Hyperactivity-Impulsivity subscale (ranging from 0 to 27). A Total Scale score (ranging from 0 to 54) can also be obtained by summing the raw scores of the two subscales. Raw scores from the Total Scale and the two subscales can then be converted to percentiles. Norms for the scale were derived separately for boys and girls from an ethnically and regionally representative sample of 2000 children (ages 4 to 19) (DuPaul et al., 1998).

The overall reliability and validity of the ADHD-RS-IV: HV is adequate. In the current study, internal consistency coefficients for the three scales ranged from $\alpha = .95$ to $.97$ (DuPaul et al., 1998). In addition, four-week test-retest reliability statistics ranged from $r = .78$ to $.86$ (DuPaul et al). DuPaul and his colleagues confirmed the validity of the ADHD-RS-IV: HV by comparing it to other measures used to assess ADHD symptoms. High correlations were found between the Hyperactivity-Impulsivity subscale of the ADHD-RS-IV: HV and the Conners Parenting Rating Scale – Revised (CPRS; Conners, 1989) Hyperactivity Index, the CPRS
Impulsivity-Hyperactivity subscale, and the CPRS Conduct Problems subscale, ranging from $r = .65$ to $.81$. The Inattention subscale had a high correlation with the CPRS Learning Problems subscale ($r = .66$). As would be expected, lower correlations were found between the ADHD-RS-IV: HV and the CPRS subscales that are unrelated to ADHD (e.g., Psychosomatic, Anxious) (DuPaul et al.).

Parent ratings on the ADHD-RS-IV: HV discriminated between the different subtypes of ADHD in the DSM-IV (APA, 1994). In addition, parent ratings on the ADHD-RS-IV: HV distinguished between children with ADHD and clinic-referred children without ADHD. Specifically, parent ratings on the Hyperactivity-Impulsivity subscale were highest for children with ADHD Combined Type ($M = 16.4; SD = 5.9$) compared to children with ADHD Predominantly Inattentive Type ($M = 10.7; SD = 5.7$) and children without ADHD ($M = 11.6; SD = 8.0$). Parent ratings on the Inattention subscale were highest for children who had ADHD, regardless of subtype ($M = 19.3; SD = 4.3$ for both ADHD groups) when compared to children without ADHD ($M = 14.2; SD = 7.9$) (DuPaul et al., 1998). Thus, the ADHD Rating Scale: Home Version has good discriminant validity, based on an ethnically diverse sample including 93 Hispanic children.

The ADHD-RS-IV: SV (DuPaul et al., 1998) was completed by the child’s teacher. The 18 items on the School Version are identical to the items on the Home Version and utilize the same 4-point Likert scale. In addition, the same scales (Inattention Subscale, Hyperactivity-Impulsivity Subscale, and the Total Score) are derived from the teachers’ responses on this measure (DuPaul et al.).

Normed on an ethnically diverse sample including 106 Hispanic children, the overall reliability and validity of the ADHD-RS-IV: SV is very good. In the current study, internal
consistency coefficients for the three scales ranged from $\alpha = .95$ to .97. Four-week test-retest reliability statistics on the scales ranged from $r = .88$ to .90 (DuPaul et al., 1998). To assess validity of the ADHD-RS-IV: SV, comparisons were made between this measure and other measures historically used to assess ADHD. Strong correlations were found between the Hyperactivity-Impulsivity subscale of the ADHD-RS-IV: SV and the Conners Teacher Rating Scale – Revised (CTRS; Conners, 1989) Hyperactivity Index, the CTRS Impulsivity-Hyperactivity subscale, and the CTRS Conduct Problems subscale, ranging from $r = .55$ to .79. The ADHD-RS-IV: HV Inattention subscale showed strong correlations with the CTRS Hyperactivity subscale ($r = .73$) and the CTRS Hyperactivity Index ($r = .76$). In addition, as would be expected, the Inattention subscale had the highest correlation with the CTRS Daydream-Attention scale ($r = .85$) (DuPaul et al.).

Similar to parent ratings, teacher ratings on the ADHD-RS-IV: SV differentiated the different subtypes of ADHD in the DSM-IV (APA, 1994). In addition, teacher ratings on the ADHD-RS-IV: SV distinguished between children with ADHD and clinic-referred children without ADHD. Specifically, teacher ratings on the Inattention subscale were highest for children who have ADHD, regardless of subtype: $M = 21.6$ ($SD = 4.3$) for children with ADHD Combined Type and $M = 19.3$ ($SD = 4.7$) for children who have ADHD Predominantly Inattentive Type, compared to children without ADHD ($M = 13.3$; $SD = 5.9$). Teacher ratings on the Hyperactivity-Impulsivity subscale were highest for children with ADHD Combined Type ($M = 18.6$; $SD = 5.7$) compared to children with ADHD Predominantly Inattentive Type ($M = 6.9$; $SD = 4.5$) and children without ADHD ($M = 10.5$; $SD = 8.0$) (DuPaul et al., 1998).

The third measure that was use to assess symptoms of ADHD is the Child Behavior Checklist/4-18 (CBCL; Achenbach, 1991) in English or Spanish. Specifically, the Attention
Problems Scale was used to confirm inattention in ADHD children. Both versions of the CBCL consist of 118 items that assess a broad range of problems in children. On a three-point response scale, parents rate the extent to which each item describes their child’s current behavior or behavior within the last 6 months. Specifically, a rating of 2 indicates that the item is “very true” or “often true” of their child, a rating of 1 indicates that the item is “somewhat true” or “sometimes true” of their child, and a rating of 0 indicates that the item is “not true” of their child.

Normative data for the CBCL has been conducted with the English version and apply to the Spanish interpretation as well, as separate norms have not been established (personal communication, CBCL, June 27, 2002). However, the Spanish CBCL has been used in over 65 empirical studies, including Spanish-speaking countries (ASEBA, electronic citation, June 27, 2002) and has been demonstrated as having predictive validity in terms of screening for psychopathology in Hispanic children (Bird, Gould, Rubio-Stipec, Staghezza et al., 1991).

The problem behavior scales of the CBCL were derived from multivariate statistical procedures conducted separately for boys and girls in different age groups (Achenbach, 1991). Results from the scales on the CBCL are reported in T scores \( (M = 50, SD = 10) \) to indicate how an individual’s particular scale scores compare with scores obtained by a normative sample of children. T-scores in the range of 60-69 are considered to be at-risk scores, while scores above 70 (above the 98\(^{\text{th}}\) percentile) are in the clinically significant range. These scales include: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, Aggressive Behavior, and Sex Problems. Factor analyses indicate that three of these scales form an Internalizing scale (Withdrawn, Somatic
Complaints, and Anxious/Depressed) and two scales form an Externalizing scale (Delinquent Behavior and Aggressive Behavior).

The CBCL has been used extensively in research because of the favorable psychometric properties of the measure. Achenbach (1991) reported that the mean correlation of the problem scales on the CBCL over a one-week period was $r = .89$, which indicates that the CBCL has good short-term test-retest reliability. Good interrater reliability was also obtained. Specifically, children were divided into four groups based on sex and age and then parents rated their child. The correlation between parent ratings ranged from $r = .65$ to $r = .75$ (Achenbach).

The construct validity of the CBCL was established in different ways. First, nearly all of the problem items discriminated between referred and non-referred samples, with referred children scoring significantly higher on the problem items than non-referred children (Achenbach, 1991). Second, scales on the CBCL were correlated with analogous scales on the Revised Behavior Problem Checklist (RBPC; Quay & Peterson, 1983). For example, the Withdrawn scale of the CBCL correlated $r = .66$ with the Anxiety-Withdrawn scale of the RBPC, the Anxious-Depressed scale of the CBCL correlated $r = .78$ with the Anxiety-Withdrawn scale of the RBPC, the Thought Problems scale of the CBCL correlated $r = .64$ with the Psychotic scale of the RBPC, the Attention Problems scale of the CBCL correlated $r = .77$ with the Attention Problems scale of the RBPC, the Delinquent Behavior scale of the CBCL correlated $r = .73$ with the Conduct Disorder scale of the RBPC, and the Aggressive Behavior scale of the CBCL correlated $r = .88$ with the Conduct Disorder scale of the RBPC (Achenbach).

In sum, the CBCL displays adequate reliability and validity, and it is widely used in clinical, community, and research settings.
The Attention Problems Scale of the CBCL has shown good convergent validity with an ADHD diagnosis resulting from a structured interview (Biederman et al., 1993). Specifically, Biederman et al. administered the Schedule for Affects Disorders and Schizophrenia for School Age Children - Epidemiologic Version (K-SADS-E) to parents of children with and without ADHD and DSM-III-R diagnoses were determined. Biderman et al. reported “excellent convergence” (p. 1247) was found between ADHD diagnoses derived from a structured interview and the Attention Problems Scale on the CBCL, using both total predictive power and odds ratios. Specifically, elevations on the Attention Problems Scale correctly diagnosed children with ADHD 86% of the time (Biederman, Faraone, Doyle, et al.). Similarly, Biederman, Faraone, Mick and colleagues (1996) found the Attention Problems scale of the CBCL differentiated children with ADHD from those without that diagnosis. In addition, to the studies listed above, research generally supports good convergent validity between the CBCL and the K-SADS (Carlson & Kelly, 1998; Kaufman, 1997). In addition, internal consistency reliability statistics were computed on the Attention Problems Scale with the current sample and were found to be adequate ($\alpha = .88$). In summary, the CBCL, specifically the Attention Problems Scale, demonstrates sound psychometric properties, making it a useful tool that is widely used in clinical, community, and research settings.

For the present study, diagnoses of ADHD/I, ADHD/HI, and ADHD/C, as reported by parent/guardian, will be confirmed with elevations above the 80$^{th}$ percentile on the Inattentive subscale, Hyperactivity-Impulsivity subscale, or Total Score of the ADHD-RS-IV: HV or the ADHD-RS-IV: SV or a T score above 69 on the Attention Problems scale of the CBCL. Further, children were not reported to have ADHD by their parent/guardian will be eliminated from the control group if they receive elevations above the 90$^{th}$ percentile on any of the three scales of the
ADHD-RS-IV: HV or the ADHD-RS-IV: SV or a T score above 61 on the Attention Problems scale CBCL.

Measures of Competence

The Social Acceptance Scale of the Self-Perception Profile for Children (SPPC; Harter, 1985) was used to assess social self-concept. The SPPC is a 36-item multidimensional self-report measure designed to assess children’s judgment of their competence in five different domains, as well as assess their global self-worth. These domains include: (1) Scholastic Competence (academic performance); (2) Social Acceptance; (3) Athletic Competence (sports and outdoor games); (4) Physical Appearance; (5) Behavioral Conduct; and (6) Global Self-Worth. Two declarative statements are given for each question that describe how “some kids” behave or perform. The child is required to identify which statement is most like them and is then asked to determine if that statement is “Sort of True for me” or “Really True for me”. Questions were designed to reduce socially desirable responding by giving two equally desirable choices.

The SPPC possesses adequate internal consistency, with estimates ranging from $\alpha = .71$ to .86 (Harter, 1985; Muris, Meesters, & Fijen, 2003). The Social Acceptance scale also has adequate internal consistency, with estimates ranging from $\alpha = .75$ to .80 depending on the normative sample (Harter, 1985) and good test-retest reliability (intraclass correlation coefficient $= .84$; Muris et al., 2003). Internal consistency for the Social Acceptance scale with the current sample was below estimates provided by Harter $\alpha = .68$. Normative comparisons are reported separately for males and females in grades 3 through 8. Factor analysis supports a five-factor structure (Harter, 1985; Muris et al.); however, results with children in 3rd and 4th grade have been less consistent in finding a distinct Scholastic Competence factor.
Validity for the SPPC has been supported through negative correlations with psychopathological symptoms. Using the Harter Perceived Competence Scale (HPCS; Harter, 1982), the Social Competence scale was negatively correlated with psychosocial stress, anxiety, and depression (Alva & de Los Reyes, 1999). The HPCS was revised and renamed to become the SPPC. One new item was added to the HPCS Social Competence scale to form the Social Acceptance on the SPPC. Similarly, the SPPC scales were negatively correlated with trait anxiety as measured by the State-Trait Anxiety Inventory for Children (STAIC; Spielberger, 1973), anxiety disorder symptoms as measured by the Spence Children’s Anxiety Scale (SCAS, Spence, 1998) and depressive symptoms as measured by the CDI (Cole, Jacquez, & Maschman, 2001; Muris et al., 2003). Parent-reported internalizing problems on the CBCL were negatively correlated with SPPC Social Acceptance and Global Self-Worth scores, and the CBCL Externalizing Problems Scale was negatively correlated with Scholastic Competence, Social Acceptance, Physical Appearance, Behavioral Conduct, and Global Self-Worth (Muris et al.).

With a Mexican American elementary school sample, Hess and Peterson (1996) reported an internal consistency of $\alpha = .62$ for the Social Acceptance scale. In the current sample, the internal consistency for the Social Acceptance scale for children who were identified as Hispanic/Spanish (e.g., Mexican, Mexican-American, Puerto Rican, Cuban) was $\alpha = .58$. When $t$-tests were run between the Mexican American sample and the normative sample, only one group ($4^{th}$ grade girls) evidenced significant differences on the Social Acceptance scale. Mexican American $4^{th}$ grade girls rated themselves significantly higher on social acceptance than $4^{th}$ grade girls in the normative sample. Alva and de Los Reyes (1999) used the HPCS with a predominately Hispanic $9^{th}$ grade population found a higher internal consistency of $\alpha = .72$ for the Social Competence scale.
The Teacher Rating Scale (TRS; Harter, 1985) is a 15-item measure developed to parallel the SPPC. The 3-item Social Acceptance scale was used in the present study. On the TRS, the teacher rates the child’s “actual behavior” on each item. Responses are given in a double “structured alternative format.” For example, the teacher is first asked to decide between two statements as to which fits the child best (e.g., “This kid often forgets what he or she learns, or this kid remembers things easily.”) Once the teacher makes a statement choice, the teacher then rates the statement as “Sort of True for this Child” or “Really True for this Child.” Items are scored with 4, 3, 2, or 1, with 4 representing the most positive rating and 1 representing the most negative rating. The TRS shows excellent internal consistency reliability, reported at $\alpha = .93$ to .96 (Harter, 1982). With the current sample, internal consistency for the TRS Social Competence scale was $\alpha = .98$. Good factorial validity was also demonstrated with item loadings on each factor ranging from .60 to .67.

**Peer Assessment of Social Behavior**

As part of a larger study, a peer victimization measure was completed by the children. This measure was not used in the current study. The most current version of the peer nomination instrument developed by Crick and Grotpeter (1995) was administered to assess social behavior among students. The original version of this measure (Crick & Grotpeter, 1995) included four items that assessed isolation; however, these items were not included in subsequent versions (Crick, 1997, Crick & Werner, 1998). As part of a larger study, three aspects of social behavior will be assessed, including overt aggression, relational aggression, and prosocial behavior. In this study, two items that assess liked and disliked peers were used as a measure of sociometric status. During a group, within-class administration, participants were provided with a class roster
and asked to nominate up to three classmates who best fit the behavioral descriptors for each of the items.

Crick (1997) provided evidence of the construct validity of these subscales. Factor analysis of the items yielded three distinct factors: Overt Aggression, Relational Aggression, and Prosocial Behavior. Specifically, factor loadings for the items ranged from .70 to .90, and all cross-loadings were below .43. Thus, these findings provide evidence that overt aggression and relational aggression are distinct constructs.

