ATTENTION-DEFICIT/HYPERACTIVITY DISORDERED CHILDREN'S SOCIAL SELF-PERCEPTIONS OF THEIR PEER-RELATED PERSONAL AND INTERPERSONAL PROBLEMS

By

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Dedication

This doctoral thesis is dedicated to several individuals who have aided in the successful completion of this research. Throughout the course of my education, I am indebted to the commendable, reverent, and esteemed support of Guiliana Sherrington, who has willingly and selflessly extended many tireless financial sacrifices over the years in enabling me to develop and fulfil my research interests in childhood relationships and mental health problems. Without the benefit of her help and positive encouragement, therefore, I would not have been able to pursue such interests. Further, I would like to express my sincerest appreciation to the positive and enthusiastic encouragement and patient self-belief offered by both Associate Professor Stephen Houghton and Dr Graham Douglas in promoting the psychoeducational value of this research and making my postgraduate training very rewarding. Finally, special thanks and praise must go to the late Wendy Mander for her timely help, and especially the families and their children with Attention-Deficit/Hyperactivity Disorder who volunteered to participate in this socially significant research.

Abstract

The purpose of this research was to examine the nature and significance of the social self-perceptions of Attention-Deficit/Hyperactivity Disordered (ADHD) children's

peer-related personal and interpersonal problems. To achieve this objective, three separate yet interrelated studies were conducted. In Study One, the common types of ADHD children's peer-related personal and interpersonal problems were investigated utilizing focus group methodology and a small group interview with educators and parents, where appropriate. The qualitative results revealed that ADHD children had few friends and often felt lonely, depressed, teased, and victimized by their peers. This was due to their deficient self-regulatory and functional social skills in being able to appropriately moderate their maladaptive behaviour across varying situational contexts.

In Study Two, the findings of Study One were used in combination with the relevant literature to construct and develop a Children's Personal and Interpersonal Problems Self-Report Questionnaire composed of three age-appropriate measures of Loneliness, Depression, and Interpersonal Problems. Furthermore, an additional item was constructed for children to self-report their Number of Close Friends. To adequately trial these measures, a small and representative school-based sample (27 males, 25 females) of ADHD and nondisordered ("Control") children were recruited aged from 8 years 4 months to 17 years 4 months. Item affectivity, Item and Person discrimination indices, and Cronbach's Alpha revealed that all three dependent measures were acceptably representative, unique, reliable, content and construct valid measures.

In Study Three, the newly developed and validated questionnaire was administered to a large school-based sample of ADHD, Attention-Deficit/Hyperactivity Disordered with comorbid Learning Disabilities (ADHD/LD), Learning Disabled (LD), and nondisordered ("Control") children within metropolitan, country, and remote locations of Western Australia. This sample comprised 220 children (141 males, 79 females) aged from 9 years 2 months to 17 years 11 months. Bivariate Pearson product-moment

correlations revealed that children's Loneliness, Depression, and Interpersonal Problems were positively and significantly interrelated. Children's self-reports, however, including their Number of Close Friends, were not significantly related by Age (Months).

Multivariate and univariate analyses of variance, pairwise *post-hoc* Scheffé comparisons, and Chi-Square analysis in Study Three indicated that there were significant Group-related differences in children's self-reports. Furthermore, Stepdown analyses indicated that Loneliness and Depression made unique significant contributions in differentiating Group. Specifically, children with ADHD/LD and LD self-reported significantly more Loneliness and Depression, relative to Controls, whereas LD children reported significantly less Loneliness and more Depression than ADHD/LD and Control children, respectively. There were, however, no significant differences in Loneliness and Depression between ADHD, LD, and nondisordered children. Chi-Square analysis also revealed that there were significant differences in children's Number of Close Friends, dependent on Group. An additional Stepdown analysis also indicated that Loneliness, Depression, and Interpersonal Problems all uniquely accounted for significant differences in children's frequency of Close Friends.

The findings of this research significantly enhance the present knowledge and understanding concerning the social self-perceptions of ADHD children's peer-related Personal and Interpersonal Problems, particularly those with comorbid Learning Disabilities. Furthermore, the psychoeducational implications of this research raise important questions concerning the predictive influences of short or long-term peer-related difficulties on the subsequent school adjustment, achievement, motivation, attendance, and later psychosocial post-school status of ADHD children.

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I would also like to acknowledge the invaluable supportive contributions offered by the school personnel, children with ADHD and their parents who volunteered to participate in allowing this research to be undertaken. In Study One, educators' and parents' disclosed qualitative and personalized accounts of ADHD children's peer interactions which significantly assisted in gaining a thorough knowledge and understanding of their personal and peer-related difficulties. In Studies Two and Three, the teachers, principals, and relevant school personnel at Cannington Senior High School (Hilbert Muck), Challis Primary School (Pam Judge), Kelmscott Senior High School (Lin Bellmaine), Nedlands Primary School (Gary Samson), and Waggrakaine Primary School (Diane Evans) were instrumental in the coordinated distribution of parental consent forms and in trialing and administering the Children's Personal and Interpersonal Problems Self-Report Questionnaire (CPIPQ) among children. Data collection, however, would not have been possible without the conscientious efforts of

both parents and their ADHD children in completing the relevant Parental Self-Report Forms and CPIPQs.

In the time spent within the Graduate School of Education at the University of Western Australia, I am indebted to the help of Jenny Foo, Carol Thomason, and Robyn Wilson who greatly assisted with the photocopying of questionnaires. In assistance with computing problems and friendly advice, I am deeply indebted to David Malthouse and my doctoral colleagues: Shane Langsford, John West, Vivienne Lawrence, and Myra Taylor. Further, I would also like to express due thanks to Margaret Edwards, Senior Administrative Officer in the Postgraduate Research Studies and Scholarships Office at the University of Western Australia, who greatly assisted with financial issues associated with the production of this thesis.

Declaration

In accordance with the regulations for presenting theses and other work for higher degrees, I hereby declare that this doctoral thesis is entirely my own work and that it has not been submitted for a degree at any other university.

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Note: This doctoral thesis has been formatted in accord with the American Psychological Association (1994) Publication Guidelines.

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CHAPTER ONE

INTRODUCTION

The purpose of this research is to examine the social self-perceptions of ADHD children concerning their peer-related personal and interpersonal problems. More specifically, the significance of ADHD children's peer-related difficulties will be examined by contrasting their problems with those of a suitable control group of peers. Where appropriate, ADHD/Control and Gender-related differences will be investigated.

Context of the Research

Attention-Deficit/Hyperactivity Disorder (ADHD) is the current diagnostic neurodevelopmental label for individuals who exhibit socially inappropriate behavioural levels of overactivity, impulsivity, and inattention across varied situational contexts, as operationalized by the Fourth Edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; American Psychiatric Association, 1994). Due to the socially maladaptive behaviour of ADHD children, many tend to be at-risk to a range of psychosocial, psychological, and academic-related problems. For example, these children frequently experience difficulty in initiating and establishing satisfactory peer relationships which negatively affects their self-esteem, school adjustment and motivation, pre-empting early academic disengagement and future unemployment. The peer-related difficulties and social status of these children, however, are often further exacerbated by the presence of one or more co-occurring disorders, particularly diagnosed learning disabilities (LD), which appear common among at least one-third of this population.

Although the negative peer relationship problems of ADHD children are well documented, the personal accounts of how these children self-perceive the nature of their actual social situation appear to have been largely ignored or overlooked because of concomittant concerns regarding the reliability and validity of children's self-reports due to their lack of social awareness (Barkley, 1998). Recent research, however, demonstrates that the nature and frequency of their self-perceived peer-related difficulties often accurately converge with the self-reports of teachers, educational psychologists, and their peers.

Limited attention, however, appears to have been focused on examining differences between the self-perceived peer relations of ADHD children either with or without comorbid LD. An examination of differences in the social self-perceptions of these children is important as such information aids in developing and assessing the effectiveness of psychoeducational interventions designed to ameliorate these children's specific peer-related difficulties. Based on the data gathered from peers' and teachers' self-reports, Flicek (1992) and Flicek and Landau (1985) suggest that children with ADHD and comorbid LD frequently experience more negative social outcomes concerning peer rejection, popularity, and teacher-related aggression, relative to children with either ADHD or LD alone. Uncertainty, however, remains concerning whether such differences are attributable to the effects of ADHD and/or LD. Furthermore, information gathered from peers and teachers may otherwise ignore the social cognitions of such children concerning the actual positive or negative nature of their peer relations.

In terms of the present knowledge available concerning the self-perceived peer difficulties of ADHD children, many appear to be largely preoccupied and acutely aware of the nature and quality of their peer relationships and peers' negative feelings towards themselves, relative to their nondisordered peers. Although most children at some developmental stage express peer-interaction concerns or worries, the lack of mutually satisfying peer relationships appear to represent significant social concerns particularly among ADHD children (Perrin & Last, 1997). The reciprocated social support that these children receive either from their classmates or friends is therefore limited, resulting in subsequent feelings of loneliness. It is unknown, however, whether gender differences exist in the reported loneliness of ADHD children. Despite this current lack of understanding, loneliness does represent a major personal problem for these children on a regular and recurrent daily basis.

Friendship worries therefore appear paramount among ADHD children. Recent research also demonstrates that such children are significantly more socially anxious and depressed than their nondisordered peers (National Health and Medical Research Council, Commonwealth of Australia, 1997a). Furthermore, symptoms of social anxiety appear to be related to the development and persistence of depression among these children. Although the nature and social aetiology of childhood depression has been widely researched within the general population, little is known concerning how dysfunctional peer relations are related to the incidence of depressive symptoms among children with ADHD. Furthermore, the increased depression among such children is likely to place them significantly at-risk to severe psychosocial and psychological dysfunction such as impaired academic achievement, occupational attainment, delinquent criminality, and later psychiatric hospitalization (Conners & Erhardt, 1998).

Depression is therefore likely to be an additional major personal problem of such children.

It is well documented that within the general population girls consistently report predominantly more depressive symptoms than boys, particularly in response to high levels of peer-related interpersonal stress (Reynolds, 1998). Among behaviourally and aggressively disordered children, many of these individuals tend to have overly positive peer social self-perceptions concerning the actual nature of their peer relations, which tend to be largely discordant with peers' evaluative judgements concerning the actual peer acceptance of these children. It is largely unclear therefore whether children with ADHD, particularly those with comorbid LD, are actually adversely emotionally affected and thus depressed by the self-perceived nature of their lack of supportive peer relations.

The lack of reciprocated peer friendships and subsequent peer rejection of these children, however, are often the result of these children's deficient functional social skills in being able to adaptively synchronise their disinhibited noncompliant and aggressive behaviour in varied situational and temporal contexts, due to their inability to delay the need for immediate gratification (Tannock, 1998). Interpersonal problems, such as low peer acceptance and negative peer interactions therefore represent common social experiences among children with ADHD, as supported by the self-reports of peers, teachers, and parents. Although female children are frequently more adversely affected in response to peer-related interpersonal problems within the general population (Graber, Lewinsohn, Seeley, & Brooks-Gunn, 1997), limited data exist

concerning the possibility of gender differences among ADHD children in response to similar negative self-perceived interpersonal experiences.

In the general population, it has been well documented that children's feelings of loneliness, depression, and interpersonal problems are interrelated, particularly in the absence of supportive peer friendships (Sharp & Cowie, 1998). For example, children with few friends who experience being teased, bullied and victimized by their peers are likely to report increased levels of peer problems and subsequent feelings of depression and loneliness. Largely unknown, however, is whether ADHD children are adversely emotionally affected in relatively similar ways to nondisordered children, in response to having few friends.

In a concerted effort to improve the behavioural symptomatology and subsequent negative peer social status of ADHD children, at least 70% of these children are on prescribed psychostimulant medication at some point in their lives (e.g., Dexamphetamine Sulphate, Ritalin) (Hoagwood, Kelleher, Feil, & Comer, 2000). The effects of medication, however, do not appear to either substantially alleviate or abate the aversive noncompliant behaviour of many of these children, nor their resultant negative peer social status, leaving the benefits of pharmacological intervention questionable and in need of reassessment.

In summary, this present research integrates the concepts of personal and interpersonal problems, as pertinent to the self-perceived experiential peer relationships of children with ADHD. The overall aims of this present research are therefore threefold: (i) to provide a detailed understanding of the social self-perceptions of ADHD children's personal and interpersonal problems; (ii) to investigate differences in the reported

loneliness, depression, and interpersonal problems of ADHD children and a suitable comparison group to determine whether these salient differences are attributable to the effects of either ADHD and/or LD; and (iii) to provide new directions for future psychoeducational research in ameliorating the peer difficulties of children with ADHD.

Purpose of the Research

This thesis investigates several propositions. Firstly, there will be differences in the self-reported loneliness, depression, interpersonal problems, and number of close friends of ADHD children and a suitable comparison group. It is anticipated that there will be Group and Gender-related differences in children's self-reports. Secondly, children's number of close friends are expected to influence their self-reported loneliness, depression, and interpersonal problems. By examining Group and Gender-related differences in the self-reports of ADHD children and a suitable comparison group, this research will focus attention on the former children's personal social self-perceptions of their salient peer difficulties.

Significance of the Research

The proposed research is significant in four ways. First, this research will investigate the social self-perceptions of ADHD children's peer relationship problems among a large sample of Western Australian schoolchildren by utilizing and integrating the findings of qualitative and quantitative empirical field data. Although Tracey and Gleeson (1998) examined the self-reported personal and social experiences of Australian ADHD children, the ecological validity and generalizability of their findings appear to be limited due to the restrictive South-western Sydney sample of DSM-III

diagnosed ADHD (N = 41) and Non-ADHD (N = 43) children which they recruited. Furthermore, these researchers failed to consider differences in the self-reports of ADHD children either with or without comorbid LD.

Second, although the findings of Tracey and Gleeson (1998) have substantial psychoeducational implications for the effective and efficient delivery of school-based intervention programmes, their results are based primarily on DSM-III diagnosed ADHD children. It must be acknowledged, however, that on the basis of an anonymous reviewer's recommendations, DSM-III ADHD diagnoses were converted by the researcher to equivalent DSM-IV ADHD diagnoses. Such a practice, though, is likely to result in erroneous conclusions relating to differences in the self-reports of ADHD and Non-ADHD children. This is because DSM-IV presently recognizes greater behavioural heterogeneity as characteristic of ADHD, thereby encompassing and identifying a broader and more varied range of at-risk children. The self-reports of DSM-III diagnosed ADHD children, therefore, do not appear to be sufficiently representative of the peer-related difficulties of DSM-IV diagnosed ADHD children.

Third, the results of the present research will be based upon the self-perceived peer relational difficulties of DSM-IV diagnosed ADHD children. The methodological utilization of these children's self-reports appears important as they are likely to prove better and more accurate sources of knowledge concerning the present levels of interpersonal and psychological functioning inaccessible through the use of peers or adults, as suggested by Cantwell, Lewinsohn, Rohde and Seeley (1997).

Fourth and finally, differences in the self-reported loneliness, depression, interpersonal problems and number of close friends of ADHD children either with or without comorbid LD will be investigated allowing valuable insight to be gained concerning the nature of their peer-related difficulties, rather than those of children within the general population which tend to have been extensively examined. Furthermore, previous research appears to have concentrated mainly on examining differences between the peer-based social functioning of ADHD children with or without comorbid conduct, oppositional defiant, or other types of disruptive behaviour disorders (i.e., Jensen, Martin, & Cantwell, 1997), as compared with that of a matched comparison group.

Research, therefore, which provides a detailed understanding of ADHD children's peer-related difficulties is likely to have important psychoeducational implications and ramifications. For example, the outcomes of this present research are likely to assist significantly with the effective and efficient delivery of community- and school-based psychoeducational preventive/intervention programmes, targeted towards ameliorating the peer-related difficulties of these children, which have been found to influence their subsequent school adjustment, achievement, and later post-school status (Realmuto, August, & Hektner, 2000; Wu, Hoven, Bird, Moore, Cohen, Alegria, Dulcan, Goodman, Horwitz, Lichtman, Narrow, Rae, Regier, & Roper, 1999).

Design of the Research

This present research is composed of three separate yet interrelated studies. In Study One (Chapter Three), the purpose is to determine the common types of peer-related personal and interpersonal problems experienced daily by ADHD children. Focus group methodology and one small group interview are utilized selectively with both educators

and parents to achieve this purpose. The qualitative results of Study One are then discussed by drawing upon the illustrative verbal comments of participants.

In Study Two (Chapter Four), the findings of Study One are used in combination with the relevant literature, to construct and validate a Children's Personal and Interpersonal Problems Self-Report Questionnaire (CPIPQ) consisting of three reliable and valid age-appropriate measures of Loneliness, Depression, and Interpersonal Problems. An additional item is also constructed within this questionnaire for children to self-report their Number of Close Friends. To psychometrically examine and trial these measures, a sample of ADHD children and a suitable comparison group of children are used. A Parent Questionnaire is also constructed in order to gather relevant and descriptive information relating to ADHD children (i.e., source of diagnosis, medication status, etc.).

In Study Three (Chapter Five), the CPIPQ which was developed in Study Two, is administered to a large Western Australian school-based sample of ADHD and comparison children. Teachers', principals', and educational psychologists' recorded class assessments are used to identify, verify, and categorize children either with or without LD. Further, an information sheet describing the purpose and nature of the research was distributed in the Western Australian "Learning and Attentional Disorders Society" Newsletter (October, 1998) to recruit additional ADHD children resident within metropolitan, country, and remote locations of Western Australia. In Study Three, ADHD and LD children are specifically recruited to examine whether the differences in children's self-reports appear to be attributable to the effects of ADHD and/or LD.

Prior to Studies One to Three (Chapters Three to Five), Chapter Two provides a critical review of the relevant literature and describes the behavioural characteristics, aetiology and diagnostic nomenclature of ADHD children. Further, the associative peer relational problems of these children are also discussed, as related to their negative peer social status. At the close of Chapter Two, the thesis propositions and research questions are presented.

The final chapter of this thesis (Chapter Six) integrates the findings of this research with the results of the relevant literature related to ADHD children's experiential peer-related Personal and Interpersonal Problems. The psychoeducational implications and significance of the present research findings are also discussed by examining the predictive relationships between peer difficulties, educational underachievement, participation in school-related activities, serious mental health problems, and subsequent post-school status. Finally, beneficial and efficient recommendations for future research are given.

CHAPTER TWO

LITERATURE REVIEW

In this chapter, a critical review of the literature, relevant to children with Attention-Deficit/Hyperactivity Disorder (ADHD) and their concomitant behavioural symptomatology and peer relationship problems is presented. The chapter is subdivided into four sections. In Section One, the prevalence, aetiology, and descriptive behavioural symptomatology of childhood ADHD is detailed. In Section Two, the evolving, historical, and most recent diagnostic and classificatory nomenclature characteristic of childhood ADHD are discussed. In Section Three, the experiential peer-related difficulties (loneliness, depression) and the precipitating variables that mitigate and influence peer acceptance and rejection of ADHD children are reviewed. The research findings related to the peer-related difficulties of nondisordered rejected children are also discussed, in relation to the negative social status of ADHD children. Finally, in Section Four, the relevant research propositions and questions, together with a summary are presented.

Definition, Prevalence, and Aetiology of Childhood ADHD

Prevalence.

Attention-Deficit/Hyperactivity Disorder (ADHD) is the current diagnostic label for individuals who display developmentally inappropriate levels of inattention, impulsivity, and overactivity, as operationalized by the Fourth Edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; American Psychiatric

Association, 1994). ADHD accounts for up to 50% of referrals to child psychiatric clinics in the United States of America where it is estimated that approximately 3% to 5% of children have ADHD (McNicholas, 2000). In Australia, it is conservatively estimated that this childhood disorder affects between 5% to 10% of schoolchildren aged from five to 18 years old (Tracey & Gleeson, 1998). More recently, based on an Australian sample (N = 1275), Gomez, Harvey, Quick, Scharer and Harris (1999) found that 2.4% of primary school children exhibited behavioural symptoms characteristic of ADHD. In a Western Australian epidemiological child health survey (N = 2737) in 1995, however, it was estimated that between 5.5% and 7.6% of preschool, primary, and secondary schoolchildren have ADHD and/or associated learning problems (Health Department of Western Australia, 1999). More recent data from educational psychologists employed within Western Australian primary and secondary high schools, suggest that the relative prevalence of childhood ADHD and learning problems is 7.14% and 6.94%, respectively (Langsford, 1999). Teachers can expect therefore to have at least one child in their classroom who has ADHD (Jones, 1994).

Males tend to outnumber females 3:1 in being diagnosed with ADHD (Barkley, 1998). In clinical and community-based epidemiological samples of ADHD children, males tend to be over-represented approximately 9:1 (Mean = 6:1) and 3.4:1, respectively, relative to females (Barkley, 1998; Cantwell, 1996). Furthermore, symptoms of ADHD appear to be disproportionately more frequent among six to 11-year-old, low-socioeconomic status boys (Pineda, Ardila, Rosselli, Arlas, Henao, Gomez, Mejia, & Miranda, 1999). Males also appear to outnumber females due to familial factors, that is, boys with ADHD appear more likely to have fathers with a prior childhood history of ADHD (Silverthorn, Frick, Kuper, & Ott, 1996).

Selective referral bias among clinically diagnosed children has been cited as a reason for the higher predominance of ADHD among males in clinical as opposed to epidemiological-based samples (Barkley, 1998). Clinically-referred male children have been found to behave more aggressively and antisocial which inevitably leads to earlier referral (Barkley, 1998). Carlo, Raffaelli, Laible and Meyer (1999) attributed the perceived nonaggressiveness of female children to their significantly higher levels of perceived overt empathic and sympathetic behaviour as a result of their differential exposure to varying parental socialization practices, relative to males.

Informant variability (education, intelligence or emotional level, "halo" or expectancy effects) among teachers and parents is also likely to account for the perceived male predominance of ADHD (Mandal, Olmi, & Wilczynski, 1999). For example, teachers rather than parents, tend to frequently identify more male children than females as having ADHD due to an inherent behavioural response bias in focusing exclusively on such children's negative social behaviour (Danforth & DuPaul, 1996). Furthermore, "halo" or expectancy effects including children being perceived as interacting either negatively or aggressively with teachers and peers are more likely to result in such children being identified with ADHD, irrespective of children's actual observed or objective levels of activity and inattention in the classroom (Schachar, Sandberg, & Rutter, 1986).

Aetiology.

Structural and functional neuroimaging and electroencephalographic studies of children with ADHD suggest that this neurodevelopmental disorder appears to be characterized

by localized and nonspecific neuroanatomical and neurophysiological abnormalities of unknown aetiology (Baving, Laucht, & Schmidt, 1999; Tannock, 1998). More recently, Anderson, Dover, Yang, Holahan, Shaywitz, Marchione, Hall, Fletcher and Shaywitz (2000) implicated the role of lower adrenomedullary functioning and lower sympathetic epinephrine excretion as contributory factors towards accounting for the associative behavioural and academic impairment of ADHD children.

It is unlikely, however, that any single causative agent accounts for the behavioural symptomatology of ADHD (Cantwell, 1996). Cumulative evidence gathered from familial aggregation, twin, and adoption studies appears to implicate genetic familial factors in the development of this neurodevelopmental disorder in some children (Sherman, Iacono, & McGue, 1997). Furthermore, based on a large sample of 1,938 families with twins and siblings aged between four and 12 years (Total Children = 5,067), Levy, Hay, McStephen, Wood and Waldman (1997) recently estimated the hereditability of ADHD among Australian children to vary between 0.75 and 0.91. The hereditability of childhood ADHD is therefore significantly higher compared to other behavioural disorders such as Depressive Disorders, Autism, and Tourette's Syndrome (Plomin, Owen, & McGuffin, 1994). There is little agreement, however, concerning the mode of inheritance of ADHD, and whether it is attributable to the effects of either one or more specific genes (Tannock, 1998).

Genetic factors alone, however, do not account for the incidence and development of all childhood ADHD cases (Barkley, 1998). For example, situational or environmental influences such as family dysfunction, parent-child relationships, and parental psychopathology are also considered to be equally important candidates in the aetiology

of ADHD among children (White, 1999). Based on findings gathered from 576 raised-together monozygotic or dizygotic-twin American boys aged 11 to 12 years Sherman et al. (1997) suggested that genetic rather than shared or nonshared environmental factors more strongly account for the behavioural symptomatology of ADHD among children. Among Australian children, Rhee, Waldman, Hay and Levy (1999) reported that genetic factors strongly account for the development of childhood ADHD in males, whereas environmental factors appear to influence the development of ADHD in female children.

Comorbidity and ADHD

Longitudinal research has demonstrated that ADHD children are at high-risk to a range of comorbid academic, behavioural, and psychosocial difficulties in adolescence and later adulthood, compared with their Non-ADHD peers (Wilson & Marcotte, 1996). Furthermore, the comorbidity or the incidence of one or more coexisting psychiatric disorders (depression, anxiety) and peer relationship difficulties appears significantly more common among children with ADHD than nondisordered or learning disabled children (Biederman, Faraone, Mick, Moore, & Lelon, 1996). For example, between 50% to 80% of ADHD children frequently satisfy diagnostic criteria for other academic, psychiatric, and behavioural disorders (Tannock, 1998).

Comorbid Academic Difficulties.

Academic underachievement appears to be an impairment most often associated with ADHD in childhood, later adolescence, and school (Wender, 1995). ADHD children are likely to experience both deficient academic performance (productivity) and deficient

academic achievement (subject mastery), relative to their nondisordered classmates (Barkley, 1998). The deficient academic performance often appears as a result of inability to show sustained concentration and persistence on academic tasks which require attention to detail (Wender, 1995). In some cases, the academic achievement of ADHD children is further compromised by the presence of an underlying learning disability, which appears to be comorbid with ADHD in 10% to 92% of cases (Biederman, Newcorn, & Sprich, 1991). More recent estimates, however, suggest that learning disabilities are prevalent in 10% to 25% of ADHD children (American Academy of Child and Adolescent Psychiatry, 1997). These estimates depend, however, on the diagnostic educational criteria used to define learning disabilities.

Learning disabilities among ADHD children are particularly significant because many children with comorbid learning disabilities are at-risk of lowered self-esteem and increased depression which may affect these children's peer acceptance, subsequent psychological adjustment, and interpersonal functioning (Stanley, Dai, & Nolan, 1997). The significantly increased psychological problems among learning disabled children have also been found to predict the proportion of these children in receipt of school-based and post-school educational and psychological support services (Prior, Smart, Sanson, & Oberklaid, 1999; Rock, Fessler, & Church, 1997). Furthermore, many academically impaired ADHD children with comorbid learning disabilities are significantly more likely to be psychosocially at-risk in terms of increased mental health service utilization, being unemployed, or occupying lower-ranked occupational positions, relative to Non-ADHD children at post-school follow-up (Woodward & Fergusson, 2000).

Academic problems in children with ADHD appear to increase developmentally with age (Fischer, Barkley, Edelbrock, & Smallish, 1990). In an educational setting, as many as 63% of ADHD children may require academic tutoring (Faraone, Biederman, Lehman, Spencer, Norman, Seidman, Kraus, Perrin, Chen, & Tsuang, 1993). Furthermore, up to 40% of children with ADHD are likely to be in receipt of special educational assistance for associative learning and/or behavioural problems (Barkley, Fischer, Edelbrock, & Smallish, 1990). Barkley et al. (1990) further reported that ADHD children are at least three to eight times more likely to have failed a grade (29.3% vs. 10.6%), been suspended (46.3% vs. 15.2%), expelled (10.6% vs. 1.5%), or dropped out of school (9.8% vs. 0%), respectively relative to their nondisordered peers. In addition, Weiss and Hechtman (1993) stated that as many as 35% of ADHD children may drop out or fail to finish high school. Of those who do complete their secondary education, few elect to pursue any tertiary-based university degree program (Weiss, Hechtman, Milroy, & Perlman, 1985).

Comorbid Behavioural and Psychosocial Difficulties.

Children with ADHD also exhibit a significantly higher incidence of other disruptive behaviour disorders, such as oppositional defiant and conduct disorders (Satterfield, Swanson, Schell, & Lee, 1994). Oppositional defiant disorder (ODD) tends to co-occur in as many as 35% of children with ADHD (Biederman et al., 1991), while conduct disorder (CD) is estimated to co-occur in 30% to 50% of clinical and epidemiological samples (Schachar & Tannock, 1995). Although ODD and CD share common aggressive and antisocial symptomatology, these two childhood disorders are conceptually distinct (Biederman, Faraone, Milberger, Jetton, Chen, Mick, Greene, & Russell, 1996c). Children who meet diagnostic criteria for ODD also often satisfy

diagnostic criteria for CD (Kuhne, Schachar, & Tannock, 1997). Furthermore, the comorbidity of ODD and CD appears to be more common in boys than girls with ADHD (Jensen, Martin, & Cantwell, 1997).

Delinquent antisocial behaviour is also common in 25% to 40% of clinically referred ADHD children, especially among boys with early CD (American Academy of Child and Adolescent Psychiatry, 1997). Children with ADHD also appear more likely to regularly use cigarettes, experiment with drugs, and develop significant substance abuse dependencies in adolescence and later adulthood (American Academy of Child and Adolescent Psychiatry, 1997). Conduct disorder rather than ADHD *per se* appears to influence the development and maintenance of antisocial disorders in adolescents with ADHD (Milberger, Biederman, Faraone, Chen, & Jones, 1997). Furthermore, conduct problems in childhood also tend to predict both juvenile and adult criminality in later life (Satterfield & Schell, 1997).

Diagnostic Criteria for Childhood ADHD

Diagnosing Childhood ADHD.

For a reliable and valid childhood diagnosis of ADHD to be ascertained, certain diagnostic criteria need to be adhered to. The American Psychiatric Association established definitional and diagnostic criteria to clinically diagnose childhood ADHD in its Diagnostic and Statistical Manual of Mental Disorders (DSM). DSM is a clinically rather than empirically derived classification system based primarily on

professional consensus, as reflected through the findings of both contemporary research and clinical field trials (Montague, McKinney, & Hocutt, 1994). The definitional criteria utilized to diagnose childhood ADHD remain one of the most controversial and intensely debated topics, as evidenced by the evolving and revised nomenclature for this childhood disorder in successive DSM editions (American Psychiatric Association, 1968, 1980, 1987, 1994).

ADHD Diagnostic Criteria: DSM-II to DSM-III-R.

Previous conceptualizations of ADHD have resulted in this diagnostic term being referred to by varying nomenclature (hyperkinesis, Attention Deficit Disorder) due to the differential importance and emphasis being placed on one or more of the three core behavioural characteristics: impulsivity, inattention, and motor excess (Gaub & Carlson, 1997a). Although the first edition of the DSM was published in 1952, ADHD was not officially recognized until the publication of DSM-II (American Psychiatric Association, 1968). DSM-II introduced the term hyperkinesis or "hyperkinetic reaction of childhood" to reflect the motoric disinhibition characteristic of this disorder which had been highlighted by Chess (1960). DSM-III (American Psychiatric Association, 1980) subsequently renamed this disorder Attention Deficit Disorder (ADD) due largely to the research of Douglas and her associate (Douglas, 1972; Douglas & Peters, 1979) who had stressed that deficits in attention and impulsivity were of greater significance than hyperactivity in the diagnosis of this childhood disorder. DSM-III subsequently differentiated two subtypes of ADD characterized either by the presence (ADD/H) or absence (ADD/WO) of hyperactivity (Barkley, 1997a). Very limited and inconclusive empirical research, however, existed at the time to validate this ADD subtyping approach (Barkley, 1998).

When the revised edition of DSM-III (DSM-III-R) was published in 1987, a unidimensional approach was adopted with the creation of a single diagnostic category termed Attention-Deficit/Hyperactivity Disorder (ADHD) (Cantwell & Baker, 1992). A clinical diagnosis of ADHD required a child to display any eight of 14 symptoms of inattention, impulsivity, and motor hyperactivity (Barkley, 1997a). Symptoms were presented in a single unitary list because there existed insufficient evidence to suggest which symptoms reflected inattention, impulsivity, and hyperactivity (Barkley, 1998). Furthermore, only diagnostic criteria for ADD/H were stipulated (Barkley, 1997a).

Some researchers argued that by failing to wait for further empirical evidence to support the validity of DSM-III criteria, DSM-III-R was published prematurely (Werry, Reeves, & Elkind, 1987). Insufficient empirical evidence existed, therefore, at that time to support the construction of diagnostic criteria for ADD/WO as a distinct and valid diagnostic entity (Barkley, 1997a). In instances where the predominant behavioural feature included developmentally inappropriate attention, a diagnostic category termed Undifferentiated Attention Deficit Disorder (UADD) was tentatively created (American Psychiatric Association, 1987). Although this term was considered equivalent to ADD in DSM-III, clear criteria were not provided to guide its diagnosis (Gomez et al., 1999). Hence, the diagnosis of UADD was not widely utilized within the professional community (Shaywitz & Shaywitz, 1991).

