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Social Skill Production, Emotional Intensity and Anxiety in Attention Deficit
Disordered and Learning Disabled Children

BY

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Abstract

This study explored the experience of affect intensity, anxiety and social strategy generation to a structured Social Knowledge Interview within a sample of Attention Deficit Hyperactivity Disordered (ADHD) and Learning Disabled (LD) children. From a pool of 28, nine to sixteen-year-old students, 15 ADHD and 13 LD only diagnosed subjects were identified. The subjects completed the Revised Children's Manifest Anxiety Scale, Affect Intensity Measure and participated in an interview asking them to provide social strategies to 16 illustrated problematic social interactions. ADHD children suggested social strategies at a rate equal to, and that were judged as friendly and as relationship enhancing as their LD peers. The two groups did not differ in their anxiety or affect intensity scores. Results are discussed in the context of needing to subtype the heterogeneous LD population in order to facilitate more accurate descriptions of social skill deficits.

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Social Skill Production, Emotional Intensity, and Anxiety in Attention Deficit Disordered and Learning Disabled Children

The study of social skills, or specific social behaviours that predict important and positive social outcomes (Gresham, 1992), has been examined for decades by social scientists. Scientific interest in children's relationships has been guided by the widely accepted hypothesis that social groups have significant impacts on the social, emotional and psychological development of children (Ladd, 1999). Consequently, the social maladjustment of children has also received intense study over the years (Ladd, 1999). It has been well documented that children with social skill deficits are at an increased risk of peer rejection, juvenile delinquency, substance abuse, depression, poor academic achievement and increasing cognitive and emotional problems later in life (Bates, Bayles, Bennett, Ridge & Brown, 1991; Henker & Whalen, 1989; Weiss & Hechtman, 1993). These findings emphasize the need to assist children who have social skill deficits in an attempt to prevent or minimize their risk of later maladjustment difficulties. Attention Deficit Hyperactivity Disordered (ADHD) and Learning Disabled (LD) populations have frequently been identified as being at risk for social skill deficits.

ADHD has been defined in the literature as a genetically inherited, biologically based temperament style that predisposes youngsters to be inattentive, impulsive, and physically restless, as well as, deficient in their capacity for rule governed behaviour (Anastopoulos, DuPaul, & Barkley, 1991; Hynd, Hern, Voeller, & Marshall, 1991). Children diagnosed with ADHD are at risk for a number of difficulties such as academic underachievement, low self - esteem, conduct problems, negative interactions

with parents, teachers and peers (Weiss & Hechtman, 1993) and peer rejection (DeHaas & Young, 1986). As ADHD children develop they are also at increased risk of more severe difficulties such as antisocial behaviour, conduct disorder, substance abuse, delinquency, and depression (Henker & Whalen, 1989; Weiss, & Hechtman, 1993). A great deal of effort has gone toward the development of social skills training programs to assist ADHD children.

It is estimated that between 60 and 90% of all ADHD children receive some form of psychopharmacological treatment, commonly methylphenidate (Barabasz & Barabasz, 1996; Landau & Moore, 1991). Stimulant medications appear to reduce the aversive nature of ADHD children's social interactions with peers but do little to improve the frequency of their prosocial initiations. To date there is little evidence that decreasing a child's aversive or negative characteristics leads to an increase in that child's popularity and social status. Therefore, medication alone is not sufficient to treat the social problems experienced by ADHD children (Landau & Moore, 1991). Behavioral and cognitive interventions have also been used to treat social skills deficits in ADHD children. While behaviour modification programs coupled with medication use have reported some success in improving peer acceptance the improvements have not returned them to "normal" levels of acceptance, nor have they been long lasting or shown to generalize across a wide range of social settings (Abikoff, 1991; Abikoff, 1987; Pelham & Bender, 1982; Whalen, Henker & Hinshaw, 1985). There are several factors generally thought to contribute to the lack of success for these interventions: a) enhanced self - control and improved problem solving behaviours that lead to decreased impulsivity and increased reflective behaviours, are not directly related to interpersonal success, b) current interventions may be too specific in focus and do not generalize to a wide range of social situations easily, c) researchers have pointed to the need to isolate

specific causal mechanisms across different environments that are responsible for social difficulties (Kendall, 1993; Landau & Moore, 1991), d) others have suggested the need to study the dynamics of social exchanges and then design intervention strategies / techniques to address each stage of the interaction process (Clark, Cheyne, Cunningham, & Siegel, 1988; Landau & Milich, 1988), e) third factor variables, such as emotionality, may be blocking or inhibiting the production of known social skills (Wheeler & Carlson, 1994). The negative, long-term, developmental outcomes associated with rejected children indicates a need to improve the success of social skill interventions for ADHD children.

The literature exploring Learning Disabilities (LD) has been less clear regarding the existence of social skill deficits in LD children. Learning Disability has been defined as a generic term referring to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning or mathematical abilities (Riccio, Gonzalez, & Hynd, 1994). It is a commonly held belief that most children with LD are less accepted and experience more peer rejection than their normal peers (Dudley-Marling & Edmiaston, 1985; Vaughn & La Greca, 1992). However, studies comparing LD, low academic achievement and high academic achievement groups have revealed equivocal results (Burusk, 1989; La Greca & Stone, 1990; Vaughn & Haager, 1994). This suggests a need to categorize the heterogeneous LD population into more specific subtypes, particularly when examining social skill deficits.

Gresham (1992), summarized a meta – analytic review of the LD and social skills literature by Swanson and Malone (1992) showing that approximately 23% of

children with LD are as well accepted as children without LD. A similar number of LD children are not socially rejected at all. Approximately 22% of LD children display the same level of negative peer interactions as normal children and 33% of LD children display the same level of aggressive behaviour as children without LD. Gresham suggests that peer acceptance problems and LD may co-occur with specific learning disabilities and not with others. He posits that some of the confusion in the LD social skill findings may result from the co – existence of LD and other disorders such as ADHD. In their article, San Miguel, Forness and Kavale (1996) conclude that differences found in social skills ratings between LD and non-LD samples may be due to extreme scores of LD children who are co-diagnosed with psychiatric disorders like depression or ADHD. They posit that social skill deficits displayed by some subsets of the LD population appear to mimic the symptom patterns found for children with ADHD. This suggests that social skill deficits of some LD children may be the result of other diagnoses and not the result of LD itself (Lopez, Forness, MacMillan, Bocian, & Gresham, 1996). The categorization of subtypes in LD populations is not yet widely accepted, but there is a growing body of evidence supporting the existence of a genetic basis for specific learning disabilities (Bishop, North & Dolan, 1995; DeFries, Filipek, Fulker, Olson, Pennington, Smith, & Wise, 1997; DeFries & Gillis, 1993). These findings support the need to further examine how subtypes of LD relate to social skill abilities. It may be important to sub divide LD and ADHD populations in order to tailor specific social skill interventions for each group. This is significant given current

social skill development models that suggest differing causal processes may interfere with the production or performance of social skills for any given population.

Gresham's (1988) model of social skills, as outlined by Wheeler and Carlson (1994), breaks the concept of social skills deficits into four different deficiency types: skill deficits, performance deficits, self - control skill deficits and self control performance deficits. Children with skill deficits do not possess or have the knowledge of particular social skills in their behavioural repertoires. Performance deficiated children possess the knowledge of social skills but fail to perform them at an acceptable level. Gresham postulates that children with self – control skill deficits and self - control performance deficits are affected by a mediating or interfering response that inhibits control or performance. For example, anxiety may prevent children with self - control deficits from learning social interaction skills while impulsivity may inhibit the performance of appropriate social skills for children with performance deficits.

Of importance is the idea that the performance of social skills can be affected by some interfering or blocking response that inhibits the acquisition or performance of a particular skill. The interference or block may be cognitive - verbal, overt - motoric or physiological - emotional in nature (Nelson & Hayes, 1979; cited in Gresham, 1988). The existence of blocking mechanisms may explain why traditional social skill interventions have failed to live up to their potential. Gresham's theory would suggest that until these blocks are eliminated it will be extremely difficult for a child to learn or perform new and appropriate social behaviours (Gresham, 1988).

Research exploring ADHD children's social competence (defined as a judgement based on a set of criteria about a person's performance of a social task (Gresham, 1992)) and social skills has indicated that ADHD children do not differ, in comparison to their normal peers, on social cognitive measures (Henker & Whalen, 1989). However, ADHD children do appear have deficits in social skill performance or production (Clarke, Cheyne, Cunningham & Siegel, 1988; Landau & Moore, 1991; Wheeler & Carlson, 1994). Clarke et al. (1988) conclude that ADHD children appear to possess adequate knowledge of social skills but appear to have an inability to perform or translate this knowledge into appropriate behavioural outputs that are necessary for effective social interactions.

Due to the heterogeneity of the LD population it is much less clear where LD children may be experiencing difficulty with their social skills. For some subsets of the population it may be a cognitive deficit that prevents them from learning or committing to long term memory effective social skills. For others, it may be language or communication deficits that interfere with their production of social skills. For another group they may display the coexistence of emotional / behaviour disorders that block the production of social skills (San Miguel, Forness, & Kavale, 1996). This is illustrated by Swanson and Malone's (1992) meta – analysis where a significant portion of the LD population did not experience any deficits in their social skills at all. It seems imperative that researchers further explore the relationship between LD subtypes and social skill deficits.