The Overt Aggression subscale includes five items that assess physical and verbal aggression (e.g., hitting, kicking, or punching others; saying mean things to others to insult them or put them down). The Relational Aggression subscale consists of five items that assess relational aggression, that is, behaviors designed to harm another child’s peer relationships (e.g., spreading rumors about a peer so that others will not like him/her; excluding others from being in one’s peer group). The Prosocial Behavior subscale includes three items that serve as positively toned filler items (e.g., saying or doing nice things for classmates; helping others join a group or make friends).

Evidence of reliability and validity for the peer nomination instrument has been reported in several studies. Specifically, the internal consistency of the subscales has been shown to exceed $\alpha = .80$ in numerous samples. For example, Crick and Grotpeter (1995) reported Cronbach’s alpha coefficients of .94, .83, and .91 for overt aggression, relational aggression, and prosocial behavior, respectively. Similarly, Crick (1996) reported Cronbach’s alpha coefficients of .94, .94, and .93 for overt aggression, relational aggression, and prosocial behavior, respectively. Thus, all three subscales are internally consistent.
Crick (1996) demonstrated the stability of overt and relational aggression over time among a sample of 3rd – 6th grade students. Ratings were obtained over a 1-month and 6-month period to assess both short- and long-term stability. Among boys, the short-term test-retest reliability was $r = .93$ for overt aggression and $r = .86$ for relational aggression. Among girls, the short-term test-retest reliability was $r = .81$ for overt aggression and $r = .80$ for relational aggression. Among boys, the long-term test-retest reliability was $r = .78$ for overt aggression and $r = .56$ for relational aggression. Among girls, the long-term test-retest reliability was $r = .68$ for overt aggression and $r = .68$ for relational aggression. In sum, peer ratings of overt and relational aggression are relatively stable across time, although stronger correlations were obtained over a four-week interval.

In order to further establish the construct validity of relational aggression, correlational analyses were conducted by Crick and her colleagues (Crick & Grotpeter, 1995; Crick, 1997) to determine the relationship between relational and overt aggression. Results yielded a moderate correlation (ranging from $r = .54$ to $r = .63$), which indicates that relational and overt aggression are separate, yet related constructs. As Crick and Grotpeter note, this moderate association is expected since the two constructs are hypothesized to be “different forms of the same general behavior” (p. 715). Further support for the distinctiveness of overt and relational aggression is evident in the percentage of aggressive youth who demonstrate these two types of behaviors. Specifically, research has shown that the majority of aggressive children exhibit either relational or overt aggression, but not both forms (Crick & Grotpeter).

**Measure of Depressive Symptoms**

The Children’s Depression Inventory (CDI; Kovacs, 1992) was used to assess children’s feelings and symptoms of depression. Derived from the criteria for depression in the DSM-IV
(APA, 1994), this measure consists of 27 items, all of which assess depression in children and adolescents between the ages of 7 and 17. Written at an approximate 1st grade reading level, each item consists of three related statements, and children respond by selecting one of the three statements that “describes you best for the last two weeks” (e.g., I am sad once in a while vs. I am sad many times vs. I am sad all the time). Items are scored in a range from 0 (least “depressive” response) to 2 (most “depressive” response, and total scores range from 0 to 54. The measure is comprised of a Total Score and five subscales: (1) Negative Mood, (2) Interpersonal Problems, (3) Ineffectiveness, (4) Anhedonia, and (5) Negative Self-Esteem. Scores are expressed as T-scores with a mean of 50 and a standard deviation of 10. Norms are provided separately for boys and girls dependent upon age (7-12 and 13-17). The Total Score will be used in this study as a measure of overall depressive symptoms.

Based on an ethnically diverse normative sample (23% African-American, American Indian, or Hispanic children), Kovacs (1992) reported the internal consistencies ranging from $\alpha = .59$ to $\alpha = .68$ for subscales and $\alpha = .86$ for the Total Scale. In the current sample, internal consistencies ranged from $\alpha = .48$ to $\alpha = .68$ for the three subscales (i.e., Anhedonia, Negative Mood, and Ineffectiveness) used and $\alpha = .82$ for the composite of those three subscales. One-week test-retest reliability statistics were $r = .87$ and $r = .56$ over a 6 month interval. However, the measure was constructed to measure state rather than trait characteristics of depression and thus is not expected to remain stable over long periods of time. Convergent validity is supported by Bartell and Reynolds (1986), who found significant correlations between this measure and the Child Depression Scale ($r = .70$). Additionally, in studies of psychiatric inpatients, CDI scores for depressed children were significantly higher than scores of non-depressed children (Hodges,
1990; Knight, Hensley, & Waters, 1988). The CDI has divergent validity and the Piers-Harris Self Concept Scale ($r = -0.79$; Knight, Hensley, & Waters).

To address ethical concerns presented by the measure, two items which are of a particularly sensitive nature were dropped from the measure (e.g., an item assessing suicidal ideation and an item addressing self-hate; Crick and Grotputer, 1995). The internal consistence for children’s responses to the adapted version of the CDI was $\alpha = 0.85$ (Crick & Grotputer).

The Internalizing Scale from the CBCL was also used to measure parent reports of child internalizing symptoms. The Internalizing Scales is composed of three of the “Problem Behavior Scales (i.e., Withdrawn/Depressed, Somatic Complaints, and Anxious/Depressed). Achenbach (1991) found the test-retest reliability of the Internalizing Scale on the CBCL to be good ($r = 0.89$) over a seven-day period. Inter-parent reliabilities for the Internalizing Scale was also found to be adequate ($r = 0.66$). Regarding construct validity, moderately high correlations were found between the Internalizing Scale and the Psychosomatic and Anxiety scales of the CPQ and the Anxiety-Withdrawn Scale of the Quay-Peterson RBPC, with correlations ranging from $r = 0.56$ to 0.72 (Achenbach). In addition, internal consistency reliability statistics were computed on the Internalizing Scale with the current sample and were found to be adequate ($\alpha = 0.89$). (Please see Table 4 in Appendix A for a list of all measures used in this study.)

**Procedure**

Given the variables of interest, data collection occurred at the end of the school year in order to optimize the accuracy of assessment from students and teachers. This period of the academic year was specifically chosen to allow teachers ample time to observe student’s classroom behavior so that they could provide informed ratings of children’s ADHD symptoms and social competence.
After receiving approval from school principals to conduct this project at their school, a researcher met with teachers at each school to discuss the project and request their cooperation. Participating teachers completed an informed consent form (see Appendix E). Two copies of the informed consent form were distributed to each teacher so that one copy could be returned to the investigator and one copy could be retained by the teacher. Only teachers who completed the informed consent form were included in this study.

A flyer announcing the study was distributed to all students in grades 3 through 6 to give to their parent(s) one week before the packet of consent forms and measures were sent home. The packet included an introductory letter that briefly described the study and explained the order of the information in the packet (see Appendix F) and two copies of the consent and assent forms (see Appendices G and H). Only students who returned the forms with signed parental consent were included in this study. Assent, read by parents, was also solicited from each student. As part of a larger study, the participants were first asked to complete the consent and assent forms, and then they were instructed to complete a set of counterbalanced measures including the Background Information Form, BAS, ADHD RS-IV: HV, Children’s Social Behavior Scale – Parent Form (CSBS-P; Crick, 1996), and CBCL. Parents did not write their name or their child’s name on any of the forms they completed. The forms were marked with a code number assigned to each student in advance by the researcher. Parents returned all materials within two weeks to their child’s teacher in a sealed envelope. One written reminder was sent home approximately one week after the packets were distributed to encourage parents to return the packets to their child’s teacher.

The data collection with the children was completed in a single, within-class group administration scheduled during the least disruptive period of the school day designated by
teachers and school officials. A pair of researchers [one graduate level, one undergraduate research assistant (URA)] administered the peer nomination measure in each classroom. The graduate level researcher was responsible for the oral administration of the Peer Nomination Procedure and read the instructions of the SPPC, the CDI, and Peer Victimization Questions while the URA was responsible for monitoring the classroom and passing out research materials.

Students who did not have parental consent to participate in the study were provided with an alternate activity (e.g., word search) while their classmates completed the study. Students with parental consent to participate who are absent on the date of data collection were not administered the peer nomination procedure; however, attempts were made to collect questionnaire data from these students.

Prior to administration, teachers were asked to provide the investigator with a current class roster. Each class roster was retyped to include only the first names of the students in alphabetical order. Last names were omitted, unless there was more than one child with the same first name. In that case, the initial of the last name for those particular children was added. Each name was preceded by an identification number assigned by the researcher in advance. Students were instructed to use this number, rather than a child’s name, during the nomination procedure. Furthermore, each student’s identification number was written on their questionnaires rather than his/her name.

First, general instructions were read to the students to make it clear that they were able to withdraw from the study at anytime, to review confidentiality, and to remind the students that there were no right or wrong answers. Then the class roll was read and data collection packets and word searches were distributed. The numbered class rosters were distributed to each student, and the administrator asked children who used a different name than appeared on the roll to
provide the name that their classmates knew them by. All students were instructed to change the name on their copy of the roll sheet. The children were then asked to cross through their own name and number and were instructed not to record their own number as an answer for any of the items. Students were also provided with a sheet to record their responses (Appendix D).

Prior to administration of the test items, students were encouraged to ask questions regarding the instructions, and practice items were used to ensure that students understood the task. Each item was read aloud twice by the administrator. Each student was provided with a piece of colored paper and was instructed to use it as a “cover sheet” so that others could not see their answers. Students were instructed not to discuss their responses with other classmates; however, they were encouraged to discuss the activity with their parents at home.

Following the Peer Nomination Procedure, the SPPC, CDI, and Peer Victimization questions were administered orally by the graduate level researcher. Instructions and practice items were orally administered for the SPPC, the children were encouraged to ask questions, and then they completed the rest of the measure individually. When all of the students completed the Social Competence scale of the SPPC, the procedure was repeated for the CDI. Then the students were instructed to read the instructions and complete the 7-items on the Peer Victimization measure. The graduate administrator and URA assisted students as needed. Upon completion of the final measure, all materials were collected by the administrators, and then pencils and stickers were distributed to all students.

During the child administration, teachers completed a Teacher Background Information Form, ADHD RS-IV: SV, Children’s Social Behavior Scale – Teacher Form (CSBS-T; Crick, 1996), Social Competence scale of the TRS, and Child Background Information Form for each
participating student. The random code numbers assigned to the students appeared on each form rather than the name of the student.

As a benefit for school participation in the present study, the class with the highest percentage of students who participated on each campus was given a pizza party. In addition, all students, regardless of participation received a pencil and a sheet of stickers. In appreciation of their participation in the study, all parents who completed the entry form were entered into a drawing for dinner for two at a local restaurant. Furthermore, participating parents were provided with a Debriefing Statement (see Appendix I) that offered a list of local mental health resources. Participating teachers from each campus were entered into a drawing for their choice of either a $25.00 gift certificate to a local educational store or a gift certificate to a local restaurant. Each participating school was provided with a social skills curriculum designed to enhance students’ relationships with their peers and their ability to resolve conflict appropriately. In addition, a parent meeting with an expert panel was held to address ways to deal with relational aggression and bullying that their children may be experiencing. Finally, a teacher in-service including topics such as childhood depression and aggression was provided prior to the beginning of the following school year. At the conclusion of the study, a summary of group results will be made available to all interested parents, teachers, and school personnel. In addition, when possible, a summary of group results for individual schools will be provided to school administrators, upon request.
CHAPTER 3
RESULTS
Data Preparation

Prior to conducting statistical analyses, all dependent and independent variables were examined for both the Attention-Deficit/Hyperactivity Disorder (ADHD) sample and the whole sample (ADHD group and Control group combined) to determine if normality was met, which is an assumption for both the Multivariate Analysis of Covariance (MANCOVA) and multiple regression. The Teacher Rating Scale and peer nomination like and dislike ratings were mild to moderately skewed. However, according to Tabachnick and Fidell (1996) as long as sample sizes are equal and two-tailed tests are used, MANCOVA is robust to modest violations of normality. No transformations were performed.

Another assumption of the MANCOVA, the assumption of homogeneity of covariance, was met based on Box’s Test of Equality of Covariances for nearly all analyses. In two analyses when this assumption was not met, a Huynh-Feldt correction was used to adjust for overly lenient significant findings (Tabachnik & Fidell, 1996). Several univariate follow-up tests did not meet the assumption of homogeneity of variance. However, with all analyses being run with equal sample sizes, MANOVA is robust for violations of this assumption (Tabachnik & Fidell, 1996).

Prior to analyzing the hypotheses that include ADHD status as an independent variable (IV) and the Self-Perception Profile for Children (SPPC) Social Acceptance scale as a dependent variable (DV), both the internalizing composite from the Child Behavior Checklist (CBCL; i.e., parent-reported child internalizing symptoms) and sum of the negative mood, anhedonia, and
ineffectiveness scales from the Children’s Depression Inventory (CDI; i.e., child self-reported internalizing symptoms) were analyzed to determine their appropriateness for use as a covariate.

The CBCL internalizing composite scale was not significantly correlated with the SPPC Social Competence subscale, \( r = .02, p = .43 \). There was, however, a significant difference in parent-reported internalizing problems between children with and without ADHD, \( t(1, 92) = 3.17, p < .01 \). Specifically, children with ADHD \( (M = 12.04, SD = 15.93) \) were reported to have more internalizing difficulties than children without ADHD \( (M = 4.49, SD = 3.70) \). The CBCL internalizing composite scale will not be used as a covariate for analyses with ADHD status as an IV and the SPPC Social Competence subscale as a DV.

The CDI composite (anhedonia, ineffectiveness, and negative mood) showed a significant negative correlation with the SPPC Social Competence subscale, \( r = -.54, p < .01 \). There was also a significant difference in level of self-reported symptoms of depression between children with and with ADHD, \( t(1, 91) = 2.96, p < .01 \). Specifically, children with ADHD \( (M = 9.49, SD = 6.06) \) reported having more difficulties with depression then children without ADHD \( (M = 6.07, SD = 5.04) \). Therefore, the CDI composite will be used as a covariate for all analyses with ADHD status as an IV and the SPPC Social Competence subscale as a DV.

**Primary Hypotheses Results**

**Hypothesis 1 and 2 Results**

Hypothesis 1 stated the ADHD children would have lower teacher rated social competence than comparison children. Hypothesis 2 stated that ADHD children would be less liked and more disliked by their peers than comparison children. A MANOVA with ADHD status as the IV and TRS Social Acceptance scores and peer ratings (i.e., liked and disliked ratios from the peer nomination procedure) as the DVs was utilized to determine differences in social
competence. The omnibus results indicated a significant difference between ADHD and comparison children, $F(3, 87) = 6.88, p < .001, \eta^2 = .19$. In examining univariate results, there was a significant difference between ADHD and non-ADHD children on peer ratings of rejection (i.e., disliked), $F(1, 89) = 17.50, p < .001, \eta^2 = .16$. Specifically, children with ADHD ($M = .28, SD = .25$) were more disliked by their peers than children without ADHD ($M = .09, SD = .16$). There was also a significant difference between ADHD and non-ADHD children on teacher ratings of social competence, $F(1, 89) = 12.48, p = .001, \eta^2 = .12$. Specifically, children with ADHD ($M = 7.48, SD = 3.16$) were rated as less socially competent by their teachers than children without ADHD ($M = 9.60, SD = 2.53$). No significant difference was found for ADHD status on peer ratings of being liked, $F(1, 89) = 2.06, p > .05, \eta^2 = .02$.