Current ADHD Diagnostic Criteria: DSM-IV.

The most recent edition, DSM-IV (American Psychiatric Association, 1994), conceptualizes that the diagnosis of ADHD is based on two distinct behavioural

dimensions: Inattention and Hyperactivity-Impulsivity (Barkley, 1996). Results of both factor-analytic studies and field trial research consistently highlight the importance of these two core factors in the diagnosis of ADHD (Pillow, Pelham, Hoza, Molina, & Stultz, 1998). Furthermore, Barkley (1996) conceived that hyperactivity and impulsivity are not independent behavioural symptoms, but represent a unidimensional behaviour termed "disinhibition".

The current diagnostic criteria comprising DSM-IV (reproduced in Table 1) are different from those listed in DSM-III-R. In DSM-IV, greater behavioural heterogeneity is accepted as distinctive of a diagnosis of ADHD (American Psychiatric Association, 1994). The current clinical diagnosis of ADHD is based on a list of 18 symptoms that include nine symptoms of inattention and nine symptoms of hyperactivity-impulsivity (Lahey, Applegate, McBurnett, Biederman, Greenhill, Hynd, Barkley, Newcorn, Jensen, Richters, Garfinkel, Kerdyk, Frick, Ollendick, Perez, Hart, Waldman, & Shaffer, 1994). A minimum threshold of at least six symptoms of inattention and/or hyperactivity-impulsivity is required to clinically diagnose childhood ADHD (American Psychiatric Association, 1994). Furthermore, the scientifically preferred North American ADHD diagnostic criteria of DSM-IV (American Psychiatric Association, 1994) closely resemble those incorporated within the *Information Classification of Diseases*, 10th Edition (ICD-10; World Health Organization, 1993) which refers to childhood ADHD in Britain and Europe as "hyperkinetic disorder" (Tripp, Luk, Schaughency, & Singh, 1999).

To ensure that ADHD is reliably and validly diagnosed, children need to exhibit severe and developmentally inappropriate social levels of inattention and/or

hyperactivity/impulsivity in at least two or more settings (e.g., school, home) for at least six months prior to the age of seven years (American Psychiatric Association, 1994). Furthermore, multiple informant sources (e.g., teacher, parent) are considered more valid in preference to single informant sources (teacher or parent) in efficiently and concordantly diagnosing DSM-IV childhood ADHD (Mitsis, McKay, Schulz, Newcorn, & Halperin, 2000). The diagnostic DSM-IV criteria utilized to clinically diagnose ADHD among school-aged children are presented in Table 1.

Table 1: DSM-IV Diagnostic Criteria for Childhood Attention-Deficit/Hyperactivity Disorder.

A. Either (1) or (2):

(1) Six (or more) of the following symptoms of **Inattention** have persisted for at least six months to a degree that is maladaptive and inconsistent with developmental level

Inattention

(a) Often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities

(b) Often has difficulty sustaining attention in tasks or play activities

(c) Often does not seem to listen to when spoken to directly

(d) Often does not follow through on instructions or fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behaviour or failure to finish instructions)

(e) Often has difficulty organising tasks and activities

(f) Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)

(g) Often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)

(h) Is often easily distracted by extraneous stimuli

(i) Is often forgetful in daily activities

Table 1. *(continued ...)*

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(2) Six (or more) of the following symptoms of **Hyperactivity - Impulsivity** have persisted for at least six months to a degree that is maladaptive and inconsistent with developmental level:

Hyperactivity

(a) Often fidgets with hands or feet or squirms in seat

(b) Often leaves seat in classroom or other situations in which remaining seated is expected

(c) Often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)

(d) Often has difficulty playing or engaging in leisure activities quietly

(e) Is often "on the go" or often acts as if "driven by a motor"

(f) Often talks excessively

Impulsivity

(g) Often blurts out answers before questions have been completed

(h) Often has difficulty awaiting turn

(i) Often interrupts or intrudes on others (e.g., butts into conversations or games)

B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.

C. Some impairment from the symptoms is present in two or more settings (e.g., at school [at work] and at home).

Table 1. *(continued ...)*

D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.

E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

Code based on type:

314.01 **Attention-Deficit/Hyperactivity Disorder, Combined Type:** if both criteria A1 and A2 are met for the past 6 months.

314.00 **Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type:** if Criterion A1 is met but Criterion A2 is not met for the past 6 months.

314.01. **Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type:** if Criterion A2 is met but Criterion A1 is not met for the past 6

months.

Coding note: For individuals (especially adolescents and adults) who currently have symptoms that no longer meet full criteria. "In Partial Remission" should be specified.

Source: *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.).

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Currently, DSM-IV stipulates that a childhood diagnosis of ADHD may be one of three Subtypes: Predominantly Inattentive Type, Predominantly Hyperactive-Impulsive Type or Combined Type (American Psychiatric Association, 1994). More recently, Weiler, Bellinger, Marmor, Rancier and Waber (1999) reported that 92% of female children are likely to receive a DSM-IV diagnosis of ADHD Predominantly Inattentive Subtype, whereas male children are equally predominantly overrepresented among all three ADHD Subtypes. The convergent and collaborative recent findings of both Barkley (1997b) and Houghton, Douglas, West, Whiting, Wall, Langsford, Powell and Carroll (1999), however, conceive that ADHD is best conceptualized as either one of two DSM-IV Subtypes: ADHD Predominantly Inattentive, or ADHD Combined.

Correspondence between DSM-III, DSM-III-R, and DSM-IV.

Although there is now a steady growth of recent accumulative and convergent clinical and behavioural data about DSM-IV diagnosed ADHD children (Willcutt, Pennington, Chhabildas, Friedman, & Alexander, 1999), detailing the evolving diagnostic nomenclature characteristic of ADHD is important for several reasons. Many childhood ADHD-related empirical studies conducted between the early 1980s and late 1990s based their contextual definitive findings on DSM-III or DSM-III-R diagnostic criteria

(Marks, Himelstein, Newcorn, & Halperin, 1999). Bridging and being able to construe valid generalizations from one DSM classificatory system to another is important in order to socially and educationally ameriolate DSM-IV diagnosed ADHD children's peer relationship problems based on the extensive societal cost resultant from the gathered research data (Biederman, Faraone, Weber, Russell, Rater, & Park, 1997).

Recent research investigations which have addressed the degree of behavioural and cognitive correspondence between DSM-III, DSM-III-R, and DSM-IV diagnostic ADHD criteria suggest that there exists close correspondence between ADHD children diagnosed according to these three varying diagnostic nomenclatures (Biederman et al., 1997). Although conceptually distinct, Biederman et al. (1997) found that 93% of clinically referred children (Total Sample = 405) who received a DSM-III-R ADHD diagnosis also received a DSM-IV ADHD diagnosis. Further, the Kappa coefficient assessing the agreement between DSM-III-R and DSM-IV ADHD diagnoses among three board-certified child and adult psychiatrists in this study was 0.73 ($Z = 14.6$, $p < 0.001$) (Biederman et al., 1997). In an empirical comparison of DSM-IV ADHD diagnoses of 56 children with their retrospective DSM-III diagnoses on demographic, behavioural, cognitive and comorbidity variables, Morgan, Hynd, Riccio and Hall (1996) also found significantly close correspondence on all four relevant variables.

Behavioural Symptomatology of Childhood ADHD

Inattention.

All children with ADHD share aspects of three common core characteristic behavioural symptoms: inattention, hyperactivity, and impulsivity. Inattention refers to these children's inability to maintain or sustain visual attention relative to others of the same

age and gender (Barkley, 1998). Children with ADHD who display attentional difficulties often find it difficult to sustain attention to boring and repetitive tasks which they find aversive or unpleasant (Goldstein, 1997). Tasks or activities which require sustained self-application and mental effort and offer little intrinsic appeal or immediate reinforcement upon completion also often present problems for these children (Barkley, DuPaul, & McMurray, 1990; Tannock, 1998). Parents and teachers often describe that these children are disorganized, forgetful, daydream, distractible, fail to follow requests or instructions, and frequently shift from one incomplete task or activity to another (American Psychiatric Association, 1994).

The visual attentional deficits characteristic of ADHD, however, do not effectively aid in differentating ADHD children from their peers with other psychiatric disorders, such as anxiety, dysthymia, conduct, pervasive developmental, or oppositional defiant disorders (Swaab-Barneveld, De Sonneville, Cohen-Kettenis, Gielen, Buitelaar, & Van Engeland, 2000). Furthermore, Pearson, Yaffee, Loveland and Norton (1995) stated that the fleeting covert attentional spans of ADHD children can not be attributed to underlying developmental immaturity. More recently, Carlson and Tamm (2000) implicated the role of motivational factors as attributable to ADHD children's avoidance of tasks that require persistent and sustained self-application. The presence of intrinsic rewards, however, has been found to enhance ADHD children's self-rated motivation on tasks which require effortful self-application (Carlson, Mann, & Alexander, 2000).

Hyperactivity.

Hyperactivity refers to ADHD children's deficient ability in being able to appropriately self-regulate their motor and vocal behaviour (Tannock, 1998). Parents and teachers often describe these children as physically more active, restless, and fidgety compared to Non-ADHD children (Barkley, 1998). Behavioural descriptions of ADHD children as being "incessantly on the go", "talking excessively", "interrupting others' activities" are common, as are examples of off-task and out-of-seat classroom behaviours (e.g., shouting, moving around the classroom without permission) (American Psychiatric Association, 1994). Similarly, Antrop, Roeyers, Van Oost and Buysse (2000) found that when the overt behaviour of 30 DSM-IV unmedicated ADHD and 30 Non-ADHD six to 12-year-old children were videotaped in a 15-minute waiting situation, either with or without nontemporal stimulation, there were significant between-group differences. In each experimentally induced waiting situation either with or without the presentation of a documentary video, ADHD children were significantly more overactive than age-matched Controls (repetitive behaviour, movement of legs and trunk, talking, opening the door) (Antrop et al., 2000).

Although ADHD children exhibit disproportionately higher-than-normal levels of motor and vocal activity, behavioural hyperactivity alone does not tend to differentiate these children from their Non-ADHD peers (Barkley, 1998). In a recent investigation of the objective hyperactivity levels of 42 DSM-IV diagnosed ADHD and 22 Non-ADHD children aged from seven to 12 years, Dane, Schachar and Tannock (2000) recorded the nature of children's social interaction over the course of a full-day of assessment (morning/afternoon), blind to children's diagnostic status. In a morning test session, children's anxiety, depression, intellectual, and academic (reading, mathematics) functioning were assessed. Children's receptive/expressive language and attentional

skills (reaction time, response inhibition, phonological awareness, perceptual planing/organization, emotional cue recognition) were measured in an afternoon test session. Although all children were assessed on a range of behavioural and nonbehavioural variables, their purpose was only to provide varying situational contexts during which children's hyperactivity could be validly measured. Although the investigative results revealed that ADHD children displayed significantly higher levels of activity than Controls during the afternoon session, there were no significant differences in children's morning activity levels, suggesting diminished persistence in behavioural self-regulation over time (Dane et al., 2000).

Situational and/or temporal factors therefore affect the degree to which children with ADHD are likely to exhibit socially inappropriate levels of hyperactivity (Dane et al., 2000). In freeplay recreational settings (physical education, lunch/recess), ADHD children are likely to be less distinguishable from their Non-ADHD peers than in highly restrictive and structured classroom settings (Luk, 1985). Furthermore, rule-governed classroom tasks (mathematics, reading) which require greater planning and organizational skills often appear to constitute areas in which ADHD children are likely to exhibit inappropriate levels of hyperactivity, compared to their Non-ADHD peers (Porrino, Rapoport, Behar, Sceery, Ismond, & Bunney, 1983). Due to the highly reinforcing nature of novel or unfamiliar surroundings (e.g., beginning of the school year, one-to-one contact), ADHD children appear to exhibit fewer behavioural problems (Barkley, 1998). The pervasive situational noncompliance of ADHD children, however, tends to be consistently stable across varied classroom settings, and therefore instrumental in differentiating ADHD from Non-ADHD children (Beck, Kotkin, Swanson, & Miller, 1999).

Impulsivity.

Impulsivity relates to ADHD children's failure to inhibit and moderate their social behaviour in response to situational demands (Schachar, Tannock, Marriott, & Logan, 1995). Impulsivity is characterized by ADHD children's tendency to respond and act quickly without considering the consequences of their actions either for themselves or for others (Barkley, 1998). ADHD children often interrupt or intrude on others, fail to wait for instructions, talk out of turn, or behave or say something indiscreetly (American Psychiatric Association, 1994). Motives for their actions can often be due to the inability to delay immediate gratification (Carlson & Tamm, 2000). Unlike inattention, symptoms characteristic of both hyperactivity and impulsivity remain "hallmark" symptoms of ADHD because these combined social behaviours tend to effectively differentiate ADHD and Non-ADHD children (Barkley, Grodzinsky, & DuPaul, 1992). Furthermore, Nigg (2000) argued that the increased incidence of hyperactivity and impulsivity among ADHD children may be due to associative differential deficits in the working memory, executive control, motivation inhibition, and attentional control of such children.

Developmental Course and Behavioural Stability of Childhood ADHD

Age-of-Onset and Impairment of ADHD.

Symptoms of ADHD typically appear to manifest in early childhood between the ages of two and seven years (Wender, 1995). For child and adolescent referrals, the mean age-of-onset of ADHD varies between three and four years (Barkley, Anastopoulos, Guevremont, & Fletcher, 1990). In approximately 50% of cases, onset is before the age of four years (Coker & Thyer, 1990). In some cases, the age-of-onset may be as late as

11 years (Applegate, Lahey, Hart, Biederman, Hynd, Barkley, Ollendick, Frick, Greenhill, McBurnett, Newcorn, Kerdyk, Garfinkel, Waldman, & Shaffer, 1997).

Although the age-of-onset of ADHD-related behavioural symptomatology is typically within early childhood, age-of-impairment post-dates age-of-onset by at least several years because cumulative behavioural symptoms may not interfere with social or academic functioning until later in childhood (Barkley, 1998). For example, Applegate et al. (1997) found the age-of-onset of the first ADHD symptom to be one year of age and the median age-of-impairment to be 3.5 years. Alternatively, social impairment may not occur until ADHD children have entered school when social and academic demands are placed upon them (Barkley, 1998).

Behavioural and Diagnostic Stability of ADHD.

Behavioural symptoms of ADHD are usually quite evident well before the commencement of formal schooling (National Health and Medical Research Council, Commonwealth of Australia, 1997a). By three years of age, over 50% of children with ADHD are already exhibiting overt behavioural problems characterized by overactivity, inattention, and situational noncompliance (Barkley, 1998). Palfrey, Levine, Walker and Sullivan (1985) suggested that even before the age of four years, approximately 40% of children have inattentive problems that of parental concern.

Many early childhood problems, however, appear to remit within three to six months of onset (Campbell, 1995). Furthermore, 50% to 90% of preschool children who display inattentive and overactive behaviour do not appear to develop ADHD in later childhood or adolescence (Barkley, 1998). Although varied behavioural problems are common

among very young children one to two years of age, Mathiesen and Sanson (2000) found that 18-month-old children who exhibited problematic behavioural dysregulation were significantly more likely to continue to display persistent behavioural problems at 30 months of age. Furthermore, at 30 months, behaviourally disordered children were also significantly more socially and emotionally maladjusted relative to their nondisordered peers (Mathieson & Sanson, 2000). Similarly, Pierce, Ewing and Campbell (1999) demonstrated that "hard-to-manage" preschool children whose aversive behavioural problems persisted from ages three to nine years were significantly more likely to continue to meet diagnostic criteria for an externalizing behavioural diagnosis (ADHD) at 13 years of age, compared to children with less transient behavioural problems.

Although behaviourally disordered preschool and primary school children are frequently diagnosed with ADHD, Lahey, Pelham, Stein, Loney, Trapani, Nugent, Kipp, Schmidt, Lee, Cale, Gold, Hartung, Willcutt and Baumann (1998) stated that these children may be incorrectly diagnosed with ADHD due to their hyperactivity, rather than their functional impairment.

In an attempt to verify the validity of DSM-IV ADHD among children aged from four to six years, Lahey et al. (1998) compared 126 age-matched ADHD and 126 Non-ADHD children on a range of measures of social and academic impairment. To reliably measure differences in the functional impairment of these ADHD and Non-ADHD children, Lahey et al. (1998) utilized four informant sources: teachers, parents, trained interviewers, and children's self-reports. When teacher and parent-reported symptoms of children's oppositional defiant disorder, conduct disorder, anxiety, and depression

were statistically controlled to avoid attributing impairment to ADHD, the results revealed that young ADHD children were significantly more functionally impaired compared to Controls. Teachers often rated the young ADHD children as significantly more likely to be ignored and disliked by peers, and significantly less popular, less prosocial, less cooperative, and less assertive, relative to comparison children. Furthermore, ADHD children also reported significantly greater friendship difficulties in either making friends or being able to engage in peer-related activities. Parents indicated that the young ADHD children were significantly more likely to be in receipt of special educational services for learning or behavioural problems, relative to their nondisordered peers. Trained interviewers (blind to children's diagnostic status), like parents, also tended to give ADHD children significantly lower ratings of adaptive functioning than comparison children. Young children can therefore be validly diagnosed as ADHD using DSM-IV criteria, by utilizing structured diagnostic protocols (Lahey et al., 1998).

Historically, it was believed that all ADHD children "outgrew their problem" by adolescence or adulthood (Cantwell, 1996). Longitudinal follow-up studies, however, consistently show that between 30% to 80% of children with ADHD continue to have this disorder as adolescents, while 8% to 66% may have this disorder in late adolescence or young adulthood (Barkley, 1996). For example, over a 12-year follow-up period, McGee, Partridge, Williams and Silva (1991) demonstrated that over 75% of preschool behaviourally disordered ADHD children (initially three years of age) continued to show persistent behavioural, cognitive, and academic deficits at age 15 years. In addition, approximately 71% of teachers believe that ADHD-related

symptomatology continues throughout adolescence, and is therefore not exclusively a childhood disorder (Hawkins, Martin, Blanchard, & Brady, 1991).

Few empirical studies, however, appear to map the developmental course of childhood ADHD symptomatology (inattention, hyperactivity-impulsivity). In a four-year longitudinal study of 177 clinic-referred DSM-III-R ADHD males (Mean Age = 9.4 years), Hart, Lahey, Loeber, Applegate and Frick (1995) found there was an age-related decline in children's hyperactivity-impulsivity symptomatology, independent of either pharmacological or inpatient treatment. Although there was a significant decline in inattentive symptoms during the year following initial assessment, inattentive symptoms in the ADHD males did not decline thereafter (Hart et al., 1995).

August, Braswell and Thuras (1998) reported similar findings concerning the diagnostic stability of childhood ADHD. In their study, a large school-based community sample (N = 7231) of children enrolled in Grades One, Two, Three, and Four were screened for ADHD and other externalizing and internalizing disorders, and followed over a five-year period, at which time they were completing Grades Six, Seven, Eight, and Nine. Within this sample, 132 children were diagnosed with ADHD, based on DSM-III-R criteria. To investigate the developmental stability of ADHD among these 132 children, August et al. (1998) instructed the children's mothers to complete structured diagnostic interviews at entry into the study (Year One), and subsequently three (Year Four) and four years later (Year Five). At each assessment point (Years One, Four, and Five), mothers rated their ADHD child's behavioural and adaptive functioning. In addition, teachers also rated the overt behavioural patterns (attention, hyperactivity) of ADHD children annually.

Over a five-year duration, August et al. (1998) found that ADHD children's behavioural symptomatology differentially declined, according to parental and teacher diagnostic data. Parental data revealed that the frequency of children's inattentive and hyperactive/impulsive behaviour significantly decreased with age (from Years One to Four), with symptoms of hyperactivity declining more rapidly. Between Years One and Two, the teachers' data demonstrated that inattentive problems declined significantly faster than symptoms of hyperactivity, whereas between Years Two and Four, symptoms of hyperactivity tended to decline significantly faster than inattention problems. Of those 132 children who were initially diagnosed with ADHD, the parental diagnostic data demonstrated that only 69% still met criteria for ADHD in either Years Four or Five. Furthermore, children who continued to be persistently diagnosed with ADHD were found to have significantly higher rates of conduct (Year One), anxiety (Year Four), and oppositional defiant disorders (Years One, Four, and Five), relative to children whose ADHD had remitted after Year One (August et al., 1998).

Symptoms of ADHD, therefore, do not always persist into adolescence and adulthood. In some cases, ADHD may represent a transient disorder that is likely to remit early in childhood or adolescence (Biederman, Faraone, Milberger, Curtis, Chen, Marrs, Ouelette, Moore, & Spencer, 1996b). At four-year follow-up assessment in their study, Biederman et al. (1996b) found that although 85% of the available sample (N = 128) continued to meet DSM-III-R criteria for ADHD, 15% remitted either before or after the age of 12 years. Furthermore, familial history of ADHD, psychosocial adversity (parental psychopathology, socioeconomic status, family intactness, family conflict) and psychiatric comorbidity of ADHD symptoms with conduct, mood and anxiety

disorders were found to best predict the persistence of ADHD symptoms among children.

Personal and Interpersonal Relationships of ADHD Children: Predictors of ADHD Children's Negative Peer Social Status

Peer-Related Social Difficulties of ADHD Children.

The associative social and educational impairment of ADHD often appears to formatively influence, precipitate, and maintain the peer relationship problems of children with ADHD (Gresham, MacMillan, Bocian, Ward, & Forness, 1998). The social behaviour of such children is often described as qualitatively immature and socially incompetent (Goldstein, 1997). For example, some children with ADHD lack basic social skills. Furthermore, some may appear to experience difficulty in a variety of social situations in interacting with their peers. Knowing how to join an ongoing activity or conversation, how to take turns, or how to behave appropriately in a given situation is often problematic (Goldstein, 1997).

Gresham (1988) postulated that the peer-related social difficulties that ADHD children frequently experience may be due to one of four problems: social skill, performance, self-control, or self-control performance skill deficits. Social skill deficits relate to ADHD children's lack of social skills in varying situation contexts, whereas ADHD children with performance deficits are often unable to perform requisite adaptive skills at an acceptable level (Wheeler & Carlson, 1994). Alternatively, self-control deficits (anxiety, social withdrawal) interfere with ADHD children's ability to initiate peer interaction whereas self-control performance deficits (hyperactivity, impulsivity) refer to these childrens' behavioural regulatory deficiencies (Wheeler & Carlson, 1994). Gresham (1988) suggested that identifying the skill deficiencies of ADHD are

important as such target behaviour needs to be efficiently extinguished before appropriate instructional social skills can be effectively taught.

More recently, Milch-Reich, Campbell, Pelham, Connelly and Geva (1999) attributed the social difficulties of ADHD children to their specific social reasoning deficits in encoding, representing, and understanding ongoing social events (social cues, peer behaviour). Similarly, Matthys, Cuperus and Van Engeland (1999) confirmed that children with ADHD frequently exhibit deficient social problem-solving skills in encoding and generating solutions to problematic social situations (being disadvantaged, social expectations).

In conceptualizing ADHD children's severe peer-related difficulties, Greene, Biederman, Faraone, Ouellette, Penn and Griffin (1996) postulated that the peer relationship problems of these children should be termed "social disabilities". Based on this psychometric approach, Greene et al. (1996) found that 22% of the ADHD probands (N = 140) aged between six and 17 years in their study, qualified as "socially disabled", as this subgroup of ADHD children were significantly more anxious, depressed, socially withdrawn, aggressive, delinquent, and cognitively impaired than either their "nonsocially disabled" ADHD counterparts or Non-ADHD comparison children. Socially disabled ADHD children are therefore at very high risk of severe social and educational dysfunction (psychiatric hospitalization, adult criminality) (Greene et al., 1996), particularly because of the significantly higher levels of intrafamily conflict resident within the families of such ADHD children (Kaplan, Crawford, Fisher, & Dewey, 1998).

The peer difficulties that children with ADHD commonly experience can often be traced back to preschool even before the age of six years (Campbell, 1995). Investigative studies reveal that preschool children often evidence an array of externalizing (overactivity, aggression toward peers, noncompliance, tantrums) and internalizing behaviours (anxiety, sadness, social withdrawal, fearfulness) (Campbell, 1995). Over one and two-year periods, the problematic behaviour of children tends to be remarkably high both within representative and highly selected samples (Egeland, Kalkoske, Gottesman, & Erickson, 1990; Painta & Caldwell, 1990). Furthermore, follow-up studies show that children who exhibit problematic behaviour in preschool continue to display disordinate and inappropriate levels of behaviour even into late adolescence (Aguilar, Sroufe, Egeland, & Carlson, 2000). Unfortunately, even when the problem behaviour of preschool children subsides, these children still continue to experience peer dislike and rejection due to the maintained negative reputational bias of peers (Campbell, 1995).

Emotional Predictors of ADHD Children's Negative Social Status.

The emotional responsivity and reactivity of ADHD children also appears to influence the nature of ADHD children's peer relationships (Braaten & Rosén, 2000; Melnick & Hinshaw, 2000). In an investigation of the affective behaviour of children either with or without ADHD, Braaten and Rosén (2000) examined differences in the empathy, emotional behaviour, intensity, and reactions of 24 unmedicated ADHD and 19 Non-ADHD boys aged between six to 12 years.

To assess the affective behaviour of children, all respondents were successively read eight fictitious counterbalanced stories once in three age-segregated groups (6 years 1

month to 6 years 11 months; 7 years 1 month to 10 years 11 months; 11 years 1 month to 12 years 11 months) to facilitate children completing the assigned task requirements (Braaten & Rosén, 2000). The theme of the first and latter four stories concentrated respectively either on a single basic emotion (happiness, sadness, anger, or fear), or eliciting opposite positive (happiness) and negative emotions (sadness, anger, or fear; latter four) from the children, based on the description of the character. After checking for sufficient recall after the completion of each story, all children were verbally questioned concerning their empathy with the narrated character described emotion(s) (happiness, sadness, anger, fear). Children's verbal responses were then appropriately scored based on the perceived similarity between the character's depicted emotion(s) and the children's own emotion. After the completion of this task, all children were then instructed to complete self-report measures of emotional intensity and contingent emotion to perceived reward and punishment situations. Parents were also requested to rate the frequency with which their child had exhibited emotions related to interest, joy, sadness, anger, fear, shame, and guilt during the past two weeks (Braaten & Rosén, 2000).

In examining differences in the empathy and emotional control of school-aged boys either with or without ADHD, Braaten and Rosén (2000) found that ADHD boys were significantly less empathic and tended to exhibit and self-report disproportionately more sadness, anger, and guilt, relative to Non-ADHD boys. More importantly, ADHD children were significantly inaccurate in matching their emotion with that of the depicted character, and also gave fewer character-centered verbal interpretations of the character's described emotion(s), relative to Controls. There were, however, no significant group-related differences in children's self-reported emotional intensity or

contingent emotion (Braaten & Rosén, 2000). The perceived lack of empathic behaviour of ADHD children, however, demonstrates that such children are more likely to engage in less prosocial behaviour which may account for their increased peer social rejection (Roberts & Strayer, 1996).

Similarly, Norvilitis, Casey, Brooklier and Bonello (2000) found that ADHD children (31 males, 13 females; Mean Age = 10.01 years) had significantly deficient emotional appraisal skills, relative to Non-ADHD children (24 males, 12 females; Mean Age = 10.59 years) in varying contexts. In this investigation, all children were individually shown 16 dramatized videotaped versions of a male or female child who was acting either happy, surprised, angry, sad, and/or scared. After watching the videotape, children were asked to identify their own emotion or that of the stimulus child. These were then compared with trained observers' reports to ascertain accuracy. Findings revealed that ADHD children, particularly those with significantly increased behavioural problems (hyperactivity, impulsivity, inattention), were less adept at accurately identifying emotions in themselves or others relative to Non-ADHD children (Norvilitis et al., 2000). The experiential peer relationship difficulties of ADHD children may therefore be attributable to their emotional competence deficits due to perceived failure to understand why their peers reject them in response to their aversive social behaviour (Norvilitis et al., 2000).

Although ADHD children exhibit self-regulatory emotional affective and competence deficits (Braaten & Rosén, 2000; Norvilitis et al., 2000), emotional dysregulations are not prevalent or common among all children with ADHD (Melnick & Hinshaw, 2000). Furthermore, ADHD children represent an heterogeneous population composed of

children with varying disruptive comorbid oppositional defiant and conduct disorders, due principally to underlying symptoms of hyperactivity and impulsivity rather than inattention *per se* (Frick, Lahey, Applegate, Kerdyck, Ollendick, Hynd, Garfinkel, Greenhill, Biederman, Barkley, McBurnett, Newcorn, & Waldman, 1994).

More recently, Melnick and Hinshaw (2000) examined the interrelationships between the emotional reactivity, responsivity, and peer-nominated social status of six to 12-year-old boys either with (N = 48) or without (N = 34) ADHD. In addition, children with ADHD were subdivided into a low (N = 23) and a high-aggressive (N = 25) subgroup, based on five weeks of recorded observation. To assess the emotional reactivity and self-regulatory behaviour of respondents, all children were instructed to build a frustrating and emotionally eliciting age-appropriate Lego model in the company of his parent(s). The purposeful absence of two requisite missing Lego pieces essential to fulfil the task requirement created the emotionally stimulating conditions. In completing the task requirements, the family interactions of all children were videotaped and then blindly transcribed and coded, independent of respondent's actual diagnostic status, to assess children's emotional functioning.

Controlling for core ADHD symptomatology (restlessness/impulsivity), Melnick and Hinshaw (2000) found no group-related differences in the emotional reactivity of ADHD and Non-ADHD boys. Although Melnick and Hinshaw (2000) failed to find any generalized emotional regulation difficulty between ADHD and comparison boys, low and high-aggressive ADHD boys differed significantly in their emotional reactivity. For example, high-aggressive ADHD boys tended to focus more on the pessimistic or threatening aspects of the task instead of attempting to generate ideas to make the task

conditions more acceptable. Furthermore, high-aggressive ADHD boys were also significantly more noncompliant and overtly aggressive, relative to the low-aggressive or Non-ADHD subgroup, which marginally predicted peer-nominated social preference as "least preferred friend". Emotional dysregulation deficits among ADHD children, however, may be symptomatic of these children's social difficulties they have in emotional appraisal and expression in varying contextual situations (Maedgen & Carlson, 2000).

The inferior empathic skills of ADHD children may be attributable to deficient higher order cognitive processing skills of these children (Milch-Reich et al., 1999). Lorch, Diener, Sanchez, Milich, Welsh and Van Den Broek (1999) examined the influence of story structure properties on the recall of story events by 70 ADHD (47 males, 23 females) and 62 Non-ADHD children (39 males, 23 females) aged between seven to 11 years. To assess cognitive comprehension skills, the children were instructed to listen carefully to two separate four-minute audiotaped folktales, presented in a counterbalanced order, so that they could recall and retell the plot of each narrated story to the next successive child. To ensure a complete retelling, each child was successively prompted to aid in the recall of additional information. In addition, children's recall was recorded on audiotape before being transcribed verbatim and subsequently coded, (independent of children's diagnostic status), according to predetermined ideas and a preceding causal network analysis of each narrated story.

In examining differences in the cognitive processing skills of ADHD and Non-ADHD children, Lorch et al. (1999) found that ADHD children showed significantly greater deficits in being able to effectively recall the structure and inter-related causal

connections of the story, relative to Controls. There were, however, significant differences in the cognitive skills of male and female ADHD children, dependent on their intelligence or IQ. For example, female ADHD children with high intelligence demonstrated comparable performance to Non-ADHD children of high IQ, and therefore showed no deficits in either recall or sensitivity to causal structure. Female ADHD children of low IQ, however, experienced considerable cognitive deficits relative to Non-ADHD children of similar IQ. Although male ADHD children's task performance was not moderated by intelligence, Lorch et al. (1999) suggested that the deficient task performance of these children, relative to that of comparison children with high intelligence, was more likely due to their deficient attentional and inhibitory skills rather than cognitive deficits *per se*. Furthermore, Lorch et al. (1999) commented that the cognitive processing deficits of ADHD children may account for their social difficulties due to their misinterpretation of the actions of others and/or the consequences of their own aversive behaviour.

In a subsequent study, Lorch, Milich, Sanchez, Van Den Broek, Baer, Hooks, Hartung and Welsh (2000) replicated and extended their earlier research by examining seven to 12-year-old ADHD (N = 40) and Non-ADHD boys' (N = 52) comprehension of televised stories, during which the viewing condition was experimentally manipulated (i.e., "toys present" vs. "toys absent). Although results revealed that ADHD boys were capable of periods of sustained attention or cognitive engagement in the "toys-absent" conditions of the subsequent free- and cued-recall of televised stories, significant group-related differences emerged in the "toys-present" condition. That is, ADHD children's levels of visual attention and subsequent comprehension of the causal story structure of two televised shows (i.e., a detective story; and a story about the characteristics and

behaviours of otters, bats, water-dwelling rodents, and rhinoceros) was significantly impaired in the "toys-present" condition. In conclusion, such results affirm that the performance of ADHD children is likely to suffer in social situations that necessitate and require focused effort, strategic and specific attentional skills.

