

THE UNIVERSITY OF CALGARY

DEPRESSION, ATTRIBUTIONAL STYLE AND SELF-ESTEEM
IN ATTENTION-DEFICIT HYPERACTIVITY DISORDERED MALES

By

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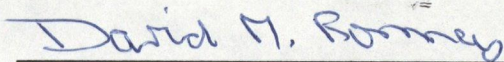
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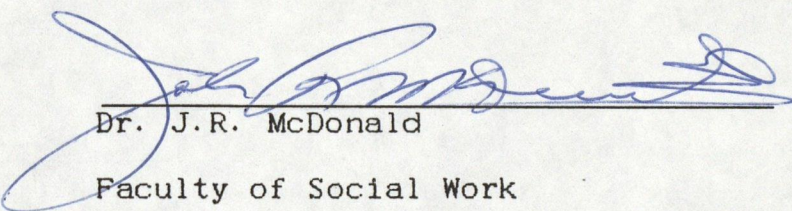
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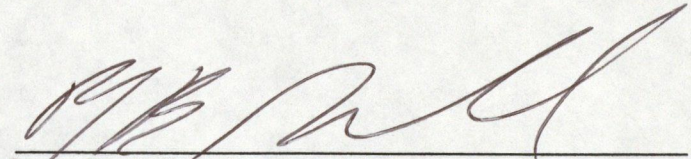
The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "Depression, Attributional Style and Self-Esteem In Attention-Deficit Hyperactivity Disordered Males", submitted by Cheryl Yvonne Alston in partial fulfillment of the requirements for the degree of Master of Science.


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ABSTRACT

Attention-deficit Hyperactivity Disorder (ADHD) research has focused on stimulant medication's cognitive and behavioral effects by comparing ADHD children to normal controls, revealing little about how it affects ADHD subgroups. This study explored the nature of depression, attributional style and self-esteem for two age groups of ADHD males who are medicated versus non-medicated, along with exploring the differences between groups on teacher-reported levels of externalizing behaviors (i.e., impulsivity, inattention, nervousness/overactivity, aggressiveness).

Sixty previously diagnosed ADHD males were solicited from regular classes, integrated special education classes and special education schools and given the Children's Depression Inventory, Coopersmith Self Esteem Inventory and Children's Attributional Style Questionnaire. Teachers completed the Child Behavior Checklist and Conners Teacher Rating Scale. Subjects were then divided into four equal groups based on age and medication: younger/older medicated and younger/older non-medicated. Comparisons among the groups on all sociodemographic and psychological variables were made using various statistical techniques.

Results indicated that the older medicated group had significantly lower social self esteem than the older non-medicated group, but the younger medicated group had

significantly higher academic self-esteem than the younger non-medicated group. No group reported significant levels of depression, but all groups were mildly depressed. The younger subjects, as a whole, had significantly higher levels of inattention, aggression and externalizing behaviors. Correlational analysis suggested an inverse relationship between self-esteem and depression; an inverse relationship between self-esteem and attributional style; and a direct relationship between depression and attributional style. Also, as age increased the medicated subjects decreased internal attributions for positive events, whereas non-medicated subjects increased internal attributions for positive events. Teacher-reported externalizing behaviors did not significantly decrease for subjects on stimulant medication.

Results were discussed in relation to previous studies for all psychological variables, and theoretical explanations were posited for the differences between medicated and non-medicated ADHD males. These results suggested that medicated adolescent ADHD males may be more demoralized by their disorder than younger and/or non-medicated males due to the social and self stigma of drug use, social difficulties, and continual academic failures. Clinical recommendations include the application of cognitive therapies to improve self-concept and decrease depression.

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TABLE OF CONTENTS

	Page
ABSTRACT	iii
ACKNOWLEDGEMENTS	v
LIST OF TABLES	viii
CHAPTER ONE: INTRODUCTION	1
Purpose	4
Hypotheses	5
CHAPTER TWO: LITERATURE REVIEW	6
ATTENTION-DEFICIT HYPERACTIVITY DISORDER	6
Symptomatology	6
Prevalence	14
Etiology	16
Psychopharmacologic Treatment	22
CHILDHOOD DEPRESSION	29
Classification and Causes	29
Prevalence	37
ATTRIBUTIONAL MODEL OF DEPRESSION	39
SELF-ESTEEM	46
ADHD, DEPRESSION, ATTRIBUTIONAL STYLE AND SELF-ESTEEM	52
CHAPTER THREE: METHODOLOGY	64
Sample	64
Psychological Measures	65
Conners Teachers Rating Scale	65
Child Behavior Checklist	67

Coopersmith Self-Esteem Inventory	71
Children's Depression Inventory	72
Children's Attributional Style Questionnaire	74
Procedure	76
Data Analysis	78
CHAPTER FOUR: RESULTS	79
Sociodemographic Variables	79
Psychological Measures	82
Correlations Between Measures	90
Clinical Observations	99
CHAPTER FIVE: DISCUSSION	100
Sociodemographic Variables	101
Psychological Measures	104
Limitations of Study and Future Recommendations	119
Summary and Conclusions	123
REFERENCES	126
APPENDICES	143

LIST OF TABLES

Table	Page
1. Means and Standard Deviations for Age, Length of Time on Medication and Daily Dosage.....	81
2. Means and Standard Deviations for all Psychological Measures.....	83
3. Analyses of Variance for Self-Esteem and Depression Measures.....	85
4. Analyses of Variance for Variables Measuring Inattention, Impulsivity, Aggression, Nervous/Overactive and Externalizing Behaviors...	86
5. Analyses of Variance for Attributional Measures..	87
6. Pearson Product-Moment Correlational Coefficients for Age, Length of Time on Medication, and Daily Dosage for all Variables.....	91
7. Pearson Product-Moment Correlational Coefficients for Depression and Self-Esteem Variables for Entire Sample.....	93
8. Pearson Product-Moment Correlational Coefficients for Depression, Impulsivity, Externalizing Behavior and Attributional Variables for Entire Sample.....	95
9. Pearson Product-Moment Correlational Coefficients For Impulsivity, Nervous/Overactive and Inattention for Entire Sample.....	96
10. Pearson Product-Moment Correlational Coefficients for Self-Esteem and Attributional Variables for Entire Sample.....	98

CHAPTER ONE

INTRODUCTION

Attention-deficit Hyperactivity Disorder (ADHD) is one of the most serious and enigmatic developmental disabilities of childhood for which there is no known cure, although the condition can be ameliorated. It is also the most researched and best known of the childhood behavior disorders. In the past 25 years there has been a proliferation of diagnostic techniques, treatment methods and special clinics developed to assess and treat ADHD children. In an attempt to explain the upsurge in attention paid to this disorder, Weiss (1985) speculates that it is due to the following: 1) ADHD is the most common disorder referred to child psychiatry clinics; 2) the disorder is severe enough to affect social and familial relationships and academic achievement; 3) unlike profound disorders such as autism, useful interventions have been applied to this disorder; 4) the nature of the ADHD deficits lend themselves to research and intervention by professionals from many disciplines, including child psychiatrists, psychologists, and educators; 5) the alleged efficacy of stimulant drugs on both cognitive and behavioral aspects of the syndrome; and, 6) ADHD is not limited to childhood nor is the disorder necessarily outgrown.

Knowledge about a particular disorder is gleaned by

measuring and treating the disorder, and this has been exactly the case with ADHD. The focus of much of the treatment research has been on the efficacy of stimulant medication in improving attention and increasing task-oriented behavior and reflectivity, but there has been a concomitant lack of research directed toward the effects of stimulants on aggression, learning, conduct problems, development of personality characteristics, and sociability (Weiss, 1985). Also, few research studies have examined differences between subgroups of ADHD children; instead, studies have concentrated on comparing ADHD children with normal controls. While the latter method is interesting it tells us little or nothing about the specificity of the disorder.

Studies which have examined the affective states of ADHD children have shown that they tend to have lower self-esteem and higher depression, more academic failure, and are more often aggressive and irritable than normal children (e.g., Szatmari, Offord, & Boyle, 1986). However, in all the studies investigating affective characteristics the ADHD children being treated with psychotropic medication were removed from the study. No studies to date have examined levels of self-esteem and depression in a group of ADHD children receiving psychotropic medication as compared to non-medicated ADHD children.

Locus of control, attributional style and motivational

deficits are variables traditionally related to depression. Depressed persons have consistently shown clinical symptoms such as guilt, low self-esteem, pessimism, self-derogation, and helplessness (Poznanski, 1982). The reformulated learned helplessness model of depression specifically postulates that internal, stable, and global causal attributions for negative outcomes lead to decreased self-esteem and depression (Abramson, Seligman, & Teasdale, 1978). More recently, Peterson and Seligman (1984) argued that an explanatory style that invokes internal, stable, and global causes for a negative event will serve as a vulnerability factor in subsequent depression. In other words, a negative explanatory style serves as the diathesis and interacts with a stressful event to produce an expectation of uncontrollability that is the proximal cause of depression.

Assessment of children's attributional style and its potential role as a vulnerability factor for depression has received inadequate empirical investigation. Also, attributional styles may play an important role in cognitive-behavioral therapy since the explanations that children generate for the behavior and events they anticipate or observe may be a variable that moderates the effects of treatment. For example, children who attribute their behavioral improvement to personal effort may be more likely to show generalization of the improvement than a

child who attributes behavior change to luck, fate or chance (Moyal, 1977). With respect to ADHD, cognitive-behavioral treatment modalities have been implemented and found to be relatively successful with this population (Kendall & Braswell, 1985). Studies to date have not investigated the existence of a depressive attributional style in ADHD children nor examined what, if any, differences in attributional style occur between medicated and non-medicated groups of ADHD children.

Purpose

The purpose of this study is to explore the nature of depression and self-esteem in ADHD males who are non-medicated as compared to ADHD males receiving stimulant medication. Also, the study will examine whether or not those ADHD children reporting moderate to severe levels of depression experience a depressive attributional style as postulated in the reformulated learned helplessness model of depression. Further, studies suggest that there are different developmental manifestations of depression, attributional style and self-esteem, depending upon the age of the child. Therefore, the study will also examine two distinct age groups (i.e., 7 years 6 months to 11 years 6 months; 11 years 7 months to 16 years 6 months) to determine how and to what extent these variables are manifested. Those children, either medicated or non-medicated, in the sample with higher depression scores and lower self-esteem scores

will be contrasted with those who have lower depression and higher self-esteem on the externalizing factors of impulsivity, inattention, nervousness/overactivity, and aggressiveness. Lastly, this study may give a clearer picture of the characteristics of depression and self-esteem in ADHD males and the overall effects of stimulant medication on the development of self-concept.

Hypotheses

1. The younger medicated group will have higher self-esteem and less depression than the younger non-medicated group.
2. Both younger medicated and non-medicated groups will have higher self-esteem and lower levels of depression than both the older non-medicated and medicated groups.
3. The older medicated group will have higher self-esteem and less depression than the older non-medicated group.
4. The younger medicated group and the older non-medicated group will display a depressive attributional style as compared to the two other groups.
5. The younger non-medicated group will display higher levels of impulsivity, inattention, nervousness/overactivity, and aggressiveness than the younger medicated group.
6. The older medicated group will display lower levels of inattention, impulsivity and aggressiveness than the older non-medicated group and both younger groups.

CHAPTER TWO

LITERATURE REVIEW

This chapter will review the literature pertaining to Attention-deficit Hyperactivity Disorder, in particular, symptomatology, prevalence, etiology, and pharmacologic (i.e., stimulants and antidepressants) treatment. The classification, causes, and epidemiology of childhood depression and the attributional model of depression will then be discussed, followed by a brief description of self-esteem. Finally, the relationship between Attention-deficit Hyperactivity Disorder and childhood depression, attributional style, and self-esteem will be considered.

ATTENTION-DEFICIT HYPERACTIVITY DISORDER

Symptomatology

Before the 1960's children displaying significant problems with attention span, hyperactivity and impulsivity were believed to have minimal brain damage (MBD), with excessive motor activity (hyperactivity) as the 'sine qua non' of the disorder (Laufer, Denhoff, & Solomons, 1957; cited in Barkley, 1989). A reduction in emphasis on neurological damage occurred in the 1960's after numerous studies refuted the syndromal nature of the disorder and its relationship to brain damage and, instead, focused on the effects of stimulant medication upon motor activity. The

disorder became known as "Hyperactive Reaction of Childhood" (American Psychiatric Association, 1968).

In 1980 the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-III) clinically defined the disorder as "Attention Deficit Disorder (with or without Hyperactivity)", after numerous researchers argued that the disorder consisted of major deficits not only in hyperactivity but also in impulse control and sustained attention (e.g., Douglas, 1972; Routh, 1978). Thus, this new classification focused on the cognitive impairment that precludes satisfactory levels of achievement for children diagnosed as ADHD (Bohline, 1985; Lubar, 1985). As of 1987, the DSM-III-R eliminated the two subgroups and changed the classification to "Attention-deficit Hyperactivity Disorder" (ADHD). Any individuals displaying attentional deficits without hyperactivity are now referred to as having "Undifferentiated Attention Deficit Disorder", as it is unclear whether they represent a true subtype of ADHD or a separate diagnostic entity (Carlson, 1986).

Children diagnosed with ADHD are frequently described as impulsive, overactive, excitable, easily frustrated, disobedient to adult authorities, aggressive to others, and externally controlled (Barkley, 1981; Kendall & Braswell, 1985; DSM-III-R, APA, 1987). ADHD's essential features include developmentally inappropriate degrees of inattention (e.g., fails to finish things, easily distracted);

impulsiveness (e.g., acts before thinking, needs constant supervision); and hyperactivity (e.g., excessive running, fidgeting). Although individuals tend to display disturbances in each of these three areas, the disturbances are of varying degrees. These major symptoms develop early in childhood, prior to age 7 years, and are typically chronic, lasting greater than 6 months (DSM-III-R, APA, 1987).

Manifestations of ADHD appear across a wide variety of situations, including home, school, work, and social situations, but are usually more evident in situations requiring sustained attention, such as classroom settings. Proponents of ADHD argue that symptoms are exacerbated when a child enters school and is confronted by teacher demands, classroom rules and increased parental expectations (Fisher, Burd, Kuna, & Berg, 1985; Nichamin & Windell, 1985). Very few children manifesting this disorder display symptoms in all settings or even in the same setting at all times. Typically, the child's behavior may be appropriate and well-organized while engaging in one-to-one activities but may become dysregulated in group situations (DSM-III-R, APA, 1987).

An overall inability to sustain attention appears to be the primary symptom manifested and includes the inability to listen, difficulty completing projects, and distractibility, especially in the classroom setting. With respect to ADHD,

"sustained attention involves the ability to remain vigilant over long periods of time (as measured through the effect of time on task) and the ability to prepare and maintain readiness for response (as measured through the effect of warning signals on reaction time)" (Schachar, Logan, Wachsmuth, & Chajczyk, 1988, p. 362). ADHD children appear to have "diminished persistence in responding to tasks that have little intrinsic appeal or minimal immediate consequences for completion" (Barkley, 1989, p. 4). Some children exhibiting ADHD may be able to sit still for long periods of time but are unable to plan, organize or complete tasks (Kendall & Braswell, 1985). According to Bohline, "The inability of ADHD children to sustain their attention and concentration to task-relevant stimuli is a most common impediment to classroom learning" (1985, p. 604).