Given the high rate of co - morbid diagnoses between LD and ADHD and the confusion surrounding LD children's social skill abilities, these groups need to be examined in an effort to explore possible differences in their social skill abilities. This type of research could provide information regarding the need for subtypes of LD in social skills research. Further, in order to improve the effectiveness of social skill interventions it may become necessary to tailor interventions to address the specific interfering or blocking mechanisms found in the different subtypes of LD.

It is widely thought that ADHD children experience a social skill performance deficit. There is a growing body of literature that supports the idea that subtypes of the LD population exist and some subtypes experience social skill deficits that mimic ADHD deficits. The origin and nature of these deficits has not yet been clearly delineated. However, there is some suggestion that the existence of co-morbid disorders such as ADHD within the LD population may be responsible for some of the deficits displayed by LD children. It would seem important to conduct studies that examine LD children without ADHD and ADHD/LD children, comparing them on their social skill ability. It would also be valuable to examine these groups for potential interfering mechanisms that might reduce social skill abilities.

Most research exploring cognitive processing has examined emotion - free, rational cognitive thought (Cates, Shontz, Fowler, Vavak, Dell'Oliver, Yoshinobu, 1996) and ignored the role of emotions and arousal on cognitive processes. Research by Vitaro and Pelletier (1991) has demonstrated the inhibitory impact of emotional arousal on the performance of social skills. Their findings suggest that emotional

arousal blocks the performance of known social skills and produces a performance deficit in maladjusted children. The performance deficits found in Vitaro and Pelletier's study may be similar to the performance deficits commonly associated with ADHD children.

Dodge and his colleagues (Dodge, 1986; Dodge, Pettit, McClaskey, & Brown, 1986) have developed a social information processing model that outlines a series of "sequential steps an organism follows in order to respond efficiently to a stimulus (Dodge, 1991, pg. 160)." Dodge posits that emotional dysregulation can impair the sequential functioning of the processing steps at any point. His research lends support to the idea that emotional arousal or experiences of intense affect may interfere with the production of social skills and could lead to the appearance of a performance deficit.

Anxiety has been conceptualized as an individual's response to a perceived threat and / or perceived inability to handle challenging situations (Sarason, Sarason, & Pierce, 1990). Leary (1982), described anxiety as a "cognitive – affective response characterized by physiological arousal (indicative of sympathetic nervous system activation) and apprehension regarding a potentially negative outcome that the individual perceives as impending" (p. 99). It is widely acknowledged that anxiety and self – deprecating thoughts lead to a deterioration in the performance of task relevant skills and behaviours (Sarason et al, 1990). Clarke, Cheyne, Cunningham and Siegel (1988) posited that ADHD children become trapped in a cycle of interaction attempt => rejection => frustration => aggressive out burst => further rejection, and thus are rarely able to advance beyond the initial stages of social interactions. This corrosive cycle

may induce heightened levels of anxiety for ADHD children when engaging in social interactions.

Any child who has been exposed to such a cycle, may develop feelings of anxiety about the outcome of a social interaction, leading them to focus on emotion driven situational cues. The subsequent focus on their emotion sensitive cues may lead them to make behavioural choices consistent with their state of anxiety or tension. This sets up a propensity to rely on dominant behavioural responses to potentially emotionally ambiguous situations and might explain the lack of generalization of social skill interventions. If a child's underlying anxiety regarding social interactions is not addressed it is likely that he / she would be unable to access newly acquired skills and instead would get caught up with old ineffective behaviour patterns. If differences can be shown to exist between LD only and ADHD children's experience of affect and social skills, then there may also be differences in what interferes with their display of social skills.

In summary, children who experience social skill deficits are at an increased risk of social maladjustment. Current social skill interventions seem to be relatively ineffective in their ability to remedy the long - term developmental consequences particularly for ADHD/LD children. With a growing movement toward non – medicinal interventions, it seems imperative to explore the social skill deficits of ADHD and LD children in greater detail. This study intends to investigate the social skill production differences between LD only and ADHD/LD populations. It also intends to explore the LD and ADHD populations' experience of affect intensity and

anxiety in relation to their social skill production. This will hopefully set the stage for future exploration of social skill performance deficits of ADHD and LD children.

The following chapters will review the relevant literature regarding social skill deficits, ADHD and LD. From this, a set of research questions will be drawn and explored using qualitative measures. The thesis' findings will be discussed in terms of their limitations, directions for future research and their implications for social skill intervention strategies.

Chapter Two: Literature Review

This chapter will provide a history and review of research findings concerning ADHD, LD and social skills. It will begin with a review of the literature surrounding ADHD children and the impacts of their social skill deficits. The review will explore a theory of social skill deficits as posited by Gresham (1988) and examine the relation between social skill deficits, emotional intensity, anxiety and Dodge's (1986) social information processing model. Since many of the ADHD and LD social skills studies have demonstrated similar results, and long term outcomes, a general overview of the literature concerning LD and social skill deficits will be provided. The overview of the LD literature will focus on the need to categorize the LD population and discuss the equivocal findings of past social skills studies.

Attention Deficit Hyperactivity Disorder

Attention Deficit Hyperactivity Disorder (ADHD), is the most commonly diagnosed childhood behavioural disorder. The specific diagnostic label of the disorder has changed many times since it was first described in the 1930's (Murphy & Hicks - Stewart, 1991). It has been titled: minimal brain disorder, hyperactivity, hyperkinesis, impulsivity, and attention deficit disorder with or without hyperactivity (In this review ADHD, ADHD/LD and hyperactivity are used interchangeably). Regardless of the label the essential symptoms of ADHD include developmentally inappropriate degrees of inattention, impulsivity and motor hyperactivity (Frick & Lahey, 1991). Typically, ADHD is defined as a genetically inherited (Hynd, Hen, Voeller, & Marshall, 1991), biologically based temperament style that predisposes youngsters to be inattentive,

impulsive, and physically restless, as well as, deficient in their capacity for rule governed behaviour (Anastopoulos, DuPaul, & Barkley, 1991). The disorder arises in early childhood, and is thought to be chronic throughout childhood and adulthood. Generally, diagnoses occur when children encounter structured, rule governed environments like the school setting often at about age of 6 or 7 (Barkley, 1990). Unfortunately, there is no proven treatment to remedy this condition.

Prevalence

Prevalence estimates for the disorder vary considerably ranging from as low as 1% to as high as 15% in community samples (Frick & Lahey, 1991; Whalen & Hencker, 1991). LaGreca and Quay (1984) as cited in Frick and Lahey (1991), state that ADHD diagnoses account for as many as 50% of all referrals to outpatient mental health clinics in the United States. Most authorities generally agree that ADHD afflicts approximately 3-5% of the population (American Psychiatric Association, 1994). Males are identified at a greater rate than females with ratios ranging from 4:1 to 9:1 (American Psychological Association, 1994). Recent trends are suggesting that females tend to be underdiagnosed and / or the rate of female ADHD is increasing (Barabasz & Barabasz, 1996).

Associated Outcomes of ADHD Diagnoses

Children diagnosed with ADHD are at risk for a number of difficulties such as academic underachievement, low self - esteem, conduct problems, and negative interactions with parents, teachers and peers (Weiss et al., 1993). As ADHD children develop they are also at increased risk of developing more severe symptoms such as

antisocial behaviours, conduct disorder, substance abuse, and delinquency (Henker & Whalen, 1989; Weiss, & Hechtman, 1993).

Academic Difficulties

A substantial number, 23% - 30%, of ADHD children have difficulty achieving at an academic level predicted by their age and general intelligence (Frick & Lahey, 1991). The current relationship between ADHD and academic underachievement is unclear. Frick and Lahey (1991) have suggested three hypotheses that might explain this interaction. First, the symptoms of ADHD (i.e. inattention, impulsivity and hyperactivity) may interfere with a child's learning. Second, children with learning problems may appear more inattentive and distractible and therefore they are more likely to be diagnosed with ADHD; or third, the same mechanisms which cause ADHD symptoms also place the child at risk for a cognitive processing deficit that interferes with their learning ability.

Compounding the direct academic challenges of ADHD symptoms, Weiss and Hechtman (1993) would add secondary symptoms of (a) poor motivation; (b) the accumulated dearth of what should have been (but was not) learned; and (c) mood depression. The combination of ADHD characteristics and these secondary symptoms create a cycle of failure and poor school achievement. As a result, ADHD children are likely to suffer from low self - esteem and depression. Weiss and Hechtman (1993) state that these difficulties would be expected in any population encountering repeated failures in childhood, school and social interactions. Thus, these corollary diagnoses are not unique to hyperactive children.

Co - Morbid Diagnoses

Approximately 50% of hyperactive children are diagnosed with co - morbid Conduct disorder or Oppositional Defiant disorder (Henker & Whalen, 1989; Weiss & Hechtmann, 1993). The distinctions between these disorders have largely been made based on cluster analyses, yet distinctions in practice are often very difficult to make. There has been great debate amongst researchers concerning the utility of distinct diagnoses, causing some researchers to speculate that they derive from the same etiology.