In an exploratory analysis, the same hypotheses and statistics were run with more strict criteria for inclusion in the ADHD group. To be included as ADHD, children had to have their diagnosis confirmed by one of the parent-reports of ADHD (i.e., CBCL Attention Scale or ADHD-RS-IV: HV) and on the ADHD-RS-IV: SV filled out by the teacher. In addition, as suggested by the ADHD-RS-IV manual for inclusion in a clinic diagnostic measure, ADHD was confirmed with elevations above the 80th percentile on either the parent or teacher report and above the 90th percentile on the remaining parent or teacher report (DuPaul et al., 1998). Twenty children were excluded from the ADHD sample when the stricter criteria were used. Statistical comparisons were made between the strict ADHD group and the children who were excluded on all relevant demographics (i.e., parent and child gender, age, education level, ethnicity, and family income level) and no significant differences were found.

The omnibus results indicated a significant difference between ADHD and comparison children, $F(3, 50) = 11.38, p < .001, \eta^2 = .34$. In examining univariate results, there was a
significant difference between ADHD and non-ADHD children on peer ratings of rejection, \( F(1, 52) = 28.05, p < .001, \eta^2 = .29 \). Specifically, children with ADHD \((M = .28, SD = .25)\) were more disliked by their peers than children without ADHD \((M = .09, SD = .16)\). There was also a significant difference between ADHD and non-ADHD children on teacher ratings of social competence, \( F(1, 52) = 22.07, p = .001, \eta^2 = .30 \). Specifically, children with ADHD \((M = 7.48, SD = 3.16)\) were rated as less socially competent by their teachers than children without ADHD \((M = 9.60, SD = 2.53)\).

In further exploratory analyses, children who had been excluded from the control group due to elevations above the 90th percentile on one or more subscales of the ADHD confirming measures, were included as a third group and hypotheses 1 and 2 were rerun. This group will be referred to as the high symptom group for the remainder of this document. The omnibus results indicated a significant difference between ADHD, comparison, and high symptom children, \( F(6, 264) = 3.70, p < .01, \eta^2 = .08 \). In examining univariate results, there was a significant difference between groups on peer ratings of rejection (i.e., disliked), \( F(2, 133) = 8.42, p < .001, \eta^2 = .11 \). Post Hoc test were run to identify specific group differences. Tukey’s correction was used to correct for family-wise error. Specifically, children without ADHD \((M = .09, SD = .16)\) were significantly less disliked by their peers than children with ADHD \((M = .28, SD = .25)\) and high symptom children \((M = .23, SD = .24)\). There was no significant difference between ADHD children and high symptom children. There was also a significant difference between groups on teacher ratings of social competence, \( F(2, 133) = 5.92, p < .01, \eta^2 = .08 \). Specifically, children with ADHD \((M = 7.48, SD = 3.16)\) were rated as less socially competent by their teachers than children without ADHD \((M = 9.60, SD = 2.53)\). There were no significant differences between the high symptom children and either of the other groups.
Hypothesis 3 Results

Hypothesis 3 stated that there would be an ADHD status by gender by rater interaction such that boys would show an ADHD status by rater interaction (i.e., evidence of PIB) while girls would not show an ADHD by rater interaction (i.e., no evidence of PIB). A MANCOVA with ADHD status and gender as the IVs and the SPPC and TRS Social Acceptance Scores as the DV with the CDI composite as a covariate was utilized to determine differences. Dependent variable scores were standardized to z-scores for direct comparison of children’s competence across raters.

The omnibus results indicated a significant interaction between rater, gender, and ADHD status, $F(1, 88) = 8.55, p < .001, \eta^2 = .09$. Specifically, with the level of depressive symptoms statistically controlled, control girls ($M = -.20, \text{Std. Error} = .20$) underestimated their abilities in relation to their teacher’s ($M = .57, \text{Std. Error} = .20$) reports, and ADHD girls ($M = -.22, \text{Std. Error} = .20$) overestimated their abilities in relation to their teachers ($M = -.58, \text{Std. Error} = .20$). Control ($M = .22, \text{Std. Error} = .16$) and ADHD ($M = -.04, \text{Std. Error} = .15$) boys agreed with their teacher’s ($M = -.04, \text{Std. Error} = .16; M = -.03, \text{Std. Error} = -.15$) reports of social competence. Two ANCOVAs were run to assist with interpreting the three way interaction.

There was no interaction between ADHD and gender when children rated social self-concept, $F(1, 88) = .45, p > .05$. There was no main effect for either ADHD or gender. However, there was a significant interaction between ADHD and gender when teachers rated social competence, $F(1, 88) = 10.85, p = .001$, such that teachers rated ADHD girls as significantly lower in social self-concept than control girls, but reported no significant difference between ADHD and control boys. Thus, the three way interaction between ADHD status, gender and rater appears to be a
result of a gender by ADHD status interaction in teacher-reported social competence while children did not report any social self-concept differences based on either ADHD or gender.

In examining the main effect of ADHD status, there was a significant difference between ADHD and non-ADHD children, $F(1,88) = 6.70, p < .05$, $\eta^2 = .07$. Specifically, children and teachers rated ADHD children ($M = -.21$, Std. Error $=.10$) as less socially competent than non-ADHD children ($M = .14$, Std. Error $=.10$), even when level of depressive symptoms were statistically controlled. This analysis was not rerun with the stricter ADHD sample due to low sample size.

In exploratory analyses, hypothesis 3 was rerun with the high symptom children included as a third group. The omnibus results indicated a significant interaction between rater, gender, and ADHD status, $F(2, 131) = 7.84, p < .001$, $\eta^2 = .11$. Specifically, with the level of depressive symptoms statistically controlled, control girls ($M = -.28$, Std. Error $=.21$) underestimated their abilities in relation to their teacher’s ($M = .38$, Std. Error $=.23$) reports, and ADHD girls ($M = -.36$, Std. Error $=.22$) overestimated their abilities in relation to their teachers ($M = -.90$, Std. Error $=.23$). Control boys ($M = .15$, Std. Error $=.17$) overestimated their social competence in comparison to teacher reports ($M = -.29$, Std. Error $=.19$). However, ADHD ($M = -.16$, Std. Error $=.16$) boys agreed with teacher’s ($M = -.30$, Std. Error $=.18$) reports of their social competence. High symptom girls ($M = .24$, Std. Error $=.18$) overestimated their abilities in relation to their teacher’s reports ($M = -.14$, Std. Error $=.20$). In contrast, high symptom ($M = -.49$, Std. Error $=.20$) boys underestimated their abilities in relation to teacher report ($M = -.06$, Std. Error $=.22$). Two ANCOVAs were run to assist in interpreting the three way interaction. There was a interaction between ADHD and gender when children rated social self-concept, $F(2, 131) = 5.16, p < .01$. Specifically, high symptom boys reported significantly lower social self-
concept than control and ADHD boys; while high symptom girls did not report self-concept that was significantly different than control and ADHD girls. There was also a significant interaction between ADHD and gender when teachers rated social competence, $F(2, 131) = 4.85, p < .01$, such that teachers rated ADHD girls as significantly lower in social self-concept than control and high symptom girls, but reported no significant difference between ADHD, control, and high symptom boys.

In examining the main effect for ADHD status (with three levels), there was a significant difference between ADHD and non-ADHD children, $F(1, 88) = 6.70, p = .02, \eta^2 = .07$. Specifically, children and teachers rated ADHD children ($M = -.43, \text{ Std. Error} = .11$) as less socially competent than non-ADHD children ($M = -.01, \text{ Std. Error} = .11$). There was no significant difference between ADHD or control children and high symptom children ($M = -.11, \text{ Std. Error} = .11$). This analysis was not rerun with ethnicity as the IV because of the poor internal consistency of the SPPC Social Competence scale with the Hispanic sample.

**Hypothesis 4 Results**

Hypothesis 4 stated that regardless of ADHD status, children that employ an illusory bias would have better psychological adjustment than children who do not have a positive illusory bias. To determine PIB status, teacher ratings of Social Acceptance on the TRS that were more than one standard deviation below the mean competence score were considered “low social competence”. Scores one standard deviation above the mean on the Social Acceptance scale of the SPPC were considered “high social self-concept”. Both criteria were required for membership in the PIB group (Gresham et al., 2000). Only two children were identified as PIB using this strategy; therefore, an alternative strategy for identifying children who employ PIB was utilized.
Owens and Hoza (2003) used a difference score between standardized child and teacher scores reports to determine overestimation of ability. This strategy was used to identify children as “PIB” in the current sample (e.g., Positive differences score means overestimation of social competence), and then the top (overestimate) and bottom (underestimate) quartiles were used to complete the analysis.

Due to low internal consistency with CDI subscales, an ANOVA was run using a composite of the Negative Mood, Anhedonia, and Ineffective subscales rather than a MANOVA. The omnibus test indicated no significant difference in self-reported symptoms of depression between children who overestimate (Positive Illusory Bias, PIB) or underestimate (Negative Illusory Bias, NIB) their social competence, $F(1, 46) = .80, p = .38, \eta^2 = .02$.

A MANOVA with “PIB” status as the IV and six scales from the CBCL (i.e., withdrawn/depressed, anxious/depressed, somatic complaints, thought problems, rule-breaking behavior, and aggressive behavior) as DVs was used to determine differences in psychological adjustment as reported by parents. The omnibus test was not significant, $F(6, 32) = 2.10, p = .08, \eta^2 = .28$, although the effect size indicates a clinically significant difference between PIB children and NIB children. In examining the univariate results, there were significant differences between PIB children and NIB children on five out of six of the CBCL subscales (See Appendix A, Table 5 for $F$, $p$, and $\eta^2$ values). Specifically, PIB children were rated by their parent as having more difficulties with withdrawn/depression, anxiety/depressed, rule-breaking, aggression, and thought problems than NIB children (See Appendix A, Table 5 for $M$ and $SD$).

**Hypothesis 5 Results**

The fifth hypothesis tested stated that there would be a significant negative correlation between age and social self-concept (SPPC Social Competence), such that older children would
have lower social self-concept than would younger children. A Pearson Product Moment Correlation was conducted to determine the relationship between the reported social self-concept and age. There was no significant correlation between social self-concept and age ($r = -.07, p = .26$).

Hypothesis 6 Results

Hypothesis 6 stated that ADHD children who were taking medication would report higher social self-concept than non-medicated ADHD children. A $t$-test was utilized to compare the means of ADHD children who were and were not medicated (independent variable) on the SPPC Social Competence subscale. The results indicated no difference between the medicated ($M = 15.90, SD = 4.42$) and non-medicated ($M = 15.56, SD = 4.37$) ADHD children, $t(1, 46) = .26, p = .79$, $\eta^2 = .001$. To determine if teachers reported an increased social competence for ADHD children who were medicated, an additional $t$-test was used to compare the means of ADHD children who were and were not medicated on the TRS Social Competence subscale. The results also indicated no difference between medicated ($M = 7.97, SD = 3.01$) and non-medicated ($M = 6.72, SD = 3.18$) ADHD children, $t(1, 46) = 1.36, p = .18$, $\eta^2 = .04$.

Research Question 2 (Case Study)

Research Question 2 stated that children who were rated low in social competence by their teacher (TRS $\leq 6$) and were rejected by their peers (peer nomination dislike ratio of $\leq .50$), but reported high social self-concept (SPPC $\geq 18$) would be studied individually (and as a group if there is a large enough sample). The entire sample of 330 children was used to identify children who met these criteria. Six children were identified. Demographic and clinical variables of the 6 children who were identified as using PIB were compared with the entire sample. Four out of six of the children (66%) were boys. In the whole sample, only 42% of the children were
boys thus boys were overrepresented in this case study. Also children with high ADHD symptoms, both those diagnosed with ADHD and those with high symptom but no ADHD diagnosis, were overrepresented among the six children who used PIB. While 33.9% of the entire sample had high ADHD symptoms, 4 out of 6 (2 boys, 2 girls) of the PIB children were high in ADHD symptoms. It is interesting to note that the girls who had high ADHD symptoms but were not diagnosed as ADHD while the two boys with high ADHD symptoms were diagnosed with ADHD. Finally, the four children who were high in ADHD symptoms also had two or more scales of the CBCL in the clinically significant range as well as elevations on the Children’s Depression Inventory; thus, psychological problems appear to be overrepresented among the six PIB children in comparison to the sample as a whole. The two control children who used PIB did not have any elevations on the CBCL or the CDI. Their age, gender, ethnicity, ADHD status, CDI scores, and CBCL scores are reported in Appendix A, Tables 6 and 7.

Dimensional analyses

Multiple regressions were run in order to analyze ADHD symptoms as dimensional variables rather than ADHD status as a categorical variable. Dimensional analyses were run with the entire sample rather than the matched ADHD sample. However, analyses including the SPPC were only run using the Caucasian participants due to poor internal consistency for the non-Caucasian participants.

First, it was hypothesized that higher levels of teacher- and parent-reported inattention and hyperactivity/impulsivity from the ADHD-RS-IV: SV and ADHD-RS-IV: HV would predict higher levels of positive illusory bias (positive SPPC/TRS difference scores). A hierarchical multiple regression was used to analyze this hypothesis. First, teacher reported ADHD symptoms (i.e., inattention and hyperactivity/impulsivity) were entered together, and then parent-reported
ADHD symptoms were entered together. Internalizing symptoms were not included in this analysis because there was not a significant correlation between the CDI and the SPPC/TRS difference scores, \( r = -.04, p > .05 \). Neither teacher rated ADHD symptoms, \( F(2, 313) = 1.76, p < .05, \ Adj. R^2 = .005 \), nor the combination of teacher and parent rated ADHD symptoms, \( F(4, 311) = 2.13, p > .05, \ Adj. R^2 = .01 \), significantly predicted positive illusory bias. Parent-reported inattention, however, did account for a significant amount of unique variance, \( (Beta = .23, t = 2.10, p < .05, sr^2 = .01) \). The intercorrelations and regression analysis summaries can be seen in Appendix A, Tables 8 and 9.

It was hypothesized that higher levels of teacher and parent-reported inattention and hyperactivity/impulsivity, and child reported depressive symptoms (i.e., internalizing symptoms) would predict lower levels of teacher-reported social competence. A hierarchical multiple regression was used to determine the predictive relationship between these variables. Internalizing symptoms were entered first followed by teacher-reported hyperactivity and inattention which were entered together and then parent-reported hyperactivity and inattentions which were entered together. Internalizing symptoms significantly predicted teacher-reported social competence, \( F(1, 307) = 40.70, p < .001, \ Adj. R^2 = .11 \). The combination of internalizing (i.e., CDI composite) and teacher-reported ADHD symptoms (i.e., ADHD-RS-IV: SV inattention scale and ADHD-RS-IV: SV hyperactive/impulsive scale) as predictors was significant, \( F(3, 305) = 27.34, p < .001, \ Adj. R^2 = .20 \). Also, the combination of internalizing symptoms and teacher and parent-reported ADHD symptoms as predictors was significant, \( F(5, 303) = 19.08, p < .001, \ Adj. R^2 = .23 \). The combination of teacher-reported ADHD and internalizing symptoms accounted for significantly more variance in teacher-reported social competence than internalizing symptoms alone, \( F_{\text{change}} = 18.36, p < .001 \). The combination of internalizing and
parent and teacher-reported ADHD symptoms accounted for significantly more variance than either internalizing symptoms alone or the combination of teacher-reported ADHD symptoms and internalizing symptoms, $F_{\text{change}} = 5.49$, $p = .005$. Of the five predictors, parent rated inattention was the most important variable ($\text{Beta} = -.30$, $t = 3.05$, $p = .003$, $sr^2 = .03$) followed by teacher rated inattention ($\text{Beta} = -.29$, $t = 3.47$, $p = .001$, $sr^2 = .04$). Neither teacher nor parent rated hyperactivity/impulsivity contributed significantly to the prediction of teacher rated social competence when internalizing and teacher and parent-reported inattention were included. The correlation matrix between the predictor variables and dependent variable, as well as the results of the multiple regression, can be seen in Appendix A, Tables 10 and 11.