Behavioural and Academic Predictors of ADHD Children's Negative Social Status.

Even in social situations where children have had little prior contact with ADHD children, Non-ADHD peers continue to maintain negative peer perceptions of these children, even as early as the first day of interaction (Erhardt & Hinshaw, 1994). To determine whether peers' initial negative evaluative impressions of ADHD children were a reliable and valid finding, Bickett and Milich (1990) sought to investigate Fourth and Fifth Grade peers' (N = 201) first social impressions of target children with either ADHD and/or comorbid learning disabilities. All Non-ADHD children were shown 16 videotaped dyadic interactions consisting of four selective pairs of male children who were in a role-play situation as either the randomly assigned host or guest of a simulated television talk show. In each videotaped interaction, an ADHD, LD, ADHD/LD, or nondisabled boy was randomly paired with a nondisabled partner. After watching one minute of the original three minute videotaped interaction either with or without the associative audio, Non-ADHD children were instructed to rate the social competence, likeability, and aggressiveness of ADHD, LD, and ADHD/LD children on a five-point Likert scale. Despite all Non-ADHD children being blind as to the diagnostic status of previously unfamiliar targeted children and of only observing limited behaviour, ADHD and LD boys were judged as unpopular and less socially competent particularly in the enacted socially demanding role of host, relative to ADHD/LD and nondisabled boys.

Although Bickett and Milich (1990) found nonsignificant peer judgemental differences between ADHD/LD and nondisabled boys, Flicek (1992) suggested that the peer relationship problems of ADHD children are often exacerbated by the presence of comorbid learning disabilities. In an investigation of the social status of 249 American Grade Two to Grade Six low-achieving ("LA"; N = 29), "LD" (N = 34), "ADHD" (N = 33), "ADHD + LA" (N = 19), "ADHD + LD" (N = 18), and "Control" (N = 116) boys, Flicek (1992) found significant social differences between "ADHD + LD" and "Control" boys, with the former group receiving significantly more peer nominations of rejection, unpopularity, lack of cooperativeness, disruptiveness, and deficient leadership skills. Similarly, earlier research by Flicek and Landau (1985) also demonstrated that peers and teachers often rated "ADHD + LD" boys as significantly more aggressive and less prosocial relative to "ADHD", "LD", or "Control" boys.

To further investigate the development of negative peer social status, Erhardt and Hinshaw (1994) examined the influence of selective behavioural and nonbehavioural variables (noncompliance, aggression, prosocial behaviour, social isolation, physical attractiveness, motor competence, intelligence, academic achievement) among a sample of 49 previously unfamiliar boys (25 ADHD, 24 Non-ADHD) aged from six to 12 years who were attending a five-week summer school research programme. To enhance naturalistic social observation, all ADHD and comparison boys were requested to work together in completing a variety of classroom and playground activities (academic tasks, crafts projects, team sports) designed to maximize social interaction. The results revealed that social behaviours, chiefly, externalized verbal and physical aggression and "noncompliance - disruption" appeared to be the most potent predictors of peers'

impressions of previously unfamiliar ADHD boys, controlling for nonbehavioural factors (Erhardt & Hinshaw, 1994).

Hinshaw, Zupan, Simmel, Nigg and Melnick (1997) investigated the behavioural (overt and covert antisocial behaviour) and internalizing (depression, social isolation) predictors of peer sociometric status among previously unfamiliar ethnically diverse ADHD (N = 73) and comparison Non-ADHD boys (N = 60) aged between six to 12 years. To observe and record the nature of social interactions between ADHD and comparison children, respondents were divided into two age-segregated groups (6 years 1 month to 9 years 4 months; 9 years 5 months, to 12 years 1 month) of between 22 to 24 children. Over the course of a six-week summer programme validated time-sampling techniques were used by four rotating trained observers (blind to children's diagnostic status) to code the social behaviour of randomized targeted children in varied contextual activities (classroom, playground, small-group).

Controlling for verbal IQ and academic achievement, Hinshaw et al. (1997) found that the significantly increased aggressive, noncompliant, and covert antisocial behaviour (stealing, property destruction) of ADHD children significantly predicted negative peer regard and peer social status. Although there were significant and nonsignificant group-related differences in children's depression and social isolation (nonparticipation in peer-related activities), only social isolation uniquely predicted negative peer social status due to its increased saliency to peers (Hinshaw et al., 1997). Furthermore, Hinshaw et al. (1997) attributed the failure to find significant differences in the social isolation of ADHD and comparison boys due to the inadequate and ill-defined

operationalization of this construct, as indicated by the marginal observer agreement statistics.

In a longitudinal investigation, Gresham, MacMillan, Bocian, Ward and Forness (1998) contrasted the at-risk social, affective, and academic status of 231 American Grade Three children with either comorbid ADHD (hyperactivity-impulsivity-inattention and conduct disorder; N = 25), internalizing/externalizing behavioural disorders ("I + E"; N = 105), with that of age-matched Controls (N = 101). Teachers' behavioural ratings, school records (disciplinary referrals, negative narrative comments, school absences), peer-nominated sociometric measures (friendship, social preference and impact scores), and relevant self-report data (social skills, loneliness, social self-concept and self-image) were all used to selectively measure children's social and affective functioning. Additionally, measures of academic competence, achievement, self-concept (relevant subscales of the Social Skills Rating Scale; Gresham & Elliot, 1990), and a sociometric peer-based "Work with Rating" scale were utilized to assess children's academic functioning. All children's assessments were conducted twice in Grade Three (Fall and Spring) and once in Grade Four (Fall or Winter).

From the commencement of Grade Three (Fall) to the Fall/Winter of Grade Four, Gresham et al. (1998) found that a mean of 65.3% of comorbid ADHD children were actively rejected by their peers, compared with only 32.7% and 12.5% of age-matched "I + E" and Control children, respectively. Furthermore, approximately 70.7% of ADHD children had significantly fewer reciprocated peer friendships compared with a mean of 47.0% and 25.7% of "I + E" and age-matched Controls, respectively. By the commencement of Grade Four, therefore, ADHD children reported being significantly

more lonely than "I + E" or Controls. There were, however, unexpected nonsignificant between-group differences on measures of social and academic self-concept, as well as general self-esteem. Gresham et al. (1998) attributed these unexpected incongruous findings to the incidence of self-serving positive illusory perceptual social biases among ADHD children.

Self-Serving Illusory Perceptual Social Biases Among ADHD Children

Self-serving illusory perceptual social biases refer to the tendency with which ADHD children have an overly idealized positive view of peers' social self-perceptions about themselves, in an attempt to counter self-perceived feelings of social inadequacy (Diener & Milich, 1997). Consequently, the behavioural problems (i.e., aggression, noncompliance) of ADHD children who are significantly more aggressive and behave more frequently in a socially inappropriate manner than their Non-ADHD peers, do not always imply that they will report significantly more peer relationship problems than their Non-ADHD peers. For example, Hughes, Cavell and Grossman (1997) found that behaviourally disordered aggressive children frequently tended to inflate and idealize the perceived social quality of their peer relationships. Biased self-serving unrealistic social cognitions, however, appear common among aggressive behaviourally disordered children (Liau, Barriga, & Gibbs, 1998). Lochman and Dodge (1998) attributed the distorted social self-perceptions of aggressive children to their lack of awareness concerning the consequences and effects of their own aversive social behaviour.

Self-serving perceptual illusory social biases, however, do not appear to be common among children with friends due to the result of norms and expectancies associated with friendship (Campbell, Sedikides, Reeder, & Elliot, 2000). For example, friendships

engender and empower feelings of self-respect, self-esteem, and positive self-regard among such children which may inhibit, negate and suppress children's subsequent self-enhancement strivings due to their desire to maintain satisfactory relational bonds with their peers (Sedikides, Campbell, Reeder, & Elliot, 1998).

Peer Relationship Problems of Male and Female ADHD Children

The documented findings concerning ADHD children's problematic peer relationships relate mainly to male ADHD children. Males are more readily and easily accessible due to the significantly higher gender predominance of ADHD among school-aged boys, particularly within clinically-referred samples (Gaub & Carlson, 1997b). Some empirical studies, however, do include both male and female ADHD children within their target sample (Kitchens, Rosén, & Braaten, 1999; Tracey & Gleeson, 1998). Gender differences between male and female ADHD children, however, rarely receive attention due to insufficient numbers. Rather, the examination of pertinent psychosocial and behavioural differences between ADHD children and an appropriately age-matched comparison LD or Control sample tends to be prioritized ahead of the examination of gender-related differences between ADHD children (Bloomquist, August, Cohen, Doyle, & Everhart, 1997; Wilson & Marcotte, 1996). Consequently, limited empirical data exist concerning the experiential peer relationships of female ADHD children (Arnold, 1996).

More recently, however, gender differences in the behavioural and social functioning of ADHD children have been investigated (Sharp, Walter, Marsh, Ritchie, Hamburger, & Castellanos, 1999). In a behavioural and social comparison of 42 age-matched ADHD girls (Mean Age = 8.9 ± 1.7 years) and 56 ADHD boys (Mean Age = 9.3 ± 1.7 years),

Sharp et al. (1999) found corresponding gender similarities. Although parents rated female ADHD children as significantly more attentionally impaired and teachers rated males as significantly more hyperactive, there were no significant gender differences in ADHD children's parental or teacher-assessed internalizing (social withdrawal, anxiety, depression) or externalizing symptomatology (delinquent, aggressive behaviour). Comorbid diagnoses (reading, conduct, and oppositional defiant disorders) among both female and male ADHD children were also relatively similar. Families of ADHD female probands, however, were significantly more likely to have a predominantly higher familial frequency of this developmental disorder among their parents and siblings, relative to male ADHD children (Sharp et al., 1999).

In a psychosocial contrast of clinically referred female ADHD children (N = 140) and their female Non-ADHD peers (N = 122), Biederman, Faraone, Mick, Williamson, Wilens, Spencer, Weber, Jetton, Kraus, Pert and Zallen (1999) also found that female ADHD children were more likely to experience impaired social, school, and family functioning. For example, female ADHD children exhibited a significantly higher incidence of mood, anxiety, and conduct disorders in addition to lower IQ and achievement scores, relative to their Non-ADHD female peers. Biederman et al. (1999) conclusively stated that these results empirically affirm that phenotypical congruent behavioural and psychosocial similarities exist between male and female ADHD children. In line with this, Castellanos, Marvasti, Ducharme, Walter, Israel, Krain, Pavlovsky and Hommer (2000) found that female ADHD children (N = 36) also shared similar pathophysiological executive dysfunctions characteristic of male ADHD children, in terms of requisite tasks which required and necessitated attention, working memory, and response inhibition.

Although behavioural similarities exist between male and female ADHD children, males are significantly more likely to have a higher incidence of ADHD symptomatology (inattention, hyperactivity-impulsivity, conduct/learning problems) (Scahill, Schwab-Stone, Merikangas, Leckman, Zhang, & Kasl, 1999). Furthermore, male ADHD children are significantly more likely to have been raised in low-income, overcrowded living conditions (same or fewer rooms than household members) characterized by higher levels of family dysfunction, compared to their Non-ADHD peers. For example, the mothers and fathers of male ADHD children were significantly more likely to have a history of psychiatric treatment or excessive alcohol use, respectively, compared to Controls (Scahill et al., 1999).

Interpersonal and Academic-Oriented Goals of ADHD Children

Children with ADHD do not appear to share common or similar social goals in their attempts to establish and maintain satisfactory peer relationships. For example, Melnick and Hinshaw (1996) found that ADHD-high aggressive boys tended to engage more frequently in dominating, disruptive, and trouble-making behaviour than ADHD-low aggressive and Non-ADHD boys. More recently, Sutton, Reeves and Keogh (2000) reported that children's willingness to avoid social responsibility may account for their subsequent disruptive behaviour. Alternatively, it also appears that primary and secondary school-aged at-risk children with severe behavioural and/or emotional disorders may prefer to be ideally perceived as nonconforming rather than academically or interpersonally goal-oriented compared to not at-risk children (Carroll, Baglioni, Houghton, & Bramston, 1999; Carroll, Durkin, Hattie, & Houghton, 1997).

To investigate whether sociocognitive ability and executive functional skills accounted for the antisocial behaviour of disruptive ADHD children, Hughes, White, Sharpen and Dunn (2000) observed and recorded the nature of peer interactions between 40 age-matched preschool disruptive "hard-to-manage" ADHD children and 40 teacher-nominated best friends (Controls) (Mean Age = 52 months). Within each dyad, both children were assigned cooperative tasks which involved social reasoning, affective perspective taking, and executive functional skills (planning and inhibitory control). All observations were videotaped for 20 minutes, on two separate occasions, before being subsequently transcribed and coded for antisocial behaviour (refusal to share, bullying), and children's angry or distressful responses to their friends' emotional and prosocial behaviour (helpfulness, expressed positive affect). The results revealed that the frequency of disruptive children's angry, antisocial, and lack of empathic behaviour were significantly related to deficient executive functional skills. The interpersonal problems of disruptive ADHD children were therefore attributable to their inability to appropriately regulate their behaviour rather than problems in social understanding *per se* (Hughes et al., 2000).

Interpersonal Expectancy Effects and ADHD Children

Peers' Social Self-Perceptions of ADHD Children.

Many Non-ADHD peers seem to maintain negative social self-perceptions of ADHD children, particularly of those with comorbid learning disabilities (Bickett & Milich, 1990). Interpersonal expectancy effects, however, also appear to influence the nature of children's social interactions (Troyer & Younts, 1997). To investigate the effects of interpersonal expectancies, Harris, Milich, Corbitt, Hoover and Brady (1992) directly observed the nature of dyadic social interactions among 68 pairs of previously

unacquainted children either with or without ADHD. When Non-ADHD boys were informed that their partner had ADHD, this negative "expectancy" significantly disrupted social interaction between the ADHD child and their Non-ADHD partner (Harris et al., 1992). For example, Non-ADHD boys became less friendly, more reserved, talked less often, and reported the Lego or Crayon task which they had been assigned to complete with their ADHD partner as more difficult. Earlier research by Harris, Milich, Johnston and Hoover (1990) also revealed similar conclusive findings concerning the lack of perceived social reciprocity between ADHD children and their Non-ADHD peers.

Non-ADHD children's negative evaluative social impressions of their ADHD peers, however, appears to be influenced by the latters' inappropriate and noncompliant social behaviour rather than diagnosed ADHD status (Cornett-Ruiz & Hendricks, 1993). More recently, Smith, Jussim and Eccles (1999) affirmed that once negative interpersonal expectancies are established concerning the target behaviour of aversive individuals such as ADHD children, these perceived expectancies tend to persist and be maintained over time due to the socially aversive behaviour of such children.

Teachers' Social Self-Perceptions of ADHD Children.

Teachers' social self-perceptions of behaviourally disordered children are also instrumental in significantly influencing and biasing peers' evaluative social preferences and self-perceptions of such classmates (White & Kistner, 1992). For example, Blair, Umbreit and Bos (1999) found that teachers often reacted negatively and vehemently towards behaviourally disordered children by frequently expressing verbal disapproval, administering behavioural reprimands, and associative time-out extinctive strategies, while rarely focusing on these children's positive social

behaviours. In addition, White and Jones (2000) highlighted the finding that negative and evaluative teacher feedback significantly influences and serves to reinforce the negative reputational status of peer-rejected children. Maladaptive teacher-child relationships therefore indirectly lead to decreases in the frequency of behaviourally disordered children's prosocial behaviours, and facilitate salient increased reinforcement of peer-perceived ostracism and negative social self-perceptions of such children (Birch & Ladd, 1998). Aluja-Fabregat, Ballesté-Almacellas and Torrubia-Beltri (1999) also found that teachers' negative social self-perceptions of children were significantly influenced by children's maladaptive aggressiveness, hyperactivity, and impulsiveness. Furthermore, teacher self-perceptions tend to significantly predict children's future academic achievement (Alvidrez & Weinstein, 1999).

ADHD Children's Self-Reported Personal and Interpersonal Problems

Reliability and Validity of ADHD Children's Self-Reported Peer Relationship Problems.

Although research concerned with the epidemiology and diagnostic stability of ADHD among children is relatively common (Rohde, Biederman, Busnello, Zimmermann, Schmitz, Martins, & Tramontina, 1999), less attention appears to have been paid towards examining ADHD children's self-reported peer relationship problems (Lufi & Parish-Plass, 1995). Self-reports of ADHD children's peer-related difficulties are important because such children may serve as better informants relative to peers, teachers, or parents who may be unaware of the nature of their actual peer relationship problems (Larson & Richards, 1994). Furthermore, the self-reports of ADHD children may aid in the effective and efficient development and delivery of psychoeducational intervention programmes (Gallagher, Millar, & Ellis, 1996).

Due to inattentivness, impulsiveness, and lack of social awareness, the reliability and validity of the self-reports of ADHD children have often been cited as methodological hinderances in researchers and clinician's reluctance to rely upon them (Barkley, 1998). Smith, Pelham, Gnagy, Molina and Evans (2000), demonstrated, however that ADHD children (N = 36) were able to provide sufficiently reliable and valid self-reports about their negative peer relationships. Furthermore, the data from ADHD children's self-reports proved to be consistent with both teachers' and educational psychologists' reports of these children's negative social behaviours (conduct problems, defiant or impulsive behaviour, teasing peers), despite no prior knowledge of their behavioural difficulties (Smith et al., 2000).

Knowledge and Understanding of ADHD Children's Peer-Related Difficulties.

The knowledge concerned with understanding the experiential personal and interpersonal problems of at-risk peer rejected ADHD children is important for several reasons. By examining the peer-related difficulties of ADHD children, such information aids in developing effective psychoeducational intervention strategies through effectively understanding what positive (mutually supportive help, cooperativeness) and negative inappropriate social behaviours (aggressiveness, disruptiveness) either facilitate or negate the efficient initiation and maintainence of peer friendships (Doll, 1996).

The developmental plight of rejected children's peer-related difficulties has been extensively investigated (Ladd & Burgess, 1999). Three early longitudinal related studies which sparked interest from both developmental and clinical psychologists

concerning this aspect of peer rejected children include Cowen, Pederson, Babigian, Izzo and Trost (1973), Roff (1961), and Roff, Sells and Golden (1972). In all three related investigations, the at-risk peer rejected status of children who were considered as "unpopular" or poorly accepted by their peers significantly predicted early school withdrawal, later mental health problems (schizophrenia, depression), mental health service utilization, and also delinquent criminality at subsequent follow-up. Furthermore, sociometric peer-nominated subjective assessments which were utilized in all three investigations proved more potent predictors of later social and psychiatric dysfunction than salient self-report data and objective-based school records, teacher judgements, and intellectual cognitive assessments (Cowen et al., 1973; Roff, 1961; Roff et al., 1972).

ADHD Children's Social Self-Perceptions of Their Personal and Interpersonal Problems.

Although sociometric research significantly aids in identifying the problematic peer relationships of ADHD schoolchildren, their subjective social self-perceptions of experiential personal (loneliness, depression) and interpersonal problems (conflictual peer acceptance) appear to have been largely ignored until quite recently (Tracey & Gleeson, 1998). Many ADHD children are acutely and overtly conscious of their negative peer social status, which tends to have a resultant negative impact upon their self-esteem (Wheeler & Carlson, 1994). Furthermore, the personal problems of ADHD children often appear to stem from such salient interpersonal concerns as physical appearance, generalized social anxiety, social dissatisfaction (peer acceptance and popularity), and general unhappiness (Lahey, Schaughency, Strauss, & Frame, 1984).

Self-Reported Interpersonal Problems Of ADHD Children.

Many of the experiential interpersonal problems of behaviourally disordered children tend to occur at school in the context of peer interaction, during which quarrels, teasing, loneliness, and bullying are common daily social experiences (Cullingford, 1999). Although teasing and bullying are the most common negative peer interactions, teachers are often unaware of their occurrence (Aho, 1998; Smith & Brain, 2000). At least 20% of children report being called disliked names, teased, or other forms of verbal harassment on a daily basis, due to their peer relationships, physical appearance, competency, and weight (Crozier & Dimmock, 1999; Gleason, Alexander, & Somers, 2000). Furthermore, between 40% to 80% of schoolchildren report having been the target of peer-directed humiliation, public ridicule, taunting, physical threats, and aggression (Bonney-McCoy & Finkelhor, 1995). In a recent study, Espelage, Bosworth and Simon (2000) found that only 19.5% of Sixth, Seventh, and Eighth-Grade children (N = 558; 15.5% males, 23.0% females) reported exhibiting no bullying behaviour towards their peers in the past 30 days.

Despite these findings concerning the prevalence of teasing and bullying among schoolchildren within the general population, only limited data exist pertaining to ADHD children. Based on the relevant literature, Hodgens, Cole and Boldizar (2000) recently reported that children diagnosed with ADHD Predominantly Inattentive Type (ADHD-PI), relative to those with ADHD Combined Type (ADHD-C) and nonclinical Controls, were significantly more likely to be nominated by their nondisordered peers as being teased and left out by their peers. Furthermore, ADHD-C children were significantly more likely to be nominated for starting fights and arguments with peers at school, compared to ADHD-PI and Control children (Hodgens et al., 2000). Similarly,

based on earlier research by Gaub and Carlson (1997a), these researchers found that ADHD children with Combined or Predominantly Hyperactive-Impulsive subtypes were significantly more likely to engage in a higher incidence of peer-directed inappropriate antisocial and aggressive behaviour than those with Predominantly Inattentive subtype.

Within the school environment, teasing and bullying often have adverse psychological consequences upon victimized schoolchildren. For example, victims' of interpersonal conflict often report feeling rejected, excluded, humilitated, distressed, lonely, and depressed, particularly in response to peers' negative evaluative comments (Kowalski, 2000). Teasing and bullying, appear to be more common among children with learning, behavioural, and/or emotional disorders (Martlew & Hodson, 1991). Furthermore, bullying which involves the display of social and/or physical aggression towards a less dominant individual, appears up to two times more common in the playground than in the classroom (Craig, Pepler, & Atlas, 2000). Due to the unstructured nature of playground activities and limited adult supervision, children with ADHD are therefore more likely to report being bullied and victimized by their peers in the schoolyard, in response to their inappropriate social behaviour.

Many behaviourally disordered children are also likely to experience a range of other peer, teacher, and academic-related problems at school. More recently, Huebeck and O'Sullivan (1998) investigated the nature, frequency, and impact of school-related problems among a sample of 210 (97 males, 113 females) Grade Six and Seven children from 12 classrooms in Canberra, Australia, over a six-month duration. The results revealed that school-related problems were reported by 10% to 56% of children, of

which 13% to 64% were bothered either "somewhat" or "a lot" by these problems (e.g., "being left out", "kids teasing and picking on me", "a teacher is unfair to me or other kids"). Furthermore, Santa Lucia, Gesten, Rendina-Gobioff, Epstein, Kaufmann, Salcedo and Gadd (2000) also found that female schoolchildren tended to report significantly higher and lower levels of interpersonal stress and positive interpersonal experiences, respectively, relative to males.

Negative and conflictual peer interactions, however, are not limited solely to the school environment. To examine the prevalence of naturally occurring interpersonal conflict in early adolescence, Jensen-Campbell and Graziano (2000) recruited 155 nondisordered children (67 males, 88 females) aged from 11 to 15 years, who were instructed to keep diary records of their daily interactions and conflicts with family members and friends for two weeks. Although the results revealed that interactions without conflicts outnumbered conflictual interactions approximately 2:1, interpersonal conflicts represented 31% of children's reported social interactions. The peer-related difficulties of behaviourally disordered ADHD children, therefore place them at-risk to experiencing adverse and stressful interpersonal and noninterpersonal episodic and chronic life experiences, such as dysfunctional peer relations, depression, and academic failure, particularly in the absence of friends (Rudolph, Hammen, Burge, Lindberg, Herzberg, & Daley, 2000).

Peer Friendships and Self-Reported Loneliness of ADHD Children.

Peer-rejected children with ADHD are likely to be significantly socially disadvantaged due to the important developmental roles that friendships serve. For example, Sullivan's (1953) early psychoanalytic research suggested that friendships were crucial in

facilitating and promoting the requisite development of egalitarian cognitive, personal, and social competencies, such as cooperation, empathy, perspective-taking, altruism, and fulfilling such basic needs as companionship, intimacy, acceptance, and self-validation. Consistent with Sullivan's claims, other developmental theorists have continued to document the importance of peer relationships. For example, Hartup and Stevens (1997) stressed the adaptational significance of friendships in the development and provision of independence, self-esteem, self-confidence, self-worth, emotional security, and psychological adjustment. Furthermore, peer relations also significantly aid children in acquiring social skills relating to acting and behaving appropriately, responsibly, morally, and ethically in varying social situations, which facilitate the successful development of new friendships. (Doll, 1996).

It is conservatively estimated that between 5% to 10% of schoolchildren have few or no friends (Doll, 1996; Page, Scanian, & Deringer, 1994). Children with ADHD, however, may be without friends for a variety of reasons (Barkley, 1998). For example, some children may be socially withdrawn, overtly aggressive towards their peers, whereas others may be ignored or neglected by their peers due to insufficient requisite and purposeful social skills in being able to initiate, facilitate, and maintain satisfactory peer relationships (Flora & Segrin, 1999). Some children may prefer solitude or time spent alone which appears conducive in facilitating and promoting self-development and psychological growth (Fave & Bassi, 2000). The continued maintenance of time spent alone in the absence of friends, however, has been found to result in significant maladjustment and impaired psychological development (Larson, 1997).

Although ADHD children are frequently rejected by their peers due to their antisocial behaviour, this does not suggest that these children are completely without friends. For example, Parker and Asher (1993) found that 45.3% of Third, Fourth, and Fifth-Grade low-accepted children (74 boys, 76 girls) had at least one friend. Furthermore, many low-accepted children were satisfied with these friendships. The qualitative nature of low- versus high-accepted children's friendships, however, often differ in terms of self-validation and support, help and guidance, conflict resolution, and intimate disclosure, as supported by their friends' nonjudgemental perspectives (Brendgen, Little, & Krappmann, 2000). For example, rejected children's friends often perceive the quality of their friendships less positively than rejected children themselves. In addition, the quality of children's dyadic peer friendships tend to be stronger and consistent predictors of their interpersonal problems and immediate psychological well-being than sociometric measures of peer acceptance (Doll, 1996).

Although most children at some stage express pertinent peer or friendship-related concerns particularly within the formative developmental adolescent years (Muris, Meesters, Merckelbach, Sermon, & Zwakhalen, 1998), ADHD children's peer-related difficulties appear to be particularly significant. Children with ADHD tend to express more intense worries and concerns about the perceived quality of their peer friendships at school and with peers' self-referent feelings towards themselves, relative to their Non-ADHD peers (Perrin & Last, 1997; Tracey & Gleeson, 1998). Furthermore, although ADHD children perceive and rate the importance of valued and reciprocated peer social support similarly to their nondisordered peers, the reciprocated social support that these children receive either from their classmates and/or friends is

minimal (Demaray, 1998). Loneliness is therefore a fairly frequent experience among children with ADHD (Perrin & Last, 1997; Tracey & Gleeson, 1998).

Loneliness thus reflects children's subjective perceived social dissatisfaction with the degree to which relational and contingent emotive and socially supportive needs are being effectively fulfilled (Wildermuth, 1990). More recently, Jackson, Soderlind and Weiss (2000) found perceived social support to uniquely predict subsequent loneliness among a sample of 180 students (58 males, 122 females) ranging in age between 18 and 46 years (Mean Age = 21.22 Years, SD = 5.49 Years). All children, however, tend to report relatively similar levels of loneliness, irrespective of their gender and age (Mahon, Yarcheski, & Yarcheski, 1994). Moreover, even Kindergarten and First-Grade children have been shown to experience and conceptualize feelings of loneliness, synonymous with the feelings of sadness and social alienation reported by lonely adults (Bullock, 1993).

Although feelings of loneliness are not exclusively synonymous with "aloneness" or depression (Barrell, 1997), it is well documented that children's loneliness is significantly related to their reported depression and subsequent school achievement and attendance (Juvonen, Nishina, & Graham, 2000). In line with this, Poduska (2000) found that approximately 39% of 467 First-Grade children who had difficulty in establishing satisfactory peer relationships were perceived by their parents as requiring the need for mental health services and educational intervention.

ADHD Children's Self-Reported Depression and Socially Supportive Peer Interactions.

Children with few friends, particularly ADHD children, are more likely to become and remain depressed over extended durations of time (Biederman, Faraone, Mick, Wozniak, Chen, Ouellette, Marrs, Moore, Garcia, Mennin, & Lelon, 1996a). Although depression is generally defined as low or dysphoric mood, it is also characterized by symptoms of cognitive, emotional, behavioural, and physiological impairment leading to reduced psychosocial competence and functioning (Reynolds, 1998). Furthermore, among the general population, as many as 24% of children are likely to experience a major depressive episode prior to the age of 18 years, particularly females (National Health and Medical Research Council, Commonwealth of Australia, 1997b).

Depression, however, tends to be significantly more frequent among behaviourally disordered children due to their increased exposure to adverse life experiences, and appears to be predictive of lower educational achievement and occupational rank in later adulthood (Sandberg, McGuinness, Hillary, & Rutter, 1998). Furthermore, the depressive experiences of ADHD children, relate mainly to their concomittant interpersonal problems and appear exclusively independent of ADHD-associated "demoralization" (school difficulty, behavioural symptomatology) (Biederman, Mick, & Faraone, 1998). The perceived availability of friendship networks, however, has been found to significantly influence children's self-reported depression, loneliness, and interpersonal problems (Eley & Stevenson, 2000; Joiner, 1997). Despite these findings, socially supportive peer relations are not exclusively synonymous with decreased depressive symptomatology among children (Finch, Okun, Pool, & Ruehlman, 1999).

Within the general population, recent research also suggests that childhood depression often engenders negative peer social self-perceptions, and diminished self-worth, independent of social desirability in children's self-reports (Epkins, 2000). For example,

depressed children often rate and evaluate the supportiveness, helpfulness, and intimacy of their peer relations more negatively, relative to their nondepressed peers (Nezlek, Hampton, & Shean, 2000). In addition, maladaptive attributional styles such as children's negative internalized beliefs of their own social competence, self-esteem, coping skills, and interpersonal functioning, however, are also significantly influenced by their reported depression (Schwartz, Kaslow, Seeley, & Lewinsohn, 2000). Depression is therefore a particularly significant personal problem among ADHD children, relative to their nondisordered peers (Biederman et al., 1996a; Kitchens et al., 1999).

Many ADHD children have at least two or more comorbid anxiety disorders (social phobia, overanxious disorder) which appear to develop in early childhood prior to the age of one year (Mennin, Biederman, Mick, & Faraone, 2000). Highly socially anxious children subsequently tend to report significantly low levels of self-esteem, peer acceptance, and more negative peer interactions (being teased, having enemies at school) than less socially anxious children (Ginsburg, La Greca, & Silverman, 1998). These children are often significantly more lonely and depressed due to their concomittant maladaptive coping and social skills in many social situations (initiating conversations, interacting with other children) (Beidel, Turner, & Morris, 1999).

In a recent retrospective investigation, Rucklidge and Kaplan (2000) examined the current attributional styles and childhood social self-perceptions of 51 ADHD and 51 Non-ADHD adult women aged from 26 to 59 years, matched by age, level of education, socioeconomic status, and IQ. The results revealed that ADHD women (Mean Age = 41.32 Years, SD = 6.38 Years) reported feeling significantly more depressed and more

socially dissatisfied with their peer and teacher relationships as a child, compared to Non-ADHD women (Mean Age = 41.52 Years, SD = 4.63 Years). Furthermore, the self-reported depressive symptomatology of respondents also significantly predicted more frequent and persistent learned helplessness attributional styles among ADHD women than those without. Many ADHD women therefore reported feeling significantly less in control of such negative childhood experiences as peer criticism and school failure compared to Non-ADHD women (Rucklidge & Kaplan, 2000).

Based on the relevant literature reviewed, dysfunctional and psychologically aversive peer relations appear common daily social experiences among children with ADHD. Peer-related personal (loneliness, depression) and interpersonal problems are therefore likely to represent significant social concerns among children with ADHD, as based on teachers', parents', and peers' self-report data concerning these children's peer difficulties. Limited data exist, however, concerning how these ADHD children, particularly those with comorbid learning disabilities, actually perceive the qualitative nature of their peer relations. Furthermore the gathering of such information is essential in order to guide the efficient delivery of psychoeducational services for such children

Aims of the Research

The aim of this research is to therefore investigate ADHD children's social self-perceptions of the actual nature of their peer-related Personal and Interpersonal Problems. More specifically, the social significance of the self-reported problems of

ADHD children will be compared with those of suitably matched peers. Where appropriate, differences in children's self-reports according to Group-status (ADHD, Comparison) and Gender will be investigated.