Difficult Social Interaction Styles

Difficult social interaction and relationships, with parents, siblings, teachers and peers also characterize ADHD children. The most frequently cited complaint offered by parents of ADHD children is non-compliance (Frederick & Olmi, 1994). Pelham and Bender (1982) report that 50% of all ADHD children have problems interacting with peers. Peers describe ADHD children as significantly more aggressive, disruptive, domineering, intrusive, noisy and are considered to be less liked (Frederick & Olmi, 1994; Pope, Bierman, & Mumma, 1989). ADHD children are also more apt to be rejected by their peers (DeHaas & Young, 1986). The high incidence of peer rejection met by ADHD children is significant because of the strong correlation between rejection and later, mental illness and severe maladjustment.

Rejection

Rejected children are at risk for future development of cognitive problems, juvenile delinquency, substance abuse, depression, and poor academic achievement

(Bates, Bayles, Bennett, Ridge & Brown, 1991; Henker & Whalen, 1989; Weiss & Hechtman, 1993). In a review of various studies, Barkley (1989), found that 75% of children diagnosed with ADHD later exhibited symptoms of adult depression, 23 - 45% were convicted of a crime as a juvenile, and 27% met criteria to be alcoholic. The long-term developmental consequences associated with ADHD diagnoses are not promising. It is for this reason that practitioners and researchers are seeking ways to ameliorate the effects of peer rejection in an effort to prevent or minimize the risk of later maladjustment difficulties for these children.

Social Skills

Social maladjustment difficulties encountered by ADHD children typically seem to result from improper, ineffective and inappropriate use of social skills. Grenell, Glass and Katz (1987) found that hyperactive boys had deficits in their social knowledge concerning the maintenance of relationships, handling of interpersonal conflict as well as in the performance of socially skilled behaviours. Pelham and Bender (1982) observed that normal children frequently attempt to withdraw from interactions with ADHD children. In a study conducted by Barkley (1990), it was reported that normal children perceived ADHD children to be disruptive, unpredictable and aggressive, and they in turn tended to respond to ADHD children with aversion, criticism, rejection and sometimes counter - aggression. These conflictual and rejecting responses can be observed after only a few contacts extending over brief periods of time, 20 - 30 minutes. It is little wonder, based on the aversive and conflictual interaction styles typical of ADHD children, that their peers quickly reject them.

Studies of the social skills literature have suggested three factors commonly associated with peer rejection. They include off-task, disruptive and rule-violating behaviours (particularly in rule bound environments like a classroom), achievement deficits and aggression (Landau & Moore, 1991). ADHD children typically, exhibit all three of these factors relating to social rejection.

Social Competence

Interestingly, studies of social competence have indicated that ADHD children do not significantly differ, from their normal peers in their ability for social perspective taking or in other social cognitive measures (Henker & Whalen, 1989). Hyperactive children, in comparison to normal peers, do seem to differ in their ability to detect positive and negative behaviours of others (Whalen, Henker, & Granger, 1990). They also appear to lack knowledge concerning the maintenance of established relationships (Grenell, Glass & Katz, 1987).

Social Communication Skills

A number of studies have examined the social communication skills of ADHD children. In 1979, Whalen, Collins, McAuliffe and Vaux, conducted a study using a structured role-play game called “Space flight” that incorporated two distinct roles: Mission Control and Astronaut. Each role had exclusive task appropriate requirements: Mission Control acted as message senders, and Astronaut acted as message receivers. Whalen et al. found that the ADHD boys displayed role appropriate behaviours when playing Mission Control, but inappropriate behaviours while playing the role of Astronaut. In a similar study, Landau and Milich (1988) conducted a “TV talk show”

game where the children were asked to play the role of either Game Show Host or Guest. Consistent with previous findings, ADHD children failed to modulate their behaviours according to the role requirements. In particular, hyperactive boys tended to ask too many questions as the Guest (or Astronaut) and too few as the Host (or Mission Control). The inability of the hyperactive boys to modulate their communication styles across the differing roles also had a deleterious effect on the social communication styles of their normal peers. These findings suggest that children with ADHD do not have deficits in social skills knowledge but rather a social skills performance or production deficit (Landau & Moore, 1991; Wheeler & Carlson, 1994).

Clarke, Cheyne, Cunningham and Siegel (1988) in a study of 40 ADHD and normal boys in mixed and normal only dyads, demonstrated the inability of ADHD boys to modulate their communication style in response to changing social situations. Clarke et al. noted that while ADHD children may be cognitively aware of appropriate strategies to initiate friendships they often fail in their relationships to advance beyond the initial stages of interaction. They posit that ADHD children may experience a cycle of attempted social interaction followed by rejection that leads to frustration and subsequent aggressive behaviour. The nature of this cycle may exasperate future attempts at social interaction leading to further peer rejection.

Clarke et al.'s suggestion provides some explanation for why ADHD children, as has previously been found, seem to possess cognitive knowledge regarding the initiation of social interactions but limited knowledge regarding the maintenance of

friendships. They become trapped in a cycle of interaction attempt => rejection => frustration => aggressive out burst => further rejection, and are thus rarely able to advance beyond the initial stages of social interactions. In sum it seems that ADHD children appear to possess the appropriate knowledge of social interaction but seem to have an inability to perform or translate this knowledge into appropriate behavioural outputs necessary for effective social interactions.

Social Skill Performance deficits

Gresham's model of social skills, as outlined by Wheeler and Carlson (1994), breaks the concept of social skills deficits down into four different deficiency types: skill deficits, performance deficits, self - control skill deficits and self control performance deficits. Children with skill deficits do not possess or have the knowledge of particular social skills in their behavioural repertoires. Performance deficient children possess the knowledge of social skills but fail to perform them at an acceptable level. Gresham postulates that children with self - control deficits and self - control performance deficits are affected by a mediating or interfering response that inhibits control or performance. For example, anxiety may prevent children with self - control deficits from learning social interaction skills while impulsivity may inhibit the performance of appropriate social skills for children with performance deficits.

Of importance is the idea that performance of social skills can be affected by some interfering or blocking response that inhibits the acquisition or performance of a particular skill. The interference or block may be cognitive - verbal, overt - motoric or physiological - emotional in nature (Nelson & Hayes, 1979; cited in Gresham, 1988).

The possibility of interfering blocking mechanisms needs to be further investigated. Their existence may explain why traditional cognitive intervention techniques have failed to live up to their potential. Gresham's theory would suggest that until these blocks are eliminated it will be extremely difficult for a child to learn new and appropriate social behaviours (Gresham, 1988). The effect of emotional arousal on cognitive processes has also received little research attention from cognitive theorists. Could emotional arousal (e.g. anxiety) be a potential blocking or interfering mechanism to the performance of social skills by ADHD and / or LD children?

The Impact of Emotional Arousal on Social Skill Performance

Most research exploring cognitive processing has examined emotion - free, rational cognitive thought (Cates, Shontz, Fowler, Vavak, Dell'Oliver, Yoshinobu, 1996) and has ignored the role of emotions and arousal in social information processing. Cates et al. cite research by Vitaro and Pelletier (1991) that demonstrates the inhibitory impact of emotional arousal on the performance of social skills. Vitaro and Pelletier (1991) examined well -adjusted versus maladjusted children's solutions to actual problem solving situations and traditional hypothetical problem solving situations. They found no differences between the adjusted versus maladjusted children in their response inventories during the hypothetical problems solving stage. This indicates that these children did not differ in their knowledge of social skills. However, Vitaro and Pelletier did find significant differences between the adjusted versus maladjusted children in their performance of social skills during actual problem solving situations. Vitaro and Pelletier's findings suggest that emotional arousal may block the

performance of known social skills and produce a performance deficit in maladjusted children. The performance deficits found in Vitaro and Pelletier's study may be similar to the performance deficits commonly associated with ADHD children.

Emotions and Information Processing

Dodge and his colleagues (Dodge, 1986; Dodge, Pettit, McClaskey, & Brown, 1986) have developed a social information processing model for children that outlines a series of "sequential steps an organism follows in order to respond efficiently to a stimulus (Dodge, 1991, pg. 160)." Dodge's model discusses a series of five steps, encoding, interpretation, response search, response evaluation and enactment, through which stimulus cues are processed.

According to [Dodge's (1991)] formulation, an individual comes to a particular situation (such as an interaction with a peer who is trying to cheat a child in a game) with an aggregation of biologically determined capabilities and predispositions (intelligence, temperament, mood state, etc.) and a data base of past experiences and receives as input an array of relevant and irrelevant cues from the environment. The individual's behavioral response is a function of how he or she processes those cues. (p. 161)

Dodge posits that emotions can be regulated by cognitive processes and can also serve to regulate cognitive processing. The act of regulation can be both functional and dysfunctional depending on the behavioral choices enacted by an individual (Dodge, 1991). Dodge also suggests that emotional dysregulation can impair the sequential functioning of the five processing steps at any point. The behavioral outcomes chosen by a given child will depend on where the interference occurs in the process.