It was hypothesized that higher levels of teacher and parent-reported inattention and hyperactivity/impulsivity and child reported depression would predict lower levels of child reported social self-concept. Internalizing symptoms significantly predicted child reported social self-concept, $F(1, 215) = 39.61$, $p < .001$, $\text{Adj. } R^2 = .15$. The combination of internalizing and ADHD symptoms (CDI composite, ADHD-RS-IV: SV inattention scale and ADHD-RS-IV: SV hyperactive/impulsive scale) as predictors was significant, $F(3, 213) = 15.59$, $p < .001$, $\text{Adj. } R^2 = .17$. The combination of symptoms accounted for significantly more variance in child reported social self-concept than internalizing symptoms alone, $F_{\text{change}} = 3.64$, $p < .05$. The addition of the parent-reported ADHD symptoms did not significantly contribute to the prediction of child reported social self-concept, $F_{\text{change}} = .90$, $p = .41$. Of the five predictors, internalizing symptoms was the most important variable ($\text{Beta} = -.33$, $t = 5.06$, $p < .001$, $sr^2 = .11$). Teacher-reported inattention was the only other variable to significantly contribute to the prediction of child reported social self-concept ($\text{Beta} = -.25$, $t = 2.40$, $p = .17$, $sr^2 = .03$). The correlation
matrix between the predictor variables and dependent variable, as well as the results of the multiple regression, can be seen in Appendix A, Tables 13 and 14.
CHAPTER 4
DISCUSSION

The present study examined differences in social self-concept between ADHD and non-ADHD boys and girls while controlling for internalizing symptoms. In addition, the use and possible function of the positive illusory bias was investigated. Children with poor self-concept show increased difficulty during childhood and poorer outcomes in adolescence and early adulthood when compared to children, adolescents and adults with high-self concept (Dubow, Edwards, & Ippolito, 1997; Marsh & Yeung, 1997; Slomkowski, Klien, & Mannuzza, 1995). Given the academic and social difficulties often associated with ADHD, children who have been diagnosed with ADHD may be more prone to having low self-concept than children who have not been diagnosed with ADHD (Greene, Biederman, Faraone, Sienna, & Garcia-Jetton, 1997; Weiss, Hechtman, & Perlman, 1978; Wilson & Marcotte, 1996). However, previous research looking at differences in self-concept based on ADHD status have yielded inconsistent findings. Resulting literature hypothesized the use of a positive illusory bias by ADHD children may account for these children reporting self-concept similar to control children in spite of having more social and academic problems.

As suggested by Shavelson, Hubner, and Stanton (1976), this discussion will only use “self-concept” when referring to the child’s self-reported self-concept as measured by the Self-Perception Profile for Children (SPPC; Harter, 1995). Teacher reports from the Teacher Rating Scale (TRS; Harter, 1985) will be referred to as competence.

When discussing the different samples used during the analyses, the sample including ADHD children who were confirmed on at least one of the three rating scales will be referred to as the “less strict” ADHD sample. The sample with ADHD children who were confirmed on one
of the home rating scales as well as the school rating scale will be referred to as the “stricter”
ADHD sample. Children who were not previously diagnosed with ADHD but who where
reported to have clinically significant hyperactivity/impulsivity or inattention on any of the
ADHD-RS-IV: HV or SV subscales will be referred to as high symptom children/group. These
children were not included in control group for analyses and are used in exploratory analyses as a
third group.

Summary of Findings

Peer and Teacher-reported Competence (Hypotheses 1 and 2)

As hypothesized, ADHD children were more disliked by their peers and rated as less
socially competent by their teachers than control children. However, there was no difference
between groups on how liked the children were by their peers. These findings were consistent
whether the lenient or strict ADHD groups were used. There were, however, larger effect sizes
when the strict ADHD group was used. There were not enough children in the sample to look at
differences between children with ADHD symptoms only reported at school verses children who
only exhibited ADHD symptoms at home.

When the high symptom group (i.e., non-diagnosed children with high ADHD
symptoms) was included in analyses, there still remained significant differences between groups
on disliked ratings and teacher ratings, but no difference on ratings of peer liking between groups
was found. Specifically, with regards to peer ratings of disliking, control children were less
disliked than ADHD children and high symptom children. However, for teacher ratings there
was a significant difference between ADHD and non-ADHD children, but there was no
significant difference between the high symptom children and either group.
Similar to previous studies, this study found that ADHD children were less liked by their peers than control children. In addition, high symptom children were less liked by their peers than control children. Erhardt and Hinshaw (1994) found that behaviors that interrupted activities and broke rules significantly predicted negative peer nominations. These behaviors associated with ADHD and hyperactivity may interrupt typical social activities at the school (i.e., group projects, games in gym or at recess, appropriate turn taking in conversations) and lead to social rejection in children who display them. In addition, difficulties with attention have been shown to adversely effect peer relations (Sandler et al., 1993). Finally, children with ADHD may also have poor social communication and self-regulation, both of which may contribute to peer rejection (Hubbard & Dearing, 2004). Due to limitations associated with the distribution (i.e., high positive skew) of the peer ratings of disliking, a multiple regression was unable to be run to assist with determining the predictive relationship between parent- and teacher-rated ADHD symptoms and peer rejection.

Similar to previous research, this study supported that teachers rated ADHD children as less socially competent than control children (Barton, 2003). Also consistent with previous research, high inattention, as rated by parent or teacher, was the most important predictor of low teacher rated social competence. Sandler et al. (1993) found that children with ADHD/C and ADHD/I (i.e., children with inattention) were rated by their teachers as having lower social competence than children with only hyperactivity (ADHD/HI). In contrast to Sandler et al., who found that both inattention and hyperactivity significantly predicted teacher ratings, the current study found that hyperactivity was not a significant predictor of teacher ratings. Child-rated internalizing symptoms (i.e., anhedonia, negative mood, and ineffectiveness) were also a significant predictor of teacher rated social competence. It makes sense that children who are
more irritable and not enjoying activities would have more difficulty with teachers and peers. It could also be that children whose teachers see them as less socially competent and therefore give them negative feedback are more prone to depressive symptoms. Previous research has supported that children with internalizing difficulties, regardless of ADHD status, were more likely to experience peer difficulties (e.g., Karustis, Power, Rescorla, Eiraldi, & Gallagher, 2000). However, it is important to note that inattention predicted low teacher rated social competence above and beyond internalizing symptoms.

In contrast to Erhardt and Hinshaw (1994), there was not a significant difference between children with and without ADHD for peer liking ratings in this study. In Erhardt and Hinshaw’s study, the children were initially strangers and were asked to make sociometric rating after knowing the other children between one and three days. These findings may not apply to a classroom setting like the one in this study where most of the children knew each other for at least 9 months. Also, Erhardt and Hinshaw had sample size of 48; while the current sample had approximately 1,400 children who could receive sociometric votes. Thus children in Erhardt and Hinshaw’s study were more likely to be voted for by their peers. In the current study, approximately 62% of the children received at least one vote for being liked, but only 45.5% of the children received one or more votes for being disliked. While one child may have been identified as disliked by many children, most children who were voted as liked only received one vote. Another hypothesis for why there was no difference between the groups is that children with ADHD are often friends with other children in their classrooms who have similar difficulties (Hinshaw & Melnick, 1995).

Children in the high symptom group were rated similarly to ADHD children by their peers. High symptom children were more disliked by their peers than control children, but no
differences were found on ratings of peer liking. This makes sense given Erhardt and Hinshaw’s (1994) finding that behaviors that interrupted activities and broke rules significantly predicted negative peer nominations. With regard to teacher ratings, there was no significant difference between the high symptom group and either of the other two groups (i.e., ADHD or control). Children may be less aware of another child’s ADHD status but rather respond in a similar manner to any child who displays disruptive behaviors.

Children in the high symptom group could represent undiagnosed ADHD or other disruptive behavior disorders, learning disabilities, psychological disorders (i.e., mood, anxiety), or any number of environmental/familial causes (i.e., child abuse, domestic violence, poor parent/teacher-child relations). In addition, children with high ADHD symptoms could represent children who are highly intelligent/gifted (Baum, Olenchak, & Owen, 1998). Thus, caution must be used when interpreting results with the high symptom group.

Positive Illusory Bias (Hypothesis 3)

As hypothesized, an ADHD status by gender by rater interaction was found in the current study. Specifically, it was hypothesized that ADHD boys would overestimate their social abilities in comparison to teacher reports. When looking at just the children’s reports of social self-concept, there were no main effects or interactions for gender or ADHD. However, there was a significant interaction between ADHD status and gender on teacher-reports of social competence. ADHD girls overestimated their social competence in comparison to their teacher’s reports; while control girls underestimated their competence and ADHD and control boys reported social self-concept that was commensurate with their teacher’s reports of social competence.
These findings are in contrast to much of the previous literature which supported a PIB in ADHD boys (Diener & Milich, 1997; Hoza et al., 2002; Ohan & Johnston, 2002). However, they are similar to Owens & Hoza (2003) who found that girls with ADHD symptoms “overestimated” their math abilities in comparison to math achievement scores and academic self-concept in comparison to teacher reports than boys with ADHD symptoms. In addition, Barton (2004) found what could be interpreted as the use of PIB in ADHD girls. Similar to the social competence findings, ADHD girls overestimated their mathematic self-concept. Again similar to the present finding, the ADHD girls also rated themselves lower in mathematic self-concept than control girls and control and ADHD boys. Thus, an argument was made that ADHD girls did not truly display a PIB.

One hypothesis as to why ADHD girls reported lower social self-concept than boys is the higher presences of cognitive delays in ADHD girls than ADHD boys (Gaub & Carlson, 1997b). These additional cognitive problems may increase peer rejection. There are also different patterns in social behavior between boys and girls during middle childhood. For example, girls tend to place higher emphasis on reciprocity, goal-directed activity, and intimacy than boys (Merrell & Gimpel, 1998). Girls with ADHD may have more difficulty because inattention and hyperactivity interfere with these social norms. Specifically, girls who are diagnosed with ADHD are more likely to show impaired attention than hyperactivity (Lahey et al., 1994). Given the impact of inattention on social interactions, this may account for the lower social self-concept/competence rates by both teachers and ADHD girls. Also, previous research supports that regardless of ADHD status, girls report more loneliness and lower peer acceptance than boys (Kaminski, Smith & Trammell, 2003). Girls may be more sensitive to peer problems than boys,
and with the increases social difficulties often associated with ADHD, ADHD girls may be particularly susceptible to low self-concept resulting from peer rejection.

In terms of the discrepancy between teacher and ADHD girl report, ADHD girls may be rated much lower than is accurate by their teachers because of social expectations. Specifically, ADHD girls, especially those who are hyperactive, are more discrepant from expectations of girls than ADHD boys are from the expectations of boys. The larger discrepancy in social behavior for ADHD girls may make their behaviors appear more socially impairing than that of ADHD boys.

When the high symptom group was included as a third group, there continued to be an ADHD by gender by rater interaction. Teacher-reported social competence continued to display an ADHD status by gender interaction. ADHD girls were rated significantly lower in social competence than control girls and all the boys, and control girls were rated significantly higher in social competence than ADHD girls and all boys. However in this analysis, child-reported social self-concept now showed an ADHD status by gender interaction as well. While the ADHD and control boys rated themselves as more socially competent than girls, the high symptom boys rated themselves as less socially competent than girls. In contrast, teachers rated high symptom boys and girls similarly.

There are several possible explanations for why high symptom boys reported lower self-concept than high symptom girls, control boys and girls, and ADHD boys. First, in looking at the ADHD-RS-IV: SV (School Version), teachers rated high symptom boys more similar to boys diagnosed with ADHD, while high symptom girls were rated more similarly to control girls. No gender differences were found on parent-reported ADHD symptoms. It appears that high symptom girls were not seen as inattentive and hyperactive at school, and therefore, may not
have received negative feedback from their teachers. More importantly, it may be that the high symptom girls did not display the hyperactivity and inattention that can disrupt peer interactions and therefore do not experience peer rejection. Additionally, high symptom boys are less likely to be receiving treatment or accommodations for their inattention and/or hyperactivity. This may lead to more disruptive behaviors and in turn create more negative teacher feedback and heighten the possibility for peer rejection.

Results of the hierarchical multiple regression conducted with PIB indicated that, as a group, neither parent nor teacher ratings of ADHD symptoms were predictive of child PIB. Although it accounted for little variance in PIB, parent rated inattention did significantly predict PIB. Results of the hierarchical multiple regression conducted with the Social Acceptance scale of the SPPS indicated that internalizing symptoms were the most important predictor of child report social self-concept. Higher internalizing symptoms predicted lower social self-concept. Teacher-reported inattention was also a significant negative predictor of child-reported social self-concept. However, parent-reported symptoms of ADHD were not significant predictors of child reported self-concept. It makes since that internalizing symptoms are the best predictor of child rated social self-concept. First, children with internalizing symptoms have been shown to have poor self-concept (Karustis, Power, Rescorla, Eiraldi, & Gallagher, 2000). In fact, although not used in this study, the Negative Self-Esteem scale on the Children’s Depression Inventory (CDI; Kovacs, 1992) measures self-concept (three other CDI scales were used in this study). Second, children likely used the same response style in completing the SPPC and the CDI thus increasing the relationship between the two reports.
Psychological Adjustment and Positive Illusory Bias (Hypothesis 4)

This hypothesis was not tested as originally intended. The original intention was to compare children with low self-concept who did and did not display the positive illusory bias; however, due to the small number of children with low self-concept who used an illusory bias ($n = 9$), children who overestimated their social abilities in comparison to their teachers were compared with children who underestimated regardless of the scores on either measure.

Contrary to what was hypothesized, children who reported social self-concept higher than warranted in comparison to teacher reports of competence did not report lower depressive symptoms than children who underestimated their social competence. There was no significant difference between the groups on self-reported internalizing symptoms. However, when parent-reported internalizing symptoms were used, children who overestimated their social competence were rated as significantly more depressed, withdrawn, and anxious than children who underestimated their social competence. In addition, children who overestimated were also rated as having significantly more trouble with rule-breaking, aggression, and thought problems.

Based on parent-report, children with PIB have poorer psychological functioning, both with regard to internalizing and externalizing symptoms.