Research Questions

With regard to the above stated aims of this research, the following seven questions were formulated:

Research Question 1: What are the most common types of Personal and Interpersonal Problems that children with ADHD experience daily at school ? **(Study One)**

Research Question 2: Do the Personal and Interpersonal Problems of ADHD children vary according to subtype (Predominantly Inattentive, Predominantly Hyperactive-Impulsive) ? **(Study One)**

Research Question 3: How can ADHD children's Personal and Interpersonal Problems be reliably and validly measured ? **(Studies One & Two)**

Research Question 4: Can the developed measures of Personal and Interpersonal Problems differentiate between ADHD and Non-ADHD children ? **(Study Two)**

Research Question 5(a): How are children's Personal and Interpersonal Problems interrelated ? **(Studies Two & Three)**

Research Question 5(b): Are there differences between the self-reports of male and female ADHD and comparison children ? **(Studies Two & Three)**

Research Question 6: Do ADHD children with or without comorbid learning disabilities differ in their self-reported Personal and Interpersonal Problems ? **(Study Three)**

CHAPTER THREE

STUDY ONE: AN EXPLORATORY STUDY OF THE EXPERIENTIAL PERSONAL AND INTERPERSONAL PROBLEMS OF CHILDREN WITH ADHD

This chapter describes the purpose, objectives, and research design of Study One. The methodology describes the participants and materials used in this first study, the procedure followed, and the data collection and qualitative analysis conducted. The results of Study One are then presented along with the key findings and their implications for Study Two are discussed.

The purpose of Study One was to identify through an exploratory study the Personal and Interpersonal Problems experienced by children with ADHD. Subsidiary to this purpose were four objectives: (i) to obtain preliminary information from educators and parents concerning the typological and experiential Personal and Interpersonal Problems of ADHD children at school, (ii) to examine how ADHD children reacted to these varied problems; (iii) to obtain information useful in the construction of quantitative instruments; and (iv) to generate hypotheses that can be further examined in later research.

Focus Groups

Focus groups represent one method through which qualitative data may be gathered about a particular issue or topic based on the subjective experiences, self-perceptions and opinions of people (Hughes & DuMont, 1993; Vaughn, Schumm, & Sinagub, 1996). Furthermore, qualitative field data provide a context through which naturalistic

real-life phenomena can be more accurately described and investigated, than through quantitative field data, therefore facilitating the validation of hypothesis-testing and theory-building (Fine & Elsbach, 2000).

Essentially, focus groups typify a well targeted discussion-based group interview during which a moderator directs the flow of discussion using a predefined set of open-ended questions (Millward, 1995; Sussman, Burton, Dent, Stacy, & Flay, 1991). In order to elicit and facilitate effective and efficient communication within a focus group, it is generally agreed that a focus group is best manageable with only six to eight participants (Albrecht, Johnson, & Walther, 1993). In the presence of larger numbers, focus groups tend to lose their effectiveness. For example, accurately recording dialogue within a large focus group is susceptible to creating organizational and managerial difficulties (Millward, 1995). In addition, people are likely to talk at different volumes, conversations are hard to track and there is some likelihood that large groups may fragment as subgroups form (Millward, 1995).

In this present research, focus groups were used with both educators and parents to examine the types and relative frequency of Personal and Interpersonal Problems that ADHD children experienced at school in the context of their peers. Children with ADHD were not directly involved in focus groups for several reasons. Hoppe, Wells, Morrison, Gillmore and Wilsdon (1995) acknowledge that there are likely to be certain discussion topics which engender feelings of discomfort and embarrassment among different types of participants, particularly children. For example, children's fears of possible humiliation and concomitant anxiety concerning peer reactions, appear to censor what information is disclosed to the peer group at large, particularly issues

which fail to conform with the cultural norms of proper "masculine" and "feminine" behaviour (Buhrmester & Prager, 1995; Doyle, 1989). In general, children prefer and tend not to disclose their aversive exchanges with peers that involve being teased, threatened, hit, and/or excluded (Vernberg, Ewell, Berry, Freeman, & Abwender, 1995). When disclosure does occur, peers are more likely than adults to be chosen as confidants (Vernberg et al., 1995). Furthermore, the disclosure of potentially embarrassing information tends to remain confined only to friends who can be trusted not to "spread things around" (Rotenberg, 1991).

Method

Participants

Given the exploratory nature of Study One, two groups of five participants were recuited for each of the two focus groups. The first focus group consisted of four primary school teachers and one attendant educational psychologist. The four teachers had an average of 14 to 15 years teaching experience (Range = 12 to 23 years), and the attendant educational psychologist had 49 years school experience. The second focus group comprised five mothers (Age Range = 38 to 47 years), with ADHD children aged from 10 to 16 years old. In addition to the two focus groups, a small group interview was also conducted with the Education Support school principal and the attendant educational psychologist. Each of these two educators possessed a minimum of 10 years school experience.

Setting

The two focus groups and the small group interview were conducted at one Western Australian state-government Education Support Centre located in the Perth metropolitan

area. All focus groups and interviews were conducted in the same room. Within this Education Support Centre were professional personnel who provided for the educational and psychological supportive needs of children with ADHD and/or learning disabilities, who resided either in the Perth metropolitan area or within remote country locations of Western Australia.

Materials

A standard focus group format was employed comprising three main open-ended questions for the two focus groups and the small group interview. Questions were used to solicit both educators' and mothers' views pertaining to: the types and frequency of Personal and Interpersonal Problems that ADHD children experienced, the nature of their peer relationships and self-reported loneliness, how these children reacted to their peer-related problems.

The open-ended questions (Q) included:

1. (a) What are the everyday types of Personal and Interpersonal Problems that children with ADHD experience at school ?
1. (b) How often do these Personal and Interpersonal Problems occur at school ?
1. (c) Are there any differences in the school-related Personal and Interpersonal Problems of Predominantly Inattentive or Predominantly Hyperactive-Impulsive ADHD Children ?
2. (a) Do children with ADHD have many friends ?
2. (b) Do ADHD children like to interact socially with their peers ?
2. (c) **Have children with ADHD ever told you that they're lonely ?**

2. (d) **Are there any differences in the Friendships/Loneliness of Predominantly Inattentive or Predominantly Hyperactive-Impulsive ADHD Children ?**

3. (a) How do ADHD children react to Personal and Interpersonal Problems ?

3. (b) **Are there any differences in the individual reactions of Predominantly Inattentive or Predominantly Hyperactive-Impulsive ADHD Children to the Personal and Interpersonal Problems that they experience ?**

Each of the two focus groups were videotaped using a Panasonic AD450 Video-camera which was positioned approximately three metres away at an angle to ensure all participants were always in full camera view. An audio-recorder was also used. Both the video camera and the audio-recorder were operating prior to the participants entering the room. Videotape recording was not utilized in the small group interview (only the audio-recorder was used) at the request of the participants.

Procedure

The researcher initially contacted a state-government Education Support Centre specializing in the management of children with ADHD and LD, and also the Western Australian Learning and Attentional Disorders Society (LADS), to explain the purpose of the present research and to seek volunteers. The Education Support Centre agreed to ask teachers to volunteer to participate in the focus group. LADS also agreed to randomly select five mothers from their database and invite them to participate in a similar focus group session. The researcher subsequently telephoned all consensual individuals who volunteered to participate to arrange a mutually convenient time for the two focus group interviews. One small group interview was also conducted with the Education Support school principal and resident educational psychologist to enable a

broad and representative range of the types and frequency of peer-related difficulties that ADHD children experience at school.

Each of the two focus group sessions and the small group interview were conducted in a room which the state government Education Support Centre made available, without interruption, for the duration of the present research project. The furniture arrangement in the room set aside for each of the two focus group sessions was identical. Six chairs were arranged in a small semi-circular formation positioned diagonally opposite a video camera and a audio-recorder. For the small group interview, two chairs were positioned directly opposite the researcher. An audio-recorder was placed on a table between the researcher and the two participants.

For the two focus groups and the small group interview, all participants were greeted by the researcher, during which the purpose and nature of the session were explained. A similar standard format schedule, worded from the perspective of either an educator or a mother, was used to direct each of the three interview sessions (i.e., educators, parents, small group interview). All participants were also encouraged to present their individualized subjective points of view, and discuss their ideas freely and openly with each other. On obtaining several responses, the researcher probed until all relevant views had been expressed. The researcher then moved onto the next question. Any digression from the question posed was allowed to continue for a time before the researcher guided the respondent back to the original point. The average duration of each focus group session and the small group interview was 48 minutes (Range = 36 to 60 minutes).

Data Analysis

The qualitative data of Study One were analysed in two ways. Initially, the relevant findings gained independently from both educators and parents in response to each of the questions posed, are briefly discussed. Following this introductory synopsis, relevant illustrative verbatim quotes are given to support and enhance these results by disclosing how different educators and parents individually responded to each question posed.

Results

The findings from the two focus groups and the small group interview are presented together in three sections: (a) Types and Relative Frequency of Personal and Interpersonal Problems, (b) Friendships, Socialization, and the Self-Reported Loneliness of ADHD Children, and (c) Children's Reactions to Personal and Interpersonal Problems. At the commencement of each section, the key ideas expressed by educators and mothers are summarized. Following this are examples of respondents' actual comments in response to each question posed.

Types and Relative Frequency of Personal and Interpersonal Problems

All of the educators and mothers agreed that children with ADHD were likely to experience a varied range of Personal and Interpersonal Problems at school, both inside and outside the classroom on a daily basis. All participants directly cited a multitude of aversive negative social experiences that ADHD children experienced in the context of their peers.

Participants had difficulty in differentiating the problems that children with ADHD Predominantly Inattentive (ADHD-PI) or Predominantly Hyperactive-Impulsive (ADHD-H) subtype experienced at school. Two educators did suggest, however, that children with ADHD-PI were more socially withdrawn whereas children with ADHD-H were more likely to attract the teacher's attention due to their highly overt antisocial behaviour. Consequently, the overt behavioural differences between ADHD-PI and ADHD-H children were likely to influence the types and relative frequency of Personal and Interpersonal Problems experienced by these children.

(Q) What are the everyday types of Personal and Interpersonal Problems that children with ADHD experience at school ?

Sensitivity to direct or indirect criticism and verbal remarks made by teachers and/or peers were mentioned frequently as daily problems that these children experienced. Typical comments by educators included:

Personal Experiences

They're hugely sensitive ... to the slightest remark (Educational Psychologist A)
I mean no one else would pick up a thing negative that they would perceive as negative (Teacher B)

If someone makes a remark to them ... they actually interpret that in their own way ... it might not be even about them but they might decide that it is (Teacher C)

It's like a bump or something ... instead of being an accidental bump he deliberately hit me ... and now I've got to get him back ... revenge is very strong with some kids (Teacher A)

Interpersonal Experiences Inside the Classroom

Their sensitivity to teacher management is very high
(Educational Psychologist A)

Feeling that they're going to be picked on by teachers or by their peers ... it can be both ... They have a perception sometimes that they're asked to do things more often (Teacher A)

They feel like they're nagged at more often by the teacher ... feeling that there's something wrong with them (Educational Psychologist A)

Peer social interaction and active cooperation (e.g., taking turns playing a game) were other concerns highlighted. In social interaction with peers, ADHD children frequently experienced difficulty in initiating and establishing peer social contact, and in influencing their behaviour appropriately in response to peers' verbal and/or nonverbal social behaviour.

Interpersonal Experiences Outside the Classroom

Co-operating with peers can be difficult (Teacher C)

... To fit into the social mores of normal behaviour in the playground ... they find that very difficult because ... they find it very difficult to ask how to play ... to understand the tacit sort of rule that you don't just go flying into a game ... or they make the rules up themselves sometimes but they'll always win and they're not necessarily fair rules (Teacher A)
They find it very hard to fit into games ... to take turns ... to fit into a social atmosphere (Teacher C)

Some carry a feeling of rejection (Teacher B)

When they're in the playground they don't pick up anything that's implied ... they wouldn't pick up what the rules of the game are ... and they don't pick up kids' body language when a kid might be getting a bit frustrated with them when their invading that kid's space... they don't pick up any of those cues (Teacher B)

When mothers were asked to describe the school-related Personal and Interpersonal experiences of their ADHD children, the comments included:

Personal Experiences at School

They can't make it through the day ... they're very sensitive ... they've been so emotionally picked on (Parent B)

She ("her daughter") *gets very easily hurt ... and she said my feelings have been hurt constantly (Parent C)*

They're so sensitive to other children (Parent B)

Interpersonal Experiences at School

School kids don't like them ... everyone backs away from them (Parent A)

They can't flow through the day (Parent B)

They'll do anything to get attention ... they want everyone to look at them ... they'll yell out and interject (Parent D)

They've lived on adrenalin for all of their life ... and they love it ... they love the attention, the excitement (Parent A)

There's no delaying gratification ... like I want it now ... just like an addiction or something ... I've got to have it now (Parent D)

They lack a sort of awareness of the appropriate time to interject, to initiate or whatever ... appropriateness ... when you do things (Parent B)

He was the biggest victim ... he just exploded ... he couldn't take it anymore being criticized at school. He started high school and that was the "pits" for him. He was just teased ... and bullied ... he ran away from school (Parent C)

(Q) How often do these Personal and Interpersonal Problems occur at school ?

There was a general consensus among all educators to the question posed of *"all day"*. Mothers responded similarly - *"all the time"*. Two teachers, however, qualified their responses:

It depends on the kid ... some kids start at quarter to 9 in the morning and they're blaming everybody for everything (Teacher B)

It varies ... it seems to vary with what's being asked of them to do ... it varies too with what's happened before they actually come into the classroom or out into the playground (Teacher D)

(Q) Are there any differences in the school-related Personal and Interpersonal Problems of Predominantly Inattentive or Predominantly Hyperactive-Impulsive ADHD Children ?

Educators and mothers appeared unaware of any discernible differences. One educational psychologist suggested that ADHD-PI or *"passive sort of children ... they tend to withdraw back in the games and not really cope ... instead they'll be out reading a book"*. Furthermore, two teachers agreed that *"the hyperactive-impulsive is much more likely to be the one the teacher picks on*", because these children were often *"calling out"*, *"interrupting*", and *"very restless"* (Re: ADHD-H subtype).

Friendships, Socialization, and Self-Reported Loneliness of ADHD Children

All respondents reported there was large variability in the frequency of ADHD children's peer friendships: some were likely to have many friends, some did not. Most children with ADHD, however, appeared to have few friends, as many of these children were frequently ostracized and rejected by their peers. In some cases, some ADHD children preferred to socially gravitate towards and interact with either younger children or older adults. Further, many participants agreed that children with ADHD often felt lonely. Participants, however, appeared unaware of friendship-related differences between ADHD children of different subtypes.

(Q) Do children with ADHD have many friends ?

Educators expressed several different points of view to this question. Significant comments were:

It can be very hard to tell ... there's huge variance within that population (Educational Psychologist B)

You have some whose friendship group changes and you can see them ... developing and maintaining friends because they are actually able to do that (Teacher A)

It's so variable ... some would have none and some would have no peer relationship difficulties at all. It's not where their difficulty shows (Teacher D)

Some have quite a charisma with peers ... they can be a leader or good at sport or something (Teacher B)

Some could appear to have friends but in fact they are on the fringe of a friendship group and they're probably not really relating one-to-one intimately with any one of that group ... but they're always on the periphery (Teacher C)

I come from a very broad group that doesn't tend to have friends ... the "aggressive acting-out" (Educational Psychologist A)
They're often not selected in pairs or in groups (Teacher C)

They can have a negative peer group (Teacher A)

Many ADHD kids have few friends ... most of these kids you talk to often say they never get invited out for weekends or home to parties by other kids they know at school (Teacher B)

When educators were questioned concerning whether they were aware of any ADHD children without friends currently present either within their own classroom or in other teacher's classrooms, all educators responded affirmatively.

Similarly, the mothers participating in the second focus group reflected what educators had already expressed. Typical mothers' comments included:

They don't have friends ... ADD children don't have friends (Parent A)

Well the irony is they know lots of people but don't have any real friends that they can rely on (Parent C)

My loud-mouth one has a stream of friends but they all seem to be (the ones he's bringing home now) ... the ones that are like-minded ... and it's diabolical (Parent B)

(Q) Do ADHD children like to interact socially with their peers ?

All participants commented that there were some ADHD children who were quite socially adept and skilled at interacting successfully with their peers. Some children with ADHD, however, appeared to be socially reticent and withdrawn, and seemed to want to isolate themselves and remain alone. Developing and maintaining friendships with peers was therefore problematic and troublesome for these ADHD children.

The responses from educators and parents were:

A lot of parents would encourage ADHD kids to come to their home ... it didn't last ... the kid didn't want to come back ... another time they seemed to find it very hard to develop and if they developed a friendship ... maintenance of that was very difficult for them ... and one of the additional problems that seemed to happen was that when they tried to get these kids into clubs and so on the kid may be keen to go but they didn't sustain that (Principal)

Within the ADHD diagnosis there's kids that are really social and very reactive and interactive with other children but then there's a group that will socially isolate themselves and be always on the outer (Educational Psychologist B)

There are ADHD kids that interact with adults ... but it may not always be appropriate ... and yet they may not be interacting well with their peers ... often you know its little kids or older people that they feel more comfortable with (Principal)

They sort of hang around staff (Teacher A)

Some like to put themselves in more and more isolated situations ... they put more and more blocks up emotionally and therefore what comes back to them isn't very much ... it's a limited feedback loop... and therefore they feel more stressed about how isolated they are so they isolate themselves more because of how they feel and then it goes off on a tangent (Educational Psychologist B)

They love solitude ... because then they've got no one to nag at them (Parent B)

Certainly mine likes to go and play with his Lego or just lock himself up and sometimes he will say I just need to be on my own ... "give me space" (Parent C)

(Q) Have children with ADHD ever told you that they're lonely ?

All educators and mothers responded affirmatively to this question. Two teachers further qualified their responses by suggesting that ADHD children *"often"* felt lonely. One educational psychologist also positively affirmed: *"absolutely"*. Furthermore, one of the five mothers expressed: *"Yeah absolutely. My eldest one is so lonely ... it's just so sad ... you can see it in his body language"*.

(Q) Are there any differences in the Friendships/Loneliness of Predominantly Inattentive or Predominantly Hyperactive-Impulsive ADHD Children ?

Educators and parents were not aware of any discernible differences. One teacher, however, did suggest:

Often the "inattentive" ones ... they may not have friends but some of them are quite self-sufficient in that they're happy with their own company ... and so they don't actually express being lonely but they'd like to have friends but probably not going to rush out and get them (Teacher B)

Children's Reactions to Personal and Interpersonal Problems

All respondents agreed that there were some children with ADHD who often reacted in a very socially reserved manner in response to the aversive school-related problems they experienced. Other participants, however, expressed that some ADHD children were likely to become quite *"angry"* and behave in a demonstrative and accusatory manner towards their peers, whereas others became very emotional and easily *"upset"*. Despite these opinionated differences, there was one common finding. At school, children with ADHD tended and preferred not to disclose their problems to either their teachers or peers for fear of having unwanted attention focused on them. For example,

one teacher acknowledged *"that would be fairly ... quite typical of a lot of kids"*. During the course of the school day, educators stated that ADHD children were likely to build up *"enormous internal stress"* which they would attempt to either suppress or withhold until they arrived home.

The reactions of children with ADHD varied according to subtype. Children diagnosed as Predominantly Inattentive subtype were not likely to be overtly perturbed by their problems. Rather, they tended to remain very quiet. Predominantly Hyperactive-Impulsive children, however, frequently acted out their built-up frustration and anger towards both their teachers and peers to stem their inner state of emotional turmoil.

(Q) How do ADHD children react to Personal and Interpersonal Problems ?

Typical comments of educators were:

Some kids ... they'll just sit there and do nothing ... and in the end they give up (Teacher A)

They get frustrated ... angry ... they think kids take it out on them (Teacher D)

Some of them are really extreme and they have tantrums and the others are ... hiding in the corner (Educational Psychologist B)

They're very spiteful (Teacher B)

So they start to get frustrated ... they fiddle (Educational Psychologist A)

Accusing someone else is quite common (Teacher C)

They feel ... a feeling of helplessness ... or hopelessness ... that it doesn't matter what they do because they've tried it all (Teacher B)

They're not in a position to kind of talk coherently anyway about the things that are affecting them ... they don't really verbalize about what's happening to them ... they

won't actually initiate say with teachers or someone in authority what their problem is ... they tend to keep it "bottled up" (Teacher B)

They take it home to mum ... that's for sure ... they take home this huge degree of tension. I hear constantly how the kids are when they come in that door and the mother can usually tell what sort of day they're had ... some of them come in and throw their bag around and storm through (Educational Psychologist A)

In the second focus group, mothers expressed the following comments:

The frustration and exaggeration is still the same ... if he gets frustrated ... major tantrum ... major drama (Parent D)

They'll throw a tantrum and say it's all your fault (Parent B)

My kids actually go off and sulk (Parent C)

Mine are definitely into the victim mentality ... they're the victim ... they're the little victims (Parent A)

I get a lot of negativeness (Parent B)

He couldn't express himself ... just couldn't (Parent A)

Well one bottles it ... the other one releases it lashes out verbally ALL the time ... you get no peace ... he's racist, sexist, obnoxious (Parent B)

Well they pick on everyone else ... because they're being picked on ... all day (Parent A)

(Q) Are there any differences in the individual reactions of Predominantly Inattentive or Predominantly Hyperactive-Impulsive ADHD Children to the Personal and Interpersonal Problems that they experience ?

Most educators stated that ADHD-PI children were more likely to *"bottle up"* their problems and *"build up enormous internal stress*", whereas ADHD-H children were

more likely to externalize and act-out their frustration and anger to the Personal and Interpersonal Problems that they experienced.

Pertinent comments by educators were:

It's often the "passive" kid who really ... builds up this enormous internal stress because they will go through the day not really looking very different at all sometimes ... they don't necessarily have a lot of reaction (Educational Psychologist A, re: ADHD-PI children)

The "inattentives" the very quiet ... sits there and is not noticed ... it often takes a lot to even trigger any reaction of any sort ... they seem to work very hard at not being noticed (Principal, re: ADHD-PI children)

That doesn't mean they're not reacting ... because they're probably having a huge reaction within themselves ... but it's not that they're going to overtly express that reaction ... they suppress that ... they can't express it ... and they don't want attention focused on them (Educational Psychologist B's response to Principal's comment, re: ADHD-PI children)

Acting out behaviour ... their frustration and some way of getting the attention ... or getting their needs met ... they're letting you know (Teacher B, re: ADHD-H children)

The more "impulsive" one you'd probably find their behaviour starts to spiral out (Teacher D, re: ADHD-H children)

They externalize ... which is maybe an indication of the things that are problematic for them (Educational Psychologist A, re: ADHD-H children)

Mothers, however, did not appear to explicate any concerted opinion concerning differences between ADHD-PI and ADHD-H children. The only relevant comment expressed by one mother was:

The "hyperactive" ones seem to ... if they're doing something that might make someone excited they'll be extra excited ... if someone might be mildly anxious they'll be overly anxious

Discussion

Study One used focus group methodology and a small group interview with school personnel (teachers, educational psychologists, principal) and parents, where appropriate, to jointly identify and examine the common types of peer-related Personal and Interpersonal Problems experienced by children with ADHD at school inside and outside of the classroom. Table 2 summarizes these findings.

Table 2: Common Types of Peer-Related Personal and Interpersonal Problems Experienced by ADHD Children at School.

Type of Problem	
Personal	Interpersonal
• Misinterpret the verbal remarks and non-verbal behaviour of others	• Teased and bullied by peers Feel "picked on" by teachers
• Very easily hurt emotionally by remarks and behaviour of peers	• Difficulties in co-operating with peers in a group situation
• Hostility and negative reactions from peers	• Difficulties joining in games and taking turns
• Feel victimized by the actions of their peers	• Failure to pick up and encode the nonverbal cues of other children
• Difficulties in accepting criticism from others	• Ostracized by peers in the classroom and schoolyard
• Behave inappropriately in social situations (e.g., interrupt, call out)	• Fail to appropriately moderate their social behaviour
• Experience recurrent feelings of loneliness	• Deficient ability to develop and maintain friendships

As can be seen in Table 2, ADHD children frequently experience difficulties in interacting or initiating peer social contact, and in establishing and maintaining peer friendships. In other instances, ADHD children are often teased and picked on by their peers at school. Consequently, some children with ADHD often experienced feelings of rejection and loneliness. Many of these problems tend to occur on a regular and persistent daily basis. All respondents, however, appeared unaware of differences in the types and relative frequency of Personal and Interpersonal Problems experienced by either ADHD-PI or ADHD-H children. Although educators conceded that there were some ADHD children who were very socially adept and skilled in interacting with their peers, it appeared most were not.

The subjective reactions of ADHD children to the Personal and Interpersonal Problems that they experienced often varied: some became antisocial, accusatory, and overtly externalized their anger and frustration, particularly ADHD-H children. ADHD-PI children, however, appeared more likely to suppress and restrain their emotions by remaining very quiet, introspective, and socially withdrawn, which lead to subsequent internalized feelings of negativity and depression. Many children with ADHD, however, preferred not to self-disclose their Personal and Interpersonal Problems, or in some cases, lacked the cognitive and verbal ability to self-disclose how they were feeling during the normal course of a school day. By the time these children arrived home at the close of the school day, many mothers said that they were often the unfortunate recipients of their ADHD child's built-up emotional anguish and tension.

Although ADHD children's reactions to experiential Personal and Interpersonal Problems varied, there was one common finding. Many educators and parents

commented that ADHD children often felt victimized by their peers and overwhelmed by feelings of hopelessness, helplessness, and negativity, which appear consistent with a pessimistic explanatory style. This maladaptive attributional style refers to the tendency with which children ascribe the cause of positive or negative events involving themselves along three dimensions: internal (i.e., "it's all my fault"), stable (i.e., "it's going to last forever"), and global attributes (i.e., "it's going to affect everything that happens to me") (Gladstone & Kaslow, 1995; Peterson, Buchanan, & Seligman, 1995).

Seligman (1990) suggests that a pessimistic explanatory style is common to feelings of depression, during which a negative self-concept is maintained concerning oneself. Furthermore, depressive reactions among youth have been found to be mediated by feelings of hopelessness (Metalsky, Joiner, Hardin, & Abramson, 1993; Whisman & Pinto, 1997), and negatively biased cognition (Gilboa & Gotlib, 1997). In addition, longitudinal research by Nolen-Hoeksema and colleagues suggest that children with pessimistic explanatory styles are more likely and susceptible to become depressed at a later point in time or remain depressed over extended durations of time, even controlling for initial levels of depression (Nolen-Hoeksema & Girgus, 1995; Nolen-Hoeksema, Girgus, & Seligman, 1992). It seems reasonable to conclude, therefore, that ADHD children feel more depressed in response to the Personal and Interpersonal Problems that they experience.

Boivin and Hymel (1997) suggest that children's negative social self-perceptions do not appear to be unexplainable or necessarily random, as negative experiences with peers often influence the development and maintenance of such negative social self-perceptions. Sufficient conclusive evidence therefore exists to conclude that the

experiential Personal and Interpersonal Problems of ADHD children are likely to influence the peer-related personal and social cognitive beliefs internalized and adopted by these children.

Although this exploratory research found that ADHD children experienced a range of varied Personal and Interpersonal Problems, all children are equally likely to experience a range of Personal and Interpersonal Problems as they age, mature, and socially interact with their peers (Garton & Pratt, 1995; Spirito, Stark, Grace, & Stamoulis, 1991). Further research is therefore needed to establish the saliency and social significance of the Personal and Interpersonal Problems experienced by ADHD children relative to their Non-ADHD peers.

Recent research, however, affirms that inadequate, aversive, and negative peer relationships do appear to constitute a major social concern among ADHD children (Perrin & Last, 1997). Further, many of these children appear to be aware of the significant social differences that exist between them and their nondisordered peers. For example, Perrin and Last (1997) found that ADHD children self-reported more intense worries about school and friends than non-referred "never-psychiatrically-ill" children without ADHD. Furthermore, many children with ADHD are often adversely affected by their negative social status, due to their resultant low self-esteem, increased depression and loneliness, compared to their Non-ADHD peers (Tracey & Gleeson, 1998; Wheeler & Carlson, 1994).

In this exploratory research, an interrelationship was found between the negative peer relationships of children with ADHD and their externalized social behaviour. For

example, educators and parents suggested that many children with ADHD were often ostracized and rejected by their peers as a consequence of their behaviour, and that this led to subsequent internalized feelings of loneliness among these children. In some cases, this appeared to be the result of the aggressive, disruptive, and antisocial behaviour of ADHD-H children, whereas in other instances, the quiet, withdrawn, and socially inappropriate behaviour of ADHD-PI children accounted for such findings. Research consistently demonstrates that even after only brief exposure to previously unfamiliar peers, children with ADHD tend to be overwhelmingly rejected by their peers due to their noncompliant disruptive behaviour (Bickett & Milich, 1990; Erhardt & Hinshaw, 1994). Furthermore, social withdrawal, aggression, and negative social status also tend to positively predict loneliness and social dissatisfaction among these children (Boivin & Hymel, 1997).

To conclude, this exploratory research has raised a number of important issues. First, children with ADHD experience a wide range of varied peer-related Personal and Interpersonal Problems at school. There also appear to be differences in the way ADHD children (according to subtype) react to these problems: some seek solitude and solace from their peers, whereas others prefer to externalize their built-up levels of frustration and tension. Quantitative data are now needed to operationalize and appropriately measure the Personal and Interpersonal Problems of ADHD children to validate and substantiate the findings of Study One. Age-appropriate reliable and valid instruments, however, need to be first constructed, developed, and trialed with both ADHD and Non-ADHD children. This will be the purpose of Study Two.

CHAPTER FOUR

STUDY TWO: DEVELOPMENT, CONSTRUCTION, AND VALIDATION OF THE CHILDREN'S PERSONAL AND INTERPERSONAL PROBLEMS SELF-REPORT QUESTIONNAIRE

This chapter describes the purpose, objectives, methodology, results and discussion of Study Two. The methodology describes the participants and materials used, and the procedure followed. The findings of Study Two are then presented, and their implications are discussed. Finally, recommendations for Study Three are given.

The purpose of Study Two was threefold: (a) to develop and construct a Children's Personal and Interpersonal Problems Self-Report Questionnaire (CPIPQ) comprised of three paper-and-pencil instruments to operationalize and measure Loneliness, Depression, and Interpersonal Problems among children, (b) to construct an item in this questionnaire for children to self-report their Number of Close Friends, and (c) to develop a Parental Self-Report Form to gather bibliographical information about ADHD children (i.e., medication status, comorbid disorders, etc.). Specifically, the main objective of Study Two was to administer and trial the three instruments of Loneliness, Depression, and Interpersonal Problems with a small sample of ADHD and Non-ADHD children. Item affectivity, item and person discrimination indices, internal consistency estimates (Cronbach's Alpha) were used to validate the CPIPQ in Study Two.

Method

Instrument Development Procedures

Information pertaining to children with ADHD was gathered from parents using a Parental Self-Report Form (which is reproduced in Appendix A). For example, respondents were requested to provide general information about their number of sons and/or daughters (whether biological or adopted), and whether any of these children had been clinically diagnosed with ADHD. If so, parents were requested to supply additional information about their ADHD child(ren), such as: his/her birthdate, the grade he/she was enrolled in at school (if still attendant at school), if he/she had been diagnosed by a paediatrician (if not, whom had clinically diagnosed their ADHD child), and what prescribed medication their ADHD child was currently taking (if any). Bibliographical information was used to validate and accurately match information given by both the parent and the child, where appropriate. Furthermore, other salient information was used to ascertain whether the diagnosis of ADHD had been clinically conferred by a paedatrician and the nature of their medication status.

The Children's Personal and Interpersonal Problems Self-Report Questionnaire (CPIPQ).

To gather the relevant data from the children, three paper-and-pencil measures were developed. For each measure, children were instructed to indicate how frequently Loneliness, Depression, and Interpersonal Problems had occurred in the previous four weeks. A four-week time duration was used to ensure an adequate and representative sampling of children's self-reports. The individual wording of all items used the pronoun "I" to commence and personalize each sentence. An additional item was constructed for children to self-report their Number of Close Friends. All three

measures, and the additional item will now be described in the order in which they appear in the CPIPQ (i.e., Loneliness: Items 1 to 6; Children's Depression Inventory: Items 7 to 32; Number of Close Friends: Item 33; Interpersonal Problems: Items 34 to 45).

Loneliness Scale.