The Effect of High Arousal on Information Processing

The idea that emotional states can impact the performance of complex tasks is not new (Yerkes & Dodson, 1908) and in general, the impact of high arousal has been found to be disruptive to cognitive processing (Eysenck, 1982). Early emotion research by Easterbrook (1959), found that high arousal reduces one's ability to attend to a range of cues. The reduction in attention leads to a subsequent reduction in the collection of information that is needed to interpret and analyse a situation accurately. The shortage of alternate processing information may create a tendency to rely on dominant, automatic behavioural patterns (Zajonc, 1965). These dominant behaviours are made active in response to a limited range of triggers (cues) that short-circuit additional cognitive processing (Dodge & Frame, 1982). Support for these early findings does exist in today's literature that examines aggressive and socially rejected children's social biases (Dodge, Murphy, & Buchsbaum, 1984; Dodge & Coie, 1987; Slaby & Guerra, 1988; Nasby, Hayden & Depaulo, 1979). The bias demonstrated by the children in these studies has been linked to the attenuation of emotion specific cues and the selective disregard for other potential mediating cues. These children tend to interpret ambiguous actions by their peers as being potentially hostile and which elicits emotions such as fear, anxiety, or anger. This often causes a narrowing of attentional processing to related emotion specific cues leading to the enactment of pre-emptive dominant behavioural patterns.

Dodge and Somberg (1987), hypothesized that children who are emotionally vulnerable may be more susceptible to cognitive disruption by their emotions and

maybe less able to moderate their emotion specific processing of stimulus cues. In their study, Dodge and Somberg exposed aggressive and non – aggressive boys to a hypothetical provocation situation involving themselves and a videotaped peer. They found that under relaxed conditions there were no differences in the attributional biases of the subjects. However, when the subjects were exposed to an arousing condition, they found aggressive boys experienced a decrease in the accuracy of their interpretations and an increase in their use of a hostile attribution style in comparison to their non – aggressive peers. This demonstrates that the information processing patterns of aggressive boys are vulnerable to their emotional state and encourages their reliance on dominant behavioural response patterns.

ADHD children may exhibit similar disruptions in their information processing systems by their emotions. Research by Harnishfeger & Bjorklund (1993, 1994) has demonstrated the inability of ADHD children to inhibit highly salient responses. This interference sensitivity may be exacerbated by an experience of high emotional arousal when confronted with social situations they have learned often end in confrontations with their peers. It is plausible that a child exposed repetitively to negative social interactions may develop a dominant response set, typical to that displayed by ADHD children (e.g. Clarke et al, 1988).

Saunders and Chambers (1996), cite work by Barkley (1991) suggesting that ADHD children are poor emotion regulators and often display increased emotionality, with greater degrees of explosive, unpredictable and oppositional behaviour. Further, ADHD children tend to over – react to minor inconveniences, are easily over – aroused

in stimulating situations and have difficulty “switching gears.” This makes it difficult for them to de-escalate their emotions and behaviours when necessary. This lends further support to the idea that intense, affective states interrupt or block the social skills performance of ADHD children.

Anxiety’s Impact on Cognitive Processing

Anxiety has been conceptualized as an individual’s response to a perceived threat and / or a perceived inability to handle challenging situations (Sarason, Sarason, & Pierce, 1990). Leary (1982), described anxiety as a “cognitive – affective response characterized by physiological arousal (indicative of sympathetic nervous system activation) and apprehension regarding a potentially negative outcome that the individual perceives as impending” (p. 99). It is widely acknowledged that anxiety and self – deprecating thoughts lead to a deterioration in the performance of task relevant skills and behaviours (Sarason et al, 1990). Research by Mathews (1988), investigating the effects of anxiety on cognitive processing, supports the idea that emotion states, especially those related to threat (both actual and perceived) interfere with the performance of complex or difficult mental tasks. Emotion states promote task irrelevant processing by stimulating the individual to be more receptive to cues and information related to their emotion - state. The process of attending to extraneous emotion triggered cues uses up potential cognitive resources that normally might be applied to more relevant tasks. Dodge (1991) cites research by Clark, Milberg and Erber (1984) demonstrating that arousal increases the availability of cognitions that are consistent with that level of arousal. If an ADHD child was feeling anxious about the

outcome of a social interaction, they may attend to situational cues and make behavioural choices consistent with their state of anxiety or tension. This sets up a propensity to rely on dominant behavioural responses to potentially emotional ambiguous situations.

Anxiety and the ADHD Child

Given the negative, cyclical social interaction patterns experienced by ADHD children it is plausible that they may perceive social situations as threatening. Over time, repeated social failures may leave them feeling inadequate to handle social interactions acceptably, leading to an experience of high anxiety that interferes with their ability to perform complex social interactions. Thus an examination of ADHD children's experience of intense affect-states (particularly anxiety) may increase our awareness of potential mechanisms that interfere with the performance of social skills.

Learning Disabilities and Social Skill Deficits

A review of the literature surrounding children with learning disabilities and social skills has indicated a divergence in the conclusions found by researchers. Commonly, it is thought that LD children are more disruptive, less co-operative, more insensitive, less tactful (Pearl, Donahue, & Bryan 1985), and appear to engage in more attention seeking behaviour (Perlmutter, 1983) than their peers without disabilities. LD children have also been characterized as being less attentive, more active, more aggressive and more disruptive than their peers (Gresham & Reschly, 1986; Perlmutter, 1983). Subsequently, it has been found that LD children are at increased risk of peer

rejection and consequent long - term social maladjustment difficulties (Parker & Asher, 1987).

Divergent Social Skill Findings and LD

The divergent findings were clearly illustrated in a meta – analysis by Swanson and Malone (1992). In their analysis they cited studies both reporting a social skill deficit in LD children (e.g. Bryan, 1991; Gresham & Reschly, 1986) and other studies reporting no deficiency in the social skills of LD children (e.g., Boucher, 1984; Horowitz, 1981; Perlmutter, 1983; Sater & French, 1989). Swanson and Malone cited one study by Perlmutter (1983) which indicated that children with learning disabilities in his sample were among the most popular students in the classroom. Further investigations have found similarly confusing results.

Gresham (1992), in a review of Swanson and Malone's (1992) meta – analysis, found that approximately 23% of children with LD are as well accepted as children without LD. A similar number of LD children are not socially rejected. Approximately 22% of LD children display the same level of negative peer interactions as normal children and 31% of LD children display the same level of aggressive behaviour as children without LD. Approximately 16% of LD children display comparable levels of mature behaviours as children without LD. 19% of LD children show no personality problems. Based on these findings, Gresham suggests that peer acceptance problems and LD may co -occur with specific learning disabilities and not appear with others. He posits that some of the confusion in LD and social skill research may result from the co – existence of LD and other disorders such as ADHD. The divergence of these

findings has sparked debate amongst researchers as to the origin of the apparent social skill deficiencies commonly found amongst the LD population.

Some researchers have posited a correlation between academic achievement and social skill deficits in children. A study by Coie (1985) found a .20 to .40 correlation between social standing and academic performance, leading some researchers to suggest that it is erroneous to assume that IQ predicts social standing (Bryan, 1989). These findings suggest that many children who have academic difficulties do not exhibit social skill problems and conversely those with social skill deficits do not necessarily exhibit academic difficulties (Gresham, 1992). Adding more confusion are the equivocal results found in studies comparing LD, low academically achieving (LA) and high academically achieving (HA) students (Burusk, 1989; La Greca & Stone, 1990; Vaughn & Haager, 1994). They have found little difference between LA and LD students when compared on ratings of social competence and acceptance. The factors involved in mitigating the social competence ratings of some LD students who have significant academic achievement difficulties have yet to be identified (Gresham, 1992).

Subtypes in the LD Population

In their recent article, San Miguel, Forness and Kavale (1996) discuss the value of using various subtypes to classify the LD population. The argument for subtyping seems to have grown from an awareness of the confounding effects of heterogeneity in past LD studies. Researchers have begun to argue that the use of subtypes in LD

classifications may begin to clarify the divergent findings of previous social skill studies.

Researchers have identified five consensus subtypes in the LD population (Weller & Strawser, 1987). The subtypes can be distinguished by a difference in adaptive behaviour and coping ability observed in a variety of settings. Weller and Strawser (1987) have identified one subtype that displays adaptive behaviour and coping skills that mimic the clinical diagnoses associated with ADHD (San Miguel, Forness, Kavale, 1996). A meta – analysis of social skill deficits and LD by Kavale and Forness (1996) found that teachers assessed the trait of hyperactivity as a major problem for LD children. This suggests that there might be considerable overlap between ADHD and LD diagnoses. This overlap has been found to range from a low of 10% to a high of 92% in some studies (Biederman, Newcorn, & Sprich, 1991). More recent work using strict learning disability criteria suggest that 10 to 20% of ADHD samples would also receive a dual diagnosis (Forness, Youpa, Hanna, Cantwell, & Swanson, 1992).

A study by Lopez et al. (1996) explored the subtype hypothesis comparing 18 LD only primary aged children to 42 LD co - morbid ADHD children. The findings suggest that the LD only children were rated by teachers as more proficient in their social skill ability than the LD co - morbid ADHD group. This led Lopez and her colleagues (1996) to conclude that the social skill deficits found in previous LD studies may be the result of emotional and behavioural disorders rather than LD itself. San Miguel, Forness and Kavale (1996), support the idea that differences found in social

skill ratings between LD and non - LD samples may be due to extreme scores within LD samples of children co-diagnosed with psychiatric disorders like depression or ADHD. They posit that social skill deficits that are displayed by some subsets of the LD population appear to mimic the symptom patterns found for children with ADHD. This suggests that social skill deficits of some LD children may be the result of other diagnoses rather than the result of LD itself (Lopez et al., 1996).