Children who reported higher social self-concept than warranted, given teacher reports of competence, may employ the same defense mechanism or perception error when reporting on other domains of functioning. Thus, while their parents reported difficulties with depression and anxiety, children who overestimated their social competence denied difficulties with internalizing symptoms. However, given parent reports of psychological functioning, PIB does not appear to protect against psychological difficulties that are associated with peer rejection or low self-concept (Diener & Milich, 1997). This is in contrast to studies that found PIB to be a
commonly used strategy when reporting on positive self-traits and future outcomes the protected against psychological distress in the face of negative feedback (Taylor & Brown, 1988; Taylor et al., 2000). Perhaps the use of a PIB allows a child to deny social problems to themself but in doing so decreases their need to seek out treatment or help from others to reduce their social difficulties. Thus, as social difficulties continue over time, a PIB may actually increase the negative psychological effects of peer rejection in the eyes of parents and teachers while the child continues to deny problems.

**Self-concept, Medication, and Age (Hypotheses 5 and 6)**

Similar to the findings of Barton (2003), Bussing et al. (2000), and Ialongo et al. (1994), there was no significant difference in social self-concept between medicated and non-mediated ADHD children. On teacher-reports of social competence, there was also no difference between medicated and non-medicated ADHD children. It does not appear that, overall, medication increases social functioning in children with ADHD. One hypothesis for why medication may not improve self-concept is that many time children who are on medication do not get therapy. While medication has been show to reduce negative behaviors (Hechtman, Weiss, & Perlman, 1984), it may be necessary to teach children positive behaviors through therapy or social skills groups. It is important to note that there was not a decrease in self-concept associated with taking medication as many researchers and parents feared (Barkley, 1998).

Similar to the findings of Barton (2003), there was no significant relationship between age and social self-concept on the SPPC. While one study found a slight but measurable decline (Marsh, 1989), most research has not supported a decline in social self-concept with age (Crain & Bracken, 1994; Marsh, 1984; Marsh et al., 1991; Wilgenbusch and Merrell, 1999). Marsh (1989) included children through the 11th grade. This wider age range may have allowed for
small age related difference in self-concept to be detected. It may also be that there is a decline that occurs in children who are older than those included in the present study. The lack of an age related decline in social self-concept could also be explained by the differentiation of social self-concept from other self-concept domains occurring earlier in life than differentiation of other self-concept domains. Social relationships become important to children very early in life thus providing earlier opportunities to form social self-concept; whereas, academic self-concept does not become formed or differentiated until a child enters school. This may make social self-concept more resistant to change earlier than other domains of self-concept.

Case Studies

First, it is important to note that of the 330 possible participants in this case study, only six children met the criteria laid out for PIB. (Please see Tables 6 and 7 for demographic variables and CBCL and CDI scores). These were children who in spite of peer rejection and low teacher-reports of social competences reported high social self-concept. Although PIB was rare in our sample and interpretations must be made cautiously, several interesting findings did occur within the six children. Four out of the six children in the case study had high ADHD symptoms. Of these, two were boys diagnosed with ADHD, and two were girls who were high in ADHD symptoms but did not carry a diagnosis. This is consistent with the notion that girls are under diagnosed with ADHD in comparison to boys. Psychological difficulties were also overrepresented in six children included in the case studies. The four high symptom/ADHD children also reported psychological difficulties, both in their self-reported internalizing symptoms from the CDI and in parent-reported symptoms on the CBCL. Although scale elevations varied by child on the CBCL, the 4 children with high ADHD symptoms each had two or more scale in the clinically significant range (i.e., T => 70); however, the two control children
who were identified as using PIB did not have any significant elevations on either self- or parent-reported psychological problems. It appears that the combination of ADHD symptoms and the use of PIB increase the likelihood of additional psychological problems rather than decreasing them. However, this finding could also just represent the increased psychopathology in children with ADHD rather than a result of PIB. Regardless, it does not appear that PIB provides a protective function (Diener & Milich, 1997). Although 4 of the 6 children who were identified as PIB had high ADHD symptoms, it is important to note that ADHD children as a group did not over inflate their social self-concept.

Theoretical Implications

Illusory bias is the tendency to report more positive self-concept than would be warranted (Hoza et al., 2002). In contrast to previous literature, this study did not support the use of a PIB for ADHD boys (Diener & Milich, 1997; Hoza et al.; Ohan & Johnston, 2002). Although ADHD girls did report social self-concept that was significantly higher than teacher-reports of social self competence, their self-reports were still indicative of relatively low social self-concept. ADHD girls and their teachers rated this group as significantly lower than the other groups (i.e., ADHD boy, control and high symptom children). Thus, ADHD girls were aware of their lack of social competence and were not employing PIB.

It appears that ADHD children were seen as different from high symptom children by their teachers. ADHD children were rated as less social competent than high symptom children by their teachers. However, peers did not differentiate between high symptom and ADHD children. Peers disliked high symptom and ADHD children significantly more than control children. Children may be more likely to respond to disruptive behaviors rather than knowledge of ADHD status than teachers. If teachers are already making negative attributions of children
with ADHD because of their disruptive behavior in the classroom, it is possible that these attributions may extend to the teachers’ estimates of competence.

The assumption that children are displaying a positive illusory bias also assumes that teacher-reports are more reflective of reality than the children’s report of self-concept. It may be that teacher-reports are biased. For example, ADHD girls may be rated much lower than is accurate by their teachers because of social expectations. Specifically, girls who are hyperactive are more discrepant from expectations of girls than hyperactive boys are from the expectations of boys. The larger discrepancy in social behavior for ADHD girls may make their behaviors appear more socially impairing than that of ADHD boys. Whether or not a positive illusory bias is present for the child, their perceptions of the world and their self-concept are the basis for their behavior, interpretations and predictions of the world, and ultimately how they approach life.

Clinical Implications

There are several clinical implications that can be drawn from the study. First, although there are often low correlations between teacher, parent, and child report measures, all three reports are important sources of information. There are many advantages to using child self-report data in assessment and therapy, including the ability to gather information about the perceptions of the child. Knowledge of the child’s perception is helpful in treatment since a child’s self-concept affects their understanding of themselves and their world (Harter, 1999). Gathering information from multiple informants allows the clinician to gain more information. It is important to consider the possibility that each person may be contributing different accurate information to the clinical picture. When considering the impact of ADHD on social self-concept, it maybe more informative to rely on teacher reports of ADHD symptoms than parent-
reported symptoms, as this study found that teacher-reported ADHD symptoms significantly predicted child reported social self-concept while parent-reported ADHD symptoms did not.

Given the peer rejection of ADHD children and low teacher ratings of social competence in ADHD girls found in this study, interventions within the school may help bolster self-concept in children with ADHD. If a child does not display behaviors consistent with ADHD at school, they are likely to receive more positive and less negative feedback from their teacher and peers. This positive feedback may reduce effects of any negative feedback that is coming from the parents at home. One way to decrease negative feedback at school is to improve the child’s behavior through medication and/or increased structure (Whalen, Henker, & Dotemoto, 1980, 1981). However, it is important to note that in this study medication status did not affect reported child or teacher-reported social abilities. It may be that, in order to help children with ADHD improve their social skills, they need an intervention other than medication that includes skill building (e.g., StopLight Social Skills; Driskill & Driskell, 1998). Additionally, interventions specific to cognitive inattention may prove to be particularly effective in raising ADHD children’s social competence.

Results of this study indicated that specific attention should be given to girls who are diagnosed with ADHD. Both teachers and ADHD girls reported lower social competence for ADHD girls than any other group. Although self-concept is relatively stable over time and becomes increasingly resistant to change as a child ages, primary interventions with young ADHD girls may lessen the negative effects of the disorder (Marsh, 1988).

Finally, this study also indicated that children who are experiencing internalizing symptoms, regardless of ADHD status, also experience low social competence and peer rejection. Interventions designed to reduce depression and anxiety in these children along with
interventions designed to build social skills could help increase social competence, decrease peer rejection, and buffer against future problems with internalizing disorders.

Methodological Limitations

External Validity and Generalizability

Three major limitations become apparent when the issues of external validity and generalizability are considered. First, although efforts were made to recruit families from all ethnic backgrounds, the matched ADHD sample (88%) and sample as a whole (72%) was predominantly Caucasian. Thus, the generalizability of the current results is limited to self-concept in a Caucasian population. No definitive conclusions can be drawn regarding possible differences in self-concept based on gender or ADHD status that may be present in different ethnic and cultural groups. This study is also limited in its findings because most children in the sample were ADHD/C (i.e., 73%). Thus, applying the current results to children with ADHD/I or ADHD/HI should be done with caution.

In addition, it is important to acknowledge the rate of comorbidity among children in the ADHD sample. Seventeen percent of the children in the ADHD sample were children diagnosed with at least one other psychiatric diagnosis. Although the prevalence of comorbid disorders in the current ADHD sample is significantly lower than other samples (e.g., Bussing et al., 2000), ADHD-specific conclusions must be drawn tentatively. Future research should focus on recruitment of children without other psychiatric disorders or learning difficulties. An alternative route to remedy this issue would be to statistically control for comorbid disorders with parent reports of various psychiatric symptoms.

While our response rate of 27.2% is similar to that of previous studies, selection bias must be considered when looking at the external validity of this study (see Hollman &
McNamara, 1999 for a review). Teachers who were more invested in the project helped recruit families into the study. These teachers may also have more skills or interest in dealing with children who have social difficulties and therefore may have responded to the questionnaires with a different response style than other teachers. Generating teacher interest in the study will be important in increasing response rates in future studies. Parents who chose to respond to the questionnaires may also differ from non-participating parents significant ways. For example, parents may have responded to the study because the topic of social functioning was particularly salient to them (i.e., their child was experiencing social difficulty). In addition, responding parents may be more involved with their child’s school or with parenting in general.

Measurement Limitations

There were several measurement limitations present in this study. First, as a result of the difficulties with recruitment, the number of children responding to the peer nomination procedure was typically less than a third of the children in the classroom. Although each child in the classroom could receive votes, not all children could cast votes. Also, for children whose parents did not consent to the study, simple demographic variables (i.e., gender, grade, and ethnicity) were collected, but no other information is known about these children thus limiting the information that could be obtaining through the peer nomination procedure.

Another limitation was the confusing instructions on the SPPC. The children are first asked to pick from two sentences and then are asked to decide if that sentence is “really like” them or “sort of like” them. Many children (i.e., 10%) did not understand that they were only to respond for one sentence. Most of the time these children were identified during the administration and one of the administrators would reread the instructions and ask the child to
start over marking only one answer per item. Having one of the administrators help the children may have increased socially desirable responding or artificially changed the child’s responses.

In addition, the SPPC does not specify what reference point (e.g., their ideal self, their peers, the expectations of teachers or parents) the child is to use when reporting their self-concept. This may be problematic because previous research has shown that children rate their self-concept based on their context or reference point (Harter, Waters, & Whitesell, 1998). For example, a child may rate himself as having high self-concept in comparison to peers, but low in comparison to the perceived expectations of his teachers.

Finally, similar to previous studies with Hispanic samples, the SPPC had poor internal consistencies with the non-Caucasian participants in this sample (Hess & Petersen, 1996). This prevented exploratory analysis of social self-concept with the Hispanic portion of the sample and limits the generalizability of these findings to children of color.

Future Research Directions

The results of the present study indicate a further need to investigate self-concept and PIB in ADHD boys and girls. Given the importance of external feedback in the formation of self-concept, examining the relationship between parent/parenting variables, parent-child interaction, and self-concept may help shed light on self-concept formation and the use of illusory bias. Parke and his colleagues’ (1998) Tripartite Model of Family-Peer Linkages in children with ADHD may provide a useful framework for investigating the different roles parents play in their children’s social relationships. In the Tripartite Model of Family-Peer Linkages, parents serve as instructors/educators, managers of their children’s social lives, and indirectly influence their children’s social relationship through parent-children interactions (Park et al., 1998). Expressions of positive/negative emotions or number of positive/negative comments about the child during
parent-child interactions would be examples of the indirect influence parents have on their child’s social relationships. Understanding how parents directly and indirectly impact children’s social relationships will continue to add to the understanding of ADHD and will help guide individual and family interventions to improve the functioning of children with ADHD.

In addition to parent/parenting variables, it may also be informative to look at the relationship between teacher/teaching variables (e.g., training for teaching children with special needs, method of discipline), teacher-child interactions, and child self-concept. Teacher feedback may be very important in self-concept formation given the amount of time children spend at school. In elementary school, when children spend more time with one teacher rather than having different teachers for every subject, teacher feedback may be more influential in formation of self-concept.

Future studies may also incorporate both a social interaction task and comparisons of teacher and child self-concept/competence reports to better assess the use of PIB. As in Deiner and Milich’s (1997) study, the effects of manipulating positive and negative feedback regarding social interactions could be assessed and then compared to the results from a comparison of teacher and child reports of social self-concept/competence as done in the current study. Independent raters (i.e., researchers) of social performance would allow for researchers to determine if child or teacher reports were more consistent with researchers’ observations (Deiner & Milich). The use of both methods could assist researchers in determining if children who reported higher self-concept than warranted based on teacher reports also responded to the social interaction task in a manner that is suggestive of PIB (e.g., decreasing their estimates of future performance after receiving positive feedback). The inclusion of both research designs may provide more information about whether PIB is a conscious or unconscious process. For
example, if PIB is a conscious inflation of ability, children’s responses to self-report measures may be different if they know that they will be asked to perform a task that also taps into that domain of self-concept. If PIB is a valid construct it should be consistent across types of measurements.

Future research could also include longitudinal studies. Specifically, children who reported low self-concept or PIB could be followed to determine the consistency of low self-concept and use of PIB. Long-term psychological functioning associated with ADHD, self-concept, and PIB could also be assessed. Previous research has suggested an age-related decline in self-concept using a cross-sectional research design, the use of a longitudinal design may help clarify if and when such a decline occurs and identify possible causal factors (Crain & Bracken, 1994; Marsh, 1988, 1989). A longitudinal design could also allow for the differentiation of self-concept to be studied. Given the cognitive delays sometimes associated with ADHD, it would interesting to determine if children with ADHD are delayed in their differentiation of self-concept in comparison to non-ADHD children (Barkley, 1998). The inclusion of additional self-concept domains (e.g., academic, global) in future research would increase the understanding of self-concept and PIB in children with and without ADHD.

Several changes to the methodology could increase the generalizability and strength of findings in future studies. First, efforts should be made to increase parent response rates specifically recruiting for greater ethnic and cultural diversity. In order to increase future response rates, the researchers could be more visible in the schools and school district. In addition to generating teacher interest, contacting parents via personal phone calls to encourage them to return completed study materials and answer any questions may be useful in increasing response rates in the future. Researchers could also attend school events (e.g., PTA meetings,
open house) to increase their visibility. Finally, future studies would be strengthened by the addition of a structured interview to diagnosis ADHD and other psychiatric disorders rather than relying on parent report of previous diagnosis. It is only through further research that appropriate early interventions for children with ADHD and low self-concept can be identified. Future research should continue to identify the domains of self-concept where ADHD girls and/or boys report lower self-concept than control children so that inventions can be made with ADHD children to lessen or avoid the potential long-term negative outcomes of the disorder.
Table 1

Descriptive Statistics for Children in the ADHD and Comparison Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADHD Group (n = 48)</th>
<th>Control Group (n = 48)</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Child Gender</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>31</td>
<td>36.5</td>
<td>31</td>
</tr>
<tr>
<td>Female</td>
<td>17</td>
<td>63.5</td>
<td>17</td>
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<tr>
<td>Child’s Grade</td>
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<td>.00</td>
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<tr>
<td>3rd grade</td>
<td>11</td>
<td>22.9</td>
<td>11</td>
</tr>
<tr>
<td>4th grade</td>
<td>20</td>
<td>41.7</td>
<td>20</td>
</tr>
<tr>
<td>5th grade</td>
<td>7</td>
<td>14.6</td>
<td>7</td>
</tr>
<tr>
<td>6th grade</td>
<td>10</td>
<td>20.8</td>
<td>10</td>
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<tr>
<td>Children’s Ethnicity</td>
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<td>Caucasian</td>
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<tr>
<td>Biracial</td>
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</table>

Note. \( \chi^2 \) = Pearson Chi Square.