Loneliness was measured utilizing a six-item scale. Five of these six items (e.g., "I felt alone", "I felt left out of things") are included within the 24-item Loneliness and Social Dissatisfaction Questionnaire (i.e., Items 3, 9, 14, 17, and 21) originally developed by Asher, Hymel and Renshaw (1984). This 24-Item Loneliness and Social Dissatisfaction Questionnaire has frequently been utilized in various research investigations to examine interrelationships between children's peer acceptance and subsequent loneliness (Asher & Parker, 1989). In addition, a sixth Loneliness item (i.e., "I wish I had more friends") was also developed to ascertain respondents' current level of satisfaction relating to the nature of their peer relationships. The utilization and selection of all six items was motivated by the findings of Study One which suggested that ADHD children had few friends and were often lonely as a consequence of being ostracized and rejected by their peers.

The Loneliness and Social Dissatisfaction Questionnaire developed by Asher et al. (1984) consists of 16 primary items which focus on childhood feelings of peer-related loneliness and social dissatisfaction, and eight filler items that ask about general hobbies, interests and school preferences (e.g., "I like to read", "I like science"). The 16 primary items assess children's: "(a) feelings of loneliness (e.g., "I'm lonely"), (b) appraisal of their current peer relationships (e.g., "I don't have any friends"), (c) self-

perceptions of the degree to which important relationship provisions are being met (e.g., “There's nobody I can go to when I need help”), and (d) self-perceptions of their social competence (e.g., “I'm good at working with other children”)" (Asher, Parkhurst, Hymel, & Williams, 1990, p. 257). In completing the Loneliness and Social Dissatisfaction Questionnaire, children indicate on a five-point Likert scale the degree to which each statement is a true description about themselves (i.e., “That's always true about me”; “That's true about me most of the time”; “That's sometimes true about me”; “That's hardly ever true about me”; “That's not true at all about me”).

The Loneliness and Social Dissatisfaction Questionnaire (or slight variations of it) have now been utilized in several research investigations with varied childhood samples. These have included Third through Sixth-Grade children (Age Range = eight to 11 years) (Asher & Wheeler, 1985), Seventh and Eighth-Grade children (Age Range = 12 to 13 years) (Parkhurst & Asher, 1987), and also Preschool Kindergarten and First-Grade children (Cassidy & Asher, 1989). The variations of the 24-item Loneliness and Social Dissatisfaction Questionnaire have included minor wording changes where items have been reworded to either match children’s linguistic skills or to provide an explicit school focus. With Preschool Kindergarten and First-Grade children, item format changes have included transforming declarative verbal statements into direct questions (e.g., “I'm lonely at school” was changed to “Are you lonely at school ?”), and changing the five-point response scale to an easily comprehensible three-point scale (“Yes”; “Sometimes”; “No”) to match the cognitive capabilities of younger children.

The Loneliness and Social Dissatisfaction Questionnaire has been empirically demonstrated to be psychometrically sound, despite changes in the wording and format of the original 24 items (Asher et al., 1990). In investigations which have been

conducted with schoolchildren eight years and older, Cronbach's Alpha of the Loneliness and Social Dissatisfaction Questionnaire remains uniformly high (i.e., 0.90 or above). Among Preschool Kindergarten and First-Grade children, the internal consistency of the Loneliness and Social Dissatisfaction Questionnaire is slightly lower (i.e., 0.79) but nevertheless acceptable and satisfactory. Factor analytic studies of children's responses to the Loneliness and Social Dissatisfaction Questionnaire consistently indicate that all 16 primary Loneliness and Social Dissatisfaction items load on a single factor.

Although the 24-item Loneliness and Social Dissatisfaction Questionnaire is widely and internationally recognized as a childhood measure of loneliness, this questionnaire tends to include items concerned with both loneliness and social dissatisfaction. The content validity of 11 of the original 16 items, however, which measure childhood social dissatisfaction, appears questionable as these items concentrate more on children's subjective appraisal or perception of their current social competence, and the degree to which significant and supportive peer relationship provisions and needs are being met. These 11 childhood social dissatisfaction Items were therefore not utilized within this research. In this research, only selected items from Asher et al.'s (1984) Loneliness and Social Dissatisfaction Questionnaire that directly measured children's loneliness (e.g., "I feel alone"; "I'm lonely"), and reportedly with the highest factor loadings were utilized n this present research.

For all six Loneliness items of the CPIPQ, children were instructed to indicate on a four-point scale (i.e., "Never - 0", "Sometimes - 1", "Often - 2", "Always - 3") how frequently that feeling had occurred during the past four weeks. Furthermore, to mitigate response bias, two of these six Loneliness Items were positively phrased (e.g.,

"There were other people I could talk to"), and four were negatively phrased (e.g., "I felt left out of things"). In addition, all positively phrased Loneliness Items were reverse-scored. Higher total scores indicated a higher degree of Loneliness.

Children's Depression Inventory.

In Study One, educators and mothers suggested that ADHD children often experienced self-perceived feelings of negativity and pessimism as a consequence of their dysfunctional peer relations, which appears consistent with subsequent feelings of depression. Childhood Depression was therefore assessed using the Children's Depression Inventory (CDI; Kovacs, 1992). The CDI is one of the most widely used children's self-report measures of depression (Craighead, Curry, & Ilardi, 1995). The CDI is a 27-item self-report measure suitable for children aged from seven to 17 years. All 27 items ask children to select one of three descriptions for each item that best describes him or her for the past two weeks, in order to measure the severity of children's depressive symptomatology. Responses are scored from "0" to "2" for each item, with "0" or "2" representing the absence or severity of depressive symptomatology, respectively. Factor analytic studies of the CDI demonstrate that this instrument is associated with five highly stable and replicable factors which measure externalizing noncompliant behaviour, dysphoria, self-deprecation, and academic- and friendship-related problems among children (Craighead, Smucker, Craighead, & Ilardi, 1998). Further, Craighead et al. (1998) also affirm that the CDI measures biological dysregulation, such as sleep disturbance and loss of appetite among children.

In contrast to the Beck Depression Inventory, from which the CDI was originally developed, the CDI has one of the lowest readability levels of all currently available

childhood measures of depression (Kovacs, 1992). The readability of the CDI is set at a First-Grade Level (Kazdin & Petti, 1982), although some investigators propose that the readability of the CDI approximates a Fourth-Grade Level (Berndt, Schwartz, & Kaiser, 1983). The applicability of the item content of the CDI to children's everyday lives is also significantly enhanced with the inclusion of school-related items concerning personal, interpersonal, and academic problems.

Since its initial development, the CDI has been the focus of extensive research investigations. Psychometric examinations demonstrate that the internal consistency and test-retest reliability of the CDI varies between 0.83 and 0.94 among diverse samples of children (Smucker, Craighead, Craighead, & Green, 1986; Nolen-Hoeksema, Seligman, & Girgus, 1986). Furthermore, validation studies of the CDI demonstrate that this measure successfully discriminates between clinical and nonclinical-based samples of children (Saylor, Finch, Spirito, & Bennett, 1984). For example, an examination of the construct and discriminant validity of the CDI showed this measure to correctly classify 70.4% to 71.6% of nonreferred children (N = 153), and 25% to 60% of clinical inpatients (N = 153) (Carey, Gresham, Ruggiero, Faulstich, & Enyart, 1987).

For the specific purposes of Study Two, the CDI was modified in two ways. First, item nine of the CDI pertaining to suicidal intentions was omitted due to the sensitive nature of this topic. Excluding this ninth item, however, has not been found to affect the internal consistency or test-retest reliability of the CDI (Wood, Becker, & Thompson, 1996). Second, the original response format of the CDI items was modified. In its original form, all the CDI items list different feelings and ideas that children sometimes have in "Groups of three sentences". For example, all items ask children to choose one

of three sentences, phrased in the present tense, which best describes him or her in the past two weeks (e.g., “Item 3: (a) I do most things O.K., (b) I do many things wrong, (c) I do everything wrong”; “Item 11: (a) Things bother me all the time, (b) Things bother me many times, (c) Things bothered me once in a while”).

In this present research, all of the original 26 items of the CDI were reworded. For each item, one sentence was used to summarize the semantic meaning of the original 26 items, which were each listed in “Groups of three sentences”. Furthermore, all CDI Items were rephrased into the past tense (e.g., Item 3 reworded as: “I do things wrong”; Item 11 reworded as: “Things bothered me”). In responding to the CDI items, children were instructed to choose and circle only one response (“Never - 0”, “Sometimes - 1”, “Often - 2”, “Always - 3”) that best described how frequently they had been experiencing that depressive symptom in the past four weeks. To minimize response bias among the 26 Depression items, 14 were positively phrased (e.g., “I have had fun”), and 12 were negatively phrased (e.g., “I thought my schoolwork was bad”). Further, all positively phrased Depression items were reverse-scored.

Number of Close Friends.

Having close friends or the availability of supportive peer relationships has been found to uniquely contribute to children’s reported depression, loneliness, and interpersonal problems. For example, children who possess few friends and have a negative social self-perception of peer support have been found to report a higher incidence of peer-related emotional and behavioural problems (Garnefski & Diekstra, 1996; Hecht, Inderbitzen, & Bukowski, 1998). Children with positive social self-perceptions of their peer support, however, report fewer depressive symptoms (Bennett & Bates, 1995).

Lack of close friends, however, tends to be associated more with feelings of depression than loneliness *per se* (Barrell, 1997). Despite these findings, low peer social support has been found to be a significant predictor of subsequent changes in childhood loneliness over time (Joiner, 1997; Ladd, Kochenderfer, & Coleman, 1997).

An additional item was therefore constructed for children to self-report their Number of Close Friends. The purpose of this item was twofold. In Study One, it was found that that children with ADHD had relatively few friends compared to nondisordered peers at school. Based on these present findings, it was hypothesized that in the third and final study of this research, Group-status (ADHD, Control) would significantly influence children's Number of Close Friends. Second, it was anticipated that this Friendship-related variable would significantly influence children's reported Depression, Loneliness, and Interpersonal Problems.

To clarify the term "Close Friend", this concept was defined for children as: *"Close friends are people that you like and that you can have fun with (e.g., going out somewhere, playing games together, or taking part in some common activity). Close friends understand you, value you, and are people who you can share private thoughts with. Close friends are also those you can count on for help and emotional support"*.

In completing the Number of Close Friends item, children were instructed to select and tick only one of four responses (i.e., "No Close Friends", "One to Three Close Friends", "Four to Six Close Friends", "Seven or More Close Friends") that best indicated their present Number of Close Friends. Four responses were used for this item in order to maximally discriminate between children's varied Number of Close Friends.

Interpersonal Problems Scale.

To ensure adequate and appropriate content validity, all Interpersonal Problems items were collectively drawn from both the findings of Study One and the relevant literature. For example, in Study One, educators and mothers stated children with ADHD often experienced difficulties in peer social interaction and many appeared to be teased, picked on, and victimized by their peers. Furthermore, based on the relevant literature, interpersonal problems such as low peer acceptance and support represent important social concerns among most children within the general population, particularly those with ADHD. Examples of the relevant literature utilized in the construction of the Interpersonal Problems Scale are presented in Appendix B.

Initially, 18 items (reproduced in Appendix C) were developed which reflected difficulties with peer relationships (six items), perceived emotional support from peers (three items), sociability (three items), and personal problems (six items). This list was subsequently reduced to 12 items (reproduced in Appendix D) by discarding those which were considered either redundant or inappropriate given the nature of the childhood sample being studied. Furthermore, all 12 Interpersonal Problems items were subsequently reworded to ensure age-appropriate readability and comprehensibility. This final set comprised items which assessed peer relationship problems (four items; e.g., “I was teased, laughed at or picked on by others”), perceived emotional support from peers (three items; e.g., “I was helped in some way by others”), sociability (two items; e.g., “I had trouble asking others if I could join in”), and personal problems (three items; e.g., “I felt others wouldn't like me if I tried to get to know them”). For each item, children were instructed to indicate on a four-point scale (i.e., “Never - 0”,

"Sometimes - 1", "Often - 2", "Always - 3") how frequently that peer-related experience had occurred at school during the past four weeks, with higher total scores indicating a higher degree of Interpersonal Problems.

To minimize response bias, six items were positively phrased (e.g., "It was easy for me to make friends with others") and the remaining six items were negatively phrased (e.g., "I had a fight with someone"). All positively phrased Interpersonal Problems items were reverse-scored. For example, highly endorsing a positively phrased item with a response of "Always - 4" or "Often - 3" corresponded to a resultant item score of either "0" or "1", respectively.

Reading Levels of Measures.

Reading Levels of the Loneliness, Depression, and Interpersonal Problems scales, and the Number of Close Friends item, were individually measured with the Flesch Reading Ease Score, and the Flesch-Kincaid Grade Level. These two Reading Indices are based upon the average number of syllables per word and average number of words per sentence (Microsoft Corporation, 1998).

The Flesch Reading Ease Score, which ranges from 0 to 100, indicates the ease with which normal written text can be understood (Microsoft Corporation, 1998). Standard writing approximates a Flesch Reading Ease Score of between 60 to 70. Higher scores are indicative of written text that is easily comprehensible.

The Flesch-Kincaid Grade Level refers to the educational grade level of normal written text, as based on the American Grade School System (Microsoft Corporation, 1998).

Standard writing approximates a Flesch-Kincaid Grade Level of between 7.0 and 8.0, indicating that standard written text can be understood by either a Seventh or Eighth-Grade American child, respectively. The Australian school system is however one year ahead of the American Grade School System. A Flesch-Kincaid Grade Level of between 7.0 and 8.0, therefore, indicates that standard writing can be understood by a Sixth or Seventh-Grade Australian school child, respectively.

The Flesch Reading Ease Score and Flesch-Kincaid Grade Level of the Loneliness, Depression, and Interpersonal Problems scales, and the Number of Close Friends Item in the CPIPQ, are presented in Table 3.

Table 3: Readability of the Children's Personal and Interpersonal Problems Self-Report Questionnaire (CPIPQ) Utilized in Study Two.

	Reading Indices	
Variable	Flesch Reading Ease	Flesch-Kincaid Grade Level
Loneliness (Items 1 to 6)	100.0	0.1
Depression (Items 7 to 32)	97.6	1.1
Number of Close Friends (Item 33)	100.0	0.6
Interpersonal Problems (Items 34 to 45)	97.1	1.3

As shown in Table 3, the Flesch Reading Ease of all measures varied between 97.1 and 100.0. All CPIPQ items were therefore considered appropriate and comprehensible for young children. Furthermore, the Flesch-Kincaid Grade Levels were no higher than an American Grade One Level (approximately six years of age) or an equivalent Australian Grade Two Level (approximately seven years of age). All CPIPQ items were therefore considered readable and appropriate for Australian schoolchildren enrolled in Grade Two or above.

Participants

Participants were selected from Grades Five, Seven, Nine, and 11, as recent research by Houghton and colleagues suggest significant age-related differences in the social self-perceptions of schoolchildren between these years (Houghton, Carroll, Odgers, & Allsop, 1998; Houghton, Durkin, & Carroll, 1995). Although Control children were therefore randomly selected from Grades Five, Seven, Nine, and 11, children with ADHD were self-selected based only upon parental consent in response to a mail questionnaire survey.

Two groups of respondents (ADHD and Control) thus participated in this research. In the ADHD sample, there were 24 children (13 males, 11 females) aged between 7 years 11 months and 15 years 2 months (Mean = 11 years 2 months; SD = 2 years 2 months). One child was in Grade Three, five were in Grade Four, three were in Grade Five, four were in Grade Six, three were in Grade Seven, four were in Grade Eight, two were in Grade Nine, one was in Grade Ten, and one was in Grade 11. Furthermore, all ADHD children had been clinically diagnosed by a paediatrician, according to diagnostic criteria described in the Fourth Edition of the *Diagnostic and Statistical Manual of*

Mental Disorders (DSM-IV; American Psychiatric Association, 1994), and were currently on prescribed psychostimulant medication (e.g., Dexamphetamine Sulphate or Ritalin). The medication status of ADHD children is acknowledged because many psychostimulant-treated children still continue to exhibit disordinate levels of noncompliant and socially inappropriate behaviour as reported by both teachers and peers (Angold, Erkanli, Egger, & Costello, 2000).

In the Control sample, there were 28 nondisordered children (14 males, 14 females) aged between 9 years 11 months and 16 years 4 months (Mean = 13 years 4 months; SD = 2 years 3 months). Teachers', principals', and educational psychologists' recorded class assessments were used to identify and categorize children with no documented history of ADHD and/or learning difficulties. Of these 28 children: six were in Grade Five, six were in Grade Seven, eight were in Grade Nine, and eight were in Grade 11.

Setting

In Phase One, ADHD children and their parents completed the CPIPQ and Parental Self-Report Forms in their home environment. In Phase Two, Control children from the state government primary (Grades Five and Seven) and state government secondary high schools (Grades Nine and 11) completed the CPIPQ within their classroom at a designated convenient time.

Procedure

Data collection was completed in two phases. In Phase One, the purpose and nature of the present research was explained to parents attending an ADHD-related seminar presentation held within the Graduate School of Education at the University of Western

Australia. Voluntary parental participation was actively encouraged. Parents who elected to participate in this research were given survey packages containing a one-page information sheet detailing the nature of the study, a Parental Consent Form (reproduced in Appendix F), one Parental Self-Report Form (reproduced in Appendix A), and one or CPIPQs (reproduced in Appendix E) for their ADHD child(ren) to complete and return. When all relevant survey forms were completed, parents were requested to mail them back to the researcher in the reply-paid envelope provided. At the parental ADHD seminar, 13 survey packages were distributed. A further 16 packages were distributed by mail to the home addresses of families who had previously consented to participate in pertinent ADHD research being undertaken within the Graduate School of Education at the University of Western Australia (UWA). These 16 families were randomly chosen from the lists of two consultant paediatricians (who work in collaboration with the researcher), whose children had been clinically diagnosed with ADHD alone and no documented history of learning disabilities. In total, 29 survey packages were distributed, that is, 13 initially at the ADHD seminar presentation held at UWA, and a further 16 which were mailed out to the home addresses of families on the lists of two consultant paediatricians. Of the 29 survey packages distributed, 19 of the 29 Parental Self-Report Forms (Response Rate = 65.52%) and 24 of the 51 CPIPQs (Response Rate = 47.06%) were returned.

In Phase Two, the school principals of one state government primary and one state government secondary high school were initially contacted to gain permission to administer the CPIPQ to randomly selected children in Grades Five, Seven, Nine, and 11. Twenty Parental Consent forms were distributed to the principal of the primary school and a further 20 Parental Consent forms were given to the principal of the

secondary high school to apportion among randomly selected children within teachers' classrooms. After gaining informed consent from both children and their parents, CPIPQs were administered by the researcher to those nondisordered ("Control") children in the primary (six males, six females) and the secondary high school (eight males, eight females), respectively. The approximate time required to administer the CPIPQ on a group basis within both the primary and secondary high schools was between 25 and 30 minutes. Parental Self-Report Forms were not distributed among these 28 "Control" children as they had not been clinically diagnosed with ADHD with or without comorbid learning disabilities (as confirmed by children's school records).

Data Analysis

All Study Two data were analysed with the statistical package Statview (Version 5.0; Statistical Analysis System Institute Inc., 1992 - 1998), and also the Statistical Package for the Social Sciences (SPSS, Version 6.1.1; SPSS, Inc., 1989 - 1995). The Item Affectivity and Discrimination (except for Number of Close Friends) were initially computed first. In addition, Person Discrimination Indices were calculated to identify individual aberrant or outlying response patterns to best maximize the construct validity of the three measures. Reliabilities were estimated by computing Cronbach's Alpha (Cronbach, 1951).

Results

The results are presented in three sections, as follows: (a) Item Affectivity (Total Sample; ADHD and Control Samples); (b) Aberrant Response Profiles: Item Discrimination; Person Discrimination; and (c) Internal Consistency (Cronbach's Alpha).

Item Affectivity

Total Sample (N = 52 Persons).

For the three measures, individual item responses were summed across the total number of participants to create a total score for each item. This item score was then converted to a proportion (P-value) of the maximum item score attainable. Q-values were also calculated for each item by complementing the respective P-values (Q-value = 1 - P). The Q-values for each item represented a measure of item affectivity. Items with low or high Q-values were indicative of those items which were either less or more difficult to endorse with the response "Always", respectively. For example, item 4 of the Interpersonal Problems scale, " I had a fight with someone", had the potential to be endorsed by all 52 respondents, leading to a maximum possible score of 52 x 3 = 156. The observed score in fact was 23, hence the value of "P" was P = 13/156 = 0.15. Therefore, Q = 1 - P = 0.85, indicative of an item which respondents found consistently difficult to endorse with an "Always".

Figures 1, 2, and 3 show the Affectivity of Loneliness Items 1 to 6, Depression Items 7 to 32, and Interpersonal Problems Items 34 to 45.

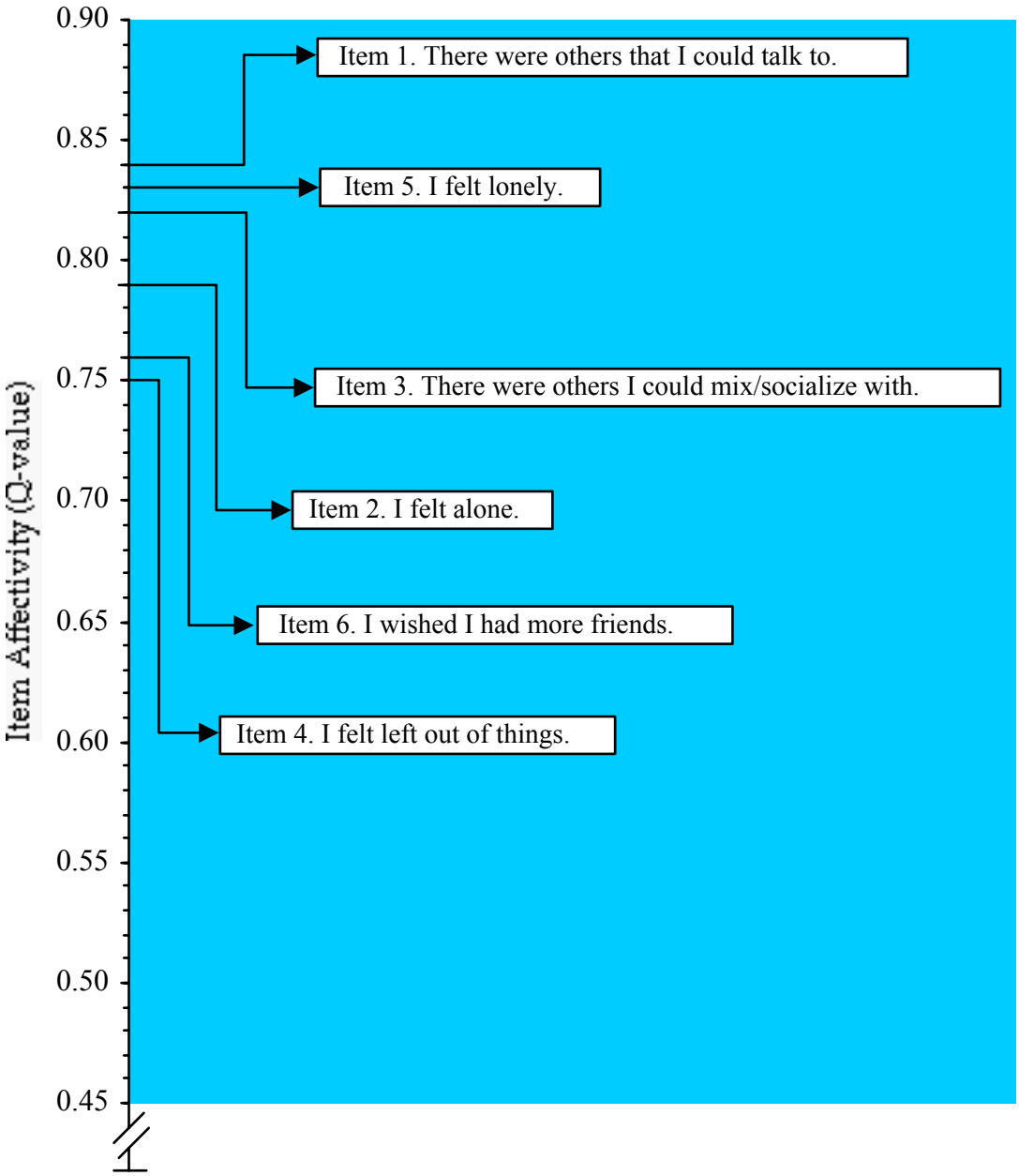

Figure 1. Affectivity of Loneliness Items 1 to 6 (N = 52).

As shown in Figure 1, the Affectivity of Loneliness Items 1 to 6 varied between 0.75 and 0.84. Of these six items, children were less or more likely to endorse Items 1 and 4, respectively.

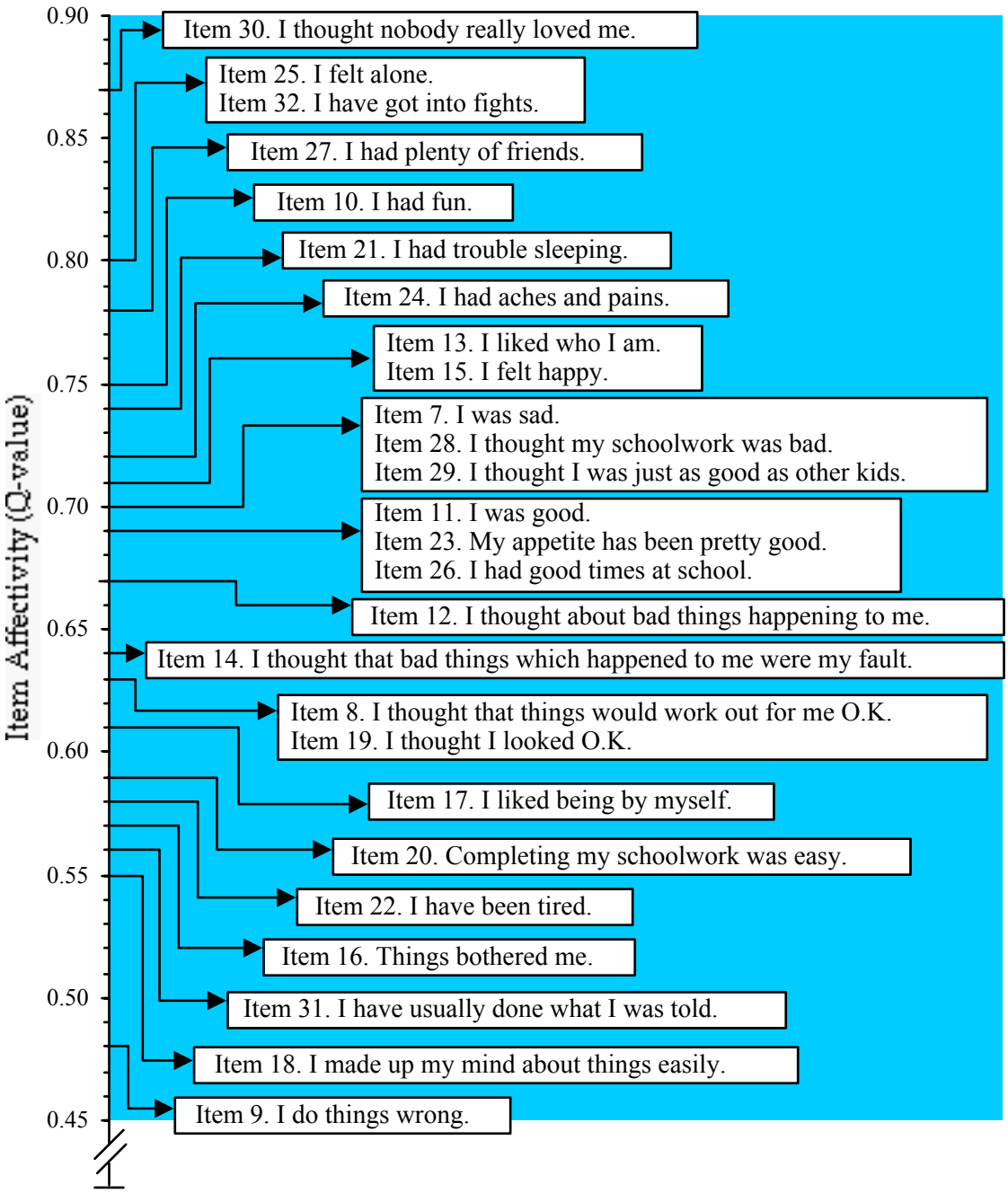

Figure 2. Affectivity of Depression Items 7 to 32 (N = 52).

In Figure 2, the Affectivity of Depression Items varied between 0.48 and 0.87. Items which were difficult to rank highly included Items 31, 25, and 32, whereas items which were easy to endorse included Items 9 and 18.

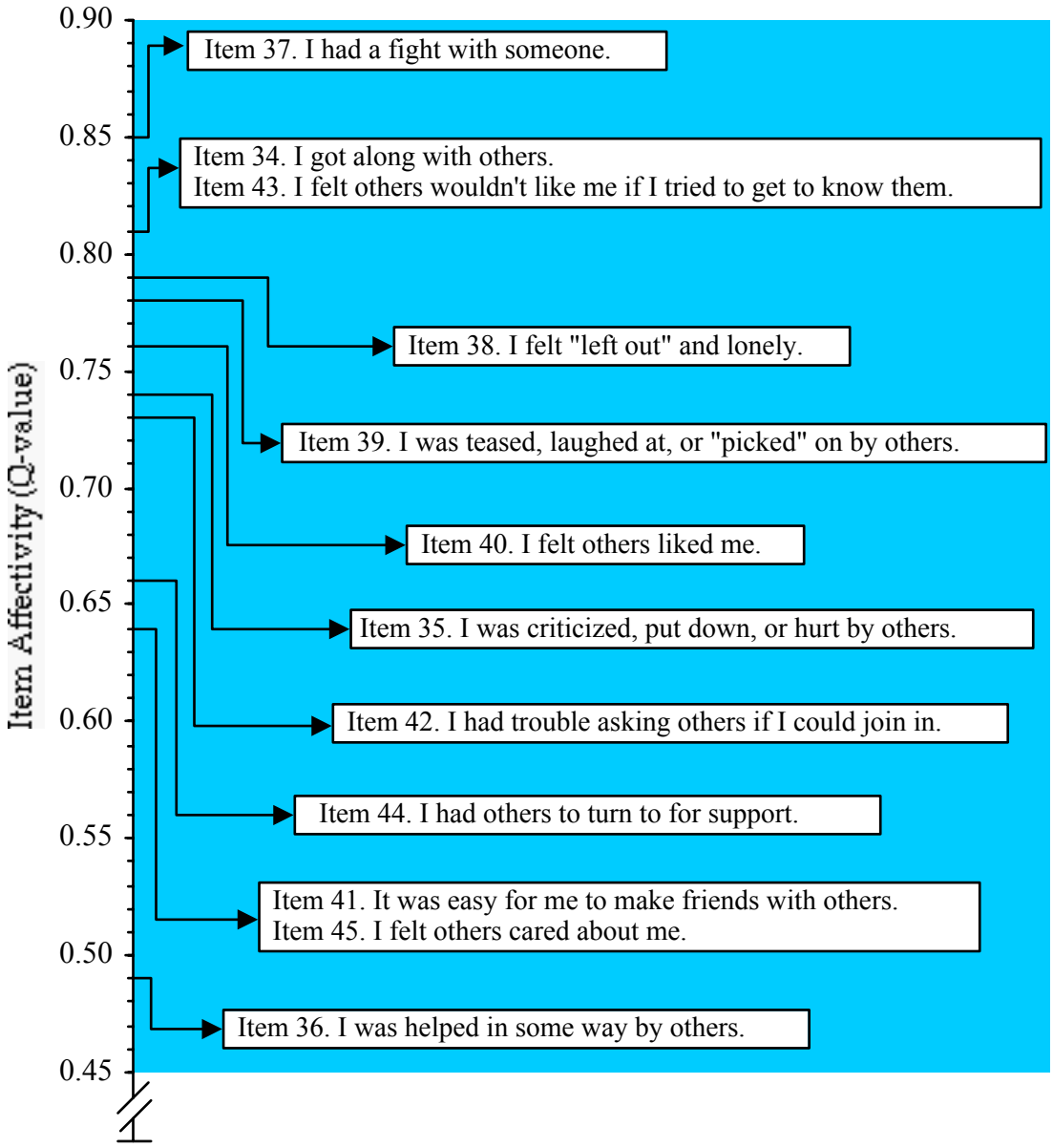

Figure 3. Affectivity of Interpersonal Problems Items 34 to 45 (N = 52).

As shown in Figure 3, the Affectivity of Interpersonal Problems Items varied between 0.49 and 0.85. Items 36 and 41 tended to be relatively frequently endorsed, whereas Items 37, 34, and 43 were the most difficult to endorse.