Although the major symptom is attentional difficulties, in many of the children overactivity is the most obvious symptom and is described as constant fidgeting, an inability to sit still, reduced need for sleep, and intense and uncontrolled energy bursts (Cantwell, 1977; Barkley, 1981). This symptom becomes most evident in structured settings, whereas in unstructured settings, such as playgrounds, ADHD children are generally indistinguishable from other children (Cantwell, 1977; Barkley, 1981; Weiss, 1985). ADHD children also manifest high levels of excitability demonstrated by a low frustration tolerance and overexcitement in group

situations. Of particular note is that an ADHD child's inability to cope with frustration often results in temper tantrums which have a powerful negative impact on interpersonal relationships (Kendall & Braswell, 1985).

The impulsivity, a deficiency in inhibiting behavior in response to situational demands, displayed by these children is multidimensional in nature (Milich & Kramer, 1985) and has numerous aspects, including: 1) poor sustained inhibition of responding; 2) poor delay of gratification; 3) a pattern of rapid, inaccurate responding to tasks; and, 4) impaired adherence to commands to regulate or inhibit behavior in social contexts. Kendall and Braswell (1985) purport that the impulsivity displayed by ADHD children involves two self-control components: cognitive (legislative) and behavioral (executive). A self-controlled child is seen as non-impulsive because he/she is actively employing the cognitive factors of deliberation, problem solving and planning.

These authors contend that "behaviorally, a self controlled child has the ability, following the deliberation, to execute the behavior that is chosen or inhibit the behaviors that we cognitively discard" (p. 102). On the other hand, the impulsive child shows an inability to adequately inhibit appropriate responses, has deficits in both cognitive processing and planning capabilities, and shows poor rule-governed behavior. All too often the ADHD

child blurts out answers, interrupts others, impulsively responds to educational questions, is unable to await his/her turn in a group situation, displays acting-out behaviors, exhibits more off-task disruptive behaviors, is non-compliant, and is often deficient in social perspective-taking (Kendall, Zupan, & Braswell, 1981; Barkley, 1987). The repercussion of these particular characteristics is that they generate negative feelings from others, including parents, siblings, teachers, and peers (Kendall & Braswell, 1985).

With regard to age-specificity, the most prominent feature in pre-school ADHD children is gross motor overactivity. At this developmental stage inattention and impulsiveness are demonstrated by the frequent shifting from one activity to another. Mothers also report that their ADHD children were irritable and demanding infants and irregular in their physiological functioning (i.e., colic, frequent crying, sleeping and eating disturbances). In school-age children the prominent features include restlessness and excessive fidgeting rather than gross motor overactivity. Problems with school-related tasks can occur because of the combination of impulsivity and inattentiveness (Bohline, 1985; DSM-III-R, APA, 1987).

As previously alluded to, the major symptoms are often accompanied by academic difficulties and specific learning disabilities, even though these children generally obtain

average to high scores in intelligence testing (Lubar, 1985; DSM-III-R, APA, 1987). ADHD children are "characterized as having difficulties with perceptions and the use of symbols, and often exhibit expressive as well as receptive difficulties including language disorders" (Lubar, 1985, p. 106). Their school difficulties are compounded by the fact that they tend to communicate less efficiently, disagree more frequently, improve less with experience, and request less performance feedback than other children (Cunningham, Siegel, & Offord, 1985).

Often, physical and verbal aggressiveness may accompany the major symptoms. However, one must be cautious in determining that aggressive behavior is symptomatic of ADHD; children can be aggressive in certain situations while maintaining an overall sense of self-control (Kendall & Braswell, 1985). Kendall and Braswell (1985) contend that while features of ADHD and aggression are similar, these two dimensions are not redundant. Other associated features for ADHD children vary as a function of age and include low self-esteem, mood lability, low frustration tolerance, lack of response to discipline, obstinacy, functional encopresis and enuresis, nonlocalized "soft" neurological signs, EEG abnormalities, and motor-perceptual dysfunctions (e.g., poor eye-hand coordination) (Barkley, 1981; Breen & Barkley, 1984; Hartsough & Lambert, 1985; Nichamin & Windell, 1985; DSM-III-R, APA, 1987).

Although restlessness, distractibility and poor concentration diminish in adolescence, they are still problematic symptoms. A major shift occurs at this age in the emergence of difficulties associated with social behavior and interpersonal relationships (e.g., rebelliousness, antisocial behavior, chronic low self-esteem) (Stewart, Mendelson, & Johnson, 1973; Weiss, 1985). Further, at adolescence ADHD children perform more poorly in academic subjects, obtain lower intelligence test scores on group-administered tests, and repeat more grades than do normal children (Hechtman & Weiss, 1983). In comparison to normals, the cognitive style of adolescent ADHD children indicates that they: 1) are easily distracted by incorrect but compelling cues; 2) tend to respond without thinking; 3) are more impulsive and field-dependent; and, 4) do poorly on measures of sustained attention in that they respond more quickly and make more errors than normal children especially when stimulus is unpredictable. ADHD adolescents also tend to display impulsivity in social situations, such as "initiating a diverting activity on the spur of the moment instead of attending to a previous commitment" (DSM-III-R, APA, 1987, p. 51).

The combination of difficulties faced by these children results in more school expulsions and leads to significantly greater drop-out rates (Prinz & Loney, 1986). Outside of school, problems of a more serious nature are reported.

High rates of antisocial behavior and/or legal encounters (e.g., police contacts, court referrals) have been reported (Prinz & Loney, 1986), along with erratic employment (Nichamin & Windell, 1985). All of these problems lead to career difficulties, communication problems, alcoholism, divorce, criminal behavior, and child abuse (Nichamin & Windell, 1985).

Varley (1985) argues that the low self-esteem, impulsive style, poorer social skills, and family alienation which develop among ADHD children predispose them to the above variety of hazards during adolescence. "Delinquent behavior as a secondary consequence of ADHD, and the moderating influence of family environment in determining delinquent outcomes" (p. 219) are important issues which need to be thoroughly researched in the future. Varley further states that the struggle over issues of peer acceptance and isolation are especially intense among this population, and treatment studies must consider the expanded role of the social milieu for the ADHD adolescent. Identity formation, loneliness, peer acceptance, and intimacy behaviors are all variables of interest for researchers.

Prevalence

In 1980 Connors estimated that 60% to 70% of North American children in guidance clinics were referred because of attentional and hyperactivity problems. Barkley (1981) estimated from clinic samples that ADHD occurred in 3% to

10% of school children under the age of twelve, and in males six to nine times more often than females. Although teacher ratings of ADHD children place 10% to 20% of children in this category, more accurate ratings by mental health professionals only rate 1% to 4% of school children in this category (Kendall & Braswell, 1985). The DSM-III-R (1987) states that ADHD may occur in as many as 3% of all children. With respect to gender, Ross and Ross (1982) state that clinical samples reveal that males appear to display symptoms more often than females, with ratios ranging between 3:1 to 6:1, whereas "...in community samples, multiple signs of the disorder occur only three times more often in males than females" (DSM-III-R, APA, 1987, p. 51). The age of onset in approximately half the cases is before four, but often the disorder is undetected before the child enters school (DSM-III-R, APA, 1987).

A 1986 Canadian study, The Ontario Child Health Study, examined the distribution and possible causes of childhood disorders by surveying a total sample of 3,294 children and reported the following information. The overall prevalence of ADHD is 9.0% in boys and 3.3% in girls and is the most common psychiatric disorder in boys 4 to 11. For example, of all the children surveyed, 65.7% of boys 4 to 11 with any disorder have ADHD. Although no significant differences are noted in the prevalence of ADHD by age or urban-rural status, the disorder is significantly more common in boys

than in girls (Szatmari, Offord, & Boyle, 1986). Langsdorf, Anderson, Waechter, Madrigal, and Juaree (1979) examined the distribution of ADHD among various ethnic groups and within social classes, and found that black children are identified as ADHD significantly more often than whites or Mexican Americans who are identified far less than would be expected based on their distribution within the general population.

Follow-up studies of young ADHD adults suggest that at least 66% continue to complain of problems with restlessness, depression, inattention, low self-esteem, and impulsivity, although many make an adequate social adjustment (Thorly, 1984; Weiss & Hechtman, 1986). Over 75% report interpersonal problems with others, up to 27% are alcoholic, and between 23% and 45% are eventually diagnosed as Antisocial Personality (Weiss & Hechtman, 1986). Significant predictors of poorer outcomes are lower levels of intelligence and socioeconomic status, poor peer relations, emotional instability, higher degrees of aggressive and oppositional behavior, extent of parental psychopathology, and extent and duration of treatment during adolescence (Satterfield, Satterfield, & Cantwell, 1981; Weiss & Hechtman, 1986).

Etiology

Possible predictors of ADHD are genetic or biologically based factors. Several adoption studies document that the biological parents of ADHD children have higher incidences

of psychopathology (e.g., conduct disorders, hyperactivity, depression, alcoholism, and drug abuse) than the adoptive parents (Cantwell, 1975; Deutsch, Swanson, & Bruell, 1982). The Alberts-Corush, Firestone, and Goodman (1986) study of the biological and adoptive parents of ADHD children suggests that there is "support for an association between childhood hyperactivity and attentional deficits in the biological parents of hyperactives" (p. 422). Other predictors of ADHD may include: 1) maternal stress during pregnancy; 2) maternal intelligence, education, and previous experience with children; 3) pre-, peri-, and post-natal biologic complications; 4) disturbed maternal-infant interactions; and, 5) problems in early infant precursors of later higher cortical functions (Barkley, 1981).

The ongoing search for the causes of ADHD has generated a number of hypotheses or speculations. Kinsbourne and Swanson (1979) have developed three general framework models: the deficit, delay, and difference models. The deficit model refers to the organic/biologic framework which posits that ADHD results from an inability to develop specific skills as a result of early brain damage. The delay model stresses a cognitive deficit which could be caused by a developmental lag in cognitive maturation. Within this model, an ADHD child would be expected to exhibit behavioral characteristics of younger children and to eventually outgrow his/her immature cognitions. However,

research clearly shows that most ADHD children have little or no evidence of brain damage (less than 5% of cases) (Rapport, 1983), and that they do not outgrow their difficulties (Weiss & Hechtman, 1986). The difference model has a psychosocial perspective in that these children are basically normal but fall on the outer portion of several behavioral curves with regard to their manifestations of the four aspects of temperament: emotionality, activity, sociability, and impulsivity. This model seems tenable in light of the 3 to 5% prevalence rate of the disorder, the widely divergent individual differences in activity level found at birth, and the multifaceted behaviors exhibited by these children (Rapport, 1983).

While Kinsbourne and Swanson's general framework models have considerable merit, there have also been numerous specific causes posited, including neurological dysfunction, maturational lag, maternal smoking and drinking, food additives, food allergies, lead poisoning, genetic factors, biochemical imbalance, radiation stress, child rearing practices, under/overarousal, fluorescent lighting, and learned behavior (Williamson, Anderson, & Lundy, 1980). Barkley (1981) provides a succinct categorization of the major etiological theories: 1) neurological factors (organic/biologic, brain damage); 2) genetic factors (inherited, sex-linked); 3) environmental toxins (e.g., food additives, lead poisoning); 4) biological variations

(varying temperaments); and, 5) psychosocial factors (e.g., child rearing practices, parent-child interactions, classroom discipline styles).

The specific biological causes of ADHD include chemical imbalance in the brain, perceptual disorders, high blood pressure, carbohydrate malfunctions, infections, and hypocalcemia. Ross and Ross (1982) suggest that when there is too little or too much of the chemicals serotonin or catecholamine in the brain an imbalance occurs in the fine make-up of the brain synapse process, resulting in quickened or slowed nerve impulses which may produce temperamental hyperactivity. They also posit that ADHD may be caused by a perceptual disorder which creates difficulties when a child attempts to integrate various stimuli into one meaningful whole or when trying to grasp central concepts. Because the child cannot perceive in a normal manner there is an increase in the drive to experience through the senses. The frustration that arises from the perceptual difficulties increases anxiety which in turn increases activity levels. Nichamin and Windell (1985) argue that current research suggests that ADHD is a chemical brain disorder that is genetically based, and that, although there is no known cure, the problem can be treated and controlled.

A possible explanation for the high level of impulsivity displayed by ADHD children may stem from psychophysiological responses dealing with the autonomic

nervous system (ANS). Research suggests that in a resting state the measures of ANS for hyperactive and normal children are the same, but differences do surface though "concerning phasic responding of the ANS to stimulation, many studies finding hyperactive children to be slower to respond psychophysically, to have smaller amplitudes in these evoked responses, and possibly to habituate faster to stimulation than normal children" (Barkley, 1981, p. 159). This suggests that ADHD children's excessive behavior may be a form of stimulus-seeking in an effort to optimize stimulation to the nervous system. Further, Satterfield and Schell (1984) report that EEG and ERP measures were significantly different in a delinquent ADHD group compared to a non-delinquent ADHD group, while social, familial and cognitive attributes were not.

Developmental disorders, especially specific developmental lags, are also posited as a major cause of ADHD. If developmental immaturity is present in the motor skills, visual processing, discriminatory abilities, auditory skills, perception, language, or comprehension, this may create confusion, instability and anxiety, thereby affecting the entire personality. For example, if a child cannot mentally link an object with a verbal symbol he/she cannot obtain meaning from the spoken word which will affect language skills. These forms of developmental lag cause high degrees of anxiety and lead to frustration which is

manifested through distractibility and impulsivity (Barkley, 1981).

Cognitive or mediational deficits may also cause or at least perpetuate attentional difficulties. Meichenbaum (1979; cited in Kendall & Braswell, 1985) posits that ADHD children have an automatized chain of events that leads to maladaptive responses, including: 1) difficulty in complying with requests; 2) initiating or ceasing activities according to situational demands; 3) an inability to modulate the intensity and frequency of verbal and motoric acts in social and educational structured settings; 4) an inability to delay gratification; and, 5) difficulty in generating socially appropriate behaviors in the absence of external monitors. Douglas and Peters (1979) contend that the behavioral and cognitive difficulties experienced by ADHD children result from defective functioning in the mechanisms that govern sustained attention and effort, inhibitory control, and the modulation of arousal levels to meet task or situational demands. Their research reveals that ADHD children display a tendency to attend to the obvious aspects of situations, while failing to consider the more subtle and relevant features, along with displaying a continuous need for high levels of stimulation. Douglas and Peters also conclude that the nature of these deficits involves an "inability to sustain attention and to inhibit impulsive responding on tasks or in social situations that require

focused, reflective, organized, and self-directed effort" (p. 173).

Psychopharmacologic Treatment

As to be expected, numerous kinds of interventions have been applied to ADHD children with varying degrees of success. These interventions include: 1) behavior modification; 2) psychopharmacology; 3) perceptual motor training; 4) diet therapy; 5) psychotherapy; 6) family therapy; 7) stimulus reduction; and, 8) cognitive-behavior modification. Each of these interventions have been applied either separately or in combinations depending upon the severity of the child's disorder. Only an examination of psychopharmacologic treatments will be addressed in detail as this thesis will be examining the differences in self-esteem, depression, and attributional styles between males currently receiving medication for ADHD as compared to non-medicated ADHD males.

In order to administer medication to a child diagnosed with ADHD the presence of at least one of the symptoms of inattention, impulsivity, and hyperactivity, not secondary to a treatable cause, which have been persistent and of sufficient severity to cause functional impairment at school, at home and/or with peers should be present (Dulcan, 1986). If these symptoms are not long-standing, alternative diagnoses should be pursued. Before administration, clinicians must also evaluate whether parents are

sufficiently reliable to administer the medication safely and as prescribed to their children.