The categorization of subtypes of LD populations is not widely accepted, but there is a mounting body of evidence supporting the existence of a genetic basis for specific learning disabilities (Bishop, North & Dolan, 1995; DeFries et al., 1997; DeFries & Gillis, 1993). Studies support the need to sub - divide LD and ADHD populations in an effort to better understand the specific cognitive and social etiologies of the different subtypes. A clearer understanding about the origins, particular social skill deficits and social - educational needs of each subtype may lead to more specific and effective social skill interventions. The use of subtypes defined by specific adaptive and coping processes seems important, particularly in light of current social skill development models that suggest differing mechanisms may interfere with the production or performance of social skills. Based on the inconclusive evidence of social skill deficits in the LD population, the use of heterogeneous population samples, and the hypotheses of San Miguel et al (1996) and Lopez et al (1996), it seems reasonable that social skill differences may exist between LD only and ADHD/LD populations.

Summary

This chapter reviewed the literature concerning the social skill deficits of ADHD children and looked briefly at LD children. It highlighted, the difficulties of these children in interacting and establishing positive relationships with peers, parents, and teachers. The review also described the social maladjustment difficulties experienced by rejected children. Researchers have concluded that the social maladjustment difficulties that are typically seen, result from the improper, ineffective and inappropriate social skills usage that characterize ADHD and some LD children. Research examining social information processing and social skill deficits have supported the existence of interfering or blocking mechanisms that interrupt or inhibit the acquisition or performance of social skills for some children. It was speculated that emotional arousal and anxiety might be sources of interference to the production of social skills for some populations of children. The review finished with a discussion concerning the divergent results of social skills research concerning LD children and concluded that there may be different social skill deficits for different subtypes of the LD population. The LD subtype literature suggests that social skill deficits of some LD children may in - part or entirely derive from co – morbid ADHD diagnoses. The literature review revealed a number of questions that need to be examined. Are there social skill differences between LD only populations and ADHD/LD populations as suggested by San Miguel, Forness, Kavale (1996) and found by Lopez et al. (1996)? Do ADHD and LD children experience intense emotions or anxiety differently? If so, could these affect experiences be potential blocking or interfering mechanisms in the

performance of social skills? If there are differences between ADHD/LD children and LD only children would their experience of affect be different?

The next chapter will describe the methodology used to explore the possible differences between LD only and ADHD/LD populations in relation to their social skill production. Further it will attempt to explore possible interfering mechanisms that create the social skill performance deficits found in ADHD children by looking at their experience of affect intensity and anxiety. San Miguel et al's (1996) hypothesis might suggest that ADHD/LD children experience greater degrees of rejection and suffer great social skill deficits than LD only children. If this is the case then it is plausible that ADHD/LD children might experience greater degrees of negative affect arousal and / or anxiety when confronted with social interaction situations than their LD only peers. Further the findings that ADHD children do not appear to have social knowledge deficits but performance deficits might indicate that ADHD/LD children will perform as equally well as LD only children in calm, emotionally safe social strategy production tasks. However, it may be that the negative, aversive interactional styles characteristic of ADHD children will appear when the social strategies suggested by the two groups are compared on "relationship enhancement" and "friendliness" factors.

Chapter Three: Method

Subjects

The subjects were drawn from a private academy for learning disabled children. The academy was established to provide educational and treatment services for children with severe learning disabilities. Children attending the school have been identified as having severe learning disabilities as defined by the Provincial Education Department and according to the definition of the Learning Disabilities Association of Canada (LDAC). The children's acceptance into the academy is based on a review of psychological assessments, achievement testing and school history. Application to the school is open and final placement is determined by need. A bursary program exists to ensure that a student's acceptance will not be limited by financial constraints.

The primary goal of the academy is to successfully reintegrate students into community classrooms as quickly as possible. The students work at their own academic level and take Government of Alberta approved courses of study. In addition, the school provides a daily "cognitive curriculum" designed to promote responsibility and accountability by the student for behaviour, personal and academic success. The curriculum is based on the individual student's age and academic level and includes instruction in problem solving, thinking strategies, organizational skills, classroom participation and development of respect for staff, peers and property.

There are approximately 160 students enrolled in the academy ranging in age from 6 years to 17 years. From this population a pool of subjects were identified based on psychological assessments performed by various psychologists and psychiatrists in the community and corroborated with teacher, and parent interviews collected at the

time of the student's admission to the academy. Consent forms were sent home with each selected child and from that initial pooling of 33 children 28 consents were returned. The resulting subjects were divided into two mutually exclusive groups: ADHD (15 students, 5 females and 10 males) and LD only (13 students, 3 females and 10 males). The subjects ranged in age from 111 months to 193 months (\underline{M} age = 147.14 months, $SD = 24.71$). The ADHD group ranged from 112 months to 193 months ($\underline{M} = 147.73$ months; $SD = 26.48$) while the LD group ranged from 111 months to 185 months ($\underline{M} = 147.69$ months; $SD = 23.58$). All the children in the study were found to be operating in the low average to average IQ range based on WISC – III assessments. The IQ scores of the ADHD subjects ranged from 78 to 118 ($\underline{M} = 101.47$; $SD = 11.54$) while those of the LD subjects ranged from 85 to 131 ($\underline{M} = 99.77$; $SD = 13.68$). Ten of the 15 ADHD students were receiving stimulant medication (primarily Ritalin) at the time of the study. Nine of the 15 ADHD subjects were also co-diagnosed with learning disabilities. Their disabilities primarily usually involved visual (3 subjects) and language (4 subjects) disabilities. The LD only group's disabilities were primarily diagnosed as language (5 subjects) and visual (5 subjects). Four subjects in the LD group were also diagnosed with Emotional / Behavioral Disorders (EBD), primarily stemming from anxiety and attachment issues.

Instruments

Affect Intensity Measure (AIM)

The Affect Intensity Measure (AIM; Larsen, 1984) is a 40 - item questionnaire that assesses the characteristic magnitude or intensity with which an individual

experiences his or her emotions. It is based on a construct definition of emotional response intensity that distinguishes between frequency of emotional states and intensity of experienced emotion. The AIM has produced test retest reliabilities at 1, 2, and 3 – month intervals of .80, .81 and .81 respectively.

Revised Children's Manifest Anxiety Inventory (RCMAS)

The Revised - Children's Manifest Anxiety Scale (R-CMAS) (Reynolds & Richmond, 1978) is a 37 item self - report questionnaire designed to assess the degree and nature of trait or chronic anxiety in children aged 6 to 19. The RCMAS has demonstrated test retest reliabilities at 3 weeks and 9 months of .90 and .68 respectively. It has also demonstrated strong internal consistency coefficient of .83 for 329 grade 1 and 2 students.

Social Knowledge Interview (SKI)

The Social Knowledge Interview (SKI) (Geraci & Asher, 1980) is an unpublished standardized interview consisting of 19 pictures representing 16 problematic social situations. It is designed to assess a child's general knowledge of appropriate social skills. Children are rated on the number of strategies they can produce for each scene, the degree of assertiveness, friendliness and impulsivity of their strategy choices, as well as how relationship enhancing and effective their strategy choices are. The interviews are tape recorded and later transcribed in order to aid in the analysis of each strategy.

Procedures

Students and parents were provided with a cover letter outlining the expectations of the study and a consent form. After receiving sufficient parental consents to begin the study, the subjects were gathered together to complete the Affect Intensity Measure (AIM) and the Revised Children's Manifest Anxiety (RCMAS) questionnaires. The testing occurred in a small auditorium. Each student had their own chair with fold up table and a clear line of sight to an overhead screen. Three support staff, including the researcher, were present during the testing. The support staff circulated within the room to assist students who had a question or who needed clarification of word or sentence meanings. The support staff were instructed prior to the assessment period to avoid coaching or leading the subjects to specific answers. They were asked to treat the assessment like a regular subject test and to only provide encouragement and clarification of meaning to the students. It was also requested that if confusion or doubts were to occur the researcher would be responsible for making the clarifications.

The subjects were asked to take a seat in the auditorium and were then given a second cover letter and consent form. Once everyone was seated, the subjects were provided an oral explanation regarding the purposes of the study. The subjects were reminded that they could withdraw at any time and without penalty to their school standing. The students were prompted to ask questions or concerns that they might have. Following the questions, the students were asked to sign their consent forms and note the number written on their consents. It was explained that this number was to be

used instead of their name whenever they were required to give it on the test forms. It was also reinforced that any information they provided would be held in strict confidence and their names and any identifying information would never be used in the study. The students were prompted once again for any questions and were then instructed to begin the tests by placing their number in the name box of the RCMAS. The instructions for the RCMAS were read aloud to the students. After a further prompt for questions, the students were instructed to complete the RCMAS and await instructions before moving on to the AIM.

Once all the subjects had completed the RCMAS, the AIM directions were read aloud. The students were directed to an overhead screen where a list of definitions and synonyms was displayed. The language of the AIM questionnaire was thought to be somewhat advanced and difficult for the students to comprehend without support. An overhead was developed that provided The Concise Oxford Dictionary's definitions for the more difficult words as well as synonyms provided by The Concise Oxford Thesaurus. Please see Appendix for a copy of the overhead.