ADHD and Control Samples.

The Affectivities were also computed separately for the ADHD and Control samples to determine whether these three scales were measuring the same constructs within each sample. Table 4 shows the item orders (in ascending affectivity) within each of the two samples.

Table 4: Item Order (In Ascending Q-value) of Loneliness Items 1 to 6, Depression Items 7 to 32, and Interpersonal Problems Items 34 to 45 in the ADHD and Control Samples.

	Loneliness Items 1 to 6 Sample			Depression Items 7 to 32 Sample			Interpersonal Problems Items 34 to 45 Sample	
	ADHD (N = 23) [a]	Control (N = 28)		ADHD (N = 24)	Control (N = 28)		ADHD (N = 24)	Control (N = 28)
LA	4	4	LA	18	9	LA	36	36
	6	2		16	22		41	44
↓	1	6		17	31		45	45
	3	5		9	20	↓	42	41
	2	3		8	18		44	35
MA	5	1	↓	31	16		40	39
				20	14		35	42
				29	19	↓	38	40
				23	28		39	37
				22	12		34	38
				19	24		43	34
				13	17	MA	37	43
			↓	15	11			
				7	26			
				14	8			
				27	7			
				21	15			
				12	13			
				11	23			
			↓	10	21			
				26	29			
				28	32			
				24	25			
				32	10			
				25	27			
			MA	30	30			

Note. LA = Least Affective Items (Low Q-value); MA = Most Affective Items (High Q-value).
[a] There was one missing case.

Table 4 shows that item order remained relatively similar within both the ADHD and Control samples for all three measures, despite an expectation of sampling fluctuation due to a small sample size. All three measures, therefore, appeared to be measuring the same construct within each sample.

Aberrant Response Profiles

Item Discrimination.

Discrimination indices were computed to examine how well each item distinguished between children who reported either low or high scores on each of the three measures. The Phi coefficient was used to calculate item discrimination by dichotomizing both item response (i.e., "Never - 0" or "Sometimes - 1", classified as "0"; "Often' - 2" or "Always - 3", classified as "1") and total score (i.e., Below median = "0"; Above median = "1") on each measure.

Items with discrimination indices 0.40 or greater reflect very good items, 0.20 to 0.40 satisfactory, 0.10 to 0.19 marginal, and below 0.10, reflect items that either need to be rejected or revised (Hopkins, Stanley, & Hopkins, 1990). Ideally, item discrimination indices should be moderately positive and similar. Negative discrimination indices are indicative of problematic items because children who highly endorse these items (i.e., "Often - 2" or "Always - 3") will have a lower total score on that measure, relative to children who do not (i.e., "Never - 0" or "Sometimes - 1").

Table 5 shows the Discrimination of the six Loneliness Items.

Table 5: Discrimination (Phi) of Loneliness Items 1 to 6 (N = 51) [a].

Item	Phi
1	0.34
2	0.34
3	0.44
4	0.44
5	0.30
6	0.47

Note. [a] There was one missing case.

In Table 5, the discrimination power of items 1 to 6 varied between 0.30 and 0.47. All six Loneliness items were therefore considered satisfactory and retained.

Table 6 shows the Discrimination of the Depression Items

Table 6: Discrimination (Phi) of Depression Items 7 to 32 (N = 52).

Item	Phi
7	0.23
8	0.42
9	0.23
10	0.48
11	0.37
12	0.30
13	0.49
14	0.20
15	0.41
16	0.56
17	0.42
18	0.50
19	0.59
20	0.29
21	0.21
22	- 0.01
23	0.39
24	0.12
25	0.30
26	0.54
27	0.44
28	- 0.06
29	0.58
30	0.08
31	0.23
32	0.26

Table 6 reveals that the discrimination power of the 26 Depression items varied between - 0.06 and 0.59. Twenty-two of these items showed acceptable discrimination power of 0.20 or higher. In four cases, the discriminatory power of these items was either negative and/or close to zero. These four items, therefore, appeared to contribute minimally to measuring individual differences. These four items, however, are included within the content of the Children's Depression Inventory (CDI; Kovacs, 1992), a

measure which has been empirically proven to be reliable and valid in numerous clinical and nonclinical studies undertaken (Hepperlin, Stewart, & Rey, 1990; Smith, Mitchell, McCauley, & Calderon, 1990). Furthermore, clinical and experimental research evidence has shown that the CDI assesses important theoretical constructs (i.e., dysphoric mood, externalizing behaviour, loss of personal and social interest, self-deprecation, vegetative symptoms) which have both explanatory and predictive utility in the characterization of childhood depression (Hodges & Craighead, 1990; Craighead et al., 1998). These four items with low discrimination were therefore retained.

Table 7 shows the Discrimination of the Interpersonal Problems Items.

Table 7: Discrimination (Phi) of Interpersonal Problems Items 34 to 45 (N = 52).

Item	Phi
34	0.31
35	0.34
36	0.38
37	0.00
38	0.38
39	0.21
40	0.51
41	0.48
42	0.41
43	0.42
44	0.47
45	0.55

As can be seen in Table 7, with the exception of Item 37, 11 of the 12 Interpersonal Problems Items showed acceptable discrimination of 0.20 or higher. Although the discrimination of Item 37 (i.e., “I had a fight with someone”) was zero, this item was

retained as it was judged the most affective and also appeared to be measuring the same construct in each of the two samples. Item 4 was therefore retained.

Person Discrimination

Person discrimination coefficients were also calculated with the Phi coefficient. Like Item Discrimination Indices, Person Discrimination Indices were computed to detect the presence of outliers among the data, by identifying the strength of the relationship between an individual's response pattern across items and the response pattern for the total group of respondents.

Table 8 shows a summary of children's Person Discrimination Indices.

Table 8: Summarized Person Discrimination Indices for the Study Two Sample (N = 52).

Person Discrimination Index (PDI)	Measure		
	Loneliness (N = 51) [a]	Depression (N = 52)	Interpersonal Problems (N = 52)
Minimum	- 0.45	- 0.33	- 0.30
Maximum	+ 0.71	+ 0.53	+ 0.69
No. of Positive cases	9 (17.6%)	46 (88.5%)	30 (57.7%)
No. of Negative cases	5 (9.8%)	5 (9.6%)	4 (7.7%)
No. of "PDI = 0" cases	37 (72.5%)	1 (1.9%)	18 (34.6%)

Note. [a] There was one missing case.

As shown in Table 8, 57.7% and 88.5% of indices were positive for Interpersonal Problems and Depression Items, respectively, implying that the majority of individual response patterns, for these two measures, were consistent with the group response pattern. In 72.5% of cases, indices for Loneliness Items were "zero", indicating no

relationship at all between children's individual response patterns and the group response profile. This result is attributable, however, to the lack of variability among children's individual responses to these six Loneliness items, and also to the computational method used to calculate discrimination, which relies on within-group variability. For example, 72.5% of children responded either by consistently maximally and/or minimally endorsing all six items to indicate a total absence of Loneliness within the previous four weeks, thereby inhibiting within-group variability with a resultant Phi Coefficient of "zero" (Note: two of the six Loneliness items were reverse-scored).

Alternatively, the lack of variability among children's responses on the Loneliness scale may be attributable to a genuine absence of loneliness. Furthermore, Hughes, Cavell and Grossman (1997) suggest that some children tend to idealize measures of relationship quality and peer acceptance. Furthermore, Patterson, Kupersmidt and Greisler (1990) suggest that some children frequently overestimate peer supportive relationships because it serves as a self-protective defence mechanism to shield themselves from the stressful perceptive effects of aversive and problematic peer relationships. Although the data corresponding to 72.5% of children's individual response patterns to all Loneliness items were unusual, there exists insufficient evidence to justify or warrant discarding the respective data.

Internal Consistency (Cronbach's Alpha) of Measures

The reliabilities of the Interpersonal Problems, Depression, and Loneliness measures were 0.84 (N = 52), 0.88 (N = 52), 0.86 (N = 51), respectively. All three measures therefore demonstrated high internal consistency.

Discussion

In Study Two, the purpose was to construct, develop, and validate a Children's Personal and Interpersonal problems Self-Report Questionnaire comprised of age-appropriate self-report measures of Loneliness (six items), Depression (26 items), Interpersonal Problems (12 items), and one "Number of Close Friends" item. A Parental Self-Report Form was also developed to gather descriptive information relating to ADHD children. Initial readability statistics demonstrated the self-report measures were comprehensible for children in Grade Two or above (at least seven years of age). To trial and validate the measures within the Student Questionnaire, a small sample of ADHD (N = 24) and nondisordered ("Control"; N = 28) schoolchildren were recruited, varying in age from 7 years 11 months to 16 years 4 months.

Psychometric examination of the Loneliness, Depression, and Interpersonal Problems measures showed the affectivity of most items was satisfactory, varying between 0.48 and 0.80, which Osterlind (1989) suggests maximizes individual differences. The affectivity of seven items, however, was above 0.80 which included three of the 12 Interpersonal Problems items, one of the 26 Depression items, and three of the six Loneliness items. Although the affectivity of these seven items was above 0.80, item analytic data remain tentative and tend to vary dependent on the nature and size of the sample (Haladyna, 1994). Further, item analytic data are also significantly influenced by the probability of chance errors, and the serial location of items (Mehrens & Lehmann, 1991). All seven items were therefore considered satisfactory for the specific purposes of this research.

Item affectivity indices, however, are related to indices of item discrimination (Carey, 1988). For example, items considered too easy or too difficult that everyone responds in a similar manner are likely to show deficient or no discriminatory power, and therefore contribute little to enhancing the reliability or validity of that measure in measuring individual differences (Payne, 1992). In this present research, examination of the discrimination power of the Loneliness, Depression, and Interpersonal Problems Items demonstrated most indices were positive and at least 0.20 or higher.

Of the five exceptions, insufficient evidence existed to justify their exclusion and conclude that these items were necessarily defective. For example, all five items with low or negative discrimination power were considered to demonstrate adequate content and construct validity in the operationalization of either childhood Interpersonal Problems or Depression. Four of these five items measuring Depression are also included within the 27-item Children's Depression Inventory (Kovacs, 1992), which has been proven to be highly reliable and valid in numerous investigations in successfully discriminating between clinical and nonclinical samples of depressed children (Craighead et al., 1995; Hodges, 1990). Furthermore, Mehrens and Lehmann (1991) state that removing items with low discrimination may undermine and seriously impair a measure's content validity in providing an adequate and representative sampling of a particular construct.

Despite the high incidence of Person discrimination indices which were equal to "zero" in this present research, Schmitt, Cortina and Whitney (1993) suggest that the removal and deletion of unusual or aberrant response patterns among test data has a very minimal effect upon test validity. Furthermore, using simulated data (i.e., real data with

aberrance artificially created by the researcher), Meijer (1997) recently reported only a small differential increase in criterion-related validity of 0.03 when aberrant response patterns (termed "nonfitting response vectors") were removed from the data set.

To conclude, this present research appears to have provided sufficient quantitative evidence to substantiate that the age-appropriate measures of Loneliness, Depression, and Interpersonal Problems are reliable and valid measures of each construct among schoolchildren. Furthermore, the heterogeneous item content within each measure appears to be sufficiently diverse to enable all three scales to broadly and representatively measure each construct, thus maximizing test reliability and validity.

Although the results of this research found that children's self-reports were differentiated significantly by Group, many children with ADHD frequently have comorbid learning disabilities (LD). Further research is therefore needed to establish whether the differences in Loneliness, Depression, Interpersonal Problems, and Number of Close Friends between ADHD and their peers are due to the effects of either ADHD (i.e., inattentiveness, hyperactivity-impulsivity) and/or LD (i.e., concomittant achievement problems). To test this hypothesis and thus limit the possible confounding of results, the purpose of Study three will be to examine differences in the self-reports of ADHD, ADHD/LD, LD, and "Control" children.

CHAPTER FIVE

STUDY THREE: SELF-REPORTED PERSONAL AND INTERPERSONAL PROBLEMS OF ADHD AND COMPARISON CHILDREN

This chapter describes the purpose, objectives, and research design of Study Three. The method describes the sample and data collection procedures undertaken. The statistical procedures used to analyse the resultant data are discussed together with the pertinent findings. The implications of these results are then given, and a summary is provided.

The purpose of Study Three was to use the Student Questionnaire developed in Study Two, to measure the Loneliness, Depression, and Interpersonal Problems of ADHD children and their peers. Groups in Study Three comprised children diagnosed with "ADHD", ADHD and a comorbid Learning Disability ("ADHD/LD"), Learning Disability only ("LD"), and Control.

Method

Participants

A total of 220 children participated (141 males, 79 females; Grades Three to 12) aged from 8 years 1 month to 17 years 10 months (Mean = 12 years 8 months; SD = 2 years 3 months). The summary data related to the mean age and frequency of male and female ADHD, ADHD/LD, LD, and Control children in Grades Three to 12 are shown in Table 9.

Table 9: Mean Age (Years - y, Months - m) and Frequency of Male and Female ADHD, ADHD/LD, LD, and Control Children in Grades Three to 12 (N = 220).

		Grade										Age (Years & Months)	
Group	N	3	4	5	6	7	8	9	10	11	12	Mean	SD
ADHD	55	3	6	6	7	6	10	6	1	7	3	12 y 11 m	2 y 7 m
- Male	40	2	4	3	5	6	8	6	0	4	2	12 y 11 m	2 y 4 m
- Female	15	1	2	3	2	0	2	0	1	3	1	12 y 8 m	3 y 2 m
ADHD/LD	36	1	6	4	7	3	5	3	6	1	0	12 y 3 m	2 y 4 m
- Male	24	1	3	3	4	3	2	3	5	0	0	12 y 3 m	2 y 4 m
- Female	12	0	3	1	3	0	3	0	1	1	0	12 y 1 m	2 y 6 m
LD	66	1	3	2	9	4	16	22	9	0	0	13 y 1 m	1 y 9 m
- Male	46	0	1	1	5	2	10	19	8	0	0	13 y 6 m	1 y 5 m
- Female	20	1	2	1	4	2	6	3	1	0	0	12 y 1 m	2 y 1 m
Control	63	1	6	13	7	17	3	6	5	3	2	12 y 5 m	2 y 3 m
- Male	31	1	2	6	4	7	2	1	5	2	1	12 y 7 m	2 y 5 m
- Female	32	0	4	7	3	10	1	5	0	1	1	12 y 2 m	2 y 1 m
Total	220	6	21	25	30	30	34	37	21	11	5	12 y 8 m	2 y 3 m

As shown in Table 9, the relative frequencies of male and female ADHD, ADHD/LD, LD, and Control children were apportioned similarly across Grades Three to 12, except for gender differences in the frequency of children in Grades Seven to 10 inclusive. To control for Grade-related differences, Age (in Months) was therefore used as a covariate in subsequent statistical analyses, where appropriate. Furthermore, of the 91 ADHD children either with or without LD, 85 (93.41%) were taking prescribed psychostimulant medication (e.g., Dexamphetamine Sulphate, Ritalin). The medication status of ADHD children is acknowledged in this research because it is well

documented that psychostimulant medication does aid in ameliorating the behavioural and peer-related difficulties of these children (American Academy of Child and Adolescent Psychiatry, 2000).

As in Study Two, teachers', principals', and educational psychologists' recorded class assessments, parental self-report data, and paediatricians' diagnoses were used to identify and classify children into one of the four groups in Study Three: ADHD, ADHD/LD, LD, and Control. Nondisordered or "Control" children were identified by their teachers, principals, educational psychologists, and parents to have no prior or present documented history of psychological and/or academic problems. Further, all children either with ADHD or ADHD/LD had been clinically diagnosed by a paediatrician, based on DSM-IV related diagnostic criteria for childhood ADHD (American Psychiatric Association, 1994).

Setting

All participating ADHD and ADHD/LD children completed the Children's Personal and Interpersonal Problems Self-Report Questionnaire (CPIPQ) either in their home environment or at their attendant primary or secondary high school. Parental Self-Report Forms were also distributed among these children to be completed by their respective mother and/or father at home. Children identified either as LD or Controls completed only the Student Questionnaire at their attendant government/nongovernment primary or secondary high school at a designated convenient time.

Procedure and Instrumentation

All participants were accessed between October, 1998 and April, 1999 through a number of relevant sources. Initially, survey packages enclosing both a Parental Self-Report Form, CPIPQs, and an information sheet (reproduced in Appendix I), detailing the purpose and nature of the research, were mailed to 77 randomly selected families who had previously given their consent to participate in ADHD-related research being conducted within the Graduate School of Education at the University of Western Australia. These 77 families were randomly chosen from a selected database of clinically-referred ADHD children who had been diagnosed by two consultant paediatricians, who work in collaboration with the researcher. Of the 77 survey packages distributed, 17 of the 77 Parent (Response Rate = 22.08%) and 19 of the 80 Student Questionnaires (Response Rate = 23.75%) were returned by April, 1999.

To further recruit ADHD children either with or without LD, a one-page information sheet (reproduced in Appendix J) was distributed in the bimonthly Western Australian Learning and Attentional Disorders Society (LADS) Newsletter (October, 1998), which was mailed to approximately 1000 members of LADS. In response to this information sheet, 32 metropolitan and 14 country-based families telephoned to participate in the present study. During the telephone call, the purpose and beneficial nature of the research were explained, together with assurances of confidentiality and subsequent feedback concerning the results of the research. The respective survey packages were mailed to these 46 families who returned them to the researcher by April, 1999 completed.

In an attempt to recruit additional children with ADHD, ADHD/LD, LD, (and Controls), a one-page information sheet (reproduced in Appendix K), disclosing the nature and psychoeducational importance of the research, was mailed to the special education personnel of 23 randomly selected Western Australian metropolitan government and nongovernment primary and secondary high schools, in November, 1998. In response to this information sheet, two government/nongovernment primary and two secondary high schools volunteered to participate. After formally contacting the principals and teachers at each school, Parental Consent letters (reproduced in Appendix L) were distributed among children to gain informed consent.

Following parental and child consent to participate, 116 CPIPQs were administered in November, 1998 in the four schools. In administering the CPIPQ, confidentiality was emphasized both verbally and on the cover page of the questionnaire. Children identified by teachers, principals, and educational psychologists as having been clinically diagnosed with ADHD by a paediatrician were also given Parental Self-Report Forms for their mother and/or father to complete at home. To ensure these Parental forms were completed, continued teacher follow-up of these children resulted in all relevant questionnaires being returned over the course of one week.

Research Hypotheses

A summary of the pertinent research questions listed at the close of Chapter Two (i.e., Are there Group and Gender-related differences in children's reported Loneliness, Depression, Interpersonal Problems, and Number of Close Friends ?, Does Loneliness and Depression account more strongly for Group-related differences in children's self-

reports ? How are children's self-reports influenced by Number of Close Friends ?), lead to the following eight research hypotheses:

Hypothesis One. Children's self-reported Loneliness, Depression, and Interpersonal Problems will be significantly interrelated.

Hypothesis Two. Differences in children's self-reported Loneliness, Depression, and Interpersonal Problems will be influenced by both Group and Gender. In the absence of significance, main effects will be investigated.

Hypothesis Three: Loneliness and Depression will make significant unique contributions in differentiating Group, relative to Interpersonal Problems.

Hypothesis Four: There will be significant Group-related differences in children's reported Loneliness and Depression.

Hypothesis Five: The interaction of Number of Close Friends and Group will significantly influence children's self-reported Depression, Loneliness, and Interpersonal Problems. In the absence of significance, main effects will be investigated.

Hypothesis Six: Depression, Loneliness, and Interpersonal Problems will each uniquely account for significant differences in Number of Close Friends.

Hypothesis Seven: There will be a significant relationship between children's Number of Close Friends and their self-reports.

Hypothesis Eight: There will be significant Group-related differences in children's Number of Close Friends.

Data Analysis

The significance of all statistical analyses (i.e., Bivariate Pearson product-moment correlations, Univariate and multivariate analyses of variance, Stepdown analyses, Chi-Square) were computed using a significance level of 0.05, with the usual protections against Type I errors. All data, including the internal consistency (Cronbach's Alpha) of the Loneliness, Depression, and Interpersonal Problems scales were analysed with the Statview statistical package (Version 5.0; Statistical Analysis System Institute Inc., 1992 - 1998), and the Statistical Package for the Social Sciences (SPSS, Version 6.1.1; SPSS, Inc., 1989 - 1995).

Bivariate Pearson product-moment correlations were calculated to examine interrelationships between children's Age (Months), Loneliness, Depression, and Interpersonal Problems. In the absence of Age-related differences, a 4 (Group = ADHD, ADHD/LD, LD, Control) x 2 (Gender) Multivariate Analysis of Variance (MANOVA) was performed to determine Group and Gender-related differences in the three dependent variables. The statistical significance of a multivariate interaction or a main effect was evaluated using Wilks' Lambda criterion. The categorical Independent Variable "Number of Close Friends" was not included in the 4 x 2 MANOVA because the frequency of 17 (83.33%) of the resultant 24 "Group (4 Levels)" x "Gender (2 Levels)" x "Number of Close Friends (3 Levels)" cells for each of the three dependent variables was less than ten.

To determine whether there was a significant interaction between Number of Close Friends ("Zero to Three", "Four Six", "Seven or More") and Group for Loneliness, Depression, and Interpersonal Problems, a two-way MANOVA was computed. Although 218 children responded to the "Number of Close Friends" item, only four

indicated they had “No” Close Friends, whereas 26 had “One to Three”, 38 had “Four to Six”, and 150 had “Seven or More”. To ensure the sample size within each of these Friendship-related categories was adequate, the data corresponding to the four and 26 children who indicated they had either “No” or “One to Three” Close Friends, respectively, were merged together to form a new Friendship-related category termed “Zero to Three” Close Friends.

To examine the unique contributions of the three dependent variables in accounting for differences by Group (Independent Variable), a Stepdown analysis was performed prioritizing the dependent variables in the order from the most likely to unknown discrimination: Loneliness, Depression, and Interpersonal Problems. Loneliness was assigned higher priority because children with ADHD rate the importance and quality of peer relationships and perceived social support from their classmates as highly as their Non-ADHD peers (Demaray, 1998; Perrin & Last, 1997). Depression was given second priority because depressive symptomatology is often associated with loneliness (Hagerty & Williams, 1999; Wolf, Scurria, & Webster, 1998).

To investigate which of the three dependent variables uniquely accounted for differences in Number of Close Friends (Independent Variable), a second Stepdown analysis was conducted based on the following *à priori* ordering (from most to least important): Depression, Loneliness, and Interpersonal Problems. Depression was assigned higher priority because children who have few close friends tend to be most at-risk and susceptible to increased and continued depressive symptomatology (Flett, Vredenburg, & Krames, 1997; National Health and Medical Research Council, Commonwealth of Australia, 1997b). Loneliness was prioritized second as the absence

or lack of close friends ("aloneness") is not exclusively synonymous with subsequent loneliness (Barrell, 1997). It is well documented, however, that children's depression is significantly related to self-reported loneliness (Brage & Meredith, 1994; Page, Scanian, & Deringer, 1994).

After finding significant Stepdown F-values for each of the two separate analyses, subsequent Univariate analyses of variance and pairwise *post-hoc* Scheffé comparisons were conducted to examine the validity of the previously stated research hypotheses. In the presence of a significant contrast, Effect Sizes were calculated to determine the magnitude of this relationship, by dividing the difference between the two respective means by the pooled standard deviation of both sample groups (Cohen, 1988).

In addition to the two MANOVAs, two Stepdown Analyses, and the subsequent series of Univariate and pairwise *post-hoc* Scheffé contrasts, a 4 (Group) x 3 (Number of Close Friends) Chi-Square Analysis was computed to examine Group-related differences in children's Number of Close Friends.

Results

Internal Consistency (Cronbach's Alpha) of Measures

The internal consistency (Cronbach's Alpha) of the Loneliness, Depression, and Interpersonal Problems measures, were 0.85 (N = 214), 0.87 (N = 220), 0.84 (N = 220), respectively. The departure from N = 220 indicates missing data.

Intercorrelations between Age and Children's Self-Reported Loneliness, Depression, and Interpersonal Problems

Table 10 shows the intercorrelations between children's Age (Months), Loneliness, Depression, and Interpersonal Problems. The departures from N = 220 indicate missing data.

Table 10: Intercorrelations Between Children's Age, Loneliness, Depression, and Interpersonal Problems.

Variable	1.	2.	3.	4.
1. Age (Months)	–	- 0.14 (N = 214)	0.01 (N = 220)	- 0.13 (N = 220)
2. Loneliness	–	–	0.68 **** (N = 214)	0.76 **** (N = 214)
3. Depression	–	–	–	0.71 **** (N = 220)
4. Interpersonal Problems	–	–	–	–

**** p < 0.0001.

As can be seen in Table 10, children's self-reported Loneliness, Depression, and Interpersonal Problems were not significantly related by Age. In addition, an examination of interrelationships between Age (Months) and the self-reports of the four groups of children also revealed nonsignificant findings. Further, the absolute

magnitude of 11 of the 12 intercorrelations between children's Age and their Loneliness, Depression, and Interpersonal Problems were less than 0.40 within these four samples (Range = - 0.42 to + 0.26). Insufficient evidence existed therefore to justify using Age as a covariate in subsequent statistical analyses.

Loneliness, Depression, and Interpersonal Problems, however, were all significantly positively correlated. For example, children who self-reported low or high levels of Loneliness tended to report consistently low or high Depression and Interpersonal Problems, respectively. Hypothesis One that "Children's self-reported Loneliness, Depression, and Interpersonal Problems will be significantly interrelated" is therefore supported.

Loneliness, Depression, and Interpersonal Problems: MANOVA, Stepdown, Univariate, and Pairwise *Post-hoc* Scheffé Comparisons

The results of the 4 (Group) x 2 (Gender) MANOVA found that one or more of the three dependent variables were significantly differentiated by Group [$F(9, 497) = 4.56$, $p < 0.0001$; Wilks' Lambda = 0.82]. There were, however, no significant multivariate effects for Gender nor for the interaction of Group and Gender. Hypothesis Two which stated that "Differences in children's self-reported Loneliness, Depression, and Interpersonal Problems will be influenced by both Group and Gender" is therefore not supported.

To investigate the effect of Group on the dependent variables, a Stepdown analysis was performed on the three prioritized variables. The results are presented in Table 11.

Table 11: Stepdown Analysis of the Effects of Group on the Three Prioritized Dependent Variables (N = 214).

Independent Variable	Dependent Variable	Univariate F	df	Stepdown F	df
Group	Loneliness	6.93 **	3, 210	6.79 ****	3, 210
	Depression	6.79 **	3, 210	4.86 **	3, 209
	Interpersonal Problems	5.22 **	3, 210	2.38	3, 208

** $p < 0.01$ **** $p < 0.0001$.

Based on an *à priori* ordering of the three indices, Table 11 shows that Loneliness uniquely contributed in accounting for Group-related differences in children's self-reports. After entering Depression at the second step, this variable made an additional unique contribution towards accounting for differences, as indicated by the significant Stepdown F-value. Interpersonal Problems, however, made no further contribution at the third and final step, beyond and above that of the former two variables. Hypothesis Three which stated that "Loneliness and Depression will make significant contributions in differentiating Group, relative to Interpersonal Problems" is therefore supported.

As Table 11 shows there were significant univariate F-values for Loneliness and Depression, pairwise *post-hoc* Scheffé comparisons were conducted to further investigate Group-related differences. Table 12 presents the means, standard deviations, between-group differences, and associated Effect Sizes. (Group-related differences in Interpersonal Problems were not examined as Stepdown analysis previously revealed that this dependent variable made no unique contribution in differentiating children's self-reports).

Table 12: Children's Self-Reported Loneliness and Depression: Summary Data.

Measure	Group							
	ADHD (N = 55)		ADHD/LD (N = 35)		LD (N = 66)		Control (N = 63)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Loneliness	5.18	3.23	7.63	4.41	4.95	3.48	4.13	3.88
Depression	28.33	10.57	31.08	11.88	29.61	9.83	23.22	9.78
Post-hoc Scheffé Contrasts	Loneliness ADHD/LD > Control *** (Effect Size = 0.79) ADHD/LD > ADHD ** (Effect Size = 0.63) ADHD/LD > LD ** (Effect Size = 0.67) Depression ADHD/LD > Control ** (Effect Size = 0.70) LD > Control ** (Effect Size = 0.62)							

[a] There was one missing case.

**p < 0.01 ***p < 0.001

Table 12 shows that ADHD/LD children reported significantly more Loneliness, compared to the three other groups of children. Furthermore, ADHD/LD and LD children reported significantly more Depression compared to Controls. Differences in children's self-reports were associated with moderate to large effect sizes (i.e., 0.62 to 0.79). Hypothesis Four which stated "There will be significant Group-related differences in children's reported Loneliness and Depression" is therefore supported.

Number of Close Friends and Children's Self-Reported Depression, Loneliness, and Interpersonal Problems

To determine whether there was a significant interaction of Number of Close Friends and Group for the three dependent variables, a two-way MANOVA was performed. The results revealed that there was a significant multivariate main effect of Number of Close Friends [F (6, 398) = 14.11, p < 0.0001; Wilks' Lambda = 0.68]. There was no significant multivariate interaction effect, suggesting that differences in self-reports were independent of Group. That is, ADHD children either with or without LD did not tend to report significantly lower or higher levels of Personal and Interpersonal Problems, relative to their nondisordered peers ("Controls") with a similar Number of Close Friends. These results therefore do not support Hypothesis Five which stated "The interaction of Number of Close Friends and Group will significantly influence children's self-reported Depression, Loneliness, and Interpersonal Problems" is not supported.

To further examine the multivariate effect of Number of Close Friends on the individual dependent variables, a Stepdown analysis was performed on the three prioritized dependent variables. The results are presented in Table 13.

Table 13: Stepdown Analysis of the Effects of Children's Number of Close Friends on the Three Prioritized Dependent Variables (N = 213).

Independent Variable	Dependent Variable	Univariate F	df	Stepdown F	df
Number of Close Friends	Depression	6.93 **	3, 210	22.98 ****	3, 210
	Loneliness	6.79 **	3, 210	21.30 ****	3, 209
	Interpersonal Problems	5.22 **	3, 210	5.28	3, 208

** p < 0.01 **** p < 0.0001.

Stepdown F-values in Table 13 show at each step, all three indices uniquely accounted for differences in children's reported Number of Close Friends. Depression followed by Loneliness, however, made the greatest unique contribution in differentiating Number of Close Friends. Hypothesis Six which stated "Depression, Loneliness, and Interpersonal Problems will each uniquely account for significant differences in Number of Close Friends" is supported.

As there were significant univariate F-values for Depression, Loneliness, and Interpertsonal Problems in Table 13, pairwise *post-hoc* Scheffé comparisons were performed to further examine the effect of Number of Close Friends. The results are shown in Table 14.

Table 14: Number of Close Friends, Depression, Loneliness, and Interpersonal Problems: Summary Data.

Measure	Number of Close Friends					
	"Zero to Three" (N = 30)		"Four to Six" (N = 38)		"Seven or More" (N = 150)	
	Mean	SD	Mean	SD	Mean	SD
Depression	37.67	13.49	30.37	7.94	24.89	9.24
Loneliness [a]	10.07	4.35	6.32	2.58	3.94	3.07

Interpersonal Problems	19.07	7.23	24.89	9.24	9.17	4.92

Post-hoc Scheffé Contrasts	Depression "Zero to Three" > "Seven or More" *** (Effect Size = 1.15) "Four to Six" > "Seven or More" ** (Effect Size = 0.59) "Zero to Three" > "Four to Six" ** (Effect Size = 0.65) Loneliness "Zero to Three" > "Seven or More" *** (Effect Size = 1.52) "Four to Six" > "Seven or More" ** (Effect Size = 0.76) "Zero to Three" > "Four to Six" ** (Effect Size = 0.96) Interpersonal Problems "Zero to Three" > "Seven or More" *** (Effect Size = 1.52) "Four to Six" > "Seven or More" ** (Effect Size = 0.60) "Zero to Three" > "Four to Six" ** (Effect Size = 1.00)

[a] There were five missing cases: one for "Four to Six", and four for "Seven or More".

**p < 0.01 ***p < 0.001 ****p < 0.0001.

As can be seen in Table 14, children's Depression, Loneliness, and Interpersonal Problems decreased significantly as their Number of Close Friends ("Zero to Three", "Four to Six", "Seven or More") increased. Furthermore, the differences in these three dependent variables were associated with moderate to very large effect sizes (i.e., 0.59 to 1.52). Hypothesis Seven which stated "There will be significant relationship between children's Number of Close Friends and their self-reports is supported.