Research into identifying predictors of drug responsiveness among ADHD children has had little success. Barkley (1981) indicates that the more inattentive the child the better the chance of immediate results. Better medication response may also be predicted when there is a lack of parental psychopathology and a positive mother-child relationship. A poor response to stimulants may also be predicted if the child has a high level of anxiety (Taylor, 1983). Unfortunately, the heterogeneity of groups of ADHD children tends to cancel the differential responses of children with different characteristics (Dulcan, 1986). At the present time there is no measure that can reliably predict the response of an individual child within a group of ADHD children (Taylor, 1983).

Since the 1950's the most popular and best researched psychopharmacologic treatment for ADHD children has been stimulant medications, primarily dextroamphetamine (Dexedrine) and methylphenidate (Ritalin). Even today very little is known about the pharmacodynamics of these psychostimulants or the nature, cause and effect of any biochemical abnormalities in the subgroups of ADHD children (Dulcan, 1986). Dextroamphetamine, first administered in the 1940's, is believed to "potentiate both dopamine and norepinephrine via stimulating release of newly synthesized

dopamine into the synaptic cleft, inhibiting presynaptic re-uptake and inhibiting monoamine oxidase" (Shaywitz, Shaywitz, Cohen, & Young, 1983). The pharmacokinetics (i.e., absorption, metabolism, distribution, and excretion) occur as follows: after a single oral dose of dextroamphetamine (.5 mg/kg) the peak plasma level occurs between 3 and 4 hours with an elimination half-life of 6 to 7 hours. The behavioral effects are maximum between 1 and 4 hours following an oral dose, corresponding to the absorption rate (Dulcan, 1986). Individual behavioral response ratings do not significantly correlate with individual plasma amphetamine levels (Brown, Ebert, Mikkelsen, & Hunt, 1980; cited in Dulcan, 1986).

Studies indicate that normal boys, normal college men, and hyperactive boys respond similarly to a single dose of dextroamphetamine in the following measures: reaction time decreased, word recall increased, vigilance increased, non-task related speech decreased, task related speech increased, and truncal activity during a cognitive task decreased (e.g., Weingartner, Ebert, Mikkelsen, Rapoport, Buchsbaum, Bunney, & Caine, 1980; Zahn, Rapoport, & Thompson, 1980; cited in Dulcan, 1986).

Methylphenidate is a piperidine derivative structurally related to amphetamine and acts by releasing stored dopamine from the reserpine-sensitive presynaptic vesicular pool, decreasing dopamine re-uptake, inhibiting monoamine oxidase,

and also by direct post-synaptic action. This stimulant is poorly bound to plasma proteins and is rapidly metabolized to ritalinic acid (Dulcan, 1986). The pharmacokinetic profile for hyperactive children includes a peak serum concentration reached at 1 to 2 hours after a single oral dose, a wide intersubject range in initial peak plasma concentration attributed to differences in absorption, and an elimination half-life of 2 to 4 hours (Gualtieri, Wargin, Kanoy, Patuck, Shen, Youngblood, Mueller, & Breese, 1982; Chan, Swanson, Soldin, Thiessen, Macleod, & Logan, 1983).

Physicians typically utilize the titration method of increasing the dose of methylphenidate until an acceptable report is obtained from the parents and teachers about the child's behavior. This practice is still followed despite findings that parents are insensitive to dose effects and are not able to distinguish between placebo and medication conditions (Brown, Slimmer & Wynne, 1984). Studies report that learning performance is most enhanced by restricting the dose of methylphenidate to a low level with peak cognitive results obtained by administering small doses (0.3 mg/kg of body weight) and that high doses of methylphenidate (1.0 mg/kg) are detrimental to the learning of cognitive tasks while low doses dramatically enhance learning performance on memory tasks (Sprague & Sleator, 1977; Brown & Sleator, 1979). Brown, Slimmer, and Wynne (1984) replicated previous studies and corroborated that 0.3 mg/kg

produces optimal effects on cognitive tasks for most ADHD children.

Adverse side effects of stimulant drugs include insomnia, loss of weight, anorexia, nightmares, motor tics, constipation, nausea, irritability, abdominal pain, dizziness, and sympathomimetic effects (i.e., tremor and coldness of extremities, pallor of the skin) (Barkley, 1981; Greenhill, Puig-Antich, Chambers, Rubinstein, Halpern, & Sachai, 1981; Barkley, 1988). There can also be suppression of growth in daily doses over 20 mg. and thrombocytopenia and depression, although rarely (Safer, Allen, & Barr, 1975; Fish, 1975; Gross, 1976). A follow-up study of 100 children on stimulant medication disputed that there was growth suppression and, instead, found that any slowing of growth in the beginning of treatment was compensated for later on whether the child continued or discontinued the medication (Bock, 1976). In another study when stimulant medication was discontinued for the three summer months significant gain in weight occurred, exceeding expected levels (Safer et al, 1975). Common minor side effects (e.g., headaches, stomach aches) often disappear following treatment for two or three weeks or when the dosage is reduced (Taylor, 1983).

The most salient effects of stimulant medication for ADHD children occur with social relations and motor activity. Barkley (1981) reports that methylphenidate use significantly improved the child's compliance to parental

directives and caused a reduction in off-task behaviors. Also, studies report a significant decrease in gross motor movement, noise, vocalization, and disruption in a classroom setting to a level indistinguishable from normal peers (Whalen, Collins, Henker, Alkus, Adams, & Stapp, 1978; Whalen, Henker, & Dotemoto, 1981). Weithorn and Marcus (1985) and Meents (1989) conclude that stimulants produce significant improvements in academic productivity and accuracy but do little to improve academic achievement.

As recent studies (e.g., Weiss, 1985) have dispelled the myth that children grow out of hyperactivity at puberty, more adolescents are being treated with stimulant medication. The efficacy of drug therapy with this population has been demonstrated (Varley, 1985). Concerns, however, have been voiced regarding: 1) possible growth retardation; 2) medication abuse; 3) increased sensitivity to peer opinion leading to increased reluctance to take possibly stigmatizing medication; and, 4) selling or giving away pills with this age group (Dulcan, 1986). The adolescent and his/her family must be well educated about proper drug use, and significant adults' sensitivity to dispensing situations may increase the adolescent's compliance.

In addition to stimulants, several tricyclic antidepressants (e.g., imipramine, desipramine) are effective in treating ADHD children who do not respond to

any of the stimulants, who are highly anxious or depressed, or with adolescents who develop euphoric symptoms on the same dosages of medication that previously had no side effects (Rapoport, 1986; Pliszka, 1987). With these medications the mechanism of action appears to be different than when acting as antidepressants (Dulcan, 1986).

Imipramine hydrochloride (Tofranil) is effective in approximately 50% of the cases; however, side effects of irritability, skin rash, cardiotoxic effects, and hypertension cause a high drop-out rate, and there is a fall off in effectiveness as the drug is used (Kupietz & Balka, 1976; Rapoport, Zametkin, Donnelly, & Lomond, 1985; Rancurello, 1985; Puig-Antich, Ryan, & Rabinovich, 1985).

Huessy and Wright (1970) used imipramine (up to 125 mg per day) for children 3 to 14 years of age who were diagnosed with hyperactivity, mood swings, aggressiveness, sleep problems, and school difficulties. They found that 67% responded with marked improvement. Greenhill, Rieder, & Wender (1973) conducted a double-blind crossover study with 58 ADHD children, 6 to 13 years of age, and compared the efficacy of methylphenidate to imipramine. They found methylphenidate to have greater efficacy with fewer adverse effects and with improved social relatedness, whereas imipramine was better for irritability, whining, clinging behaviors commonly associated with depression and sleeping difficulties. Rapoport et al (1985) and Gastfriend,

Biederman, and Jellinek (1984) have obtained promising results with desipramine but state that no trials to date provide a clear alternative to stimulant drug treatment, especially with the adolescent population. Pliszka's (1987) review of psychopharmacologic studies with ADHD children concludes that stimulant medications are superior to tricyclics in the treatment of ADHD in that they produce greater changes on behavior ratings scales, clinical global impressions, and objective measures of cognitive functioning, but that tricyclics appear superior to stimulant medications in ameliorating mood disturbance symptoms.

CHILDHOOD DEPRESSION

Classification and Causes

In the past two decades many mental health professionals interested in childhood disorders have increasingly focused on the concept of childhood depression. Initially, the belief that children could suffer from morbid depression was adamantly denied (Rie, 1966), but clinicians who evaluate and treat disturbed children now hold a general consensus that children do manifest depression, albeit displaying symptoms often different from adults. Current literature accepts that childhood depression is a distinct entity with its own defining characteristics (Kovacs & Beck, 1977; Cytryn & McKnew, 1980; Christ, Adler, Isacoff, & Gershansky, 1981; Poznanski, 1982;

Kaslow & Rehm, 1983).

Although there is general agreement amongst clinicians that childhood depressions are somewhat heterogeneous in terms of biology, etiology, genetics, prognosis, and treatment response, there is no one clear classification scheme which clarifies the plethora of issues surrounding the phenomenon of childhood depression (Petti, 1978). From their extensive review of the literature, Akiskal and McKinney (1975) conclude that depression is the final common pathway of several factors which play varying roles, depending on the individual's constitutional make-up, genetic structure, environment, past experiences, psychosocial adaptive mechanisms, and cognitive organization.

Four recognized classifications of depression are primary-secondary; unipolar-bipolar; psychotic-neurotic; and endogenous-nonendogenous (DSM-III-R, APA, 1987). Psychotic depression entails clinical symptomatology in that individuals who display gross impairment of reality testing fit into this classification. The endogenous-nonendogenous classification subsumes two dichotomies; the endogenous-psychogenic and the autonomous-reactive. The former refers to etiology and is based on the assumption that endogenous depressions have no clear psychological precipitant. The latter is concerned with the course of the illness in that reactive depressions respond well to psychotherapeutic

treatment, whereas autonomous depressions follow a predetermined course and respond poorly to psychotherapy. A primary depression is not contaminated by any other disorder, while a secondary depression arises in the context of an ongoing but seldom temporally contiguous disorder (e.g., substance abuse, neuroses). Lastly, bipolar depressions are characterized by the presence of prior manic or hypomanic episodes, while unipolar depressions are marked by their absence. Bipolar depressions tend to be homogeneous, whereas unipolar depressions are a heterogeneous group and represent 80% of the total (Allen, 1976; Andreasen & Hoenk, 1982).

Childhood depression is diagnosed in the DSM-III-R (1987) under the general classification of mood disorders and includes major depression, dysthymia and bipolar depression. These syndromes are differentiated by specific clusters of symptoms, age of onset, and duration of disturbance. Of primary interest to child psychologists are major depression and dysthymia which have basically the same diagnostic criteria for both children and adults, except for minor modifications. The diagnostic criteria for a major depressive episode includes a loss of interest or pleasure in almost all usual activities and the presence of at least five of the following symptoms nearly every day for at least 2 weeks: 1) insomnia or hypersomnia; 2) fatigue or loss of energy; 3) feelings of worthlessness or excessive or

inappropriate guilt; 4) depressed or irritable mood; 5) significant weight loss or weight gain when not dieting; 6) recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempt or specific plan for committing suicide; 7) diminished ability to think or concentrate, or indecisiveness; and, 8) psychomotor agitation (hyperactivity) or retardation (Reynolds, 1984; DSM-III-R, APA, 1987).

The diagnostic criteria for dysthymia include depressed or irritable mood for most of the day and the presence of at least two of the following: 1) low energy or fatigue; 2) low self-esteem; 3) poor concentration or difficulty making decisions; 4) poor appetite or overeating; 5) feelings of hopelessness; and, 6) insomnia or hypersomnia. These symptoms are not as severe as in a major depressive episode but may be relatively persistent or separated by a period of normal mood lasting up to several weeks at a time. The depressive syndrome in children must have a one year history (DSM-III-R, APA, 1987).

The DSM-III-R also delineates three levels of diagnostic analysis. Level one involves the analysis of the symptom as a given overt behavior (e.g., withdrawal), affect (e.g., depressed mood), cognition (e.g., irrational belief), or vegetative functioning (e.g., anorexia). At level two the analysis is based on the syndrome which implies that behaviors covary, and affective, motivational, cognitive,

and vegetative changes occur regularly in combination. The last level of diagnostic analysis states that in order for a syndrome to be diagnosed as such it must be demonstrated that the syndrome cannot be accounted for by a more pervasive condition. To demonstrate the presence of a syndrome more information is needed than the clustering of behaviors.

Developmental psychologists have found that development and age play an important role in a child's experience of affective states (Ushakov & Girich, 1972; Dosen, 1984; Garber, 1984). Ushakov and Girich (1972) examined symptomatology in children age 7 and under and another group of children age 8 to 10. They found that the older group: 1) displayed and verbally expressed more feelings of sadness; 2) had more persistent depressive symptoms; 3) had suicidal thoughts; but, 4) were less anxious than the children age 7 and under.

McConville, Boag and Purohit (1973) described three types of childhood depression in a group of children, age 6 to 13 years old: 1) the affectual depression group common in the 6 to 8 year old group and characterized by symptoms such as expressions of sadness, unspecified feelings of being bad, helplessness, and occasional hopelessness; 2) the negative self-esteem depression group common after the age of 8 and remaining after age 11 and characterized by feelings of worthlessness, being unloved, and being used by

other people; and, 3) the guilt depression group frequent after age 11 and characterized by feelings of being wicked, of being justly punished, and having suicidal ideation as restitution for their guilt feelings.

The DSM-III-R suggests that there are age-specific, associated features of depression in the adolescent population, including: 1) negativistic or antisocial behavior; 2) feelings of wanting to leave home; 3) not being understood and approved of; 4) restlessness; 5) grouchiness; 6) aggressiveness; 7) sulkiness; 8) a reluctance to cooperate in family ventures; 9) withdrawal from social activity; 10) increased emotionality; and, 11) hypersensitivity to rejection. Others researchers (Colbert, Newman, Ney, & Young, 1982) contend that depressed adolescents may complain of boredom, become restless, and may engage in antisocial and/or autoerotic behavior in an attempt to get excited and dispel a gloomy affect. Hertzog and Rathbun (1982; cited in Cichetti & Schneider-Rosen, 1984) also contend that the expression of specific depressive symptoms will differ at a given developmental period. For example, somatic complaints may take the form of encopresis in 3 to 5 year olds, abdominal pain in 6 to 8 year olds, and anorexia nervosa in 13 to 18 year olds.

Cichetti and Schneider-Rosen (1984) have developed a transactional model for the developmental differences in dealing with childhood depression. This model is based on

the assumption that developmental variations in cognitive structures cause children to employ different strategies to interpret, express and defend against their affective states depending upon their age. These researchers further suggest that a depressive episode impacts on a child's ability to adapt to a specific developmental stage, and, in turn, this failure to adapt predisposes the child to future depression. Their transactional model "views the multiple transactions among environmental forces, caregiver characteristics, and child characteristics as dynamic, reciprocal contributions to the events and outcomes of child development" (p. 19). Within this model: 1) children are seen as either resilient or vulnerable; 2) potentiating factors (e.g., poor self-control or rejecting parents) increase the likelihood of a depressive episode; 3) compensatory factors (e.g., secure attachment to parental figures and availability of defense mechanisms) increase a child's resiliency; 4) potentiating and compensatory factors can be either enduring or transient; 5) transient factors tend to be age specific and vary with developmental level; and, 6) the functioning of enduring factors can be affected by a child's developmental level.