The subjects were asked to read each question carefully, and use the definitions on the overhead to help them if they did not understand any of the words. They were instructed that if they were still having difficulty with a question or word meaning they should signal one of the three support staff who would come and assist them. The students were given an opportunity to ask any further questions and were then prompted to begin completing the AIM.

Following the completion of both tests, the students were asked if they had any questions or concerns. They were then instructed to leave the questionnaires on their desks and return to their classrooms to resume their regular school day. The tests were collected and a master list was made showing the name and number of each student.

Interview Procedure

Following the mass testing, each subject was asked to participate in a structured interview called the Social Knowledge Inventory (SKI). Each subject was called away from their class to participate. They were met by the researcher and escorted to a small interview room that the school had provided.

The room consisted of a desk and several chairs. It also had a door that could be closed to provide privacy and reduce any background noise that might interfere with the tape recording process.

The subject was asked to take a chair in the room and the researcher would sit across a desk from the child. The researcher made attempts to engage with the subject by asking questions such as how their day was going, what class they were missing, etc. Following this brief interaction the subject was asked if he / she was ready to begin. Once settled, the subjects were reminded about their right to confidentiality and their right to withdraw at any time. After making sure these rights were understood and acceptable to the subject, the purpose of the interview was outlined.

The experimenter began the interview by reading the following introductory instructions taken from Geraci and Aster's Social Knowledge Interview (1980):

We want to know how children think about things. I've got some pictures and I'm going to tell you some stories

about children. I'm going to tell you the first part of the story, and I want you to make up the rest of the story. I want you to tell me what you would do in each story. Pretend that all the children in the story are your own age. OK? Do you understand what we are going to do?

If the child did not seem to understand the instructions, the researcher reread them and questioned the child again. Once the instructions seemed to be sufficiently understood, a small hand held tape recorder was turned on and the first scene was read.

In presenting each scene, the interviewer used pointing gestures to indicate the principle characters. At the conclusion of each scene, the child was prompted with the question "What would you do?" Various follow - up procedures were used to elicit scorable responses from the children.

When a child failed to provide a scorable response to a scene the interviewer would reread the scene or rephrased the story in simpler language if necessary. If further prompting was required, the child was reminded about the purpose of the interview and encouraged to think of something they could do if they were in the scene. If the child still failed to provide a scorable response after the above procedure, the researcher moved on to the next scene.

When a child's responses were ambiguous or unclear, the researcher used a number of prompts in order to clarify the child's answers. These prompts included:

How would you...? (play, talk to them, share, hurt him)?
 What would you say to them?
 Tell me about that again.
 So you would (repeat the child's suggestion)?
 It sounds like (repeat the child's statement)?

After a child's response was clarified using one of the above methods, further solutions were solicited using the following prompts:

What else might you do?
 Anything else you would do?
 Tell me another thing you would do.

This procedure was repeated until a child could no longer generate any more solutions or until they repeatedly responded with "I don't know." At this point the researcher moved on to the next scene.

At the conclusion of the interview, the child was asked if she / he had any questions or concerns about what they had just done. The child was also asked about how they were feeling and whether they were ready to go back to their classrooms. Following this short debrief the child was thanked for their participation and asked to return to their class.

Transcribing

After each interview a transcription of the tape recording was made. Each transcription was broken down into two types of units as detailed in the SKI manual (1980):

A) Response Units

Responses are the suggestions a child makes for what the protagonist could do after the experimenter asked the question:

"What would you do?" or "What could you do?"

A response may be composed of a number of Idea units.

B) Idea Units

An idea unit is a single behavioural strategy that is suggested by the child. An idea unit could be: (1) a change in emotions (i.e.-"Get mad"), (2) a behaviour (i.e.-"Hit him"), (3) a verbalization (i.e.-"Ask him to play"). To be judged as an idea unit, the focus must be on the correct character. Ideas that focus on the other child's behaviour or suggest strategies for characters other than the protagonist were not coded as idea units, except under the following circumstances. Where the idea implies a passive role for the protagonist, but it is nonetheless a potential way of dealing with the problem, it was coded as an idea unit. For example, when a subject suggests that "the teacher would tell the names of the children" in the new school entry item, a passive role is implied for the protagonist. Since this answer has direct implications for the strategy that the protagonist would use--namely relying on the teacher to get to know the class--it is coded as an idea unit. Other types of wrong focus answers do not have as clear an implication for the protagonist. For example, to suggest that the child being teased in scene 5 could "feel sad" is clearly an out of focus answer because the child being teased is not the protagonist. This strategy has no direct or indirect implications for what the protagonist would do to solve the problem. Thus, it is a wrong focus answer and is not coded as an idea unit.

Repetition of Idea Units

When a child repeated an idea unit, it was coded as another idea unit only when these two conditions both held.

- 1) It is not part of the same response from the child, and

- 2) It is not expressed in approximately the same words.

Otherwise, an idea unit that was repeated was not coded as a separate idea.

Sorting Children's Answers into Categories

After each child's Social Knowledge Interview was tape-recorded and transcribed, all responses to the stories were coded into idea units as described in the previous section. Children's responses were then typed on index cards so that each card contained only one idea unit. Children who gave a number of ideas for each social situation had a number of separate cards with one idea unit per card. The different idea units for each situation were then sorted into categories. Each category had a label that summarized the basic strategy suggested by the child.

Ratings of the Content Categories

The SKI provided ratings for each of the content categories. The ratings assessed the children's social solutions using two types of variables. Process variables were designed to measure dimensions of interactional style. The three process variables that were employed were friendliness, impulsiveness, and assertiveness. These variables were rated on a 3 point Likert scale ranging from 1 to 3. Outcome variables were designed to measure the likely result of each social strategy. The outcome variables were rated on the dimensions of effective vs ineffective and relationship enhancing vs non - relationship enhancing. The outcome variables were rated on a five point Likert scale ranging from 1 to 5.

The process variables were defined as follows in the SKI:

SKI Variable Definitions

Friendly - Unfriendly

A friendly response was characterized as being: warm, kind, supportive, affectionate, or actively interested in others.

An unfriendly response was characterized as being: cold, unkind, non - supportive, hostile, or disinterested in others.

Impulsive - Nonimpulsive

One or more of the following characterized an impulsive response:
Rash, not well planned, not waiting, or hurrying.

One or more of the following characterized non - impulsive response:
Thoughtful, well-planned, waiting, or delaying.

Assertive – Nonassertive

One or more of the following characterized an assertive response:
Active, takes initiative, confident, or dominant.

One or more of the following characterized a non - assertive response:
Passive, doesn't take initiative, unsure, or submissive.

Ratings were also done for outcome variables. Outcome variables were designed to measure the probable consequences of the solutions given to the hypothetical social problems. The two outcome dimensions rated were effectiveness and relationship enhancing. These variables were defined as:

Effective - Ineffective

An effective response was one that was responsive to the requirements of the situation and was likely to solve the explicit or implied problem.

Relationship Enhancing – Not Relationship Enhancing

A relationship enhancing response was one that was likely to maintain or enhance a positive relationship between the two children or the child and the group.

Reliability

Two independent judges coded the transcribed idea units. Inter – rater reliability revealed that the raters agreed on the categorization of an idea unit 73.67% of the time. Percent agreement was calculated based upon the total number of “hits” or correct agreements. The agreement was calculated by dividing the total hits by the total number of potential idea units. Percent agreements ranged from a low of 62% to a high of 83%. Upon completion, the judges compared their findings and noted where their coding differed. Using discussion and debate, the judges reached agreement on each idea unit they had disagreed on. Through this process, a consensus was reached and a master list of “agreed on” category placements was formed.

Reliability of Process and Outcome variables

A list of pre – judged process and outcome variables was included with the SKI manual. In order to expedite the coding process these ratings were used. The following describes the reliability ratings previously found using the provided category ratings.

The reliability of the judges’ ratings on each of the process and outcome variables was analysed by computing the correlation between the judges’ ratings on each item.

The mean correlation for each of the process and outcome variables across the 16 items is shown in Table 1.

Table 1

Mean correlation of Judges process and outcome variables found for the Social Knowledge Interview

<u>Variable</u>	<u>Mean Correlation Across All Items</u>	<u>Range Over Items</u>
Friendliness	. 89	(.62 to .93)
Impulsiveness	. 80	(.58 to .90)
Assertiveness	. 84	(.69 to .96)
Effectiveness	. 75	(.52 to .86)
Relationship Enhancing	. 90	(.34 to .97)

Research Questions

The study's research questions were operationalized in the following ways:

- (a) Do ADHD children's RCMAS total anxiety T scores differ when compared to their LD only peers?
- (b) Do ADHD children's affect intensity scores differ when compared to their LD only peers as measured by the AIM?
- (c) Do ADHD children's ability to generate social skill strategies for the SKI's hypothetical vignettes differ when compared to their LD only peers?

- (d) Do ADHD and LD only children's social skill solutions differ in perceived friendliness ratings as judged by the SKI?
- (e) Do ADHD and LD only children's social skill solutions differ in perceived relationship enhancement ratings as judged by the SKI?