Group-Related Differences in Number of Close Friends

To determine whether there were significant differences in the frequencies of "Zero to Three", "Four to Six", and "Seven or More" Close Friends of ADHD, ADHD/LD, LD,

and Control children, a 4 (Group) x 3 (Close Friends) Chi-Square Analysis was performed. The results revealed that there was a significant relationship between Group status and Number of Close Friends (Chi-Square = 23.43, df = 6, $p < 0.0001$). Hypothesis Eight which stated "There will be significant Group-related differences in children's Number of Close Friends is therefore supported.

Figure 4 shows the Percentage of Close Friends of ADHD, ADHD/LD, LD, and Control children, as a proportion of the frequency of children within each respective sample.

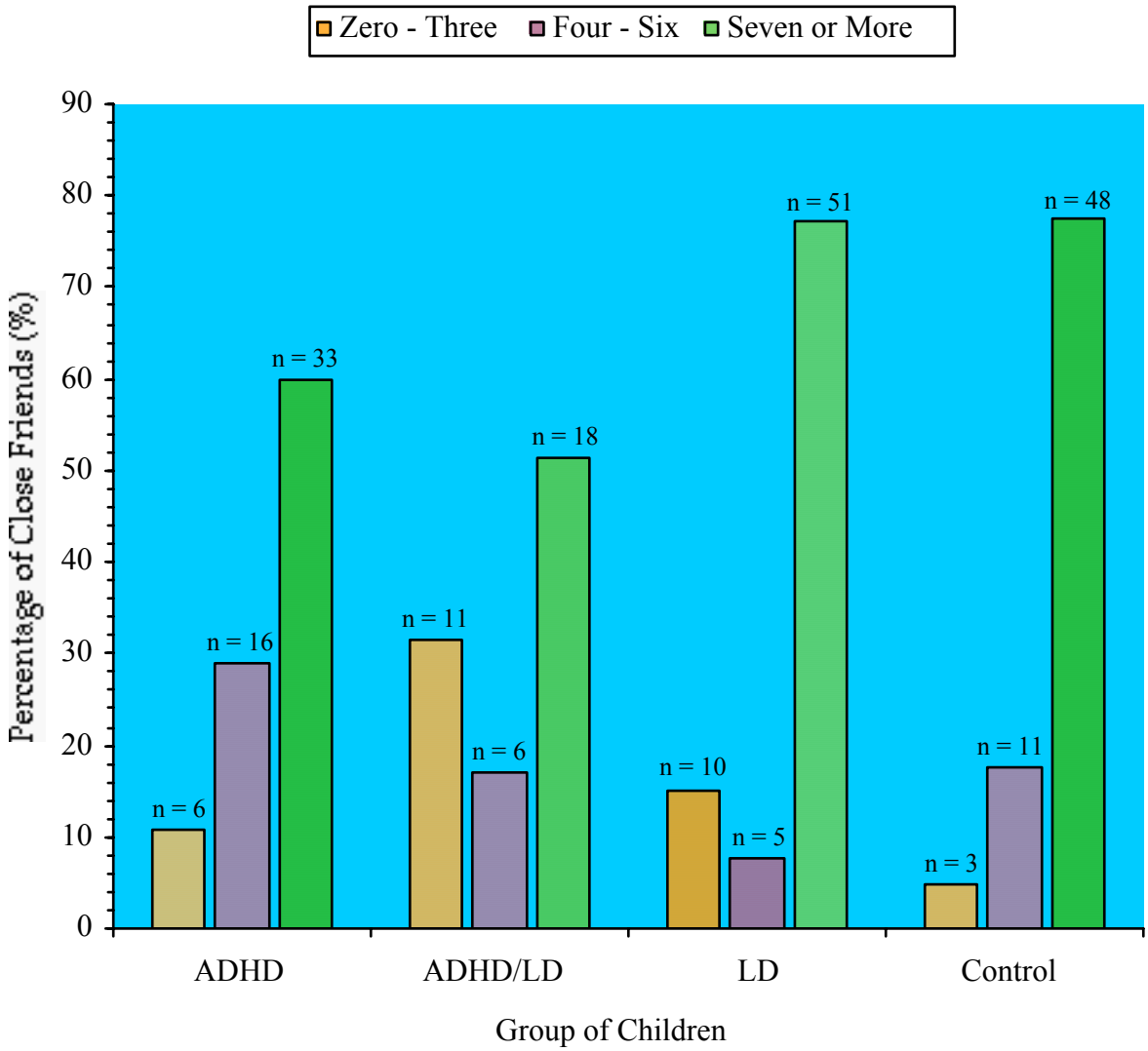

Figure 4: Percentage of Close Friends of Children According to Group (N = 218).

As shown in Figure 4, more LD and Control children appeared to have "Seven or More" Close Friends, relative to ADHD and ADHD/LD children. In addition, ADHD/LD children appeared to have a disproportionate higher and lower percentage of "Zero to Three" and "Seven or More" Close Friends, respectively, than either ADHD, LD, or Control children. Further, more ADHD/LD and fewer Control children reported that they had "Zero to Three" Close Friends, whereas more ADHD and less LD children self-reported that they had "Four to Six" Close Friends.

Discussion

The present research has demonstrated that children differed significantly in Loneliness and Depression, dependent on Group. For example, "disordered" children with ADHD and/or LD reported significantly more Loneliness and Depression than their nondisordered peers ("Controls"). More specifically, children with ADHD and comorbid learning disabilities tended to report a higher incidence of Personal Problems than either ADHD or LD children. Furthermore, there were nonsignificant differences in Loneliness and Depression between ADHD and LD children.

The increased Loneliness of ADHD/LD children, relative to their peers, therefore affirms that peer relational concerns appear to be particularly more salient among the former group. As there were nonsignificant differences in Loneliness and Depression between those individuals with ADHD/LD or ADHD and ADHD or LD, such results thus extend the earlier research of Flicek (1992) and Tracey and Gleeson (1998), who failed to adequately differentiate between the self-reported peer-related social experiences of DSM-III/DSM-III-R diagnosed ADHD children either with or without comorbid learning disabilities.

Although children with ADHD/LD were not significantly more depressed compared to their peers with ADHD or LD, the significantly increased depressive symptoms of these "disordered" children compared to Controls suggests that the former were adversely emotionally affected by the negative nature of their peer relations. Such findings are therefore consistent with similar findings by Kitchens, Rosén and Braaten (1999), relating to the increased depression of ADHD children. In addition, Hinshaw, Zupan, Simmel, Nigg and Melnick (1997) found that ADHD children, particularly those who

exhibit overt aggressive, antisocial, and noncompliant behaviour, tend to be overwhelmingly rejected by their peers, even as early as the first day of interaction.

Of the general population, Harrist, Zaia, Bates, Dodge and Pettit (1997) suggest that over extended time durations, children who are rejected by their peers are more likely to become withdrawn and at-risk to increased depressive symptomatology. Furthermore, increased levels of "subthreshold" depressive symptoms (i.e., symptoms below the threshold for clinical diagnosis) are likely to engender increasing levels of significant psychosocial dysfunction (e.g., lack of peer friendships) thereby indirectly promoting the future incidence of depression among such children (Lewinsohn, Solomon, Seeley, & Zeiss, 2000). Negative peer social status, particularly among children who feel victimized and teased, thus serves to uniquely predict increases in self-perceived loneliness (Juvonen, Nishina, & Graham, 2000). Such findings therefore support the elevated levels of peer-related loneliness among children with ADHD/LD in this research, due principally to their reported lack of close friends.

Despite the significantly fewer number of Close Friends of ADHD/LD children, relative to their peers, all children (independent of Group-status) reported experiencing similar increased levels of Personal (Depression, Loneliness) and Interpersonal Problems in general due to having few close friends. These findings are thus commensurate with similar results found by Hecht, Inderbitzen and Bukowski (1998) concerning the psychological and beneficial supportive nature of dyadic peer friendships amongst children within the general population. The significantly increased Loneliness of ADHD/LD children, however, can be further explained by examining the qualitative nature of their peer relations.

Although the present research found that children with ADHD/LD were able to maintain and establish at least one close friendship amongst their peers, many low-accepted behaviourally disordered children tend to have significantly less emotionally supportive peer relations than their nondisordered peers, despite the positively biased self-perceptions of such children concerning their inferred peer social acceptance (David & Kistner, 2000). Supportive peer interactions are not exclusively synonymous with decreased interpersonal problems, loneliness, and depression (Finch, Okun, Pool, & Ruehlmann, 1999). Perceived peer social support does, however, appear to influence children's self-reports of peer relational problems and concerns (Joiner, 1997), thereby accounting for the increased levels of Loneliness among children with ADHD/LD.

Although there were significant Group-related differences in children's Depression and Loneliness in this research, there was an absence of significant Gender differences. These findings, however, are consistent with Mahon, Yarcheski and Yarcheski (1994) who report that male and female children do not tend to report significant differences in general levels of loneliness nor in the frequency of peer friendships. Despite these findings, based on an Australian sample of 934 adolescents (393 boys, 541 girls) in Grades Seven, Nine, and 11, Chipuer and Pretty (2000) found that both urban and rural males alike tended to report significantly higher levels of both social (reflects lack of attachments to social or peer groups) and emotional loneliness (reflects lack of sense of security and intimacy within dyadic relationships), relative to females. Further research concerning the qualitative peer relations of ADHD children might therefore benefit substantially through the adoption of a multidimensional perspective concerning these individuals' experiences of peer-related loneliness.

The absence of gender differences in children's self-reported depression is contrary, however, to findings within the relevant literature which suggest a female preponderance (Greenberger, Chen, Tally, & Dong, 2000). The lack of significant findings concerning female preponderance of depression may be attributable to sample selection of children in this research, as 123 (55.91%) of the available 220 children were aged 13 years or younger. This may have otherwise resulted in limiting the potentiality of finding significant gender differences in children's depression. For example, Buckingham (2000) suggests that up until the age of 13 years, boys tend to report higher levels of depressive symptoms than girls. After the age of 13 years, however, the rates of depressive symptoms among girls tend to significantly increase, particularly between the ages of 15 and 19 years (Hankin, Abramson, Moffitt, Silva, McGee, & Angell, 1998).

Of the 91 children with ADHD who participated in this research, 85 (93.41%) were taking prescribed psychostimulant medication (e.g., Dexamphetamine Sulphate or Ritalin). Although it has been well documented that psychostimulant medication results in significant improvements in the behaviour problems of such children (Manos, Short, & Findling, 1999), children with ADHD/LD still reported significantly higher levels of Loneliness, compared to their peers. In line with this, Jensen, Kettle, Roper, Sloan, Dulcan, Hoven, Bird, Bauermeister and Payne (1999) state that all psychostimulant-treated children still continue to exhibit and display significantly socially inappropriate levels of behavioural symptomatology (i.e., inattention, hyperactivity-impulsivity). Furthermore, Olson, Schilling and Bates (1999) support the longitudinal stability of

inattentive, impulsive, overactive, and impulsive behaviour of such children tends across varied situational settings in childhood and adolescence.

The lack of specific significant differences in the peer-related personal Problems (Loneliness, Depression) of ADHD and Control children may be attributable to the effects of psychostimulant medication. Although the effects of time of ingestion of medication were not adequately controlled for, nor were there sufficient numbers of medicated and unmedicated ADHD children with which to compare differences in the self-reports of such individuals, Johnston, Fine, Weiss, Weiss, Weiss and Freeman (2000) found that medicated children with ADHD tended to rate their frequency of compliance and noncompliance as more controllable in a naturalistic social setting. Such results therefore imply that such individuals may be more likely to exhibit an incidence of more appropriate social behaviour thereby reducing their peer-related difficulties. Further research is required to adequately examine the feasibility and saliency of this issue.

In conclusion, the results of Study Three have demonstrated that children differ in Depression, Loneliness, and Number of Close Friends, dependent on Group (ADHD, ADHD/LD, LD, Control). Further research is now required in order to investigate interrelationships between the personal and interpersonal problems of children with ADHD/LD and how their peer attitudinal self-beliefs and subsequent maladaptive attributional styles influence their school adjustment, motivation, and achievement. By examining such relationships, the gathered information will greatly assist in empowering relevant school personnel (i.e., teachers, educational psychologists) to develop more appropriate and effective psychoeducational preventive/intervention

programmes targeted specifically to effectively ameliorate these children's psychosocial problems at school and in later life.

CHAPTER SIX

SUMMARY AND CONCLUSIONS

The present chapter is comprised of four sections. In Section One, the findings of this research pertaining to the self-reported Personal and Interpersonal Problems of ADHD children are discussed. Furthermore, where appropriate, Group and Gender-related differences in children's self-reports are discussed. The overall findings of this present research are then integrated with the relevant literature. In Section Two, recommendations for the effective and efficient delivery of psychoeducational practices in schools are discussed based on the implications of these results. In Section Three, the methodological implications of this research concerning retrospective protocols, social desirability response bias, and voluntary participation are acknowledged, and possible directions for future research directions are considered. Finally, in Section Four, concluding comments are given.

Discussion Of The Overall Findings Of The Research

The present research investigated ADHD children's social self-perceptions of their peer-related Personal and Interpersonal Problems utilizing both qualitative and quantitative field data. In addition, Group and Gender-related differences between the self-reports of ADHD and comparison children were examined. Three separate yet interrelated studies were conducted to examine these issues.

To ascertain the qualitative nature and relative frequency of ADHD children's peer relational problems, two focus groups and one small group interview were initially conducted in Study One with mothers, teachers, educational psychologists, and one school principal. In addition, differences in the experiential problems of ADHD children according to subtype (Predominantly Inattentive, Predominantly Hyperactive-Impulsive) were investigated, to facilitate a representative sampling of these children's peer-related difficulties. The results revealed that ADHD children frequently felt lonely, depressed, and had few friends. Furthermore, many of these children were ostracized, rejected, and disliked by their peers due to their increased incidence of stable maladaptive and noncompliant social behaviour across varied situational contexts, such as the classroom and schoolyard. Negative and aversive peer interactions and self-perceived feelings of peer victimization were therefore common negative social experiences among ADHD children.

Qualitative data enabled a detailed and ecologically valid understanding to be gained concerning the real-life Personal and Interpersonal Problems experienced by ADHD children. In line with this, mothers and relevant school personnel often described such children as having few friends, being lonely, depressed, teased, and victimized by their peers. Hodgens, Cole and Boldizar (2000) found similar results based on the peer interactions and acceptance of ADHD ($\underline{N}$ = 30) and previously unacquainted nondisordered children ($\underline{N}$ = 45) aged between 8 years 1 month and 11 years 6 months. For example, the former group were often described as shy, picked on or teased, and left out by their peers, compared to their nondisordered peers. In addition, children with ADHD were also rated by trained observers, blind to children's diagnostic status, as

significantly more likely to start fights or arguments and frequently spent more time engaged in solitary behaviour than in sustained peer interaction.

The qualitative findings of Study One together with the relevant literature provided the basis for Study Two, which involved the construction, development, and validation of age-appropriate measures of Loneliness (six items), Depression (26 items), and Interpersonal Problems (12 items). Furthermore, an additional item was constructed for children to self-report their Number of Close Friends. Readability statistics showed the measures were suitable for children in Grade Two or above (at least seven years of age). To trial these measures, a small school-based representative sample (27 males, 25 females) of Western Australian ADHD and nondisordered ("Control") children aged from 7 years 11 months to 16 years 4 months were recruited. Psychometric examination (Item affectivity, Item and person discrimination, Internal consistency) of these measures proved satisfactory.

In the third and final study, the measures validated in Study Two were administered to a large representative school-based sample (141 males, 79 females) of Western Australian children to investigate Group and Gender-related differences in self-reports, and thus examine appropriate research hypotheses which were applicable to the childhood sample being studied. As children with ADHD often have comorbid learning disabilities (LD), the sample comprised children with ADHD, ADHD/LD, LD, and nondisordered ("Control") children aged from 8 years 1 month to 17 years 10 months, to limit the possible confounding of results due to the effects of ADHD or LD. Bivariate Pearson product-moment correlations found that children's self-reports were not significantly related to Age (Months). Loneliness, Depression, and Interpersonal

Problems, however, were significantly and positively correlated. Furthermore, analysis of variance and *post-hoc* Scheffé contrasts demonstrated that there were significant differences in children's self-reports dependent on Group and Number of Close Friends. Stepdown analyses revealed that only Loneliness and Depression uniquely accounted for differences by Group. Specifically, children with ADHD/LD reported significantly more Loneliness and Depression, relative to Controls, whereas, LD children reported significantly less Loneliness and more Depression than ADHD/LD and Control children, respectively. There were, however, no differences in Depression between ADHD and LD children, nor between ADHD children with or without comorbid learning disabilities. The differences in children's self-reports according to Group suggest that it is likely that the increased personal problems of the ADHD/LD children were attributable to the effects of both ADHD and LD, due to their concomittant behavioural (Inattention, Hyperactivity-Impulsivity) and academic difficulties. These findings extend the earlier research of Flicek and colleagues (i.e., Flicek, 1992; Flicek & Landau, 1985), who investigated peer-related differences between ADHD children either with or without comorbid LD.

In addition, this present research also found that increased Number of Close Friends was associated with decreased Personal and Interpersonal Problems, irrespective of Group. As a result, Stepdown analysis revealed that differences in children's self-reports were uniquely associated with corresponding differences in their frequency of Close Friends. Chi-Square analysis also indicated that there were significant Group-related differences in Number of Close Friends.

Feelings of loneliness or relational concerns about the self-perceived quality of peer friendships appear to represent more significant social concerns particularly among

children with ADHD and comorbid learning disabilities. Furthermore, lonely individuals often tend to focus selectively on negative self-relevant information (Frankel & Prentice-Dunn, 1990). Self-focused attention to one's feelings concerning negative social experiences, however, does not exclusively give rise to biased memories or social self-perceptions (McFarland & Buehler, 1998). Rather, McFarland, White and Newth (1998) argue that individuals who acknowledged their moods were significantly more likely to self-report unbiased social self-accounts.

Preoccupation or self-focused attention on the perceived nature of one's problems does, however, indirectly promote and facilitate subsequent feelings of depression, particularly when the qualitative nature of such feelings are self-relevant (Gasper & Clore, 2000). Depression was therefore a significant major personal concern of ADHD/LD children in this research. In the general population, Leung and Wong (1998) report that depressed children often tend to exhibit significantly more peer-related cognitive disturbances characterized by negative self-talk, negative cognitions of self, world, future, and cognitive processing distortions (i.e., overgeneralizing, personalizing, catastrophizing, selective abstraction), relative to children with externalizing disorders alone. Dysfunctional peer relations, low peer approval and subsequent depressive thoughts are therefore likely to engender subsequent feelings of low relational self-worth among such children (Harter, Stocker, & Robinson, 1996).

The increased depression of ADHD/LD children, relative to Controls, however, may indirectly account for their self-perceived peer-related difficulties. For example, in a study of depressed college students' social behaviours, Hokanson and Butler (1992) found that over the course of a nine-month period, the college room-mates of depressive

individuals reported significantly higher levels of hostility, dissatisfaction and increasing withdrawal with their depressive cohabitant. In line with this, depressed compared to nondepressed individuals have also been found to be more pessimistically oriented, concerning the personal expectancies and characterizations of others' dispositions and social situations (Reich & Weary, 1998). Nondepressed children are therefore more likely to rate their depressed peers as less desirable friends, due to their difficulties in establishing rapport and egalitarian-based friendships because of their maladaptive functional social skills (Connolly, Geller, Marton, & Kutcher, 1992).

In examining factors which precipitate childhood depression, Kistner, Balthazor, Risi and Burton (1999) report that children with negative social self-perceptions, who perceived that they were actively disliked and rejected by their peers, were significantly more likely to report dysphoria or high levels of depressive symptoms, controlling for initial levels of dysphoria. Joiner, Katz and Lew (1997) found that depressed children often tended to seek out and unwittingly believe self-affirming feedback concerning their negative sense of self by gravitating towards others who judged them accordingly, thereby maintaining their depression. Depressed individuals are also more likely to blame themselves for the cause of their problems, compared to those who are nondepressed (Wall & Hayes, 2000).

Self-expectations created and adopted through internalizing others' negative evaluative social judgements are therefore likely to create self-fulfilling prophecies (Nelson & Klutas, 2000), whereby children with ADHD/LD are likely to indirectly escalate and maintain self-perceived feelings of depression, negative peer-regard and their resultant negative social status. Furthermore, Shirk, Van Horn and Leber (1997) suggest that

dysphoric or depressed children were significantly more likely to negatively evaluate the supportiveness and helpfulness of their peer interactions, thereby indirectly facilitating self-perceived feelings of loneliness.

Although this research found that ADHD/LD children did not report significantly more Interpersonal Problems than their nondisordered ("Control") peers, the increased levels of depressive symptoms among the former children were associated with increased levels of psychosocial dysfunction, characterized by their significantly fewer frequency of close friends. Such findings are therefore consistent with similar findings by Gresham, MacMillan, Bocian, Ward and Forness (1998), who found over 70% of such children lacked satisfactory and supportive peer friendships. The few reciprocated peer friendships of ADHD/LD children in this research, however, do not suggest that these individuals lacked the motivation to establish adequate relational bonds with their peers. In line with this, Baumeister and Leary (1995) state that the desire to form and maintain secure interpersonal and affiliative relationships with significant others (friends, teachers, family) is a fundamental human motivation, equally important with motives for satisfying the needs for food, hunger, and safety.

The lack of peer friendships of ADHD/LD children may explain their significantly increased interpersonal problems, as found in this research. In the school environment, children with few friends often tend to be significantly more vulnerable to episodic and chronic stressful experiences, especially peer victimization. For example, based on a mainstream sample of 229 boys and girls in Grades Three through Seven (Mean Age = 11 years 2 months), Hodges, Malone and Perry (1997) found that children with few friends were significantly more likely to be the focal targets of peer victimization,

particularly if they were devalued by peers and incapable of physically defending themselves. In a subsequent and similar investigation, Hodges and Perry (1999) found that initial victimization predicted increases in the internalizing problems of afflicted children, which in turn lead to increasing peer victimization over time.

Despite the significant increased peer-related personal problems (loneliness, depression) of ADHD/LD children in this research, self-reports were not significantly influenced by Gender. Although female children appear to be significantly more vulnerable and susceptible to peer-related feelings of interpersonal stress and thus report significantly higher levels of depressive symptoms twice that of their male peers (Nolen-Hoeksema & Girgus, 1994; Santa Lucia, Gesten, Rendina-Gobioff, Epstein, Kaufmann, Salcedo, & Gadd, 2000), insufficient evidence exists to conclusively support the presence of gender differences in children's self-reported personal and interpersonal problems (Kloep, 1999). The results of this present research related to Gender, therefore, do not appear to be contrary to the findings of the relevant literature.

Although the methodological design of this research did not allow differences to be examined in the self-reports of target children with or without medication, nor control for the time of stimulant ingestion, the present findings appear to demonstrate that the effects of medication do not tend to ameliorate these children's peer-relational problems. For example, many with comorbid learning disabilities still tended to self-report significantly more personal problems (loneliness, depression), relative to their nondisordered peers. Despite the inconclusiveness of findings in this research concerning the efficacy of medication, these results appear to be consistent with assertions that stimulant medication *per se* does not appear to "normalize" the

behaviour nor significantly improve the peer social status of all "treated" children with ADHD (American Academy of Child and Adolescent Psychiatry, 2000).

Educational Implications

The significantly increased loneliness, and depression, and significantly fewer close friends of children with ADHD/LD, compared to their peers, have important psychoeducational implications. First, interpersonal antecedents such as peer friendships and peer acceptance are often related to children's subsequent social-emotional and school adjustment (Berndt, Hawkins, & Jiao, 1999). Second, children's perceptions of the academic demands and social ecological nature of the school environment have been found to negatively influence children's subsequent school participation (e.g., paying attention, following directions, self-reliance) and achievement even as early as kindergarten (Ladd, Buhs, & Seid, 2000). Third, children's classroom engagement and motivation are often enhanced by supportive and slightly more motivated peer group members who offer self-affirming approval about their subsequent on-task behaviour (Sage & Kindermann, 1999).

Children with negative and unsupportive peer relations are therefore significantly more likely to drop out of school prematurely due to the interpersonal and school-related difficulties that they experience (Janosz, Le Blanc, Boulerice, & Tremblay, 2000). Although Janosz et al. (2000) suggest that the developmental pathways that precipitate early disengagement from school are heterogeneous and varied, these researchers' typological survey of dropouts' school experiences found that these children tended to be characterized as emotionally maladjusted and low achievers. Although the teachers' use of effective instructional practices aids in promoting the peer acceptance of at-risk

children, sustaining the implementation of such strategies often presents difficulties due to the organizational structure of schools, the synergistic nature of classrooms, and teachers' sense of pedagogical efficacy and motivation (Gersten, Chard, & Baker, 2000).

In effectively targeting the peer-relationship problems of at-risk ADHD children, it is clear that a collaborative and multidisciplinary (or multiprofessional) approach is needed in order to maximize the benefits and outcomes of psychoeducational intervention (Atkinson & Shute, 2000). For example, without the benefit of teacher input concerning the problematic peer behaviour of such children, both school and clinic-based practitioners may otherwise suggest ineffectual recommendations that do not consider the actual self-perceived classroom or school-realities of such children (Conoley & Conoley, 1991). Further, the professional support and expertise of clinic-based psychologists outside the school environment with child and family-based therapeutic experience, may complement the efforts of school-based psychologists in treating the ADHD child's psychological and emotional peer-related difficulties.

To promote the acceptability of psychoeducational interventions, however, parents need to be jointly and collaboratively involved in the behavioural consultation process with both teachers and educational psychologists to prevent undermining the home-school relationship (Freer & Watson, 1999). In line with this, the treatment effects of school-based social skills training programmes which consider the importance of collateral parental involvement and the affiliative needs of peer-rejected ADHD children are more likely to result in the generalized transfer of treatment effects (Frankel, Myatt, Cantwell, & Feinberg, 1997). Without parental involvement, however, the benefits of social skills

interventions often fail to generalize to the home, classroom, and schoolyard, as based on a meta-analytic review of 35 studies (Mean Effect Size = 0.20). This meta-analysis reported that only a mean of 8% of "treated" children were relationally better off than those without training (Magee-Quinn, Kavale, Mathur, Rutherford, & Forness, 1999).

Despite the positive benefits associated with parental-assisted social skills training, person-centered cognitive-behavioural and attributional intervention techniques are also required in order to further improve the interpersonal competence and adaptive social functioning of at-risk ADHD children. For example, cognitive-behavioural techniques instruct children how to self-monitor and self-regulate their own behaviour (Eggen & Kauchak, 1999). Attributional training is equally important as at-risk children are otherwise likely to become vulnerable to feelings of learned helplessness and subsequent depression, due to the dysfunctional and psychologically aversive nature of their peer relations (Wenzlaff & Bates, 1998). The development and maintenance of gains in the interpersonal competence of ADHD children, however, is more likely to be effectively achieved with the use of peer models rather than adults due to the saliency and relevance of the former's behaviour (Ryalls, Gul, & Ryalls, 2000).

Although cognitive-behavioural intervention or preventive strategies are important, facilitating attitudinal change in peers' negative and stereotypical self-perceptions of behaviourally disordered children are essential in order to maintain psychoeducational treatment gains in the peer acceptance of such children. Maras and Brown (2000) suggest that active inclusionary policies and intra-school contact (e.g., cooperative learning experiences or activities) between children with and without disabilities frequently promoted favourable attitudinal change and less biased attitudes among

mainstreamed children towards disordered children and the concept of disability *per se*. Furthermore, resultant peer friendships between mainstream and disabled children are likely to create a positive caring environment in which negative expectations and beliefs concerning the latter are subsequently disconfirmed and dispelled by peers (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). Teachers, psychologists, and educational policy-makers therefore need to collaboratively create equal-status social pastoral environments within the classroom and the schoolyard that assist in effectively enhancing the mental health outcomes of ADHD children in adolescence and later adulthood, particularly those with comorbid learning disabilities.

Methodological Implications And Directions For Further Research

Although the present research findings significantly add to the knowledge and understanding of ADHD children's social self-perceptions of their peer-related Personal and Interpersonal Problems, several methodological concerns need to be acknowledged. First, retrospective methodology was utilized within this research, during which educators, parents, and children were requested to recall and/or rate the frequency of occurrence of experiential peer-related difficulties. Although the response validity and bias (i.e., under- or over-reporting) of autobiographical retrospective protocols have received critical review (Shiffman, Hufford, Hickcox, Paty, Gnys, & Kassel, 1997), Marks and Hemsley (1999), recently demonstrated that there exists no significant response discrepancies between retrospective and concurrent self-report data. Brewin, Andrews and Gotlib (1993) acknowledge that claims concerning the unreliability of naturalistic retrospective data, during which participants are studied realistically in

context and not in artificially simulated experimental or instructional role-play situations, are grossly exaggerated.

Second, it is acknowledged that passive (i.e., informed consent) rather than active consent procedures (i.e., deliberate coercion) were utilized to recruit all participants in this research. Further, only consensual or self-selected children who had received parental permission volunteered to participate in this research. Sampling bias, however, has the potential to undermine and threaten the ecological and external validity of scientific data (Betan, Roberts, & McCluskey-Fawcett, 1995). For example, Noll, Zeller, Vannatta, Bukowski and Davies (1997) found that there were systematic, discernible and significant behavioural differences in the social reputation and peer acceptance/preference of consensual (N = 4073) and nonconsensual (N = 469) children: nonparticipants were often less socially accepted, more aggressive, and less socially competent. These findings of Noll et al. (1997), however, remain inconclusive due to sampling limitations inherent within their research design.

Despite the use of voluntary participants in this research, appropriate ethical standards were strictly maintained at all times due to the adherence to statutory, institutional, and professional directives that necessitate the need for informed consent. Furthermore, as research participation is always voluntary (Rosnow & Rosenthal, 1997), examining differences in the self-reports of volunteers and nonvolunteers appears contrary to the purposes of this investigation. The representativeness of voluntary participants, however, can be more effectively enhanced in future research by liaising with school administrators, teachers, and visiting individual classrooms during the recruiting phase by stressing the psychoeducational importance of the research, thus generating

enthusiasm for the study (Zabriski, Seifer, Sheldrick, Prinstein, Dickstein, & Sameroff, 1999).

Third and finally, it is acknowledged that a childhood measure of social desirability was not used in this research. Although individuals can and do actively fake their self-reports to purposefully create a positive favourable or negative unfavourable impression of themselves when instructed, insufficient evidence exists to conclusively affirm that social desirability compromises or attenuates the response validity of naturalistic self-reports *in situ* (Barrick & Mount, 1996; Ones, Viswesvaran, & Reiss, 1996). Furthermore, social desirability corrections for respondents who have been instructed to purposefully "fake good" are ineffectual as their resultant scores are often similar to those of "honest" respondents (Dwight & Alliger, 1997). In a recent meta-analytic review of 61 studies (1967 - 1997; 673 Effect Sizes), Richman, Kielser, Weisband and Drasgow (1999) also found the incidence of social desirability response bias was minimal among varied paper-and-pencil instruments, particularly when respondents were alone and anonymous, thereby reducing evaluation apprehension.

Despite the use of retrospective methodology, voluntary participation, and the absence of a social desirability measure, satisfactory reliable and valid data appear to have been gathered in this research concerning children's self-reports. Furthermore, it is clear that ADHD children's social self-perceptions of their actual social situation must be considered in the design of future research efforts, particularly among those attempting to accurately measure the perceived acceptability and effectiveness of psychoeducational intervention/preventive programmes in ameliorating these children's peer-related difficulties.

Concluding Comments

In conclusion, the results of this research have has raised a number of important issues. First, children with ADHD, particularly those with comorbid learning disabilities, are adversely affected by the perceived negative quality of their peer relationships. Many are often lonely, depressed, and have few friends. Furthermore, dysfunctional peer relations have been found to be predictive of low self-esteem, post-school psychosocial/occupational impairment and psychiatric comorbidity, as based on the results of relevant research. Structured and jointly coordinated school and family-based psychoeducational intervention and preventive approaches are thus required in order to facilitate and promote the psychological and school adjustment of at-risk children with ADHD.

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APPENDICES

Appendix A: Parental Self-Report Form Used in Studies Two and Three.

Strictly Confidential

Parental Self-Report Form: Bibliographical Information About Your ADHD Child(ren)

Strictly Confidential

Graduate School of Education
University of Western Australia

Appendix A *(continued ...)*

This section relates to information about you and your son and/or daughter with Attention-Deficit/Hyperactivity Disorder (ADHD). Remember all of your responses will remain **strictly confidential**.

ABOUT YOU *(Please tick the appropriate box):*

1. Are you ☐ Male ? OR ☐ Female ?

2. Are you ☐ the parent ?

☐ the stepparent ?

☐ the legal guardian ?

ABOUT YOUR SON(S) AND/OR DAUGHTER(S):

3. How many sons do you have ? _____

How many of your sons have ADHD ? _____

4. How many daughters do you have ? _____

How many of your daughters have ADHD ? _____

Now please complete the following questions below which relate to your son(s) and/or daughter(s) with ADHD.