The transactional model was supported by Garber's (1984) research which indicated that depressive symptoms in girls varied as a function of age. Symptoms such as appetite problems, pervasive loss of interest, guilt,

hopelessness, irritability, fatigue, hypoactivity, school-related problems, and low self-esteem increased with age. On the other hand, symptoms of weeping and morbid ideation tended to decrease with age. Nonverbal expressions of affect did not increase with age unlike verbalized depressed feelings. Garber concluded that children would not be able to experience and subsequently describe feelings of low self-esteem and hopelessness unless they had attained a certain cognitive capacity. With respect to hopelessness, Garber contended that a child must be able to correctly formulate expectations and understand the concept of the future. Also, for a child to express low self-esteem he/she must have a self representation and be able to perceive how others think and feel. Thus, cognitive development appears to play a significant role in how children manifest depressive symptoms (Garber, 1984; Kaslow, Rehm, & Siegel, 1984).

Childhood depression, like all other childhood disorders, has a multifactorial etiology (Cantwell, 1983). Although there is a growing consensus that it is counterproductive to speak of the causes of depression, there are eight major conceptual models regarding the etiology of childhood depression: 1) cognitive distortion; 2) genetic; 3) biochemical; 4) learned helplessness; 5) life stress; 6) behavioral reinforcement; 7) interpersonal disturbance; and, 8) sociological aspects (Kashani, Husain,

Shekim, Hodges, Cytryn, & McKnew, 1981). From these models numerous predisposing factors have been posited, including: 1) physical diseases causing persistent neurochemical abnormalities; 2) hereditary predispositions; 3) developmental traumas leading to specific vulnerabilities; 4) poorly developed coping mechanisms; 5) counterproductive cognitive patterns, reflecting unrealistic goals and irrational assumptions and values; and, 6) external stressors impinging upon specific emotional vulnerabilities (e.g., Cofer & Wittenborn, 1980; Kashani et al, 1981; Aneshensel & Stone, 1982; Siddique & D'Arcy, 1984; Roy, Sutton, & Pickar, 1985).

Prevalence

Lefkowitz and Tesiny (1985) assessed the prevalence of severe depression in 3,020 normal elementary school children according to four risk variables: sex, age, intellectual functioning, and family income. They reported that the overall prevalence rate was 5.2%. Albert and Beck (1975) applied the Beck Depression Inventory (BDI; Beck and Beck, 1972) to 63, 12 to 14 year olds and found that 33.3% of the sample reported moderate to severe levels of depression. Rutter, Graham, Chadwich, and Yule (1976) and Kandel and Davies (1982) investigated, inter-alia, the incidence of self-reported depression in normative adolescent populations. Rutter et al.'s Isle of Wight study, comprising 2,303 14 to 15 year olds of both sexes, found

that approximately 50% expressed misery or depression in the clinical interview, and 23% of the girls and 21% of the boys indicated they felt miserable or depressed on a self-report questionnaire. Kandel and Davies' study of a representative sample of 8,206 14 to 18 year old public secondary school children in New York State indicated that 20% of the adolescents reported feeling depressed or sad in the last year.

Reynolds (1984) reviewed studies of prevalence rates ranging from 19 to 59% among clinic populations of children and adolescents. He concluded that the variability rate is a result of differences in diagnostic criteria, age groups, and referral populations. Lobovits and Handal (1985) investigated the prevalence of depression among 8 to 12 year olds referred to an outpatient clinic using DSM-III criteria. They reported that 34% of the subjects were diagnosed as depressed based on clinical interviews compared with 22% diagnosed as depressed based on parent interviews.

Reynolds (1985) reported the results of epidemiologic studies of depression involving 8,000 students in private and public schools. Using the Beck Depression Inventory, Reynolds found that 7% of the high school students were severely depressed, 9% moderately depressed, and 18% mildly depressed. Overall, 16% of the high school students scored in the clinically depressed range of the BDI. Using the Children's Depression Inventory (CDI; Kovacs, 1983),

Reynolds reported that 13% of children in grades 4 to 6 scored above the recommended cutoff score of 19. He concluded that at any one time 14% of children in grades 4 to 6 and 16% of adolescents manifested clinical levels of depression. Further studies (e.g., Kaplan, Hong, & Weinhold, 1984; Smucker, Craighead, Craighead, & Green, 1986) suggest a significant number of children and adolescents manifest clinically significant levels of depressive symptomatology.

ATTRIBUTIONAL MODEL OF DEPRESSION

The continuing search for conceptual explanations of depression has led to the development of a cognitive framework which posits that depression occurs because of patterns of negative cognitions and interpretations (Beck, 1976; Crocker, Alloy, & Kayne, 1988). Beck (1976) investigated cognitive functioning in depressed adults and reported that depressed adults are characterized by a negative view of themselves, their future and the world as a whole. He posited that depressed individuals have a triad of cognitive distortions which cause them to view the world in deprecatory terms; to interpret experiences in a negative way; and to have pessimistic expectations about the future. This negative triad is maintained by cognitive processes that permit the individual to systematically distort reality such that his/her negative bias is confirmed. Experiences are distorted to confirm the negative triad by employing

specific dysphoria-provoking cognitive errors in response to ambiguous or negative life experiences. Types of cognitive errors include: 1) selective abstraction; 2) overgeneralization; 3) catastrophizing; 4) thinking dichotomously; 5) assuming excessive responsibility or personal causality; 6) presuming temporal causality or predicting without sufficient evidence; and, 7) making self-references (Beck, 1976; Beck, Ruth, Shaw, & Emery, 1979).

Investigations of the role cognitive distortions play in childhood depressions have confirmed that depressed children make more cognitive errors than children not reporting any depressive symptoms (Leitenberg, Yost, Carrol-Wilson, 1986). For example, similar to depressed adults (Klein, Fencil-Morse, & Seligman, 1976) depressive symptoms among fourth and fifth grade children were strongly correlated with impaired problem solving (Kaslow, Tanenbaum, Abramson, Peterson, & Seligman, 1983). Similarly, like depressed adults, depressed children tend to hold negative expectations about themselves and the future; e.g., they experience feelings of hopelessness (Kazdin, French, Unis, Esveltd-Dawson, & Sherick, 1983).

Within the cognitive framework and concomitant to Beck's cognitive distortion model of depression, the learned helplessness model of depression and accompanying attribution theory were formulated (Seligman, 1975;

Abramson, Seligman, & Teasdale, 1978; Peterson & Seligman, 1984). The concept of learned helplessness came out of animal experiments in which dogs were repeatedly exposed to uncontrollable, inescapable electric shocks. Throughout, the dogs exhibited "...few attempts to escape the shock (motivational deficit); they were not likely to follow an occasionally successful response with another (learning or cognitive deficit) and they did not evidence much overt emotionality while being shocked (emotional deficit)" (Peterson & Seligman, 1984, p. 347). Thus, the phrase "learned helplessness" was coined to describe and explain these deficits, and the researchers proposed that the dogs learned that, regardless of what they did or did not do, the shocks would continue (Seligman, Maier, & Solomon, 1971). "This learning of response-outcome independence was represented as an expectation of helplessness that was generalized to the new situation where learning was objectively possible to produce the observed deficits" (cited in Seligman & Peterson, 1986, p. 226). Further research demonstrated that it was the uncontrollability of the electric shocks and not their traumatizing properties that caused the learned helplessness (Maier & Seligman, 1976).

Seligman (1974, 1975) also took the cognitive explanation of animal helplessness and applied it to humans. He argued that learned helplessness models depression in

terms of causes, symptoms, preventions, and cures.

Initially, Seligman (1975) posited that an individual's experience of negative or positive events not dependent or contingent on his/her behavior creates the motivational, cognitive and affective symptoms of depression. Thus, the individual adopts the belief that future events are beyond his/her control. However, this theory neglected to take into account: "1) the role of individual differences in response to uncontrollability; 2) the boundary conditions of the generality of helplessness, across time and situation; and, 3) the frequent loss of self-esteem observed among depressives" (Seligman & Peterson, 1986, p. 226).

Abramson, Seligman, and Teasdale (1978) addressed these issues and reformulated the learned helplessness model of depression by stating that causal attributions about the uncontrollable events are important determinants of the generality of induced deficits and the role of self-esteem. According to this model, expectations of uncontrollable bad events can incur feelings of helplessness and depression when an individual attributes those events to internal, as opposed to external, stable as opposed to unstable, and global as opposed to specific causes. Once these causal attributions become habitual, they reflect an attributional style that can predispose a person to depression (Seligman, Abramson, Semmel, & von Baeyer, 1979; Seligman, Peterson, Kaslow, Tanenbaum, Alloy, & Abramson, 1984). In other

words, if an individual points to internal, stable, and global causes of bad events, then he/she is increasingly likely to be helpless and depressed once a bad event is encountered. The attributional reformulation is a diathesis-stress model of depression in that "depression results from characteristics of an individual (i.e., the "depressive" attributional style) in conjunction with characteristics of the environment (i.e., uncontrollable bad events)" (Seligman & Peterson, 1986, p. 227). Therefore, the co-occurrence of the attributional style and the uncontrollable events results in feelings of helplessness and depression.

To investigate the applicability of the reformulated learned helplessness model of depression to children, Seligman et al. (1984) measured the attributional style of nonhospitalized depressed children using a forced-choice instrument (Children's Attributional Style Questionnaire; CASQ; Seligman et al., 1984) that reflects how a child characteristically explains good or bad events. Their results showed that attributional style and depressive symptoms were reliable and stable and that attributional style correlated strongly with depressive symptoms. Compared to their nondepressed counterparts, depressed children made more internal, stable and global attributions for bad events and more external, unstable and specific attributions for good events. Furthermore, this insidious

attributional style applied in bad events was a risk factor for depressive symptoms six months later.

Kaslow, Rehm, and Siegel (1984) investigated depression and its social-cognitive and cognitive correlates in elementary school children. They administered the Children's Depression Inventory, the Coopersmith Self-Esteem Inventory, and the Children's Attributional Style Questionnaire to a sample of 108 normal children in grades 1, 4, and 8, (36 in each grade). The regular classroom teacher was asked to complete the Achenbach Teacher Rating Scale. Three weeks later the children were again administered the CDI, along with a Masking Symptom Questionnaire and social-cognitive tests.

The results showed that the depressed children (mean score of at least 11 on the CDI) were characterized by a depressive attributional style (more internal, stable, global attributions for failure and more external, unstable, specific attributions for success) than did the nondepressed children. They also had: 1) lower self-esteem; 2) more self-control deficits; 3) a negative self-evaluation; 4) lower expectations for performance; 5) more stringent criteria for failure; 6) a preference for punishment over reward; and, 7) impaired performance on specific cognitive tasks (e.g., Block Design, Coding, Digit Span subtests of the Weschler Intelligence Scales for Children - Revised) as compared to the nondepressed children. The teachers

reported that the depressed children were more internalizing (e.g., depressed, anxious, schizoid, withdrawn, obsessive-compulsive) and had more somatic complaints than the nondepressed children. Kaslow et al. concluded that global scores showed no age-related differences in depressive symptomatology, but that when examining specific variables (e.g., specific masking symptoms, stability of attributions) age-related differences were revealed.

In a longitudinal study, Nolen-Hoeksema, Seligman, and Girgus (1986) measured the depressive symptoms, life events, and attributional styles of 168 elementary school children, ranging in age from 8 to 11 in order to determine if children displaying depressive attributional styles were vulnerable to a defined cluster of helplessness deficits. This cluster consisted of: 1) cognitive deficits; 2) sadness; 3) lowered self-esteem; 4) lowered response initiation (passivity); and, 5) lowered assertiveness and competitiveness. Also, because the reformulated theory of helplessness is a diathesis-stress model, life events were measured to determine how they interact with attributional style. Measures applied were the Children's Depression Inventory, the Children's Attributional Style Questionnaire, and the Life Events Questionnaire (Coddington, 1972).

Nolen-Hoeksema et al.'s results validate the reformulated helplessness theory of depression in that the subjects who tended to explain bad events by internal,

stable, and global causes and good events by external, unstable, and specific causes reported more depression and showed more achievement related problems, whereas the nondepressed children showed the reverse. Also, analyses revealed that attributional style at a particular time predicted depression at a later time. Lastly, bad life events interacted with attributional style to predict depression in some of the subjects depending upon the severity of life event (e.g., death of a parent) to make children vulnerable to depression.

SELF-ESTEEM

The self-concept is based on the intricate perceptions individuals have of themselves, including their beliefs, feelings, and relationships with others. It develops as we interact with others, and can change according to the situation in which we find ourselves. The quality of the way we view ourselves, or our self-evaluation, reflects a balance between our own and others' positive and negative reactions to our self. Self-evaluation involves a judgemental process whereby an individual examines his/her capacities, performance, and attributes and then decides his/her worthiness. Thus, it reveals a person's degree of self-esteem which largely shapes the self-concept (Videbeck, 1965). Hechtman, Weiss, Perlman, Hopkins, and Wener (1979) characterized high self-esteem as a sense of well-being, responsibility, socialization, self-control, good

impressions, achievement, and intellectual efficiency.

The processional perspective defines self-esteem as a fluctuating self-attitude that resembles a standard self-evaluation, but that also encounters situational fluctuations as a function of changing roles, performances, expectations, responses from others, and other situational characteristics. Therefore, individuals may have positive attitudes about themselves, possess self-respect and self-worth, but in particular situations and at certain times may feel better or worse about themselves than usual (Demo & Savin-Williams, 1983).

Those researchers adopting the structural perspective (e.g., Coopersmith, 1967; Rosenberg, 1979) define self-esteem as a global positive or negative assessment of the self. According to this view, "self-esteem is a personality trait characterized by considerable stability from one situation to the next, even from year to year" (Demo, 1985, p. 1491). Specifically, Coopersmith explains that the self-concept, or self-image, is the content of an individual's opinions and perceptions about the self. These positive or negative perceptions, values, and attitudes by which the individual views the self-image and the judgements or evaluations made about it form the self-esteem. Self-esteem "provides a mental set that prepares the person to respond according to expectations of success, acceptance, and personal strength...and is a subjective experience

conveyed to others by verbal report and other covert expressive behavior" (Coopersmith, 1967, p. 5).

Many of the childhood depression studies have found a correlation between depression and low self-esteem, and in fact low self-esteem is generally taken as a key defining characteristic of depression. There is also evidence that individuals with high self-esteem are more likely to attribute successful outcomes to themselves and to ascribe failures to external causes when compared with individuals with lower self-esteem (Feather, 1983). For example, Fitch (1970) reported that both high and low self-esteem adult subjects took credit for success, but low self-esteem subjects made more internal causal attributions for their failure.

Ickes and Layden (1978) noted the similarity between self-esteem and attributional style and depression and attributional style: "The self-esteem level and attributional style of clinically depressed patients appear to be essentially similar to those of the normal but low self-esteem subjects" (p. 144). Thus, both depressed and low self-esteem individuals make internal attributions for failure as well as success. High self-esteem and nondepressed individuals seem to differentially attribute success more to internal factors and failure more to external factors. Tennen and Herzberger (1987) hypothesize that "to the extent that self-serving attributional biases

reflect the need to maintain one's current level of self-esteem, individuals lower in self-esteem would be more attributionally evenhanded because their low level of self-esteem does not require self-serving attributions" (p. 73).

Moyal (1977) investigated depressive variables in 225 children in grades 5 and 6. The Piers-Harris Children's Self-Concept Scale (Piers & Harris, 1969) was administered to which seven symptoms of depression had been added, along with measures of locus of control and stimulus appraisal. Results showed that self-esteem correlated positively with choice of adaptive responses, but it showed a negative relationship to choice of helpless, self-blaming, or externalized blaming responses and depression score. Moyal concluded that the variables of depression and self-esteem were strongly negatively correlated and that Beck (1976) was correct when he stated that "the depressed individual tends to distort situations and reach faulty, nonadaptive conclusions" (cited in Moyal, p. 952).