Chapter Four: Results

Group Differences

An analysis of group differences was conducted indicating that the two groups did not differ significantly based on age (ADHD: $M = 143.83$, $SD = 23.32$; LD: $M = 148.35$, $SD = 23.33$), $t(26) = -.74$, $p > .46$, or IQ scores (ADHD: $M = 101.47$, $SD = 11.54$; LD: $M = 99.77$, $SD = 13.68$). Analysis also indicated non – significant sex differences in the number of total social skill initiations the children produced (males $M = 34.20$; $SD = 10.84$; females $M = 44.13$; $SD = 15.38$, $t(26) = -1.94$, $p > .06$).

Exploring ADHD and LD only Children's Differences

A series of one way ANOVA's were performed comparing the effect of the subjects' label (ADHD vs LD) on the subjects' anxiety (RCMAS), affect intensity (AIM) and total social skill strategy production (SKI) scores. The ANOVAs' produced the following non – significant results. ADHD children did not differ from LD only children on the degree of anxiety they experienced $F = .000$, $p > .99$.

Table 2

Table showing the Mean and Standard Deviations for the Revised Children's Manifest Anxiety Inventory (RCMAS) by group

	Mean	Standard Deviation
Total Group	49.32	12.76
ADHD only	49.33	15.86
LD only	49.13	8.53

ADHD children did not differ in comparison to LD only children on their experiences of affect intensity, $F = .006$, $p > .94$.

Table 3

Table showing Mean, Standard Deviation and Range for the Affect Intensity Measure (AIM) by group

	Mean	Standard Deviation	Range
Total Group	3.81	.44	3.2 to 4.68
ADHD only	3.82	.48	3.2 to 4.46
LD only	3.81	.40	3.2 to 4.68

ADHD children did not differ from LD only children on the total number of social skill initiations produced, $F = 4.03$, $p > .055$.

Table 4

Table showing Number of subjects, Total Initiations, Mean, Standard Deviation and Range for Social Knowledge Interview (SKI) by group

	Number of subjects	Total Initiations	Mean	Standard Deviation	Range
Total Group	28	1037	37.04	12.84	16 to 73
ADHD only	15	620	41.33	14.10	18 to 73
LD only	13	417	32.08	9.45	16 to 50

Next, the two groups were compared using a series of Mann - Whitney U tests examining the effect of the subject's label (ADHD vs LD) on the category ratings of the SKI. The tests produced the following non – significant results. ADHD children did not differ from LD children on their average perceived friendliness ratings, $U(15,13) = 71.5$, $p > .24$. ADHD children did not differ from LD children on their average perceived relationship enhancing ratings, $U(15,13) = 60$, $p > .08$.

The previous findings suggest that ADHD children do not differ significantly from LD children in their experience of anxiety and affect intensity. The findings also indicate that ADHD and LD children tend to initiate social skill strategies to structured interviews at about the same rate, although these results neared .05 significance levels.

The findings also suggest that the initiations solicited in the interview tend to be rated as equally “friendly” and “relationship enhancing” between the two groups, with the later rating showing a trend toward the .05 significance level.

Chapter Five: Discussion

Social skill deficits and the social maladjustment difficulties of children have been widely studied. The development of group belonging and acceptance on the development of socially effective and capable people has long been a goal of psychological study and practice. Therefore, when children experience rejection and various social inadequacies contributing to maladjustment there is a great concern for their future well – being. Unfortunately, current methods of intervention with socially maladjusted children are not as effective as many researchers would like them to be. Children diagnosed with ADHD and / or LD are typically found to be at risk of social maladjustment difficulties without prompt and intensive interventions. Typically it is thought these children experience social skill deficits that cause them to experience difficult, aversive and rejecting relationships with others. The confusing and equivocal findings in the social skills literature related to these groups prompted the exploration of the following research questions.

The first question explored whether ADHD children differed in their experience of affect intensity or anxiety in comparison to LD only children. Gresham and his colleagues (1988) hypothesized that social skills can be affected by an interfering or blocking response that inhibits the performance of a particular social skill. They speculated that the blocking mechanism might result from a number of sources one of which may be physiological – emotional in nature. Given the negative cyclical interaction patterns found for ADHD children it is possible that these children would experience a greater number of negative emotions when engaging in social interactions.

Based on this speculation, it was posited that ADHD/LD children may experience more intense or overwhelming emotions such as anxiety which may lead to the performance deficit typically observed in ADHD diagnosed children. This study failed to demonstrate significant differences between ADHD children and the LD children in both their overall experience of anxiety and their experience of affect intensity. The findings suggest that ADHD children do not rate themselves as higher in anxiety or affect intensity in comparison to their LD peers. However, without a normal comparison group these findings are not surprising given the possibility that the two groups may not have been sufficiently distinct in their make ups.

The second research question examined whether or not ADHD children differed from their LD only peers in their ability to generate social skill solutions to problematic social situations. In this sample population, ADHD children did not differ from LD children in the number of social skill solutions they generated. Further, ADHD children's social skill strategies did not differ from those of the LD only children in terms of how friendly, or relationship enhancing their responses were. This finding supports the previous work of Whalen and Henker (Henker & Whalen, 1989; Whalen & Henker, 1985) who suggested that ADHD children do not differ significantly from their peers in their social skills knowledge. The findings also reinforce the suggestion that ADHD children have a "social skills performance deficit" rather than a social skills knowledge deficit as postulated by Wheeler and Carlson (1994) based on Gresham's (1988) model of social skills. However, these findings are again limited by the lack of a normal comparison group.

It is noteworthy, however, that two trends toward significance were noted. First, there was a trend for ADHD/LD children to suggest an increased number of social skill solutions when compared to their LD only peers. Second, ADHD children's solutions tended to be rated as less relationship enhancing than their LD only peers. These findings might suggest that children co – diagnosed with ADHD and LD may demonstrate subtle social skill performance differences in comparison to their LD only peers.

These preliminary results indicate that ADHD/LD and LD - only children, during emotionally unarousing situations can produce social skill solutions to problematic social vignettes at similar rates. However, based on the trends in the data there may be some subtle differences between the LD only and ADHD/LD populations as suggested by San Miguel et al. (1996). Further, the findings suggest that ADHD children do not rate themselves as higher in anxiety or affect intensity in comparison to their peers. This result on the surface suggests that ADHD children's cognitive processes may not be impacted as critically by their emotions as was originally posited.

Limitations

The scope of this study and its findings are limited in a number of ways. The SKI was designed to solicit as many social strategies as a child could conceive to resolve each problematic situation. It does not take into account the differing social goals or emotion – states children may enter each scene with. Children's social goals may directly influence the type and nature of the strategies they produced (direct communication S. Asher, November 1997). This is important to keep in mind since

emotion – states have been clearly shown to impact the social cues and behavioral strategies enacted by children (Dodge & Coie, 1987; Dodge, Murphy, & Buchsbaum, 1984; Nasby, Hayden & Depaulo, 1979; Slaby & Guerra, 1988) and may also influence the social goals pursued by children.

Another limitation of the study is that the emotion variables were not directly manipulated. The SKI was administered in a calm, classroom like setting that would be unlikely to elicit strong emotional reactions within the children. Without directly manipulating the affect of the children, there is no way of knowing whether ADHD children's strategy responses are impacted by their affect intensity or anxiety experiences. Dodge and Somberg's (1987) study, in which they directly manipulated the subjects' affect, indicated that aggressive boy's accuracy during the assessment of another's intentions in ambiguous social interaction vignettes deteriorated when the aggressive boys were exposed to anxiety producing stimuli. Their non – aggressive peers' assessments were less affected by their anxious arousal. It is likely that similar results may occur for ADHD children.

Another challenge to this study's validity may be related to the children's ability to accurately self report their affect using the instruments in the study. The Affect Intensity Measure attempted to assess the intensity of both positive and negative mood states of the children. It was originally designed for use with adults and uses complex affect descriptors (e.g. jubilant, zestful, exuberance) to make fine intensity distinctions between feelings. The level of the vocabulary used, even with the support offered by staff and an overhead of synonyms and definitions, may not have been sufficient to

allow the subjects to accurately distinguish between affect levels. They may then have collapsed their affect experiences into general categories, wiping out possible individual differences.

A further limitation to this study is the use of the RCMAS's total anxiety score. While the RCMAS's anxiety score has been found to be a valid and reliable assessment of general anxiety in a variety of populations, it may not have been focused enough to examine the impact of social anxiety, an emerging sub – category in the anxiety literature. An instrument that directly assesses the construct of social anxiety may have provided a more specific measure pertaining to this study's focus on social interactions.