Your son(s)

	Your 1st son	***Your 2nd son***
What is your son's date of birth ? (e.g., 25/02/1988)	_____/_____/_____	_____/_____/_____
What year is your son in at school ?	_____	_____

Please turn over ***(Instructions to parents)***

Appendix A *(continued ...)*

Your son(s)

	Your 1st son	***Your 2nd son***

Was he diagnosed by a paediatrician ?	☐ Yes ☐ No	☐ Yes ☐ No
If **no**, who diagnosed your son ? (e.g., a psychologist)	_____	_____
Is your son currently on medication ?	☐ Yes ☐ No	☐ Yes ☐ No
If **yes**, what medication is he on ?	_____	_____
Is your son	☐ ADHD Predominantly Inattentive	☐ ADHD Predominantly Inattentive
	☐ ADHD Predominantly Hyperactive	☐ ADHD Predominantly Hyperactive
	☐ ADHD Combined type	☐ ADHD Combined type
	☐ If you do not know the subtype, please tick this box	☐ If you do not know the subtype, please tick this box
In addition to ADHD, does your son also have any other diagnosed condition(s) ? (e.g., learning and/or behavioural difficulties) If so, please specify what it is or what they are.	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____

Please turn over ***(Instructions to parents)***

Appendix A *(continued ...)*

Your son(s)	***Your 3rd son***	***Your 4th son***

What is your son's date of birth ? (e.g., 25/02/1988)	_____/_____/_____	_____/_____/_____
What year is your son in at school ?	_____	_____
Was he diagnosed by a paediatrician ?	☐ Yes ☐ No	☐ Yes ☐ No
If **no**, who diagnosed your son ? (e.g., a psychologist)	_____	_____
Is your son currently on medication ?	☐ Yes ☐ No	☐ Yes ☐ No
If **yes**, what medication is he on ?	_____	_____
Is your son	☐ ADHD Predominantly Inattentive	☐ ADHD Predominantly Inattentive
	☐ ADHD Predominantly Hyperactive	☐ ADHD Predominantly Hyperactive
	☐ ADHD Combined type	☐ ADHD Combined type
	☐ If you do not know the subtype, please tick this box	☐ If you do not know the subtype, please tick this box

Please turn over ***(Instructions to parents)***

Appendix A *(continued ...)*

Your son(s)

	Your 3rd son	***Your 4th son***

In addition to ADHD, does your son also have any other diagnosed condition(s) ? (e.g., learning and/or behavioural difficulties) If so, please specify what it is or what they are.	_____ _____ _____ _____ _____ _____ _____ _____	_____ _____ _____ _____ _____ _____ _____ _____

Your daughter(s)

	Your 1st daughter	***Your 2nd daughter***
What is your daughter's date of birth ? (e.g., 25/02/1988)	_____/_____/_____	_____/_____/_____
What year is your daughter in at school ?	_____	_____
Was she diagnosed by a paediatrician ?	☐ Yes ☐ No	☐ Yes ☐ No
If **no**, who diagnosed your daughter ? (e.g., a psychologist)	_____	_____
Is your daughter currently on medication ?	☐ Yes ☐ No	☐ Yes ☐ No
If **yes**, what medication is she on ?	_____	_____

Please turn over *(Instructions to parents)*

Appendix A *(continued ...)*

Your daughter(s)

	Your 1st daughter	***Your 2nd daughter***

Is your daughter	☐ ADHD Predominantly Inattentive ☐ ADHD Predominantly Hyperactive ☐ ADHD Combined type ☐ If you do not know the subtype, please tick this box	☐ ADHD Predominantly Inattentive ☐ ADHD Predominantly Hyperactive ☐ ADHD Combined type ☐ If you do not know the subtype, please tick this box
In addition to ADHD, does your daughter also have any other diagnosed condition(s) ? (e.g., learning and/or behavioural difficulties) If so, please specify what it is or what they are.	_____ _____ _____ _____ _____ _____ _____	_____ _____ _____ _____ _____ _____ _____
What is your daughter's date of birth ? (e.g., 25/02/1988)	_____/_____/_____	_____/_____/_____
What year is your daughter in at school ?	_____	_____
Was she diagnosed by a paediatrician ?	☐ Yes ☐ No	☐ Yes ☐ No
If **no**, who diagnosed your daughter ? (e.g., a psychologist)	_____	_____

Please turn over *(Instructions to parents)*

Appendix A *(continued ...)*

Your daughter(s)	***Your 3rd daughter***	***Your 4th daughter***

Is your daughter currently on medication ?	☐ Yes ☐ No	☐ Yes ☐ No
If **yes**, what medication is she on ?	_____	_____
Is your daughter	☐ ADHD Predominantly Inattentive	☐ ADHD Predominantly Inattentive
	☐ ADHD Predominantly Hyperactive	☐ ADHD Predominantly Hyperactive
	☐ ADHD Combined type	☐ ADHD Combined type
	☐ If you do not know the subtype, please tick this box	☐ If you do not know the subtype, please tick this box
In addition to ADHD, does your daughter also have any other diagnosed condition(s) ? (e.g., learning and/or behavioural difficulties) If so, please specify what it is or what they are.	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____

Thank you for your time !

Appendix B: Bibliography of References Used in the Construction of the Preliminary Interpersonal Problems Scale (18 Items).

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Appendix B *(continued ...)*

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Appendix B *(continued ...)*

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Appendix B *(continued ...)*

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Appendix C: Preliminary Interpersonal Problems Scale (18 Items).

Your Social Life With Your Peers At School

How often did this **experience** happen to you

when you were with your peers at school

during the **PAST FOUR WEEKS** ... ?

During the **PAST FOUR WEEKS** ...	**Never**	**Sometimes**	**Often**	**Always**
1. I could not get along with other people at school.	**0**	**1**	**2**	**3**
2. I had an argument or fight with a friend.	**0**	**1**	**2**	**3**
3. I felt ignored by my friends.	**0**	**1**	**2**	**3**
4. I was let down or disappointed by my friends.	**0**	**1**	**2**	**3**
5. I was criticized or put down by others.	**0**	**1**	**2**	**3**
6. I felt "left out" and lonely.	**0**	**1**	**2**	**3**
7. I felt like I didn't "fit in" with my peers.	**0**	**1**	**2**	**3**
8. I was teased, laughed at, or "picked on" by my peers at school.	**0**	**1**	**2**	**3**

Appendix C *(continued ...)*

Your Social Life With Your Peers At School

How often did this **experience** happen to you

when you were with your peers at school

during the **PAST FOUR WEEKS** ... ?

During the **PAST FOUR WEEKS** ...	**Never**	**Sometimes**	**Often**	**Always**
9. I felt no one liked me.	**0**	**1**	**2**	**3**
10. It was easy for me to make new friends at school.	**0**	**1**	**2**	**3**
11. I didn't have any close friends at school.	**0**	**1**	**2**	**3**
12. I felt like people were against me.	**0**	**1**	**2**	**3**
13. I felt others wouldn't like me if I tried to get to know them.	**0**	**1**	**2**	**3**
14. I felt concerned with what others thought about me.	**0**	**1**	**2**	**3**
15. I had nobody to turn to when I needed help.	**0**	**1**	**2**	**3**

Appendix C *(continued ...)*

Your Social Life With Your Peers At School

How often did this **experience** happen to you

when you were with your peers at school

during the **PAST FOUR WEEKS** ... ?

During the **PAST FOUR WEEKS** ...	**Never**	**Sometimes**	**Often**	**Always**
16. I had trouble being self-confident and assertive around others.	**0**	**1**	**2**	**3**
17. I had trouble asking others if I could join in.	**0**	**1**	**2**	**3**
18. I had at least one good friend that I could talk to when something was bothering me.	**0**	**1**	**2**	**3**

Appendix D: Revised Interpersonal Problems Scale (12 Items).

Instructions

Below are a list of **experiences** that you may encounter when you're with your **peers at school**. Read each sentence and fill in **only one response** that **best describes** how often this **experience** happened to you during the **PAST FOUR WEEKS** by **circling one number** from "0" to "3" after each sentence.

An example has been done for you ...

If you have been happy only (sometimes) during the past four weeks, you would circle (1)

During the past four weeks ...

	Never	Sometimes	Often	Always
I have been happy.	0	(1)	2	3

Your Social Life With Your Peers At School

How often did this **experience** happen to you

when you were with your peers at school

during the **PAST FOUR WEEKS** ... ?

During the **PAST FOUR WEEKS** ...	**Never**	**Sometimes**	**Often**	**Always**
1. I got along with others.	**0**	**1**	**2**	**3**

How often did this **experience** happen to you

when you were with your peers at school

during the **PAST FOUR WEEKS** ... ?

During the **PAST FOUR WEEKS** ...	**Never**	**Sometimes**	**Often**	**Always**
2. I was criticized, put down, or hurt by others.	**0**	**1**	**2**	**3**
3. I was helped in some way by others.	**0**	**1**	**2**	**3**
4. I had a fight with someone.	**0**	**1**	**2**	**3**
5. I felt "left out" and lonely.	**0**	**1**	**2**	**3**
6. I was teased, laughed at or "picked on" by others.	**0**	**1**	**2**	**3**
7. I felt others liked me.	**0**	**1**	**2**	**3**
8. It was easy for me to make friends with others.	**0**	**1**	**2**	**3**
9. I had trouble asking others if I could join in.	**0**	**1**	**2**	**3**
10. I felt others wouldn't like me if I tried to get to know them.	**0**	**1**	**2**	**3**
11. I had others to turn to for support.	**0**	**1**	**2**	**3**
12. I felt others cared about me.	**0**	**1**	**2**	**3**

Appendix E: Children's Personal and Interpersonal Problems Self-Report Questionnaire Used in Studies Two and Three.

Strictly Confidential

Children's Personal and Interpersonal Problems Self-Report Questionnaire

Strictly Confidential

Graduate School of Education
University of Western Australia

Appendix E *(continued ...)*

Section One

This section relates to information about you. Remember all of your responses are **strictly confidential**.

Are you Male or Female ? ☐ Male ☐ Female

(Please tick a box)

What is your date of birth ? _____/_____/_____
(e.g., 25/02/1988)

What is your age ? _____ years

What grade are you in at school ? _____

Section One

When you feel lonely, sometimes it's because you feel left out by your friends.

For the following questions, circle the (one) number that **best** describes you.

An example has been done for you ...

If you were happy only (**sometimes**) during the past four weeks, you would circle ①

During the past four weeks ...

	Never	Sometimes	Often	Always
I was happy.	0	(1)	2	3

Appendix E *(continued ...)*

Section One *(continued ...)*

For each question, circle one response "0", "1", "2" or "3" that **best** describes how you were feeling at school during the **PAST FOUR WEEKS**.

During the **PAST FOUR WEEKS** ...	**Never**	**Sometimes**	**Often**	**Always**
1. There were others that I could talk to.	**0**	**1**	**2**	**3**
2. I felt alone.	**0**	**1**	**2**	**3**
3. There were others that I could mix/socialize with.	**0**	**1**	**2**	**3**
4. I felt left out of things.	**0**	**1**	**2**	**3**
5. I felt lonely.	**0**	**1**	**2**	**3**
6. I wished I had more friends.	**0**	**1**	**2**	**3**

Appendix E *(continued ...)*

Section Two

This series of questions list different feelings and ideas young people sometimes have.

For each question, circle one response "0", "1", "2" or "3" that **best** describes how you were feeling at school during the **PAST FOUR WEEKS**.

An example has been done for you ...

If you were happy only **sometimes** during the past four weeks, you would circle **1**

During the past four weeks ...

	Never	Sometimes	Often	Always
I was happy.	0	(1)	2	3

For each question, circle one response "0", "1", "2" or "3" that **best** describes how you were feeling at school during the **PAST FOUR WEEKS**.

During the **PAST FOUR WEEKS** ...	**Never**	**Sometimes**	**Often**	**Always**
7. I was sad.	**0**	**1**	**2**	**3**
8. I thought that things would work out for me O.K.	**0**	**1**	**2**	**3**
9. I do things wrong.	**0**	**1**	**2**	**3**
10. I had fun.	**0**	**1**	**2**	**3**

Appendix E *(continued ...)*

Section Two *(continued ...)*

For each question, circle one response "0", "1", "2" or "3" that **best** describes how you were feeling at school during the **PAST FOUR WEEKS**.

During the **PAST FOUR WEEKS** ...	**Never**	**Sometimes**	**Often**	**Always**
11. I was good.	**0**	**1**	**2**	**3**
12. I thought about bad things happening to me.	**0**	**1**	**2**	**3**
13. I liked who I am.	**0**	**1**	**2**	**3**
14. I thought that bad things which happened to me were my fault.	**0**	**1**	**2**	**3**
15. I felt happy.	**0**	**1**	**2**	**3**
16. Things bothered me.	**0**	**1**	**2**	**3**
17. I liked being by myself.	**0**	**1**	**2**	**3**
18. I made up my mind about things easily.	**0**	**1**	**2**	**3**
19. I thought I looked O.K.	**0**	**1**	**2**	**3**
20. Completing my schoolwork was easy.	**0**	**1**	**2**	**3**
21. I had trouble sleeping.	**0**	**1**	**2**	**3**

Appendix E *(continued ...)*

Section Three *(continued ...)*

For each question, circle one response "0", "1", "2" or "3" that **best** describes how you were feeling at school during the **PAST FOUR WEEKS**.

During the **PAST FOUR WEEKS** ...	**Never**	**Sometimes**	**Often**	**Always**
22. I have been tired.	**0**	**1**	**2**	**3**
23. My appetite has been pretty good..	**0**	**1**	**2**	**3**
24. I had aches and pains.	**0**	**1**	**2**	**3**
25. I felt alone.	**0**	**1**	**2**	**3**
26. I had good times at school.	**0**	**1**	**2**	**3**
27. I had plenty of friends.	**0**	**1**	**2**	**3**
28. I thought my schoolwork was bad.	**0**	**1**	**2**	**3**
29. I thought I was just as good as other kids.	**0**	**1**	**2**	**3**
30. I thought nobody really loved me.	**0**	**1**	**2**	**3**
31. I have usually done what I was told.	**0**	**1**	**2**	**3**
32. I have got into fights.	**0**	**1**	**2**	**3**

Appendix E *(continued ...)*

Section Four

The next question asks you how many **Close Friends** you have.

Close Friends are people that you like and that you can have fun with (e.g., going out somewhere, playing games together, or taking part in some common activity). **Close Friends** understand you, value you, and are people who you can share private thoughts with. **Close Friends** are also those you can count on for help and support.

Please place a tick ☑ in the box that describes you **best**.

33. How many close friends do you currently have ?			
"No" Close Friends ☐	**"One to Three" Close Friends** ☐	**"Four to Six" Close Friends** ☐	**"Seven or More" Close Friends** ☐

Appendix E *(continued ...)*

Section Five

Below are a number of **experiences** you may encounter when you're with **your peers at school**.

Read each sentence below and fill in **only one response** that **best describes** how often this **experience** happened to you during the **PAST FOUR WEEKS** by **circling one number** from "0" to "3" after each sentence.

An example has been done for you ...

If you were happy only **sometimes** during the past four weeks, you would circle **1**

During the past four weeks ...

	Never	Sometimes	Often	Always
I was happy.	0	(1)	2	3

Please circle how often this experience happened to you during the *PAST FOUR WEEKS* when you with your peers at school

During the **PAST FOUR WEEKS** ...	**Never**	**Sometimes**	**Often**	**Always**
34. I got along with others.	**0**	**1**	**2**	**3**
35. I was criticized, put down, or hurt by others.	**0**	**1**	**2**	**3**
36. I was helped in some way by others.	**0**	**1**	**2**	**3**

Appendix E *(continued ...)*

Section Five *(continued ...)*

Please circle how often this experience happened to you during the *PAST FOUR WEEKS* when you with your peers at school

During the **PAST FOUR WEEKS** ...	**Never**	**Sometimes**	**Often**	**Always**
37. I had a fight with someone.	**0**	**1**	**2**	**3**
38. I felt "left out" and lonely.	**0**	**1**	**2**	**3**
39. I was teased, laughed at, or "picked on" by others.	**0**	**1**	**2**	**3**
40. I felt others liked me.	**0**	**1**	**2**	**3**
41. It was easy for me to make friends with others.	**0**	**1**	**2**	**3**
42. I had trouble asking others if I could join in.	**0**	**1**	**2**	**3**
43. I felt others wouldn't like me if I tried to get to know them.	**0**	**1**	**2**	**3**
44. I had others to turn to for support.	**0**	**1**	**2**	**3**
45. I felt others cared about me.	**0**	**1**	**2**	**3**

End of questionnaire

Thank you for your time !

Appendix F: Study Two Information Sheet Mailed to Parents of ADHD Children.

The University of Western Australia

Graduate School of Education

Nedlands, WA 6907, Australia
Facsimile (09) 9380 1052
Telex AA92992
Telephone (08) 9380 2391
Internet: shoughto@ecel.uwa.edu.au

October 12, 1998

Dear Parent or Guardian

Sometime ago you were kind enough to allow your child(ren) to assist us here at The University of Western Australia with a research project pertaining to executive functions and information processing. We subsequently organised a morning and/or evening feedback seminar for parents and also sent you a copy of our manuscript (based on the research) entitled *Differential Patterns of Executive Function In Children With Attention-Deficit/Hyperactivity Disorder According to Gender and Subtype* (Houghton, Douglas, West, Whiting, Wall, Langsford, Powell, & Carroll). The findings of this study were also presented as part of a symposium with Professor Russell Barkley at Cambridge University, UK in April 1998. In a nutshell, our research is the first anywhere to evaluate Barkley's new theory of ADHD (and support it). We were very grateful that some parents allowed their children to return some five months later while on their normal medication and complete two of the tests again. The data are now analysed and shows quite clearly the beneficial effects of medication. You will receive a copy of this report, hopefully before Christmas. I will also be in contact with each of you again in the new year to describe what new research and events we are organising. There will of course be no charge for you to attend any of the events.

Finally, one of my PhD students (Rickey Kellner) is in the final stage of a three year, three study research programme into children with ADHD and their everyday social problems. He requires a sample of children with ADHD and would therefore be grateful if your child(ren) would complete the enclosed questionnaire. It is of course anonymous and only takes 10 minutes to complete. You will notice either a PI or C written in one section. This is just to note the ADHD subtype of your child and in no way identifies him/her. There is also a small questionnaire for parents and we would be grateful if either of the parents would complete it. A reply paid envelope is enclosed. Please do not feel under any obligation to assist us, and should you decide not to complete any of questionnaires please destroy them. I do hope you will continue supporting our research. We will of course be petitioning the Education Department with our findings. Should you have any questions about our research or if you would just like to talk for a few minutes do not hesitate to ring me on 9380 2391.

Best wishes,

Dr Stephen Houghton MAPsS, AFBPsS.
Associate Professor of Educational Psychology
Registered Psychologist

Mr Rickey Kellner
PhD Doctoral Student

Appendix G: Summary of Individual Person Discrimination Indices for All Children in Study Two (N = 52).

	Measure					
	Loneliness (Items 1 to 6)		Depression (Items 7 to 32)		Interpersonal Problems (Items 34 to 45)	
	Type of Child		Type of Child		Type of Child	
	ADHD	Control	ADHD	Control	ADHD	Control
1.	0.00	0.00	0.10	0.19	- 0.17	0.00
2.	0.00	0.45	- 0.02	0.35	0.30	0.45
3.	0.45	0.00	0.18	0.19	0.58	0.00
4.	0.00	0.00	0.35	0.19	0.33	0.00
5.	0.71	0.30	0.21	0.51	- 0.17	0.30
6.	- 0.33	0.00	0.26	- 0.06	0.33	0.00
7.	- 0.45	0.58	0.27	0.00	0.00	0.58
8.	0.00	0.00	0.19	0.33	0.45	0.00
9.	- 0.33	0.30	0.23	0.20	0.00	0.30
10.	0.00	0.00	0.26	0.19	0.00	0.00
11.	0.00	0.51	0.24	0.32	0.00	0.51
12.	0.00	0.00	0.27	- 0.04	0.45	0.00
13.	0.00	0.30	0.06	0.26	0.45	0.30
14.	0.00	0.67	- 0.22	0.26	0.19	0.67
15.	0.45	0.58	0.06	0.17	0.00	0.58
16.	- 0.45	0.45	0.53	0.33	0.45	0.45
17.	0.00	0.00	0.39	0.06	0.51	0.00
18.	0.00	0.29	0.28	0.14	0.19	0.29
19.	0.00	0.45	0.39	0.35	- 0.30	0.45
20.	•	0.45	0.22	0.51	0.69	0.45
21.	- 0.45	0.67	0.38	0.24	0.30	0.67
22.	0.00	0.00	0.28	0.14	0.35	0.00
23.	0.45	- 0.19	0.15	0.41	0.58	- 0.19
24.	0.00	0.30	0.02	0.27	0.00	0.30
25.		0.00		0.32		0.00
26.		0.00		0.27		0.00
27.		0.45		0.27		0.45
28.		0.00		- 0.33		0.00

Note. Absolute Magnitude of Person discrimination indices ranges from 0 - 1.

"•" = One missing case.

Appendix H: Three, 13, and Six Least and Most Affective Items to the Respective Loneliness, Depression, and Interpersonal Problems Scales in Study Two.

Measure					
Loneliness (Items 1 to 6), N = 51 [a]		Depression (Items 7 to 32), N = 52		Interpersonal Problems (Items 34 to 45), N = 52	
Three Least Affective Items	Three Most Affective Items	13 Least Affective Items	13 Most Affective Items	Six Least Affective Items	Six Most Affective Items
4 (0.75)	3 (0.82)	9 (0.48)	26 (0.69)	36 (0.49)	40 (0.76)
6 (0.76)	5 (0.83)	18 (0.55)	7 (0.70)	41 (0.64)	39 (0.78)
2 (0.79)	1 (0.84)	31 (0.56)	28 (0.70)	45 (0.64)	38 (0.79)
		16 (0.57)	29 (0.70)	44 (0.66)	34 (0.81)
		22 (0.58)	13 (0.71)	42 (0.73)	43 (0.81)
		20 (0.59)	15 (0.71)	35 (0.74)	37 (0.85)
		17 (0.61)	24 (0.72)		
		8 (0.63)	21 (0.74)		
		19 (0.63)	10 (0.75)		
		14 (0.64)	27 (0.78)		
		12 (0.67)	25 (0.80)		
		11 (0.69)	32 (0.80)		
		23 (0.69)	30 (0.87)		

Note. Numbers enclosed in parentheses refer to the item's Q-value (Affectivity).

[a] Departure from N = 52 indicates that there was one missing case.

Appendix I: Study Three Information Sheet Mailed to 77 Western Australian ADHD Families.

The University of Western Australia

Graduate School of Education

Nedlands, WA 6009, Australia
Facsimile (09) 9380 1052
Telex AA92992
Telephone (08) 9380 2391
Internet: shoughto@ecel.uwa.edu.au

October 12, 1998

Dear Parent or Guardian

Sometime ago you were kind enough to allow your child(ren) to assist us here at The University of Western Australia with a research project pertaining to executive functions and information processing. We subsequently organised a morning and/or evening feedback seminar for parents and also sent you a copy of our manuscript (based on the research) entitled *Differential Patterns of Executive Function In Children With Attention-Deficit/Hyperactivity Disorder According to Gender and Subtype* (Houghton, Douglas, West, Whiting, Wall, Langsford, Powell, & Carroll). The findings of this study were also presented as part of a symposium with Professor Russell Barkley at Cambridge University, UK in April 1998. In a nutshell, our research is the first anywhere to evaluate Barkley's new theory of ADHD (and support it). We were very grateful that some parents allowed their children to return some five months later while on their normal medication and complete two of the tests again. The data are now analysed and shows quite clearly the beneficial effects of medication. You will receive a copy of this report, hopefully before Christmas. I will also be in contact with each of you again in the new year to describe what new research and events we are organising. There will of course be no charge for you to attend any of the events.

Finally, one of my PhD students (Rickey Kellner) is in the final stage of a three-year, three-study research programme into children with ADHD and their everyday social problems. He requires a sample of children with ADHD and would therefore be grateful if your child(ren) would complete the enclosed questionnaire. It is of course anonymous and only takes 10 minutes to complete. You will notice either a PI or C written in one section. This is just to note the ADHD subtype of your child and in no way identifies him/her. There is also a small questionnaire for parents and we would be grateful if either of the parents would complete it. A reply paid envelope is enclosed. Please do not feel under any obligation to assist us, and should you decide not to complete any of questionnaires please destroy them. I do hope you will continue supporting our research. We will of course be petitioning the Education Department with our findings. Should you have any questions about our research or if you would just like to talk for a few minutes do not hesitate to ring me on 9380 2391.

Best wishes,

Dr Stephen Houghton MAPsS, AFBPsS.
Associate Professor of Educational Psychology
Registered Psychologist

Mr Rickey Kellner
PhD Doctoral Student

Appendix J: Study Three Information Sheet Distributed through the Western Australian Learning and Attentional Disorders Society (LADS) Newsletter (October, 1998).

The University of Western Australia

Graduate School of Education
Nedlands, WA 6907, Australia
Facsimile (08) 9380 1052
Telex AA92992
Telephone (08) 9380 2391
E-mail: shoughto@ecel.uwa.edu.au
(Dr Stephen Houghton)
rkellner@ecel.uwa.edu.au
(Rickey Kellner)

October, 1998

Dear Parent/Guardian,

Currently, I am a PhD student in the final stage of an exciting and innovative three-year, three-study research programme into children with ADHD and their everyday social problems. For this research, I require a sample of children (boys and girls) aged between 9 years and 17 years who have been diagnosed with either of the following:

(a) Attention-Deficit/Hyperactivity Disorder (ADHD) only
- this includes children who are passive/inattentive only, hyperactive only, or both passive/inattentive & hyperactive.

Or

(b) ADHD and also a learning disability.

Participation will only involve about 10 minutes of your time and will consist of completing a short questionnaire. The questionnaire will be mailed out to you along with a reply paid envelope. It is of course anonymous. If you wish to participate in this research, please ring one of the four telephone numbers below. I do hope you will continue supporting our research. We will of course provide feedback to parents through LADS and we will be petitioning the Education Department with our findings.

Should you have any questions about our research or if you would just like to talk for a few minutes do not hesitate to ring me on one of four telephone numbers given below.

9380 3985 (Rickey Kellner, UWA) or 9275 8249 (Rickey Kellner, Home)
9380 2391 (Associate Professor Stephen Houghton, UWA)
9385 1065 (Learning and Attentional Disorders Society - LADS)

Best wishes,

Mr Rickey Kellner
B. Psych., B. Ed. (Hons.)
Ph.D. Doctoral Student

Dr Stephen Houghton MAPsS, AFBPsS.
Associate Professor of Educational Psychology
Registered Psychologist

Appendix K: Study Three School Assistance Information Sheet.

The University of Western Australia

Graduate School of Education
Nedlands, WA 6907, Australia
Facsimile (08) 9380 1052
Telex AA92992
Telephone (08) 9380 2391
E-mail: shoughto@ecel.uwa.edu.au
(Dr Stephen Houghton)
rkellner@ecel.uwa.edu.au
(Rickey Kellner)

November 10, 1998

Dear Co-ordinator of Special Needs,

Currently, I am a PhD student working under the supervision of Associate Professor Steve Houghton. I am in the final stage of a three-year research programme into children with Attention-Deficit/Hyperactivity Disorder (ADHD) and their everyday social problems, which is being undertaken within the Graduate School of Education at the University of Western Australia. I have completed two studies and I am now undertaking the third and final study which requires the inclusion of: (i) students with ADHD; (ii) students with ADHD **and** Learning Disabilities; and (iii) students with Learning Disabilities (LD) **only**. ADHD occurs frequently with LD and children who have both ADHD and LD (i.e., ADHD/LD) generally tend to experience poorer academic and psychological outcomes than children with ADHD alone. In order to discern how having a learning disability affects children both socially and psychologically, it is important to obtain a sample of learning disabled children.

I would be most grateful if you would be able to provide assistance to me to access a sample of children and adolescents (boys and girls) aged between 9 and 17 years inclusive who fall into one or more of the three groups listed above. Within this research, students will be required to complete a short questionnaire at school within the classroom which will take no longer than 10 minutes. In completing this questionnaire, it should be emphasized that there are no right or wrong answers. No information relating to individuals will be supplied to any authorities or anyone else. No names will be used in any reports written about the study. We will of course provide feedback to teachers and be petitioning the Education Department with our findings.

The present research aims to develop an account of the ways in which children with a disability perceive friendships and peer relations. These children often experience problems in developing and maintaining friends and this leads, in some cases, to loneliness. If we can determine the components and processes involved in making friends we can assist children with a disability to develop various strategies which will facilitate their interactions with others. The benefits of the research will be significant for children, educators and parents in that we will be able to advise on how more appropriate social interactions may be initiated.

If you have any questions that you would like to raise with me about the study, I will only be too pleased to answer them. You can contact me on 9380 3985 (UWA) or on 9275 8249 (Home). Alternatively, you can also contact Associate Professor Stephen Houghton (UWA - 9380 2391).

Yours sincerely,

Dr Stephen Houghton MAPsS, AFBPsS.
Associate Professor of Educational Psychology
Registered Psychologist

Mr Rickey Kellner
B. Psych., B. Ed. (Hons.)
Ph.D. Doctoral Student

Appendix L: Study Three Parental Consent Information Sheet Distributed through Western Australian Government and Non-Government Primary and Secondary High Schools.

The University of Western Australia

Graduate School of Education
Nedlands, WA 6907, Australia
Facsimile (08) 9380 1052
Telex AA92992
Telephone (08) 9380 2391
E-mail: shoughto@ecel.uwa.edu.au
(Dr Stephen Houghton)
rkellner@ecel.uwa.edu.au
(Rickey Kellner)

November, 1998

Dear Parent/Guardian,

Currently, I am a PhD student in the final stage of an exciting and innovative three-year, three-study research programme into children with ADHD and the significance of their everyday social problems. For this research, I require a sample of children (boys and girls) aged between 9 years and 17 years who have been diagnosed with either of the following:

(a) Attention-Deficit/Hyperactivity Disorder (ADHD) only - this includes children who are passive/inattentive only, hyperactive only, or are both passive/inattentive & hyperactive,
(b) ADHD and also learning disabilities,
(c) learning disabilities only, and
(d) children and adolescents who do not have ADHD and/or learning disabilities.

The research will involve your child's voluntary participating in completing a short questionnaire. We would like to emphasise that there are no right or wrong answers. The study will be conducted at your child's school within the classroom and will take no longer than 10 minutes. In addition, I would be very grateful if you would complete the very short questionnaire included (***only*** if you have a son and/or daughter with ADHD) which should not take longer than 5 minutes to complete. Included will be a reply paid envelope to mail this parent questionnaire. No information relating to individuals will be supplied to any authorities or anyone else. No names will be used in any reports written about the study. We will of course provide feedback to parents and we will be petitioning the Education Department with our findings.

If you are willing to allow your son/daughter to take part, please complete the form attached and return it to the school. If you would rather your son/daughter did not take part, you are free to decline, and you and your child will not be included. Should your child decide to withdraw from the study, you may do so at any time without prejudice.

If you have any questions that you would like to raise with me about the study, I will be pleased to answer them. You can contact me on 9380 3985 (UWA) or 9275 8249 (Home). Alternatively you can also contact Associate Professor Stephen Houghton on 9380 2391 (UWA). Your co-operation is greatly appreciated.

Yours sincerely,

Mr Rickey Kellner
B. Psych., B. Ed. (Hons.)

Dr Stephen Houghton MAPsS, AFBPsS.
Associate Professor of Educational Psychology

Ph.D. Doctoral Student Registered Psychologist

Appendix L *(continued ...)*

Study Three Parental Consent Information Sheet. *(continued ...)*

Permission slip for children and adolescents to return to school if interested in participating in doctoral research being conducted

PERMISSION TO PARTICIPATE IN A RESEARCH PROJECT

I give permission for my son/daughter ..... to participate in the research project conducted by Mr Rickey Kellner and Dr Stephen Houghton.

I have read the letter explaining the purpose of the project and I understand that my son's/daughter's participation may involve completing a short questionnaire.

I understand that I am free to decline, and that my son/daughter him/herself is free to decline to participate. Furthermore, my son/daughter may withdraw from the study at any time without prejudice.

I understand that I can call Mr Kellner on 9380 3985 (UWA) or 9275 8249 (Home), and Dr Houghton on 9380 2391 (UWA) and request additional information about the study.

I understand that no names will be used in any results or publications arising from the study, and that all information collected will be treated in strict confidence.

I give permission for Mr Kellner and Dr Houghton to use and publish the information and conclusions generated from this study if they feel the field of education and paediatrics would benefit from the results.

Signed: _____ Date: _____

Contact Phone Number: _____