Kazdin et al. (1983) evaluated if hopelessness discriminated between suicidal and nonsuicidal children hospitalized on a psychiatric intensive care service and if hopelessness, depression, and suicidal intent were inter-related among children in the way they have been among adults. To be included in the study subjects were required to have no evidence of acute confusional state, uncontrolled

seizure disorder, or dementia, along with an IQ score above 70 on the WISC-R. Sixty-six children (13 girls and 53 boys) participated and had a mean age of 10.5 and a mean IQ of 92.9. The researchers developed and administered a hopelessness scale, modeled after the adult version, along with measures of depression and self-esteem. Results revealed that hopelessness was negatively correlated with self-esteem and high-hopelessness children showed significantly greater depression but lower self-esteem than low-hopelessness children. The suicidal children showed significantly greater hopelessness than nonsuicidal children and scored higher on the depression and lower on the self-esteem measures. Suicidal intent was more clearly related to the degree of hopelessness than to the severity of depression. Kazdin et al. concluded that the correlation pattern of hopelessness, depression and self-esteem was predicated on the cognitive triad of depression that includes negative attributions and expectations toward self, others and the future.

Strauss, Forehand, Smith, and Frame (1984) examined the concurrent validity of the Children's Depression Inventory (CDI) by assessing the relationship between the CDI and other measures of social and psychological functioning. From a population of 252 children in grades 2 to 5, 15 children were identified who obtained extreme scores on the CDI (scores 19 and above) and compared to a group of 15

children who received low scores on the CDI (scores of 5 or below). All children were administered a battery of teacher, peer and self-report measures assessing self-esteem, anxiety, academic status, teacher ratings of child behavior, sociometric status, and social functioning. Their findings suggest that children reporting clinical levels of depression display characteristics believed to be associated with depression in children and adults, including low self-esteem, anxiety, problems with attention and concentration, and difficulties with social relationships.

Fielstein, Klein, Fischer, Hanan, Koburger, Schneider, and Leitenberg (1985) examined the validity of the self-consistency model which implies that high self-esteem children are less likely than low self-esteem children to attribute failure to a general lack of ability. This model also posits that low self-esteem children are trapped in a vicious self-fulfilling cycle because they are cognitively predisposed to dismiss the personal relevance of success, while at the same time blaming their failures on personal inadequacies. One hundred low self-esteem children and 101 high self-esteem children from grades 4 to 6 were given an attribution questionnaire and the Piers-Harris Children's Self-Concept Scale.

Results revealed that the high self-esteem children attributed their success to ability and their failure to unstable factors, either lack of effort or bad luck. The

low self-esteem children attributed their success to unstable factors, such as good luck, and in the social domain to effort and task ease and their failure to the internal and more stable category of lack of ability. Fielstein et al. concluded that their results do not support the premise that high self-esteem children differ in their attributional response to success but not to failure. However, they do agree that in success situations, low self-esteem children's pattern of emphasizing effort more than skill may interfere with self-esteem enhancement. Their overall findings are consistent with previous studies examining attributional styles in depressed children (e.g., Seligman et al, 1984).

ADHD, DEPRESSION, ATTRIBUTIONAL STYLE AND SELF-ESTEEM

Children diagnosed as having ADHD also share an important cluster of symptoms relating to cognitive impairment with those children suffering from depression. This cluster of symptoms includes: 1) the inability to concentrate and sustain attention; 2) deficits in problem solving on higher order cognitive tasks; 3) inefficient cognitive tempo; and 4) poor academic performance (Klein et al., 1976; Douglas & Peters, 1979; Colbert et al., 1982; Kaslow et al., 1983; Rubinstein & Brown, 1984; Strauss, Forehand, Frame, & Smith, 1984). In conjunction with these specific cognitive impairments, both groups also exhibit similar behavioral and social difficulties, including

school-related conduct problems, overactivity, and poor peer relationships (Rubinstein & Brown, 1984; Whalen & Henker, 1984; Brown, Borden, Clingerman, & Jenkins, 1988).

Some clinicians contend that these two disorders are indistinguishable because they share the same symptomatology, in other words, they are manifestations of the same underlying pathology - depression (e.g., Cantwell & Carlson, 1980). On the other hand, the most widely expressed explanation for the depression exhibited by ADHD children is based on the premise that these children are discouraged and demoralized by their disorder which is manifested in depressive symptoms (Kazdin, 1981; Brown et al., 1988; Barkley, 1989).

Cantwell's 1975 review of the ADHD literature found that the most significant affective symptoms of this disorder were depression and low self-esteem, especially with adolescents. He indicated that many of the studies reviewed posited that ADHD was a depressive equivalent and that the positive results of anti-depressant medication with this group is evidence for a depressive core to the disorder. Cantwell also indicated that some authors believed that the depression was a result of continual failure on the part of ADHD children, leading to discouragement and ultimately demoralization. Borland and Heckman (1976) completed a 25 year follow-up study with 20 males who had conformed to the diagnostic criteria for the

hyperactive child syndrome 20 to 25 years before. Their results showed that the low self-esteem, reduced motivation and depression experienced by almost all the subjects may have arisen due to early social and academic difficulties.

Riddle and Rapoport (1976) examined the classroom and home behavior, academic achievement, peer status, and depressive symptomatology in a 2 year, prospective follow-up study of 72 ADHD males with a mean age of 10.2 years. Specific Thematic Apperception Test (TAT) cards were administered to the ADHD group and an age and sex matched control group and scored using a modified version of a standardized method of rating depression. Compared with controls, the ADHD group showed a significantly higher level of depression and a tendency for the older children to be rated as more depressed. Twelve of these children gave overt statements of hopelessness or worthlessness during the initial structured interview and also received projective ratings on the TAT indicating moderate to severe depressive content in their stories. Ratings of depression did not correlate significantly with stressful factors in the home, academic achievement or symptom ratings at home or school. Riddle and Rapoport conclude that their findings unequivocally demonstrate that the ADHD sample had considerably more depressive ideation and were at high risk for continuing pathology.

Brumback and Weinberg (1977) investigated the

relationship between hyperactivity and childhood depression in a population of 223 school age children. Criteria for inclusion in the study were: 1) age 6-0 to 12-11 years; 2) intelligence quotient above 75 as measured by the WISC-R or the Peabody Picture Vocabulary Test; 3) absence of pubertal secondary sexual characteristics; and, 4) no evidence of a recognizable neurological condition. All children were Caucasian from middle or upper socioeconomic status groups. All subjects were evaluated for the presence or absence of affective illness by assessing if they displayed two major criteria symptoms (i.e., dysphoric mood, self-deprecatory ideation) and any two of the minor criteria symptoms (i.e., sleep disturbance, agitation, loss of energy, reduced socialization, altered school performance, appetite disturbance, somatic complaints, and altered attitude toward school). The presence or absence of hyperactivity (i.e., excessive nonproductive activity with associated short attention span, distractibility, impulsivity, and accident proneness) was evaluated by questionnaires completed by parents and teachers and clinical assessment by a physician.

Results showed that of the 223 children 117 were hyperactive, and 86 (74%) of the hyperactive children were depressed. Also, the depressed hyperactive children either were chronically hyperactive or had episodes of hyperactivity worsened or only evident during periods of depression. The parents and teachers reported that the

hyperactivity decreased with resolution of the depression. Brumback and Weinberg concluded that hyperactivity and depression could occur independently but were frequently associated, especially in children displaying episodic hyperactivity. They recommended that future studies consider whether or not hyperactivity was primary or secondary to an affective illness such as depression, and if the hyperactivity could be a symptom of another type of affective illness, childhood mania.

Staton and Brumback (1981) found a strong relationship between depression and ADHD children in their study of 178 elementary school children. Seventy-five percent of their referral population diagnosed as having ADHD also met modified criteria for primary childhood depression. They concluded that hyperactive school problems (i.e., inattentiveness, disruptiveness) may be occurring due to an underlying depressive disorder when there is no evidence of a neurological impairment.

After the DSM-III changed the classification of Attention Deficit Disorder into two subtypes based on the presence or absence of excessive motor activity, Lahey, Schaughency, Strauss, and Frame (1984) questioned whether or not attention deficit disorders with and without hyperactivity were similar or dissimilar disorders. They identified 10 children with attention deficit disorder with hyperactivity (ADD/H) and 20 children with attention deficit

disorder without hyperactivity (ADD/WH) from a population of 625 children in grades 2 to 5. All subjects were given a battery of self-report measures, teacher ratings, sociometric, and peer ratings including the Children's Depression Inventory and the Piers-Harris Self Concept Scale.

Lahey et al.'s results showed markedly different patterns of characteristics for the two groups indicating that they are substantially dissimilar disorders. The ADD/H children were conduct disordered, guiltless, aggressive and bizarre, whereas the ADD/WH children were shy, socially withdrawn and anxious. Teachers and peers viewed both groups as unattractive, lacking in leadership, unpopular, and poor in school performance. Of particular relevance was the fact that both groups, regardless of the existence of excessive motor activity, reported significant depression and poor self-concepts. However, the two groups differed in the pattern of self-esteem in that the ADD/WH children viewed themselves as anxious, unhappy, poor in school, and unattractive, whereas the ADD/H children viewed themselves as having poor school performance, poor behavior, and as being disliked by peers.

Bohline (1985) examined the impact of ADHD symptomatology as it related to intelligence test performance and affect in a group of 29 children diagnosed with attentional difficulties as compared to 75 normals.

Children taking stimulant medication were previously removed from the study. With respect to the affective component, the ADHD group's mean score on the depression criteria was significantly higher than the non-ADHD group. Eleven of the 29 ADHD children obtained scores on the depression criteria at least one standard deviation beyond the mean score obtained by the control group. Bohline concluded that due to the fact that the two more extreme scores were obtained from the control group, the "tendency toward showing depressive features would seem to be more of a general proclivity of the entire ADHD group, as opposed to registering the affective extremes of a relative few" (p. 607). He cautioned that clinicians must be careful in distinguishing between "reactive" ADHD symptoms "occurring as associated features of other underlying emotional difficulties and those which reflect a core form of developmental hyperactivity as the primary presenting problem" (p. 608).

Borden, Brown, Jenkins, and Clingerman (1987) examined the achievement attributions and depressive symptoms in ADHD children and normals. The ADHD sample consisted of 42 males and 9 females ranging in age from 68 to 157 months and determined to be of at least average intellectual functioning with no gross neurological or uncorrected sensory impairments. The comparison sample were matched to the ADHD group on age and sex. Preliminary analyses yielded

no significant group differences on age, sex, grade, IQ, or reading achievement. All subjects were given the Children's Depression Inventory and the Intellectual Achievement Responsibility Questionnaire (IAR: Crandall, Katkovsky, & Crandall, 1965) which measured the locus of children's attributions (i.e., internal versus external) for achievement situations.

This study found that the ADHD group received higher scores on the CDI ($M=11.22$, $SD=6.33$) than did the normal group ($M=6.41$, $SD=4.30$). They also expressed more external attributions for negative as well as positive outcomes and felt less able to exert control over both positive and negative events. Borden et al. suggest that the greater a child's sense of not being able to effect positive outcomes, the more demoralized the child would be. They also state that their findings conflict with the "learned helplessness theory of depression which posits a causal relationship between depressive symptoms and the inability to control or prevent the occurrence of negative events" (p. 403) in that their ADHD sample reported a positive relationship between depressive symptoms and internal attributions for negative events. In other words, the more an ADHD child perceived internal control over negative events, the higher the depression scores. They concluded that ADHD children may readily accept responsibility for causing negative events, especially considering their disruptive, impulsive behavior

in social situations, but feel incapable of changing those negative outcomes in the future. Lastly, Borden et al. noted that the older the ADHD child, both male and female, the more he/she made external attributions for negative outcomes. They posited that these older ADHD children have learned they will be blamed for creating unsolvable problem situations regardless of their behavior. They recommended that researchers and clinicians examine the affective as well as the cognitive functioning in ADHD children in order to better understand and to help this population.

Brown et al. (1988) examined the prevalence of depression in children with ADHD and their parents. They were also seeking evidence for the existence of the demoralization syndrome in this population. A total of 58 children (47 males and 11 females) met the research criteria consisting of the following: 1) previous diagnosis of attentional difficulties; 2) long-standing behavioral problems at home and at school; 3) between the ages of 6 and 12 years; 4) free of gross neurological disease and psychosis; 5) a verbal I. Q. of at least 80 on the WISC-R; and, 6) no primary diagnosis of major depression, dysthymic disorder, or adjustment disorder with depressed mood. Of this sample, 16% received a DSM-III Axis I diagnosis of conduct disorder, 74% were diagnosed as having attentional deficits with hyperactivity and 26% had attentional deficits without hyperactivity. All of the 58 children were one or

more years behind in at least one academic area (i.e., reading, spelling, arithmetic as measured by school achievement tests). At the time of the study none of the subjects were receiving psychotropic medication. The normal group was matched to the ADHD group on grade and sex and consisted of 48 males and 10 females who had no DSM-III psychiatric diagnosis, no learning disability, and were of normal intelligence. Both groups were equivalent for race and middle socioeconomic status, and the ethnoracial composition of the entire sample was 74% white, 16% black, and 10% Hispanic.

All children were administered the Children's Depression Inventory (CDI: Kovacs, 1981) which has been found to differentiate children with psychiatric diagnoses of major depression or dysthymic disorder from normal children and those with other psychiatric conditions. When the ADHD children were completing the CDI it was part of a larger battery of tests for a clinical treatment study, so the subjects were blind to their diagnosis. The mothers and fathers of the ADHD children completed the Center for Epidemiologic Studies Depression Scale (CES-D) which consists of 20 statements and is highly correlated with clinical ratings of depression in adults.

Results revealed that the ADHD children scored in a significantly more depressed range on the CDI than the normals suggesting that ADHD children report higher levels

of self-reported depression than do normal children. Approximately one half of the ADHD children were identified as depressed while 16% of the normal group scored in the depressed range of the CDI. Because none of the subjects either in the ADHD group or the normal control group had any type of diagnosable depression, the authors suggested that this finding was evidence that half of the ADHD children were demoralized by their disorder. Brown et al. did, however, caution that a cutoff score of 10 on the CDI may be too low thus accounting for the higher levels of depression.

With respect to the parents, their CES-D scores showed that they too had high levels of depression. The authors suggest that this finding may also be a result of the demoralization syndrome. ADHD children are often disruptive, wherever they are, which seriously impacts on how parents feel about how their children behave as compared to parents whose children have other emotional and learning difficulties (e.g., learning disabled, highly anxious, or immature) which do not necessarily impact upon the parent's life as much. Thus, parents "perceive their ADHD youngsters as deviant, these parents become discouraged, demoralized, and depressed" (p. 126). Another explanation relates to the research purporting that parents who have emotional difficulties react less well to provocative child behavior which may in turn exacerbate the child's behavioral difficulties. Forehand (1979; cited in Brown et al., 1988)

states that "depressed parents may be more demanding, less consistent in child management, and may provide less supervision at home, thereby placing their children at greater risk for hyperactivity and related behavioral difficulties" (p. 126). Brown et al concluded that their overall results support the validity of a concomitant demoralization syndrome in ADHD children and their parents. They suggest that treatment modalities should not only focus on the impulsiveness and inattention but also on difficulties with self-esteem and demoralization experienced by both ADHD children and their parents.