\(^{a}\)Chi Square run with two groups, Minority vs. Caucasian due to low \( n \).
### Table 2

*Descriptive Statistics for Parents in the ADHD and Comparison Groups*

<table>
<thead>
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<th>Control Group (n = 48)</th>
<th>χ²</th>
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<td>n</td>
<td>%</td>
<td>n</td>
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<tr>
<td>Stepmother</td>
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<td>2.1</td>
<td>0</td>
</tr>
<tr>
<td>Father</td>
<td>1</td>
<td>2.1</td>
<td>5</td>
</tr>
<tr>
<td>Grandmother</td>
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<td>12.5</td>
<td>0</td>
</tr>
<tr>
<td>Aunt</td>
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<td>4.1</td>
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<tr>
<td>Other</td>
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<td>0</td>
</tr>
<tr>
<td><strong>Parent Education level</strong></td>
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<td>8th – 12th grade</td>
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<tr>
<td>Hispanic</td>
<td>3</td>
<td>6.3</td>
<td>2</td>
</tr>
<tr>
<td>Biracial</td>
<td>1</td>
<td>2.1</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>2.1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Parent Income</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;$30,000</td>
<td>20</td>
<td>45.5</td>
<td>17</td>
</tr>
<tr>
<td>$30-70,000</td>
<td>17</td>
<td>36.3</td>
<td>11</td>
</tr>
<tr>
<td>&gt;$70,000</td>
<td>8</td>
<td>18.2</td>
<td>17</td>
</tr>
</tbody>
</table>

*Note.*  χ² = Pearson Chi Square.

---

*a* Chi Square was run with two groups, Female vs. Male due to low n.

*b* Participants who did not specify an education level were not included in the analysis.

*c* University and Advanced Degree were combined due to low n.

*d* Chi Square run with two groups, Minority vs. Caucasian due to low n.
Table 2 (continued)

*Descriptive Statistics for Parents in the ADHD and Comparison Groups*

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADHD Group</th>
<th>Control Group</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>($n = 48$)</td>
<td>($n = 48$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$n$</td>
<td>%</td>
<td>$n$</td>
</tr>
<tr>
<td>Parent Marital Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never married</td>
<td>11</td>
<td>23.4</td>
<td>5</td>
</tr>
<tr>
<td>Married</td>
<td>20</td>
<td>42.6</td>
<td>26</td>
</tr>
<tr>
<td>Separated</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Divorced</td>
<td>16</td>
<td>33.3</td>
<td>14</td>
</tr>
</tbody>
</table>

*Note. $\chi^2$ = Pearson Chi Square.*

*Chi Square run with three groups. Separated was combined with Divorced due to low $n$. 


Table 3

Other Psychiatric Diagnoses for Children in the ADHD and Comparison Groups

<table>
<thead>
<tr>
<th>Psychiatric Diagnoses&lt;sup&gt;a&lt;/sup&gt;</th>
<th>ADHD Group (n = 48)</th>
<th>Control Group (n = 48)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Conduct Disorder</td>
<td>4</td>
<td>8.3</td>
</tr>
<tr>
<td>Bipolar Disorder</td>
<td>4</td>
<td>8.3</td>
</tr>
<tr>
<td>Generalized Anxiety Disorder</td>
<td>2</td>
<td>4.2</td>
</tr>
<tr>
<td>Learning Disorder</td>
<td>5</td>
<td>10.4</td>
</tr>
<tr>
<td>Dysthymic Disorder</td>
<td>1</td>
<td>2.1</td>
</tr>
<tr>
<td>Major Depressive Disorder</td>
<td>5</td>
<td>10.4</td>
</tr>
<tr>
<td>Oppositional Defiant Disorder</td>
<td>7</td>
<td>14.6</td>
</tr>
<tr>
<td>Separation Anxiety Disorder</td>
<td>1</td>
<td>2.1</td>
</tr>
</tbody>
</table>

<sup>a</sup>Psychiatric diagnoses are not mutually exclusive
Table 4

Measures Used in the Current Study

Demographic Questionnaire
- Background Information Form - completed by parent
- Teacher Background Information Form – completed by teacher about themselves
- Child Background Information Form - completed by teacher about the child

Measures to Confirm Diagnoses of ADHD
- Attention Deficit Hyperactivity Disorder-Rating Scale-IV: School Version (ADHD-RS-IV: SV; DuPaul et al., 1998)
- Child Behavior Checklist- Attention Problems Scale (CBCL; Achenbach, 1991)

Measures of Competence
- Self-Perception Profile for Children- Social Acceptance Scale (SPPC; Harter, 1985)
- Teacher Rating Scale- Social Acceptance Scale (TRS; Harter, 1985)

Peer Assessment of Social Behavior
- Peer Nomination Procedure (Crick and Grotpeter, 1995)

Measures of Depressive Symptoms
- Children’s Depression Inventory (CDI; Kovacs, 1992)
- Child Behavior Checklist- Internalizing Composite (CBCL; Achenbach, 1991)
Table 5

Means, Standard Deviation, Multivariate Analysis of Variance F values and Effect Sizes for Positive Illusory Bias Status X CBCL Scales

<table>
<thead>
<tr>
<th>CBCL subscales</th>
<th>PIB Group (n = 20)</th>
<th>NIB Group (n = 19)</th>
<th>F (1, 37)</th>
<th>( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Withdrawn/Depressed</td>
<td>3.32</td>
<td>3.33</td>
<td>.08</td>
<td>1.06</td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>2.09</td>
<td>2.39</td>
<td>1.01</td>
<td>1.62</td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>5.11</td>
<td>5.09</td>
<td>1.85</td>
<td>2.23</td>
</tr>
<tr>
<td>Rule-breaking Behavior</td>
<td>3.53</td>
<td>3.32</td>
<td>1.35</td>
<td>1.42</td>
</tr>
<tr>
<td>Aggressive Behavior</td>
<td>8.90</td>
<td>8.13</td>
<td>4.50</td>
<td>5.10</td>
</tr>
<tr>
<td>Thought Problems</td>
<td>3.95</td>
<td>3.95</td>
<td>1.60</td>
<td>1.70</td>
</tr>
</tbody>
</table>

* p < .05. ** p < .02. *** p < .001.
Table 6

*Demographic Variables for Children who Utilized a Positive Illusory Bias*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Case Study ($n = 6$)</th>
<th>Entire Sample ($n = 330$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>4</td>
<td>140</td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
<td>190</td>
</tr>
<tr>
<td>Child’s Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>92</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>90</td>
</tr>
<tr>
<td>11</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>39</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Children’s Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>4</td>
<td>232</td>
</tr>
<tr>
<td>Asian American</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Biracial</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>ADHD Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADHD-confirmed</td>
<td>2</td>
<td>48</td>
</tr>
<tr>
<td>Not ADHD</td>
<td>2</td>
<td>216</td>
</tr>
<tr>
<td>Not ADHD- Excluded due to high ADHD symptoms</td>
<td>2</td>
<td>64</td>
</tr>
<tr>
<td>Yearly Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 30,000</td>
<td>3</td>
<td>108</td>
</tr>
<tr>
<td>30,000-70,000</td>
<td>1</td>
<td>127</td>
</tr>
<tr>
<td>&gt; 70,000</td>
<td>1</td>
<td>72</td>
</tr>
</tbody>
</table>
Table 7

*Children’s Behavioral Checklist T-Scores and Children’s Depression Inventory Raw Score for Children who Utilized a Positive Illusory Bias (n = 6)*

<table>
<thead>
<tr>
<th></th>
<th>With/Dep</th>
<th>Anx/Dep&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Somatic</th>
<th>Social</th>
<th>Attention</th>
<th>Rule-breaking</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>64</td>
<td>72</td>
<td>50</td>
<td>74</td>
<td>66</td>
<td>54</td>
</tr>
<tr>
<td>2</td>
<td>63</td>
<td>56</td>
<td>50</td>
<td>65</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>3</td>
<td>75</td>
<td>71</td>
<td>67</td>
<td>79</td>
<td>71</td>
<td>75</td>
</tr>
<tr>
<td>4</td>
<td>54</td>
<td>50</td>
<td>50</td>
<td>51</td>
<td>53</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>61</td>
<td>50</td>
<td>50</td>
<td>53</td>
<td>53</td>
<td>50</td>
</tr>
<tr>
<td>6</td>
<td>77</td>
<td>68</td>
<td>65</td>
<td>83</td>
<td>70</td>
<td>64</td>
</tr>
</tbody>
</table>

<sup>a</sup> One item was removed for the Anxiety/Depressed Scale thus the T score may be an underestimate.
Table 7 (continued)

*Children’s Behavioral Checklist T- Scores and Children’s Depression Inventory Raw Score for Children who Utilized a Positive Illusory Bias (n = 6)*

<table>
<thead>
<tr>
<th>Thought Problems</th>
<th>Internalizing</th>
<th>Externalizing</th>
<th>CDI Composite &lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>63</td>
<td>66</td>
<td>52</td>
</tr>
<tr>
<td>2</td>
<td>70</td>
<td>42</td>
<td>73</td>
</tr>
<tr>
<td>3</td>
<td>75</td>
<td>74</td>
<td>75</td>
</tr>
<tr>
<td>4</td>
<td>50</td>
<td>41</td>
<td>33</td>
</tr>
<tr>
<td>5</td>
<td>51</td>
<td>52</td>
<td>33</td>
</tr>
<tr>
<td>6</td>
<td>64</td>
<td>70</td>
<td>68</td>
</tr>
</tbody>
</table>

<sup>a</sup> Raw scores for three CDI subscales (i.e., Anhedonia, Ineffectiveness, Negative Mood) combined.
Table 8

*Intercorrelations for Positive Illusory Bias as Measured by Difference Scores between the Self-Perception Profile for Children and the Teacher Rating Scale and ADHD Symptoms Predictor Variables (n = 316)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Illusory Bias</td>
<td>.03</td>
<td>.09</td>
<td>.06</td>
<td>.14*</td>
</tr>
<tr>
<td>Predictor Variable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. ADHD-RS-IV: SV Hyperactive/Impulsive Scale</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. ADHD-RS-IV: SV Inattentive Scale</td>
<td>.71**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. ADHD-RS-IV: HV Hyperactive/Impulsive Scale</td>
<td>.50**</td>
<td>.47**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>4. ADHD-RS-IV: HV Inattention Scale</td>
<td>.42**</td>
<td>.59**</td>
<td>.80**</td>
<td>-</td>
</tr>
</tbody>
</table>

*p < .01, **p < .001.
Table 9

*Regression Analysis Summary for ADHD Symptoms Predicting Positive Illusory Bias (n = 316)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SEB</th>
<th>( \beta )</th>
<th>( sr^2 )</th>
<th>Adj R(^2)</th>
<th>( \Delta R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADHD-RS-IV: SV Hyperactive/Impulsive Scale</td>
<td>-.01</td>
<td>.01</td>
<td>-.08</td>
<td>.003</td>
<td>.005</td>
<td>.011</td>
</tr>
<tr>
<td>ADHD-RS-IV: SV Inattentive Scale</td>
<td>.02</td>
<td>.01</td>
<td>.15</td>
<td>.01</td>
<td>.014</td>
<td>.016</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADHD-RS-IV: SV Hyperactive/Impulsive Scale</td>
<td>-.007</td>
<td>.02</td>
<td>-.04</td>
<td>.0007</td>
<td>.006</td>
<td>.0006</td>
</tr>
<tr>
<td>ADHD-RS-IV: SV Inattentive Scale</td>
<td>.006</td>
<td>.01</td>
<td>.04</td>
<td>.0006</td>
<td>.007</td>
<td>.0004</td>
</tr>
<tr>
<td>ADHD-RS-IV: HV Hyperactive/Impulsivity Scale</td>
<td>-.02</td>
<td>.02</td>
<td>-.11</td>
<td>.004</td>
<td>.008</td>
<td>.004</td>
</tr>
<tr>
<td>ADHD-RS-IV: HV Inattentive Scale</td>
<td>.04</td>
<td>.02</td>
<td>.23*</td>
<td>.01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. \( sr^2 \) = squared semipartial correlation.*

* p < .05.
Table 10

*Intercorrelations for Teacher-Reported Social Competence as Measured by the Teacher Rating Scale and Internalizing and ADHD Symptoms Predictor Variables (n = 309)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRS Social Competence Scale</td>
<td>-.34*</td>
<td>-.38*</td>
<td>-.17*</td>
<td>-.38*</td>
<td>-.23**</td>
</tr>
<tr>
<td>Predictor Variable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. CDI Composite Score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. ADHD-RS-IV: SV Inattentive Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. ADHD-RS-IV: SV Hyperactive/Impulsive Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. ADHD-RS-IV: HV Inattentive Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. ADHD-RS-IV: HV Hyperactive/Impulsive Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* *p < .01, **p < .001.*
Table 11

*Regression Analysis Summary for Internalizing and ADHD Symptoms Predicting Teacher-Reported Social Competence as Measured by the Teacher Rating Scale (TRS) (n = 309)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SEB</th>
<th>( \beta )</th>
<th>( sr^2 )</th>
<th>Adj ( R^2 )</th>
<th>( \Delta R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internalizing Symptoms</td>
<td>-.15</td>
<td>.02</td>
<td>-.34***</td>
<td>.12</td>
<td>.11</td>
<td>.12</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internalizing Symptoms</td>
<td>-.10</td>
<td>.02</td>
<td>-.23***</td>
<td>.06</td>
<td>.20</td>
<td>.01</td>
</tr>
<tr>
<td>ADHD-RS-IV: SV Inattentive Scale</td>
<td>-.15</td>
<td>.03</td>
<td>-.43***</td>
<td>.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADHD-RS-IV: SV Hyperactive/Impulsive Scale</td>
<td>.07</td>
<td>.03</td>
<td>.18*</td>
<td>.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internalizing Symptoms</td>
<td>-.08</td>
<td>.02</td>
<td>-.19***</td>
<td>.04</td>
<td>.22</td>
<td>.03</td>
</tr>
<tr>
<td>ADHD-RS-IV: SV Inattentive Scale</td>
<td>-.10</td>
<td>.03</td>
<td>-.29**</td>
<td>.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADHD-RS-IV: SV Hyperactive/Impulsive Scale</td>
<td>.05</td>
<td>.03</td>
<td>.137</td>
<td>.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADHD-RS-IV: HV Inattentive Scale</td>
<td>-.13</td>
<td>.04</td>
<td>-.30**</td>
<td>.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADHD-RS-IV: HV Hyperactive/Impulsive Scale</td>
<td>.06</td>
<td>.04</td>
<td>.13</td>
<td>.007</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** \( sr^2 \) = squared semipartial correlation.  
* \( p < .05 \). ** \( p < .01 \). *** \( p < .001 \).
Table 12