This study also relied on various referral and diagnostic agents to identify the children used in the study. The non - standardized, and subjective ratings employed by the various referral agents, may have led to the identification of heterogeneous populations that differ greatly between individuals. Related to the issue of heterogeneity is the possibility that the groups used in the study were too similar in etiologies to be effective comparison groups. One of the major difficulties encountered in LD social skills research is the heterogeneity of the LD population. It could be that the LD sub - group in this sample was not subtyped sufficiently to be an effective comparison unit. There are also suggestions in the literature that ADHD populations need to be subtyped as well. Several researchers have indicated the need for the reincorporation of sub - classifications of ADHD (Frick & Lahey, 1991; Whalen & Henker, 1991) formerly used by the DSM - III which listed two subtypes; ADD with Hyperactivity and ADD without Hyperactivity. There are some indications that the

social interaction patterns for these two subtypes may differ. Wheeler and Carlson (1994) suggest that ADHD and ADD (attention deficit disorder primarily inattentive) might have differing social skill performance deficits. They suggest that ADHD children tend to be more boisterous, aggressive and extroverted in their play and problem solving styles. ADD children, on the other hand, tend to be more introverted, quiet and withdrawn in their play and problem solving styles. This might suggest that ADHD children label physiological arousal differently or they are impacted differently by affective states than ADD children. ADHD children may become aroused or triggered by affective states related to anger and have developed a dominant behavioral response set using aggression. ADD children may label their social arousal as anxiety and thus develop a dominant behavioral response set involving withdrawal, inattention and distraction. The inconsistent findings of previous ADHD and LD studies strongly suggest the need for homogeneous sample groups in research examining social skill deficits.

In order to facilitate the meaningful comparison and generalization of social skill production and affect experiences, a normal comparison group would have been helpful. A normal comparison group was not selected in order to reduce the number of possible confounding factors related to different school environments and possible inclusion of undiagnosed ADHD or LD subjects amongst the control group. Unfortunately this led to the use of a small sample size limiting the power of the study.

The effectiveness of using continuous data to study developmentally changing temperamental traits like emotions has been called into question by some research

groups. Several researchers have begun to use an extreme group methodology in their studies of child temperament and emotionality. Kagan and colleagues (Kagan, Reznick & Gibbons, 1989) cite several reasons why it may be preferable to identify and study an extreme group of subjects on a given dimension rather than using continuous data to examine the developmental course of temperamentally - based traits like emotion. First, they posit that the long-term stability of a dimensional trait is greater for those groups found at the poles of a dimension; stability is not found when temperament data are examined in a continuous manner. Extreme groups can also be represented categorically, where a category is defined by a unique profile across several dimensions or features. Hinde and Dennis (1986) found, when examining categories of children with respect to obedience and aggression, that those who were extremely aggressive in school also exhibited special profiles of family experience and home behaviour when compared to those children from the normal population in the sample. The same results were not found when the data was examined along a continuum. The special profiles found for the extreme group of children in the Hinde and Dennis study supported Kagan et al.'s (1989) position regarding the unique opportunity that extreme categories offer researchers. Kagan et al. (1989) do not dispute the possibility of an underlying continuum to the various dimensions they study. Instead they highlight the advantages of studying extreme groups of subjects found at the poles of the continua. The use of continuous data may have limited the ability of this study to find differences between these groups. Extreme groups might prove a more effective way to examine ADHD and LD populations in terms of their emotionality and social competence.

A final limitation to the findings may be the population group the subjects were drawn from. The academy's curriculum has a strong social skill component designed to improve the student's ability to interact effectively and positively with their peers. At the time the SKI occurred, the subjects would have received approximately 8 months of instruction and reinforcement to the development and improvement of their social skill repertoire. This training may have increased the social skill abilities of the children in this study. Research conducted using samples drawn from other school and community populations may produce different results.

Suggestions for Future Research

The exploratory nature of this study limits the conclusions that can be drawn from its results. However, the findings do offer suggestions for future areas of study. It is suggested that more rigid and specific criteria be used to subtype the LD and ADHD populations in order to more effectively compare their social skill deficits. The use of strict assessment criteria may help eliminate subjects who are co - diagnosed with emotional / behavioral disorders (EBD) and LD. The study did not account for the influence an EBD/LD co -diagnosed child might have had on the LD groups overall results. However, it seems likely that EBD children would display deficits similar to those found for ADHD children as each diagnoses tends to produce negative interactional styles. The exclusion of such children from future studies might lead to different findings.

It was also noted that several of the children attempted to clarify the goal or objective of the protagonists in the SKI vignettes. The children were left to make up

their own social goals for the vignettes. In future studies it might be important to explore whether ADHD and LD only children differ in the type of social goals they used in the vignettes. Further, it might also prove interesting to explore how important those goals are to each group. It could be that each population has a tendency toward idiosyncratic goals that ultimately dictate the type and nature of the social skills they develop or use during social interactions. As well, the study did not account for the ordering of multiple answer solutions to the vignettes by the children. An examination of the order in which multiple solutions were given may reveal the existence of cognitive biases between the groups. It could be speculated that ADHD children would tend to provide more aggressive, less friendly, less relationship enhancing solutions as primary or “off the top of their head” behavioral strategies in comparison to LD only subjects.

Future studies may want to begin directly assessing the impact of emotionality on social skill performance in more natural settings. One way this might be accomplished is through the direct manipulation of the subject’s affect. The direct manipulation of affect might serve to heighten any differences in socio - cognitive functioning of the subjects and lead to a marked difference in the type or nature of social skill solutions offered by the children.

Another area of potential study might examine social skill intervention programs that have incorporated emotionally arousing scripts or settings into their interventions. Given the research regarding the impact of emotion states on cognitive processes, it seems intuitive that the recall of rote learned appropriate social skill scripts

will be compromised by the existence of intense affect experiences. This is particularly important if a child has been repeatedly exposed to negative social interactions, like the ones described by Clarke et al. (1988).

It may also be worthwhile exploring ADHD and LD only children's ability to apply cognitive labels to affective states. It may be that ADHD and LD only children experience affect states in social situations that remains unlabelled or unidentified due to cognitive deficits. Thus when given questionnaires such as the AIM or RCMAS, they may not be able to recall or accurately identify their affective experiences. Such a deficit might also sabotage attempts to teach these children "emotion management" skills. It would be very difficult for a child with this type of deficit to identify and effectively implement coping strategies during real social interactions.

Implications for Future Practice

The results of this study provide little direction for improving the social skill interventions currently utilized. However, future research that explores the overlap between and subtypes of the LD and ADHD populations will be invaluable in reducing children's social skill difficulties into understandable and manageable types of problems (Forness, 1990). Proper and effective diagnoses of disorders will lead to improved treatment for these children. Some LD children who are experiencing emotional or behavioral difficulties may have co – morbid ADHD diagnoses that requires different treatment modalities than those premised on simple social skill instruction. Practitioners may want to be aware of the differences between LD subtypes and incorporate those differences into the development of interventions

designed to overcome the unique deficits of each type, be it a learning / acquisition, cognitive / performance or social / emotional deficits.

Another implication for clinical practice may be a re – examination of criteria for the diagnoses of learning disorders. A tightening of the criteria may eliminate some of the difficulties found in resource rooms where LD students are mixed together with ADHD and other Emotional Behavioral Disordered (EBD) students. In these classrooms, ADHD and EBD students may not receive the most beneficial and effective treatment for their specific needs which may in fact differ considerably from the LD - only populations. Thus, not only are the LD students being misserved in mixed classrooms but ADHD and EBD children may not be receiving the necessary early interventions for their unique behaviour problems. Future findings like the ones discussed by Lopez et al. (1996) may lead to a revamping of how services are provided currently in our educational settings.

Conclusions

In conclusion, there is a growing body of literature documenting the subtle differences in social skill deficits of ADHD and LD only children. This study adds to this body of work and suggests future avenues for study. Given the extreme negative social consequences ADHD and LD children tend to experience during their development, it is imperative that we continue to explore ways to help them overcome the social deficits they display. This is particularly critical given the mixed and limited success many of the non – pharmacological treatment outcome studies have demonstrated (Abikoff, 1991; Abikoff, 1987; Kendall, 1993; Kendall & Braswell,

1982; Kendall & Finch, 1979; Kendall & Wilcox, 1980; Kendall & Zupan, 1981; Meichenbaum, 1977; Meichenbaum & Goodman, 1971; Whalen, Henker & Hinshaw, 1985). These inconclusive results are disappointing given a growing trend toward a humanistic preference for self - regulation over chemical or overt control strategies (Henker & Whalen, 1989). Continuing research may eventually bring to fruition the development of comprehensive and effective treatments for ADHD and LD children and their challenges with social interactions.

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Appendix

Definitions for the AIM Questionnaire

anxiety - concern about an imminent danger or difficulty, excessive uneasiness,
tenseness

aroused - woken up, energized, excited, inspired

contentment - feeling of being satisfied, adequately happy, peaceful, comfort

delighted - pleased greatly, thrilled, glad

ecstatic - very enthusiastic and excited, overjoyed, on cloud nine

elated - stimulated, very proud, exhaltant, cheered, excited, gleeful

enthusiastic - having great eagerness, or a strong interest in/for, warm, avid

euphoric - a feeling of well being, confidence and optimism, drunken happiness

exhilaration - affect with great joy, very high good mood, delight

exuberance - lively, high spirited, abounding with feelings, full of life

guilt - the feeling of having done something bad or wrong, dishonor

joyful - a vivid feeling of pleasure, extreme gladness

jubilant - exultant, rejoicing, overjoyed, triumphant, on top of the world

overreact - respond more forcibly than necessary or is justified, get upset over nothing

rational - is based on reason, sensible, sane, moderate not foolish, logical, intelligent,
wise

shame - a state of humiliation, disgrace, embarrassment or intense regret

zestful - a keen enjoyment or interest, flavorful, eager