All of these studies clearly indicate that ADHD children tend to have lower self-esteem, be more depressed and express more external achievement attributions for both positive and negative events than normal children. However, studies have not explored the existence of a depressive attributional style as postulated in the reformulated learned helplessness model of depression in ADHD children. Also, little is known about how subgroups of ADHD children differ in their ratings of depression and self-esteem as researchers have focused on comparing ADHD children with normal controls. In order to better delineate and treat all ADHD children it is imperative to closely explore affective differences in the subtypes, including medicated versus non-medicated ADHD children.

CHAPTER THREE

METHODOLOGY

Sample

The participants in this study were 60 English speaking male students, ages seven years six months to sixteen years six months, diagnosed as having Attention-deficit Hyperactivity Disorder by a qualified professional (i.e., psychiatrist, certified psychologist). Regular classroom, special education, and resource teachers were asked to refer students who met the following criteria: 1) previous diagnosis of ADHD by a certified psychologist, psychiatrist, and/or a pediatrician; 2) full-scale I.Q. above 80 (low average intelligence and above) as determined by a standardized intelligence test administered during the past two years; 3) no evidence of a neurological disorder; 4) no history or evidence of psychosis or severe developmental delay; and, 5) no evidence of a primary learning disability (e.g., dyslexia). Subjects selected for this study were attending classes within the Calgary Separate School Board, Foothills Academy, Calgary Academy, Rocky View School Division No. 41, and the Foothills School Division No. 38.

The 60 subjects were divided into four groups of 15. This number of subjects per group was sufficient for an effect size of one standard deviation, a power of 80% and a p value of .05 (Bartko, Carpenter, & McGlashan, 1988). The

first group consisted of those subjects between the ages of 7 years 6 months and 11 years 6 months who were not receiving any medication for ADHD. The second group consisted of those subjects in the same age group but who were on stimulant medication for ADHD. The third group consisted of those subjects between the ages of 11 years 7 months and 16 years 6 months who were not receiving any medication for ADHD. The fourth group consisted of those subjects in this older age group but who were receiving stimulant medication for ADHD.

Psychological Instruments

Conners Teacher Rating Scale (CTRS-R) (Conners, 1969; Goyette, Conners, & Ulrich, 1978) - There are two versions of the Conners Teacher Rating Scale: a 39-item version (CTRS) and a 28-item version (CTRS-R) which was employed in this study. The CTRS, the original scale, is the most extensively employed teacher rating scale to identify and select ADHD children for research purposes (Sandoval, 1977) and consists of the items most often identified by teachers for describing ADHD children. Normative data were collected on 9,583 children across ages 4 to 12 years for both sexes, and scores yielded six factors: Hyperactivity, Conduct Problem, Anxious-Passive, Emotional-Overindulgent, Asocial, and Daydreams/Attendance (Trites, Blouin, & Laprade, 1982). Barkley (1987) reports that the scale is sensitive to stimulant drug and parent training interventions.

The CTRS-R is the 28-item revised rating scale widely used for measuring behavior change in psychopharmacologic research with children (Conners, 1969) and is similar to the original version in its format and scoring. Scores yield three factors: Conduct Problem (e.g., quarrelsome, temper tantrums); Hyperactive (e.g., restless, makes inappropriate noises); and Inattentive-Passive (e.g., daydreams, immature) and an overall impulsivity rating. Normative data were collected from 383 children across ages 3 to 17 years (Goyette et al., 1978). Previous research has established the test-retest reliability ranges from .70 to .90 (Goyette et al., 1978), the criterion validity between .84 and .90 (Campbell, Schleifer, & Weiss, 1978; Copeland & Weissbrod, 1978; Lahey, Green, & Forehand, 1980; Prinz, Connor, & Wilson, 1981; Kendall & Brophy, 1981) and the discriminant validity as satisfactory (Abikoff, Gittleman-Klein, & Klein, 1977; Werry, Sprague, & Cohen, 1978). The scale has been shown to be sensitive to stimulant drug effects and to discriminate ADHD from other children (Barkley, 1978). The CTRS-R was employed in this study instead of the original because of the substantial overlap between it and the Child Behavior Checklist-Teacher Report Form, it is quicker to complete, and the items focus primarily on impulsivity, inattentiveness, and conduct problems.

With the CTRS-R, teachers rate the presence of 28 behavior problems on a 0-1-2-3 scale reflecting "not at

all", "just a little", "pretty much", and "very much", respectively. Responses are usually scored on the three factor-based scales previously discussed, as well as a Hyperkinesis Index comprising 10 items scored on the other three scales. As a global index of impulsivity, total scores are computed by summing responses to all 28 items. For each scale, raw scores are divided by the number of the items scored. Scale scores therefore range from 0 to 3. A total score of 15 (approximately two standard deviations above the mean) is the criterion value applied to define ADHD (Conners, 1969; Trites, Dugas, Lynch, & Ferguson, 1979).

Child Behavior Checklist-Teacher Report Form (CBCL-TRF)
(Achenbach & Edelbrock, 1983) - This instrument is one of the most rigorously developed and standardized child behavior rating scale available for assessing the most common dimensions of child psychopathology. The CBCL-TRF is a four page questionnaire designed to obtain classroom teachers' reports of their students' academic performance, adaptive functioning, and behavior problems. It covers demographic information, such as age, sex, race, grade in school, and parental occupations from which an index of socioeconomic status can be obtained.

The CBCL-TRF comprises two scales: Adaptive Functioning and Behavior Problems. The Adaptive Functioning Scale is based upon eight categories of information obtained from the

classroom teacher and scores current performance in academic subjects according to a 5-point scale ranging from "far below grade" to "far above grade". Four other adaptive functioning items are also included: "Compared to typical pupils of the same age: 1. How hard is he/she working? 2. How appropriately is he/she behaving? 3. How much is he/she learning? 4. How happy is he/she?" These items are rated on 7-step scales ranging from "much less" to "much more". The sum of these four items yields a total adaptive functioning score which ranges from 4 to 28. From these eight Adaptive Functioning categories six scores are derived: School Performance, Working Hard, Behaving Appropriately, Learning, Happy, and a Summary score. These scores are then plotted on an Adaptive Functioning Profile containing the normative data (Achenbach & Edelbrock, 1983).

The Behavior Problems Scale contains 118 items (e.g., acts too young for his/her age, argues a lot, disturbs other pupils) which are rated on a 0-1-2 scale, where 0 indicates the item is "not true" of the child, 1 indicates it is "somewhat or sometimes true", and 2 indicates it is "very or often true". Teachers are asked to describe the child's behavior as it has been in the past two months. These scores yield factor scale scores and are then plotted on the Behavior Problems Profile containing the normative data (Achenbach & Edelbrock, 1983).

Profiles for both sexes and for two age groups (6 to

11, and 12 to 16 years of age) are available but are different because factor analyses for each group revealed different dimensions of psychopathology. The separate profiles were derived from factor analyses of the CBCL-TRF completed for 1,800 children referred to mental health services in the eastern United States. For boys aged 6 to 11, the profile includes eight factor analytically derived behavior problem scales labelled Anxious, Social Withdrawal, Unpopular, Self-Destructive, Obsessive-Compulsive, Inattentive, Nervous-Overactive, and Aggressive (Edelbrock & Achenbach, 1984). Second-order factor analyses of these scales for all sex/age groups showed that they formed two broad-band groupings, internalizing and externalizing. These two broad-band groupings correspond to the distinction between fearful, inhibited, over-controlled behavior and aggressive, antisocial, undercontrolled behavior in children.

The CBCL-TRF discriminates ADHD from other psychiatric disorders as well as between ADHD children with and without hyperactivity (Edelbrock, Costello, & Kessler, 1984). The Inattentive factor encompasses behaviors such as: 1) inattentive; 2) easily distracted; 3) poor schoolwork; 4) cannot concentrate; 5) cannot pay attention for long; 6) fails to finish things; and, 7) fails to carry out tasks. The Nervous-Overactive factor which is applicable to boys age 6 to 11 years only) includes behaviors such as: 1)

highstrung; 2) nervous; 3) tense; 4) nervous movements; 5) fidgets; 6) cannot sit still; 7) restless; and, 8) hyperactive. These two factors appear to correspond to the symptom clusters of ADHD as presented in the DSM-III-R (Edelbrock et al., 1984).

Normative data were collected on a representative sample of 1,100 normal children. Test-retest reliability and stability of the CBCL-TRF are satisfactory (Achenbach & Edelbrock, 1983). Pearson correlations for one week test-retest reliabilities averaged .93 for school performance, .86 for adaptive functioning, and .89 for behavior problem scales. The behavior problem scales also showed good stability over 2 and 4 month intervals with average test-retest correlations of .77 and .64, respectively (Achenbach & Edelbrock, 1983). Convergent and discriminant validity have been shown by significant correlations between observational ratings and teacher ratings on the behavior problem syndromes (Reed & Edelbrock, 1983). Also, compared to non-referred children, clinically referred children were found to score significantly higher on all behavior problem scales and lower on the adaptive functioning and school performance scales of the CBCL-TRF. Lastly, an advantage to the CBCL-TRF is that it considers developmental changes in the dimensions of child psychopathology (Barkley, 1987).

Edelbrock, Greenbaum, and Conover (1985) designed a

study which examined the reliability and concurrent relations between the Teacher Version of the Child Behavior Checklist and the Conners Revised Teacher Rating Scale. A total of 104 disturbed boys, aged 6 to 11, were assessed using both tests, and a subsample of 55 boys was reassessed with both measures at an interval of one week. Correlations between the two measures indicated a strong correspondence between the three Externalizing scales of the CBCL-TRF and the factor-based CTRS-R scales. Specifically, CBCL-TRF scales labelled Inattentive, Nervous-Overactive, and Aggressive correlated highly ($p < .001$) with CTRS-R scales labelled Inattentive-Passive, Hyperactivity, and Conduct Problem, respectively. The CTRS-R Hyperkinesis Index correlated highly with all three Externalizing scales of the CBCL-TRF, particularly Aggressive ($r = .82$). These researchers concluded that overall their results support the reliability and concurrent validity of both measures.

Coopersmith Self Esteem Inventory (CSEI) (Coopersmith, 1967) - This widely used measure of self-concept is a 58-item self-report scale designed for elementary school children and young adults (Omizo, Amerikaner, & Michael, 1985). The CSEI was designed to determine a child's overall level of self esteem according to the formulation that self esteem is a "general enduring personal judgement of worthiness expressed in the attitudes the individual holds

towards himself" (Coopersmith, 1967, p. 10). The CSEI consists of five subscales: an eight-item lie scale designed to provide a measure of defensiveness or test-wiseness, and 50 items divided among four subscales designed to assess perceptions of peers, parents, school, and self. Thus, the instrument consists of the General Self-Concept, School Curriculum, Home-Parent, Social Peer, and Lie subscales. There is no item overlap across subscales.

Items require a "Like Me" or "Unlike Me" response. Each answer reflecting the favourable response receives 4 points, for a total of 100 possible points. Total scores are based on the sum of all subscale scores, excluding the lie scale. Higher scores indicate higher levels of self-esteem. A split-half reliability coefficient of .85 and test-retest coefficients in the high .80s have been reported (Coopersmith, 1967). Taylor and Reitz (1968) report a .90 split-half reliability, .88 test-retest reliability over 5 weeks, and .70 test-retest reliability over 3 years. Further, Robinson and Shaver (1973) report good convergent, discriminant, and predictive validity. Roberson and Miller (1986) report that the School Curriculum, Home-Parent, Social-Peer, and Lie subscales, which are closely related empirically, appear to be measuring distinguishable features of self-concept and are substantially valid.

Children's Depression Inventory (CDI) (Appendix A,

Kovacs, 1981) - According to Kazdin (1981), the CDI is the most widely used self-report measure of the depth or severity of depressive symptomatology in children. The CDI has been employed as a criterion measure in studies of depressed versus nondepressed children (Schwartz, Friedman, Lindsay, & Narrol, 1982; Kaslow et al., 1983), as a diagnostic tool (Cytryn, McKnew, & Bunney, 1980), and as a comparison point in validation of other measures (Lefkowitz & Tesiny, 1980; Hodges, Kline, Stern, Cytryn, & McKnew, 1982).

The CDI is a 27-item, paper and pencil measure adapted from the Beck Depression Inventory for adults (Beck & Beamesderfer, 1974). Items sample a domain of overt symptoms of childhood depression such as anhedonia, sadness, sadness, suicidal ideation, and sleep and appetite disturbance (Kovacs, 1981). After each item is read aloud by the examiner, the subject is asked to endorse one of three descriptions that best applies to him or her during the last 2 weeks (e.g., "I feel like crying everyday", "I feel like crying many days", "I feel like crying once in a while"). Responses are scored 0-2 scale, with 2 representing the severe form of a depressive symptom and 0 representing the absence of that symptom. The total score range is calculated ranging from 0 to 54. Administration requires approximately 20 minutes, and the items are appropriate for ages 7 to 17. Normative properties of the

CDI are as follows: a mean of approximately 9.00, a standard deviation of about 7.00, and a cut-off score of 19 for the upper 10% of the distribution (Kovacs, 1981).

Internal consistency of the CDI is strong with alpha coefficients ranging from .94 for normal subjects to .80 for psychiatric populations (Kovacs, 1982; Saylor, Finch, Spirito, & Bennett, 1984). According to Saylor et al. (1984), internal consistency was also supported by the split-half correlations, which were statistically significant and clinically respectable across populations and methodologies. Kovacs (1982) also reports a correlation of $r=.55$ ($p<.001$) between the CDI and clinicians' independent global ratings of depression. High test-retest correlations have been reported for normal subjects (e.g., .84 over 9 weeks) (Miezitis, Friedman, Butler, & Blanchard, 1978) and moderate correlations for psychiatric groups (e.g., .59 over 6 weeks) (Saylor et al., 1984). Smucker et al. (1986) report that all CDI items yield statistically significant item-total score correlations, which demonstrate evidence of the scale's homogeneity. Studies support the criterion validity of the scale by demonstrating that children independently diagnosed as depressed obtain significantly higher scores on the CDI than nondepressed children (Carlson & Cantwell, 1979; Kovacs, 1983).

Children's Attributional Style Questionnaire (CASQ)

(Appendix B, Seligman et al., 1984) - The CASQ is based on

the reformulation of helplessness theory which proposes that an insidious attributional style predisposes and accompanies depressive symptoms. According to this theory, individuals who are depressed tend to explain bad events with internal, stable, and global causes (Seligman et al., 1984). The CASQ has 48 items, each of which consists of a hypothetical bad or good event involving the child. There are two possible causes of each event, and the child picks the cause from the pair that better describes why the event occurred. The two causes provided in each item hold constant two of the attributional dimensions while varying the third. Sixteen questions pertain to each of the three dimensions (internality, stability, and globality). Half of the questions provide bad events to be explained, and half of the questions provide good events. Thus, there are six subscales: the internality, stability, and globality scales for good events, and the internality, stability, and globality scales for bad events (Seligman et al., 1984).

The CASQ is scored by assigning a 1 to each internal, stable, or global response when that dimension is varied, and a 0 to each external, unstable, or specific response. Subscales are formed by summing these scores across the appropriate questions for each of the three causal dimensions, separately for good events and for bad events. An overall explanatory style score is obtained by subtracting the composite negative score from the composite

positive score. The lower the overall explanatory style score, the more the child explains bad events in terms of internal, stable, and global causes, while explaining good events in terms of external, unstable, and specific causes. A sample item from the CASQ that measures internality (while holding constant stability and globality) is as follows: You get very good grades; a) School work is very simple (external); b) I am a hard worker (internal) (Seligman et al., 1984).