*Intercorrelations for Social Self-Concept as Measured by the Self-Perception Profile for Children Social Competence Scale (SPPC) and Internalizing and ADHD Symptoms Predictor Variables (n = 217)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPPC Social Competence Scale</td>
<td>- .39**</td>
<td>- .29**</td>
<td>- .17*</td>
<td>- .17*</td>
<td>- .21**</td>
</tr>
<tr>
<td>Predictor Variable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. CDI Composite Score</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. ADHD-RS-IV: SV Inattentive Scale</td>
<td>.34**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. ADHD-RS-IV: SV Hyperactive/Impulsive Scale</td>
<td>.17*</td>
<td>.69**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. ADHD-RS-IV: HV Inattentive Scale</td>
<td>.22**</td>
<td>.45**</td>
<td>.49**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>5. ADHD-RS-IV: HV Hyperactive/Impulsive Scale</td>
<td>.39**</td>
<td>.61**</td>
<td>.42**</td>
<td>.80**</td>
<td>-</td>
</tr>
</tbody>
</table>

*p < .01, **p <= 001.*
Table 13

Regression Analysis Summary for Internalizing and ADHD Symptoms Predicting Social Self-Concept as Measured by the Self-Perception Profile for Children Social Competence Scale (SPPC) (n = 217)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SEB</th>
<th>β</th>
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Note. $sr^2$ = squared semipartial correlation.
* p < .05. ** p < .001.
APPENDIX A

BACKGROUND INFORMATION FORM
BACKGROUND INFORMATION FORM

1. The parent (or guardian) completing this questionnaire is the child’s (please check one):
   (1) ☐ mother   (2) ☑ father   (3) ☐ stepmother   (4) ☐ stepfather
   (5) ☐ foster mother   (6) ☐ foster father   (7) ☐ grandmother   (8) ☐ grandfather
   (9) ☐ other (who?): ________________________

2. Other guardians who live with you and this child are (please check “yes” or “no” for each person):
   (1)Yes   (2)No
   a. mother   ☐ ☐
   b. father   ☐ ☐
   c. stepmother   ☐ ☐
   d. stepfather   ☐ ☐
   e. foster mother   ☐ ☐
   f. foster father   ☐ ☐
   g. grandmother   ☐ ☐
   h. grandfather   ☐ ☐
   i. other (who?): _________________________

3. How many other children live in your household? (circle one) 0 1 2 3 4 5 6 7 8 9 10+

4. The participating child is a: (1) ☐ girl   (2) ☑ boy

5. Your child’s date of birth: ____________  6. Your child’s age today: ____________

7. Your child’s grade in school: (1) ☐ 3rd   (2) ☐ 4th   (3) ☐ 5th   (4) ☐ 6th

8a. Has your child ever repeated a grade? (1) ☐ Yes (2) ☑ No     8b. If yes, which grade? ______

9a. Has your child ever skipped a grade? (1) ☐ Yes (2) ☑ No     9b. If yes, which grade? ______

10a. Does your child receive special education services at school? (1) ☐ Yes (2) ☑ No
    If yes, what is your child’s eligibility? ____________

10b. Grade services began ______

11a. Is your child currently taking any medication? (1) ☐ Yes (2) ☑ No
    If yes, please list the name of the medication(s). __________________________

12a. Has your child ever been diagnosed with any of the following: (Please check all that apply)
     (1) ☐ Yes   (2) ☑ No
     Type of ADHD? (1) ☐ Inattentive   (2) ☐ Hyperactive-Impulsive   (3) ☐ Combined   (4) ☐ Don’t know

12b. Conduct Disorder (CD)   ☐ ☐
12c. Oppositional Defiant Disorder (ODD)   ☐ ☐
12d. Separation Anxiety Disorder   ☐ ☐
12e. Generalized Anxiety Disorder (GAD)   ☐ ☐
12f. Major Depressive Disorder (depression)   ☐ ☐
12g. Dysthymic Disorder   ☐ ☐
12h. Bipolar Disorder   ☐ ☐
12i. Learning Disorder (Learning Disability)   ☐ ☐
    What type of Learning Disability? __________________________
12n. Communication Disorder   ☐ ☐
    What type of Communication Disorder? __________________________

If you checked “Yes” for any disorder above,
12u. How old was your child when diagnosed? 

and

12v. If yes, what type of professional diagnosed him/her? 

13. Is your child currently receiving psychological treatment/therapy or counseling?
(1) ☐ Yes       (2) ☐ No, never       (3) ☐ In the past only

15. Is English your first language? (1) ☐ Yes (2) ☐ No (if no, what is?) 

16a. How would you describe your ethnic-racial background?
(1) ☐ Asian-American     (2) ☐ Black (African-American)   (3) ☐ Caucasian (White)
If Spanish/Hispanic/Latino then please specify below:
(4) ☐ Mexican, Mexican American, Chicano   (5) ☐ Puerto Rican   (6) ☐ Cuban   (7) ☐ other 
(8) ☐ Arab (please specify country) 
(9) ☐ Native American
(10) ☐ Biracial (please specify) 
(11) ☐ Pacific Islander (please specify) 
(12) ☐ Unknown or Other (please specify) 

16b. How would you describe your child’s other biological parent’s ethnic-racial background?
(1) ☐ Asian-American     (2) ☐ Black (African-American)   (3) ☐ Caucasian (White)
If Spanish/Hispanic/Latino then please specify below:
(4) ☐ Mexican, Mexican American, Chicano   (5) ☐ Puerto Rican   (6) ☐ Cuban   (7) ☐ other 
(8) ☐ Arab (please specify country) 
(9) ☐ Native American
(10) ☐ Biracial (please specify) 
(11) ☐ Pacific Islander (please specify) 
(12) ☐ Unknown or Other (please specify) 

16c. How would you describe your child’s ethnic-racial background?
(1) ☐ Asian-American     (2) ☐ Black (African-American)   (3) ☐ Caucasian (White)
If Spanish/Hispanic/Latino then please specify below:
(4) ☐ Mexican, Mexican American, Chicano   (5) ☐ Puerto Rican   (6) ☐ Cuban   (7) ☐ other 
(8) ☐ Arab (please specify country) 
(9) ☐ Native American
(10) ☐ Biracial (please specify) 
(11) ☐ Pacific Islander (please specify) 
(12) ☐ Unknown or Other (please specify) 

17. Is English your child’s first language? (1) ☐ Yes (2) ☐ No (if no, what is?) 

18. Which category best describes the current marital status of your child’s biological parents?
(1) ☐ never married       (2) ☐ married       (3) ☐ separated       (4) ☐ divorced
(5) ☐ widowed       (6) ☐ unknown 

19. Which category best describes your current relationship status?
(1) ☐ single, not dating       (2) ☐ single, but dating casually
(3) ☐ single, but dating seriously       (4) ☐ living together/engaged
(5) ☐ married       (6) ☐ separated
(7) ☐ other (please explain)
20. What is the last grade in school you completed or the highest degree you’ve earned?
   (1) ☐ 8th grade (2) ☐ 9th grade (3) ☐ 10th grade (4) ☐ 11th grade
   (5) ☐ 12th grade (H.S. diploma or GED) (6) ☐ technical/trade school diploma or certificate
   (7) ☐ 2 yrs of college, community college, or Associate’s degree (8) ☐ 4 yrs of college or Bachelor’s degree
   (9) ☐ advanced degree, specify ________________________________
   (10) ☐ other, please specify ________________________________

21. Are you currently a student? (1) ☐ Yes, part-time (2) ☐ Yes, full-time (3) ☐ No

22. Are you currently employed? (1) ☐ Yes, part-time (2) ☐ Yes, full-time (3) ☐ No

23. If yes, what is your job? ________________________________

24a. What is your approximate yearly household income before taxes?
   (include child support received, if that applies to you)
   (1) ☐ less than $10,000 (2) ☐ $10,000 – $20,000 (3) ☐ $20,000 – $30,000
   (4) ☐ $30,000 – $40,000 (5) ☐ $40,000 – $50,000 (6) ☐ $50,000 – $60,000
   (7) ☐ $60,000 – $70,000 (8) ☐ $70,000 – $100,000 (9) ☐ $100,000-$125,000
   (10) ☐ $125,000 – $150,000 (11) ☐ $150,000 – $175,000 (12) ☐ $175,000 more

24b. Does your child get free lunches at school?
   (1) ☐ Yes (2) ☐ No, child not eligible (3) ☐ No, but child is eligible
APPENDIX B

TEACHER DEMOGRAPHIC FORM
TEACHER BACKGROUND INFORMATION FORM

1. Gender: (1) □ female (2) □ male

2. Your age today: ______________

3. Grade currently taught in school: (1) □ 3rd (2) □ 4th (3) □ 5th (4) □ 6th

4. Total number of years taught:
   (1) □ Less than 1 year (2) □ 1-2 years (3) □ 2-5 years
   (4) □ 5-10 years (5) □ 10-20 years (6) □ 20 years or more

5. How would you describe your ethnic-racial background?
   (1) □ Asian-American (2) □ Black (African-American) (3) □ Caucasian (White)
      If Spanish/Hispanic/Latino then please specify below:
      (4) □ Mexican, Mexican American, Chicano (5) □ Puerto Rican (6) □ Cuban (7) □ other__________
      (8) □ Arab (please specify country)_______________
      (9) □ Native American
      (10) □ Biracial (please specify)____________________________________________________
      (11) □ Pacific Islander (please specify)________________________________________________
      (12) □ Unknown or Other (please specify)______________________________________________

6. Primary language: (1) □ English (2) □ Spanish (3) □ Both English & Spanish Fluency
   (4) □ Other:__________________________
APPENDIX C

STUDENT BACKGROUND INFORMATION FORM: TEACHER
1. The participating child is a:  
   (1) ☐ girl  (2) ☐ boy

2. In terms of overall academic achievement, how does this child compare to the other students in his or her grade?
   (1) ☐ Bottom third  (2) ☐ Middle third  (3) ☐ Top third

3. Does this child receive special education services at school?
   (1) ☐ Yes  (2) ☐ No  (Please specify) ____________________________________________________________________

4. How would you describe this child’s ethnic-racial background?
   (1) ☐ Asian-American  (2) ☐ Black (African-American)  (3) ☐ Caucasian (White)  
   (4) ☐ Mexican, Mexican American, Chicano  (5) ☐ Puerto Rican  (6) ☐ Cuban  
   (7) ☐ Other (Spanish/Hispanic/Latino) ____________________________________________________________________
   (8) ☐ Arab (please specify country) ________________  (9) ☐ Native American  
   (10) ☐ Biracial (please specify) ________________  
   (11) ☐ Pacific Islander (please specify) ________________  
   (12) ☐ Unknown or Other (please specify) ____________________________________________________________________

5. Does child participate in a free school lunch program?
   (1) ☐ Yes  (2) ☐ No, not eligible  (3) ☐ No, but eligible
APPENDIX D

TEACHER CONSENT FORM
Teacher Name _______________________________________

Date:_________

Title of Study: Social Behavior Among 3rd-6th graders

Principal Investigator: Patricia Kaminski, Ph.D.

Co-Investigator(s): Amy Svoboda, M.A.; Angela Brett, B.A.

Superintendent and School Principals:
_______________________Susan Simpson-Laskoskie, Ph.D. Superintendent
_______________________Audrey Arnold, Principal, Tannahill Intermediate
_______________________Ronda Wright, Principal, Blue Haze Elementary
_______________________Frank Molinar, Principal, Liberty Elementary
_______________________Paula Hope, Principal, North Elementary
_______________________Lee Stewart, Ed.D., Principal, West Elementary

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the proposed procedures. It describes the procedures, benefits, risks, and discomforts of the study. It also describes your right to withdraw from the study at any time. It is important for you to understand that no guarantees or assurances can be made as to the results of the study.

Start Date of Study 01/01/2004
End Date of Study 08/01/2005

Purpose of the Study
The quality of children’s relationships with other students affects their mental health and school performance. For example, research has shown that children who are rejected by other kids often experience loneliness, low self-esteem, social anxiety, and they are at later risk for dropping out of school. Therefore, educators and parents need to promote positive social relationships early in childhood. We are conducting a study of social behavior in children and we need your help. Specifically, we are interested in learning more about different types of aggressive behavior and understanding which children are aggressive. Studying children in public schools is an important way of getting this information.

The study will be conducted in Spring 2004. Participation will require about 70 minutes of each teacher’s time. Students will participate in an activity at school that should take about 30 minutes of class time to complete. Parents will also complete three brief surveys and a demographic questionnaire that require about 45 minutes of a parent’s time.

Description of the Study
For each participating student, teachers will complete one brief survey (18 items) measuring attentional abilities, an additional brief survey (17 items) about each
participating student’s social behavior (particularly aggressive behavior), and a brief demographic form about the student. In addition, each teacher will complete one teacher demographic form about their teaching experience and basic information such as gender and age. The estimated total time required for teachers to complete all surveys is approximately 70 minutes; however, the surveys can be completed at the teachers’ convenience and do not have to be completed in one period of time or during class time.

Procedures to be used
Students will participate in the project at school with their classmates and will be asked to describe other children in class by identifying them on a sheet of paper according to how they act. For example, children will be asked to identify classmates who “ignore others,” “do nice things for others”, “hit others,” and “spread rumors about others.” A UNT research team will administer the procedure. The students will also complete a brief measure assessing thoughts, feelings, and behaviors associated with depression, although no items regarding self-hate and/or suicide will be included. In addition, measures will be sent home with students for parents to complete. Specifically, parents will answer a set of written questions to provide background information for the child and complete three short surveys about their child’s behavior.

Description of the foreseeable risks
There are no foreseeable risks associated with participation in this study. Dozens of other researchers have done similar studies using these procedures. There is a chance that some students may feel uncomfortable during the class activity when they are asked to identify their classmates according to several characteristics (for example: “insults others,” “cheers up others,” etc.) However, we have taken several steps to minimize this potential discomfort. Specifically, students will be provided with a piece of colored paper and instructed to use it as a “cover sheet” so that others will not see their answers during the activity. Children will not write the names of other kids - instead, each child will have a code number that will be used. Students will also be instructed not to discuss their responses with other classmates; however, they will be encouraged to discuss the activity with their parents at home. After the activity has been completed, a brief, fun group activity for the entire class will be conducted to distract students.

Benefits to the subjects or others
The information gathered in this research will help us learn more about social and aggressive behavior in children. This information will help counselors and teachers in the future identify children who are at-risk for becoming aggressive and intervene earlier to promote positive peer relationships. To thank you for being in this project, the research team will be working with school officials and will participate in staff development in August of 2004. Group results of the study will be discussed as well as strategies for intervening with targeted behaviors. As a benefit for school participation in the present study, all students will receive pencils and stickers, and a pizza party for the class from each campus with the most participants will be held. Finally, the research team and WS-ISD administrators will organize a “Town Hall” meeting in May 2004 for parents which will include child professionals from various fields to discuss and address issues raised by the study and parenting issues in general.
Procedures for Maintaining Confidentiality of Research Records
Every effort will be made to maintain the confidentiality of the names and survey answers of all participants. All records (surveys and our copy of this form) will be kept in a locked file cabinet in a locked room at UNT. More importantly, parents, students, and teachers will not write their name or the child’s name on any of the forms they complete. We will assign random code numbers to each child, and participants will use a code number, rather than a child’s name, when completing all materials.

Review for the Protection of Participants
This research study has been reviewed and approved by the UNT Committee for the protection of Human Subjects. The Committee can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.

Research Subject’s Rights
I have read or have had read to me all of the above. In their meeting, the school principal and investigators explained the study to me and answered all of my questions. I have been told the risks and/or discomforts as well as the possible benefits of the study. I understand that I do not have to take part in this study and my refusal to participate or my decision to withdraw will involve no penalty or loss of benefits, rights, or legal recourse to which I am entitled. The study personnel may choose to stop my participation at any time.

In case problems or questions arise, I have been told I can contact Amy Svoboda, (Doctoral Student, Department of Psychology, University of North Texas) at (817) 999-0861 or Patricia Kaminski, Ph.D., (Assistant Professor, Department of Psychology, University of North Texas) at telephone number (940) 565-2650. In addition, I may leave a message for either of them at (817) 267-3731 x 8993, which is a metro number. I can also e-mail Amy Svoboda at asvoboda@charter.net.

I understand my rights as research subject and I voluntarily consent to participate in this study. I understand what the study is about, how the study is conducted, and why it is being performed. I have been told I will receive a signed copy of this consent form.

_____________________________________  _______________
Signature of Teacher Date

_____________________________________  _______________
Signature of Witness (any other adult) Date

For the Investigator or Designee:
I certify that I have reviewed the contents of this form with the subject signing above. I have explained the known benefits and risks of the research. It is my opinion that the subject understood the explanation.

_____________________________________  _______________
Signature of Principal Investigator or Designee Date
APPENDIX E

INTRODUCTORY LETTER TO PARENTS
Dear Parent(s):

We, UNT and WSISD, are asking you and your child to help us learn more about children’s friendships. We know that problems with friends affect how children feel and how they do in school, and we need your help to figure out ways that teachers and parents can help their children. Studying typical children in public schools is a very important way of getting this information.

This page will help you through the steps of our project. First, you will be asked to decide if you and your child would like to help, and then you will tell you about the other forms. Completing all the forms will take about an hour or less of your time; you can do a little at a time if you prefer.

Step 1- “Your” Consent forms-

☐ Stapled to this page are copies of the consent and assent forms marked “Yours.”
   They are for you to keep for your records.

Step 2- “Our” Consent forms- The next set of papers clipped together include the consent and assent forms that we need you to return to us. They are labeled “Ours.”

☐ Consent form
   ☐ Read through the form titled Research Consent Form For Parents.
   ☐ Decide if you are able to help us with our project.
   ☐ If you agree to help, sign your name on page 3.

☐ Assent form
   ☐ Read the form title Research Assent Form For Children to your child
   ☐ If your child agrees to participate, have him or her write their name.
   ☐ Then please fill in his/her name, sign your name, and date the form.

☐ Fold the signed Research Consent Form for Parents and the Research Assent Form for Children labeled “Ours” and place them in the white envelope that was clipped to them.

☐ Seal the white envelope and place it into the largest envelope (the envelope that you received the forms in) that will be returned to your child’s classroom.

Step 3- Raffle entry- one form with envelope attached

☐ If you wish to enter into the raffle for an Italian dinner for two, please fill out your contact information.

☐ If you agree to be contacted again in the future to help us, please check the box. We really need your help later as well as now. And, next time we hope to be able to pay all our parents, kids, and teachers for their time.
Please give us a ‘contact person’ that could help us get in touch with you (if you happen to move in the next few years). This could be a relative or a close friend.

Fold the form and place it into the colored envelope that was clipped to the form.

Seal the colored envelope and place it into largest envelope, the one that will be returned to your child’s classroom.

Step 4- Forms about you and your child- **Stapled packet**

Please decide which language you feel most comfortable with read and filling out the forms. Each of the forms on white paper is written in Spanish on one side and English on the other. There are two blue pages only complete the one that is written in the language that you have chosen.

Complete each form starting with the form that is stapled on top. It is important that forms are completed in the order they are stapled.

After completing the forms, fold them in half and put them into the brown envelope that was clipped to them.

Place the sealed brown envelope and place it into the largest envelope, the one that will be returned to your child’s classroom.

Step 5- Returning Forms

Please seal the large envelope and have your child return it to the ‘parent forms box’ in his or her classroom.

Thank you for helping with this project. We believe there is important information that can be learned from you and your child. If you have any questions about this project, contact Amy Svoboda at (817) 999-0861 or e-mail asvoboda@charter.net or Dr. Patricia Kaminski at (940) 565-2650.

Respectfully,

_________________________              ________________________
Patricia Kaminski, Ph.D.                                                       Amy Svoboda, M.A.
Assistant Professor                          Doctoral Candidate
Department of Psychology
University of North Texas

_________________________                                            _________________________
Angela Brett, B.A.                                                        Kimberly Barton, M.S.
School Psychology Intern              Doctoral Candidate

******************************************************************************
IF YOU DO NOT WISH TO PARTICIPATE IN THIS STUDY, PLEASE HAVE YOUR CHILD RETURN ALL MATERIALS TO HIS OR HER TEACHER (SO THAT WE CAN REUSE THIS PACKET AT ANOTHER SCHOOL).
******************************************************************************
APPENDIX F

PARENTAL CONSENT FORM
Title of Study: Social Behavior among 3\textsuperscript{rd}-6\textsuperscript{th} graders
Principal Investigator: Patricia L. Kaminski, Ph.D.
Co-Investigator(s): Amy Svoboda, M.A., Kimberly Barton, M.S., and Angela Brett, B.A.
This study described below has been approved by the White Settlement ISD Superintendent and School Principals:

_______________________Susan Simpson-Laskoskie, Ph.D. Superintendent
_______________________Audrey Arnold, Principal, Tannahill Intermediate
_______________________Ronda Wright, Principal, Blue Haze Elementary
_______________________Frank Molinar, Principal, Liberty Elementary
_______________________Paula Hope, Principal, North Elementary
_______________________Lee Stewart, Ed.D., Principal, West Elementary

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the proposed procedures. It describes the procedures, benefits, risks, and discomforts of the study. It also describes your right to withdraw from the study at any time. It is important for you to understand that no guarantees or assurances can be made as to the results of the study.

Start Date of Study
01/01/2004

End Date of Study
08/01/2005

Purpose of the Study
The quality of children’s relationships with other students affects their mental health and school performance. For example, research has shown that children who are rejected by other kids often experience loneliness, low self-esteem, social anxiety, and they are at later risk for dropping out of school. Therefore, parents and educators need to promote positive social relationships early in childhood. We are conducting a study of social behavior in children and we need your help. Specifically, we are interested in learning more about different types of social behavior and understanding which children demonstrate various behaviors. Studying typical children in public schools is an important way of getting this information.

The study will be conducted in Spring 2004. Participation will require about 45 minutes of a parent’s time. The child will participate in an activity at school that should take about 30 minutes of class time to complete.
Description of the Study
Parents will complete three short surveys with questions about their child’s thoughts, feelings, and behaviors. In addition, parents will answer a set of written questions to provide background information for the child (for example: age, grade, gender, ethnicity, and marital status of parents).

Procedures to be used
The child will participate in the project at school with his/her classmates and will be asked to describe other children in class by identifying them by number on a sheet of paper according to how they act. For example, children will be asked to identify classmates who “ignore others,” “do nice things for others,” “hit others,” and “spread rumors about others.” The child will also complete a brief survey about their own thoughts, feelings, and behavior. In addition, your child’s teacher will complete a short survey on your child’s social behaviors and another survey measuring classroom/learning behaviors of your child.

Description of the foreseeable risks
There are no foreseeable risks associated with participation in this study. Dozens of other researchers have done similar studies using these procedures. There is a chance that some students may feel uncomfortable during the class activity when they are asked to identify their classmates according to several characteristics (for example: “insults others,” “cheers up others,” etc.). However, we have taken several steps to minimize this potential discomfort. Specifically, students will be provided with a piece of colored paper and instructed to use it as a “cover sheet” so that others will not see their answers during the activity. Children will not write the names of other kids – instead, each child will have a code number that will be used. Students will also be instructed not to discuss their responses with other classmates; however, they will be encouraged to discuss the activity with their parents at home. After the activity has been completed, a brief, fun group activity will be conducted to distract students.

Benefits to the subjects or others
The information gathered in this research will help us learn more about social behavior in children. This information will help counselors and teachers in the future identify children who are at-risk for social problems and intervene earlier to promote positive peer relationships. To thank you for being in this project, all parents who participate will be entered in a drawing for dinner for two at a local restaurant. Furthermore, a Town Hall meeting will be organized by the researchers and school administrators. You will be invited to listen to and ask questions of a panel of child professionals discussing issues addressed in this study and parenting issues in general. As a benefit for their participation in the present study, all students will receive pencils and stickers. One class from each school will receive a Pizza Party for their class. Additionally, teacher in-service meetings will be held to discuss the study and educate teachers regarding how to prevent and deal with relationship problems among schoolmates.

Procedures for Maintaining Confidentiality of Research Records
Every effort will be made to maintain the confidentiality of the names and survey answers of all participants. All records (surveys and our copy of this form) will be kept in a locked file cabinet in a locked room at UNT. More importantly, parents, students,
and teachers will not write their name or the child’s name on any of the forms they complete. We will assign random code numbers to each child, and participants will use a code number, rather than a child’s name, when completing all materials.

**Review for the Protection of Participants**
This research study has been reviewed and approved by the UNT Committee for the Protection of Human Subjects. The Committee can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.

**Research Subject's Rights**
I have read or have had read to me all of the above.

In their letter and in this consent form, Patricia Kaminski, Amy Svoboda, and Angela Brett have explained the study to me. I have been told the risks and/or discomforts as well as the possible benefits of the study.

I understand that my child and I do not have to take part in this study and our refusal to participate or our decision to withdraw will involve no penalty or loss of rights, benefits, or legal recourse to which we are entitled. The study personnel may choose to stop our participation at any time.

In case problems or questions arise, I have been told I can contact Amy Svoboda at telephone number (817) 999-0861 or Patricia Kaminski at telephone number (940) 565-2650. In addition, I may leave a message for either of them at (817) 267-3731 x 8993, which is a metro number. I can also e-mail Amy Svoboda at asvoboda@charter.net. I understand my rights and the rights of my child as research subjects, and I voluntarily consent to my child’s and my participation in this study. I understand what the study is about, how the study is conducted, and why it is being performed. I have been told I will keep 1 signed copy of this consent form.

__________________________  ____________
Signature of Parent  Date

__________________________  ____________
Signature of Witness (any other adult)  Date

**For the Investigator or Designee:**
I certify that I have reviewed the contents of this form with the subject signing above. I have explained the known benefits and risks of the research. It is my opinion that the subject understood the explanation.

__________________________  ____________
Signature of Principal Investigator or Designe  Date
APPENDIX G

CHILD ASSENT FORM
Title of Study: Social Behavior Among 3rd-6th graders
Principal Investigator: Patricia L. Kaminski, Ph.D.
Co-Investigator(s): Amy Svoboda, M.A., Kimberly Barton, M.S., and Angela Brett, B.A.

Superintendent and School Principals:

_______________________ Susan Simpson-Laskoskie, Ph.D. Superintendent
_______________________ Audrey Arnold, Principal, Tannahill Intermediate
_______________________ Ronda Wright, Principal, Blue Haze Elementary
_______________________ Frank Molinar, Principal, Liberty Elementary
_______________________ Paula Hope, Principal, North Elementary
_______________________ Lee Stewart, Ed.D., Principal, West Elementary

Parents, if you have signed the parental consent form so that your child can participate in this study, but decide to give your child the choice of participating or not, please complete only Part A below. If you chose for your child to participate and decide they could not make a reasonable choice for themselves, please complete only Part B below.

Part A. Parents, please read the following to your child:

“You have agreed to be in a project about how children your age act toward other children. You can decide whether or not you want to help, too. All the other kids in your class will have to decide, too. During a class activity at school, you will answer questions about the other students in your class and yourself. You do not have to help if you do not want to, and you can stop being in the project any time you want and no one will get mad at you. Your name will not be used, and the researcher will not tell anyone what you wrote because it is private. You will keep your answers private, too. But, you can ask me or your teacher if you have any questions.”

Wait for child’s response. If your child says that he/she wants to participate or nods their head in agreement, point to the appropriate spot below and say, “OK. To show that you said ‘yes’ I need you to write your name here.” Point to the bold line below. After child writes his or her name, complete the remainder of the Assent of Child. If your child does not want to participate, you may withdraw your parental consent or, if appropriate, complete Part B below.
Assent of Child

______________________________________________________
Child writes his or her name here

My child, named _________________, but writing his or her name above has agreed to participate in the Social Behavior Among 3rd-6th graders study.

______________________________________                   Date: __________
Signature of Parent or Guardian

Part B.

Waiver of Child Assent

My child, named __________________, will not be signing an Assent for the following reason(s):

_____ Age
_____ Maturity
_____ Psychological State of the Child

Therefore, as their parent or guardian, I am assenting to their participation on their behalf.

______________________________________________________
Signature of Parent or Guardian                   Date
APPENDIX H

DEBRIEFING STATEMENT
Debriefing Statement

Dear Research Participant:

Thank you for your participation in our study! Our aim is to learn more about different types of aggressive behavior and understand which children are aggressive. Our results should have uses in many areas, including social skills programs for children and studying behavior disorders of childhood.

We hope that participating in the class activity was not too stressful for your child. Sometimes, however, a child might feel uncomfortable describing his/her classmates. In addition, while completing the questionnaires about your child, you may have identified some behavioral or emotional difficulties your child is experiencing. If you would like to talk to someone about the research project or your child’s behavior, we are available to answer your questions about the research project and we can help you get an appointment with a mental health professional if needed. You may contact us by phone at 940-369-8993 (metro: 817-267-3731 x 8993) or by e-mail at amy.svoboda@att.net.

There are many other places for parents, children, and families to get help in the Metroplex that you can contact on your own. In addition to talking to your child’s school counselor or physician, you can check your local Yellow Pages under “Psychotherapists” or “Psychologists.” For your convenience, the following is a list of the names and phone numbers of several agencies that offer counseling and other services to families. (For additional information about these or other agencies, call the United Way’s Information and Referral Helpline at 1-800-548-1873).

CONTACT Counseling and Crisis Line – offers free 24-hour immediate, confidential telephone counseling, crisis prevention and intervention, and information and referral [972-233-2233]

Child and Family Guidance Centers (Dallas & Lewisville) – offers individual, family, and group psychotherapy and medication therapy for children and adolescents under the age of 18 with emotional problems; fees set according to income level [214-351-3490]

PRIMA Attention Deficit Disorder Center (Dallas) – offers evaluation, diagnosis, and intervention for children and adults with attention difficulties [972-386-8599]

UNT Psychology Clinic (Denton) – offers individual, marital, family assessment and therapy for all ages with fees set according to income level [940-565-2631]

Youth and Family Counseling (Flower Mound) – offers counseling programs for youth and their parents with fees set according to income level [972-724-2005]

The results of our study will be available to your school in the future. Thanks again for participating in this important research project.

Sincerely,
Patricia Kaminski, Ph.D. Amy K. Svoboda, M.A. Kimberly A Barton, M.S.
REFERENCES