Seligman et al. (1984) report the coefficient alphas for positive events, negative events, and overall explanatory style score scales as .71, .66, and .73, respectively. Test-retest reliability for the CASQ is .71 over a 6 month period (Seligman et al., 1984).

Procedure

Once appropriate subjects were selected by school personnel, a letter of consent (Appendix C) was sent to the child's parents. This letter also requested information regarding use of medication for ADHD symptoms, duration of prescription use, and type of medication prescribed. If parental consent was granted, consent letters were also requested of the principals (Appendix D) and classroom teachers (Appendix E) from the respective schools.

Once permission was granted for a prospective subject to participate in the study, each subject's regular classroom or special education teacher was asked to complete

the Conners Teacher Rating Scale - Revised and the Child Behavior Checklist - Teacher Report Form and return them to the researcher. Subject participation was limited to the completion of the following tests: the Children's Depression Inventory, the Coopersmith Self Esteem Inventory, and the Children's Attributional Style Questionnaire. All subjects were removed from the classroom setting for approximately one hour in order to complete the questionnaires in the presence of the researcher. Before testing began, each child had the purpose and procedure of the study explained to him. The researcher then read each scale item aloud while the subjects silently read their copies and then marked their responses on the scoring sheets. Subjects experiencing reading difficulties had the test items read aloud to them and then verbally gave their responses to the researcher.

The scores on all the questionnaires were collected and tabulated into four subject groups for data analyses. Other than the granting of consent and the providing of information regarding the use of medication for ADHD, no parental involvement was required. All subjects and their parents participating in the study were guaranteed anonymity and assured that the results were for research purposes only. No follow-up participation was solicited. Although the results were available, none of the subjects' parents and/or appropriate school personnel requested such.

Data Analyses

Descriptive statistics (e.g., means and standard deviations) for the four sample groups were calculated for all psychological measures (CTRS-R, CBCL-TRF, CDI, CSEI, CASQ) and the variables of length of time on medication and daily dosage. Analyses of variance were performed to determine any between group differences on all psychological measures and the independent variables of age and medication. All significant findings were scrutinized post hoc using the simple differences test. Pearson product-moment correlations were computed for all variables.

CHAPTER FOUR

RESULTS

Sociodemographic Variables

Subjects were solicited (see consent letter in Appendix C for details) from both urban and rural schools in the city of Calgary and surrounding towns (i.e., High River, Turner Valley, Airdrie, Westbrook, Conrich) and represent a cross section of socioeconomic levels. Of 80 potential subjects parental consent was obtained for only 60 subjects which represented 75% of the total solicited sample. Twenty-nine (48%) subjects were attending special education schools as a result of their ADHD diagnosis and secondary learning difficulties, 10 (17%) subjects were attending special education classes within regular schools, while 21 (35%) subjects were fully integrated into regular schools. The sample's grade levels ranged from Grade 2 to Grade 11, with 28 (47%) subjects having repeated at least one grade.

All medicated subjects reported being prescribed methylphenidate (Ritalin) which was administered on school days but discontinued during school holidays and weekends. Each medicated subject acknowledged taking the required dosage in the 24 hours preceding testing. Of the 30 medicated subjects, 12 (40%) reported that they disliked taking the medication. Three (5%) of the subjects' parents reported that there was an older male child in the family

diagnosed with Tourette's Syndrome, after an initial diagnosis of ADHD.

Descriptive statistics were completed on the four experimental groups (i.e., younger non-medicated, older non-medicated, younger medicated, older medicated), each comprising 15 subjects. The mean age for each group was as follows: younger non-medicated group - 9 years 8 months (117.40 months); older non-medicated group - 14 years 4 months (172.60 months); younger medicated - 9 years 3 months (111.20 months); older medicated - 13 years 6 months (163.73 months). Mean age for all subjects was 11 years 8 months (141.23 months). Tukey HSD tests indicate that mean ages were not significantly different for either the two younger groups or the two older groups but were significantly different [$F(3,56)=56.12$, $p<.0001$] between the younger and older groups. The two medicated experimental groups were compared on the sociodemographic variables of length of time on medication and daily dosage of stimulant medication. As expected, the older medicated group had a higher daily dosage level ($M=41.33$ milligrams) than the younger medicated group ($M=32.00$ milligrams) and reported a longer length of time on medication ($M=43.00$ months) compared to the younger medicated group ($M=28.40$ months). Table 1 contains the means and standard deviations for all four experimental groups with respect to age and length of time on medication and daily dosage for the two medicated groups.

Table 1

Means and Standard Deviations For Age, Length of Time on Medication and Daily Dosage

Group	Age (Months)		Length of Time Medicated (Months)		Daily Dosage (Milligrams)	
	M	SD	M	SD	M	SD
Younger Non-Medicated n=15	117.40	14.34	-	-	-	-
Older Non-Medicated n=15	172.60	16.60	-	-	-	-
Younger Medicated n=15	111.20	13.98	28.40	23.96	32.00	14.12
Older Medicated n=15	163.73	19.45	43.00	19.14	41.33	10.60

Psychological Measures

A summary of the means and standard deviations of all psychological variables for all subjects by group are presented in Table 2. These psychological variables, along with daily dosage and length of time medicated variables, were used as dependent measures in a series of 2 x 2 analyses of variance, where the independent variables were age and medication. Members of the four experimental groups thus fell into the cells of the four-fold ANOVA table. These ANOVAs were conducted on all the variables in order to identify those measures which were able to discriminate significantly among the four groups. ANOVAs for the variables measuring self-esteem and depression are presented in Table 3. ANOVAs for the variables measuring behavioral variables (i.e., impulsivity, aggression, inattention, nervous/overactive, total externalizing behavior) are presented in Table 4. The nervous/overactive variable applies only to the two younger groups due to the structure of the Child Behavior Checklist. ANOVAs for the variables measuring attributional dimensions are presented in Table 5.

Significant main effects were found on the following four measures: 1) ASEI - medicated subjects, as a whole, had lower levels of academic self-esteem than the non-medicated subjects; 2) CBCLIN - younger subjects, as a whole, had significantly higher levels of inattentive behavior than

Table 2

Means and Standard Deviations for all Psychological Measures

Variables *	Group							
	Younger		Older		Younger		Older	
	Non-Medicated	SD	Non-Medicated	SD	Medicated	SD	Medicated	SD
	M		M		M		M	
CDI	10.47	4.91	11.60	5.75	11.13	4.36	13.07	5.05
GSEI	15.20	3.51	15.93	5.02	15.07	4.08	14.87	3.20
SSEI	4.53	1.64	5.73	1.71	5.07	2.09	3.73	1.16
HSEI	4.40	2.35	5.73	2.05	4.87	2.17	4.20	1.86
ASEI	3.13	1.46	4.00	2.17	5.53	2.00	3.67	1.50
TSEI	54.40	13.67	62.13	17.67	60.53	16.88	52.93	8.65
LSEI	2.00	1.20	1.80	1.82	2.47	1.60	1.53	1.30
CASQPI	4.13	1.13	4.60	1.76	5.00	1.69	3.93	1.16
CASQPS	4.47	1.25	4.53	1.46	3.60	2.13	3.87	1.36
CASQPG	4.07	1.75	3.67	1.18	3.40	1.50	4.73	1.67
CASQNI	2.80	1.42	3.40	1.72	3.33	1.35	3.27	1.87
CASQNS	3.07	1.71	3.40	1.76	2.80	1.15	3.93	1.71
CASQNG	3.53	1.19	3.87	1.41	3.33	1.50	4.07	1.39
CASQCP	12.67	2.94	12.80	3.41	12.27	4.56	12.47	2.29
CASQCN	9.40	2.77	10.00	3.64	9.47	2.72	11.67	2.77
CASQTCS	3.27	3.73	2.13	6.55	2.80	5.49	.87	3.14
CTRS	42.47	10.17	41.67	11.70	43.93	13.00	39.40	8.33
CBCLIN	69.60	7.65	66.73	7.93	69.60	6.05	64.40	7.06
** CBCLNO	67.67	4.43	-	-	66.73	8.51	-	-
CBCLAG	66.60	4.56	65.13	5.97	70.00	9.72	63.13	4.76
CBCLTE	68.07	5.84	65.40	6.08	68.80	7.93	63.93	5.91

* Key on next page

** Nervous/Overactive variable applies to younger groups only

Table 2 (continued) KEY

Student Reported Variables:

CDI	Children's Depression Inventory
GSEI	Self-Esteem Inventory General Score
SSEI	Self-Esteem Inventory Social Score
HSEI	Self-Esteem Inventory Home Score
ASEI	Self-Esteem Inventory Academic Score
TSEI	Self-Esteem Inventory Total Score
LSEI	Self-Esteem Inventory Lie Score
CASQPI	Internality dimension (positive events) of the CASQ
CASQPS	Stability dimension (positive events) of the CASQ
CASQPG	Globality dimension (positive events) of the CASQ
CASQNI	Internality dimension (negative events) of the CASQ
CASQNS	Stability dimension (negative events) of the CASQ
CASQNG	Globality dimension (negative events) of the CASQ
CASQCP	Composite score for positive events on the CASQ
CASQCN	Composite score for negative events on the CASQ
CASQTCS	Total composite score on the CASQ

Teacher Reported Variables:

CTRS	Conners Teacher Rating Scale
CBCLNO	Nervous/Overactive scale on the CBCL
CBCLIN	Inattention scale on the CBCL
CBCLAG	Aggression scale on the CBCL
CBCLTE	Externalizing scale on the CBCL

Table 3

Analyses of Variance for Self-Esteem and Depression Measures

	Source of Variation	SS	df	MS	F	p
CDI	Drug	17.07	1	17.07	.67	.416
	Age	35.27	1	35.27	1.39	.244
	Drug x Age	2.40	1	2.40	.09	.760
	Error	1424.00	56	25.43	-	-
GSEI	Drug	5.40	1	5.40	.34	.565
	Age	1.07	1	1.07	.07	.798
	Drug x Age	3.27	1	3.27	.20	.654
	Error	902.00	56	16.11	-	-
SSEI	Drug	8.07	1	8.07	2.85	.097
	Age	.07	1	.07	.02	.879
	Drug x Age	24.07	1	24.07	8.50	.005
	Error	158.53	56	2.83	-	-
HSEI	Drug	4.27	1	4.27	.95	.333
	Age	1.67	1	1.67	.37	.544
	Drug x Age	15.00	1	15.00	3.35	.072
	Error	250.67	56	4.48	-	-
ASEI	Drug	16.02	1	16.02	4.91	.031
	Age	3.75	1	3.75	1.15	.288
	Drug x Age	28.01	1	28.02	8.58	.005
	Error	182.80	56	3.26	-	-
TSEI	Drug	35.27	1	35.27	.16	.687
	Age	.07	1	.07	.00	.986
	Drug x Age	881.67	1	881.67	4.10	.047
	Error	12024.00	56	214.71	-	-
LSEI	Drug	.15	1	.15	.07	.797
	Age	4.82	1	4.82	2.14	.149
	Drug x Age	2.02	1	2.02	.90	.348
	Error	125.87	56	2.25	-	-

Table 4

Analyses of Variance for Variables Measuring Inattention, Impulsivity, Aggression, Nervous/Overactive, and Externalizing Behaviors

Source of Variation		SS	df	MS	F	p
CTRS	Drug	2.40	1	2.40	.02	.888
	Age	106.67	1	106.67	.89	.349
	Drug x Age	52.27	1	52.27	.44	.511
	Error	6701.60	56	119.67	-	-
CBCLIN	Drug	20.42	1	20.42	.39	.533
	Age	244.02	1	244.02	4.70	.034
	Drug x Age	20.42	1	20.42	.39	.533
	Error	2909.73	56	51.96	-	-
CBCLNO	Drug	3.27	1	3.27	.14	.708
	Age	-	-	-	-	-
	Drug x Age	3.27	1	3.27	.14	.708
	Error	1290.27	56	23.04	-	-
CBCLAG	Drug	7.35	1	7.35	.15	.700
	Age	260.42	1	260.42	5.32	.025
	Drug x Age	109.35	1	109.35	2.23	.141
	Error	2741.07	56	48.05	-	-
CBCLTE	Drug	2.02	1	2.02	.05	.828
	Age	212.82	1	212.82	5.04	.029
	Drug x Age	18.15	1	18.15	.43	.515
	Error	2363.87	56	42.21	-	-

Table 5

Analyses of Variance for Attributional Measures

	Source of Variation	SS	df	MS	F	p
CASQPI	Drug	.15	1	.15	.07	.793
	Age	1.35	1	1.35	.63	.431
	Drug x Age	8.82	1	8.82	4.11	.048
	Error	120.27	56	2.15	-	-
CASQPS	Drug	8.82	1	8.82	3.51	.066
	Age	.42	1	.42	.17	.685
	Drug x Age	.15	1	.15	.06	.808
	Error	140.80	56	2.51	-	-
CASQPG	Drug	.60	1	.60	.25	.617
	Age	3.27	1	3.27	1.38	.245
	Drug x Age	11.27	1	11.27	4.75	.034
	Error	132.80	56	2.37	-	-
CASQNI	Drug	.60	1	.60	.23	.631
	Age	1.07	1	1.07	.41	.523
	Drug x Age	1.67	1	1.67	.65	.425
	Error	144.27	56	2.58	-	-
CASQNS	Drug	.27	1	.27	.10	.749
	Age	8.07	1	8.07	3.14	.082
	Drug x Age	2.40	1	2.40	.93	.338
	Error	143.87	56	2.57	-	-
CASQNG	Drug	0.00	1	0.00	0.00	1.000
	Age	4.27	1	4.27	2.26	.138
	Drug x Age	.60	1	.60	.32	.575
	Error	105.73	56	1.89	435.04	-

Table 5 (continued)

Analyses of Variance for Attributional Measures

	Source of Variation	SS	df	MS	F	p
CASQCP	Drug	2.02	1	2.02	.17	.678
	Age	.42	1	.42	.04	.850
	Drug x Age	.02	1	.02	.001	.970
	Error	648.40	56	11.58	—	—
CASQCN	Drug	11.27	1	11.27	1.25	.268
	Age	29.40	1	29.40	3.26	.076
	Drug x Age	9.60	1	9.60	1.07	.306
	Error	504.67	56	9.01	—	—
CASQTCS	Drug	11.27	1	11.27	.47	.498
	Age	35.27	1	35.27	1.46	.232
	Drug x Age	2.40	1	2.40	.10	.754
	Error	1354.80	56	24.19	—	—

older subjects; 3) CBCLAG - younger subjects, as a whole, had significantly higher levels of aggression than older subjects; 4) CBCLTE - younger subjects, as a whole, had significantly higher levels of externalizing behavior than older subjects.

Significant drug x age interactions were found among the four experimental groups on five measures: social self-esteem (SSEI) [$F(1,56)=8.50$, $p=.005$], academic self-esteem (ASEI) [$F(1,56)=8.58$, $p=.005$], total self-esteem (TSEI) [$F(1,56)=4.10$, $p=.05$], positive internal attributional dimension (CASQPI) [$F(1,56)=4.11$, $p=.05$], and the positive global attributional dimension (CASQPG) [$F(1,56)=4.75$, $p=.03$]. No significant findings were found with respect to depression, impulsivity, home self-esteem, general self-esteem, nervous/overactive, or the other attributional variables.

Post hoc tests for simple effects were completed on all the ANOVAs with the following significant interactions:

- 1) SSEI [$F(1,56)=10.60$, $p=.002$] - There was a significant difference between the older non-medicated ($M=5.73$, $SD=1.71$) and medicated ($M=3.73$, $SD=1.16$) groups, but the difference between the younger medicated group ($M=5.07$, $SD=2.09$) and younger nonmedicated group ($M=4.53$, $SD=1.64$), [$F(1,56)=.75$, $p=.39$] was not significant, although it favoured the medicated group. The older non-medicated group had significantly higher social self-esteem than the older medicated group;
- 2) ASEI [$F(1,56)=13.23$, $p=.0006$] - There was a significant

difference between the younger medicated group ($M=5.53$, $SD=2.00$) and the younger non-medicated group ($M=3.13$, $SD=1.46$), but the older medicated group ($M=3.67$, $SD=1.50$) did not differ significantly from the older nonmedicated group ($M=4.00$, $SD=2.17$), [$F(1,56)=.26$, $p=.62$]. In the younger medicated group the subjects were significantly higher in academic self-esteem than the younger non-medicated group;

3) CASQPI - [$F(1,56)=2.62$, $p=.11$] - There were no significant differences between groups, but a disordinal interaction was found. As age increases the medicated subjects decrease internal attributions for positive events, whereas the non-medicated subjects increase internal attributions for positive events.

Correlations Between Measures

The Pearson product-moment correlations for age, length of time on medication and daily dosage indicate that length of time on medication and daily dosage (MEDTIME, $r=.84$, $p<.001$) were positively related (see Table 6). With respect to the psychological variables, length of time on medication correlated significantly with the positive globality dimension (CASQPG, $r=.28$, $p<.05$). Age was significantly correlated with the negative globality dimension (CASQNG, $r=.28$, $p<.05$), and significantly correlated in an inverse fashion with inattention (CBCLIN, $r=-.26$, $p<.05$), nervous/overactive (CBCLNO, $r=-.84$, $p<.001$) and aggression (CBCLAG, $r=-.26$, $p<.05$).

Table 6

Pearson Product-Moment Correlational Coefficients For Age,
Length of Time on Medication, Daily Dosage For All Variables

	AGE	MEDTIME	DAILY DOSAGE
AGE		.13	.04
MEDTIME			.84***
CDI	.15	.00	.06
GSEI	.06	.02	.07
SSEI	.07	-.20	-.21
HSEI	.24	-.01	-.08
ASEI	-.22	.17	.21
TSEI	.05	.00	.03
LSEI	-.11	-.11	-.02
CASQPI	-.02	.12	.02
CASQPS	.15	-.10	-.22
CASQPG	.22	.28*	.19
CASQNI	.11	-.00	.11
CASQNS	.20	.15	.10
CASQNG	.28*	.07	-.06
CASQCP	.15	.17	.02
CASQCN	.24	.22	.17
CASQTCS	-.07	.01	-.05
CTRS	-.12	-.11	-.07
CBCLIN	-.26*	-.11	-.01
** CBCLNO	-.84***	-.15	-.11
CBCLAG	-.26*	-.03	-.02
CBCLTE	-.24	-.05	-.04

Note: For a key to these variables see Table 2.

* $p < .05$, ** $p < .01$, *** $p < .001$.

** Nervous/Overactive variable applies to younger groups only

As expected, with regard to the entire sample, the self-esteem measures (GSEI, SSEI, HSEI, ASEI, TSEI) were negatively correlated with the depression measure (CDI) (see Table 7). The highest correlations were found with general self-esteem (GSEI, $r = -.64$, $p < .001$), total self-esteem (TSEI, $r = -.61$, $p < .001$) and home self-esteem (HSEI, $r = -.36$, $p < .01$). The lowest correlations were between depression and social self-esteem (SSEI, $r = -.31$, $p < .05$) and academic self-esteem (HSEI, $r = -.30$, $p < .05$). Table 7 also indicates that all self-esteem measures significantly positively correlated with each other. Total self-esteem (TSEI) was significantly correlated with all self-esteem scales (e.g., GSEI, $r = .88$, $p < .001$; HSEI, $r = .72$, $p < .001$). Also, home self-esteem was significantly correlated with both general ($r = .51$, $p < .001$) and social self-esteem ($r = .49$, $p < .001$), while social self-esteem was highly correlated with general self-esteem ($r = .43$, $p < .001$). Academic self-esteem correlated to a lesser degree to the other self-esteem measures and showed the lowest correlation with home self-esteem ($r = .16$).

The Pearson product-moment correlations between the depression and attributional measures indicate that depression (CDI) was negatively correlated with the positive internality dimension (CASQPI, $r = -.15$, $p < .05$), the positive stability dimension (CASQPS, $r = -.28$, $p < .05$), the positive globality dimension (CASQPG, $r = -.26$, $p < .05$), the positive composite score (CASQCP, $r = -.30$, $p < .05$), and the total

Table 7

Pearson Product-Moment Correlational Coefficients for Depression and Self-Esteem Variables For Entire Sample

	GSEI	SSEI	HSEI	ASEI	TSEI
CDI	-.64***	-.31*	-.36**	-.30*	-.61***
GSEI		.43***	.51***	.32**	.88***
SSEI			.49***	.28*	.69***
HSEI				.16	.72***
ASEI					.54***

Note: For a key to these variables see Table 2.

* $p < .05$, ** $p < .01$, *** $p < .001$.

composite score (CASQTCS, $r=-.42$, $p<.001$) for all subjects (see Table 8). The CDI measure was significantly correlated with the negative globality dimension (CASQNG, $r=.32$, $p<.05$) and the negative composite score (CASQCN, $r=.30$, $p<.05$).

Table 8 indicates the Pearson product-moment correlations for the variables of impulsivity, externalizing behavior and attributions for all subjects. Impulsivity (CTRS) significantly correlated with total externalizing behavior (CBCLTE, $r=.66$, $p<.001$). Table 9 indicates the Pearson product-moment correlations for impulsivity, inattention, aggression, and externalizing variables for all subjects and nervous/overactive for the two younger groups. Impulsivity (CTRS) significantly correlated with inattention (CBCLIN, $r=.49$, $p<.01$), aggression (CBCLAG, $r=.68$, $p<.001$), and total externalizing behavior (CBCLTE) as mentioned previously. Inattention (CBCLIN) significantly correlated with nervous/overactive (CBCLNO, $r=.31$, $p<.01$), aggression (CBCLAG, $r=.41$, $p<.001$), and total externalizing behavior (CBCLTE, $r=.60$, $p<.001$). Nervous/overactive (CBCLNO) also significantly correlated with aggression (CBCLAG, $r=.36$, $p<.01$) and total externalizing behavior (CBCLTE, $r=.91$, $p<.001$) for the younger groups.

Table 10 indicates the correlations for the self-esteem and attributional variables for all subjects. General self-esteem (GSEI) was significantly correlated with the attributions of positive stable (CASQPS, $r=.32$, $p<.01$),

Table 8

Pearson Product-Moment Correlational Coefficients for Depression, Impulsivity,
Externalizing Behavior and Attributional Variables For Entire Sample

	CTRS	CBCLTE	CASQPI	CASQPS	CASQPG	CASQNI	CASQNS	CASQNG	CASQCP	CASQCN	CASQTCS
CDI	.27*	.24	-.15	-.28*	-.26*	.23	.22	.32*	-.30*	.30*	-.42***
CTRS		.66***	.02	.11	-.13	.13	.05	-.05	-.00	.03	-.02
CBCLTE			-.01	-.00	-.19	.08	.05	-.16	-.08	-.06	-.04
CASQPI				.17	.25*	-.24	-.15	-.10	.68***	-.29*	.62***
CASQPS					.22	-.06	-.16	.08	.65***	-.13	.50***
CASQPG						-.07	-.22	.13	.71***	.00	.51***
CASQNI							.21	.12	-.15	.65***	-.51***
CASQNS								.16	-.24	.59***	-.62***
CASQNG									.06	.53***	-.33**
CASQCP										-.18	.79***
CASQCN											-.69***
CASQTCS											

Note: For a key to these variables see Table 2.

* $p < .05$, $p < .01$, *** $p < .001$.

Table 9

Pearson Product Moment Correlational Coefficients For Impulsivity,
Nervous/Overactive and Inattention For Entire Sample

	CBCLIN	CBCLNO	CBCLAG	CBCLTE
CTRS	.49**	.18	.68***	.66***
CBCLIN		.31**	.41***	.60***
CBCLNO			.36	.37**
CBCLAG				.91

Note: For a key to these variables see Table 2.

* $p < .05$, ** $p < .01$, *** $p < .001$.

** Nervous/Overactive variable applies to younger groups only

positive global (CASQPG, $r=.33$, $p<.01$), positive composite score (CASQCP, $r=.39$, $p<.01$), and total composite score (CASQTCS, $r=.44$, $p<.001$) and significantly inversely correlated with negative global (CASQNG, $r=-.30$, $p<.05$), and negative composite score (CASQCN, $r=-.28$, $p<.05$). Social self-esteem (SSEI) was significantly correlated with positive internal (CASQPI, $r=.47$, $p<.001$), positive composite score (CASQCP, $r=.37$, $p<.01$), and total composite score (CASQTCS, $r=.32$, $p<.01$). Home self-esteem (HSEI) was significantly correlated with positive stable (CASQPS, $r=.38$, $p<.01$) and positive composite score (CASQCP, $r=.32$, $p<.01$). Academic self-esteem (ASEI) was significantly correlated with positive internal (CASQPI, $r=.26$, $p<.05$) and total composite score (CASQTCS, $r=.25$, $p<.05$) and significantly inversely correlated with negative stable (CASQNS, $r=-.35$, $p<.01$), negative global (CASQNG, $r=-.31$, $p<.01$), negative composite score (CASQCN, $r=-.27$, $p<.05$), and total composite score (CASQTCS, $r=-.25$, $p<.05$). Total self-esteem (TSEI) was significantly correlated with positive internal (CASQPI, $r=.32$, $p<.01$), positive stable (CASQPS, $r=.29$, $p<.05$), positive global (CASQPG, $r=.25$, $p<.05$), positive composite score (CASQCP, $r=.40$, $p<.01$), and total composite score (CASQTCS, $r=.45$, $p<.001$). It was significantly inversely correlated with negative stable (CASQNS, $r=-.27$, $p<.05$) and negative composite score (CASQCN, $r=-.27$, $p<.05$).

Table 10

Pearson Product-Moment Correlational Coefficients For Self-Esteem
and Attributional Variables For Entire Sample

	CASQPI	CASQPS	CASQPG	CASQNI	CASQNS	CASQNG	CASQCP	CASQCN	CASQTCS
GSEI	.18	.32**	.33**	-.09	-.22	-.30*	.39**	-.28*	.44***
SSEI	.47***	.23	.10	.08	-.13	-.08	.37**	-.09	.32**
HSEI	.15	.38**	.15	.10	-.16	.08	.32**	-.07	.23
ASEI	.26*	-.11	-.05	-.11	-.35**	-.31**	.04	-.27*	.25*
TSEI	.32**	.29*	.25*	-.03	-.27*	-.27*	.40**	-.27*	.45***

Note: For a key to these variables see Table 2.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Clinical Observations

Clinical observations during testing did not ascertain any discrete differences between the medicated and non-medicated subjects in terms of attentional levels, hyperactive behaviors or impulsivity. Although all subjects willingly cooperated in the study, 19 (32%) older subjects, regardless of medication, appeared uncomfortable and more guarded about the testing experience than the younger subjects. They generally avoided eye contact and extraneous conversation with the tester and appeared anxious to complete the testing as quickly as possible. Of these 19 subjects only 2 were attending regular classrooms.

Three (5%) of the 60 subjects displayed overt symptoms of depression (i.e., sad affect, statements about personal worthlessness, slow speech) and subsequently scored above the cutoff score of 19 on the CDI, indicating clinical levels of depression. Many of the subjects appeared to have difficulty reading the material (i.e., reading aloud, slow rate, unable to comprehend words and content) which resulted in 36 (60%) subjects having all tests read out to them by the examiner. None of the subjects reported hearing or vision deficits or speech impediments.

CHAPTER FIVE

DISCUSSION

The purpose of this study was to: 1) explore the nature of depression and self-esteem in males diagnosed with Attention-deficit Hyperactivity Disorder who are non-medicated as compared to ADHD males receiving stimulant medication; 2) examine whether or not those ADHD subjects reporting depression experience a depressive attributional style; 3) determine how and to what extent depression, attributional style and self-esteem are manifested in two age groups; and, 4) explore medication effects with respect to teacher-reported levels of externalizing behaviors (i.e., impulsivity, inattention, nervousness/overactivity, and aggression). In this chapter the significant and nonsignificant differences among the four experimental groups and the correlational analysis results will be summarized and interpreted with respect to both the sociodemographic and psychological measures. Lastly, the limitations of this study and the recommendations for future research will be discussed.

Hypotheses

The following hypotheses were found to be true:

2. Both younger medicated and non-medicated groups will have higher self-esteem and lower levels of depression than both the older medicated and non-medicated groups;

6. The older medicated group will display lower levels of inattention, impulsivity and aggression than the older non-medicated group and both younger groups.

The following hypotheses were found to be false:

1. The younger medicated group will have higher self-esteem and less depression than the younger non-medicated group;
3. The older medicated group will have higher self-esteem and less depression than the older non-medicated group;
4. The younger medicated group and the older non-medicated group will display a depressive attributional style as compared to the two older groups;
5. The younger non-medicated group will display higher levels of impulsivity, inattention, nervousness/overactivity, and aggressiveness than the younger medicated group.

Sociodemographic Variables

The mean daily dosage reported by the older medicated group was 41.33 milligrams which is approximately 9 milligrams more than the mean daily dosage (32 mg.) reported by the younger medicated group. Hechtman's (1985) review of ADHD drug studies indicates that standard daily doses of methylphenidate range from 20 to 50 milligrams per day with 30 milligrams as the most frequently reported mean dose. A number of studies have demonstrated that a 0.3 mg/kg dose of methylphenidate produces optimal performance in memory, concentration and impulse control, and that high doses

(i.e., 1.0 mg/kg) are detrimental to the learning of cognitive tasks (e.g., Brown, Slimmer, & Wynne, 1984). With these figures in mind, boys, aged 6 to 16 years, ranging in average weight from 28 kilograms (60 pounds) to 73 kilograms (160 pounds) should have daily doses not exceeding 25 milligrams to ensure optimal cognitive performance. At 32.00 milligrams for the younger subjects and 41.33 milligrams for the older subjects, it would appear that the mean daily doses of methylphenidate prescribed in this study exceed the maximum recommended by the research.

Although drug responsiveness is variable and each child must be treated as a unique individual when the physician is prescribing dosage levels, it seems that a number of subjects in this study are being prescribed methylphenidate at a far higher dosage than is necessary or optimum. With drug therapy widely accepted and practiced with this population, it appears that some practitioners advocating the use of medication as the most effective intervention do not seem to be cognizant of the limitations of psychopharmacologic interventions and the potentially dangerous effects of overprescribing methylphenidate. Further, the reported side effects of methylphenidate use may in some cases be a consequence of too much medication and should be carefully controlled against.

That 39 of 60 subjects (65%) were in either special education classes within regular schools or special

education schools as a result of their ADHD diagnosis and secondary learning difficulties concurs with previous studies (i.e., Fisher, Burd, Kuna, & Berg, 1985; Nichamin & Windell, 1985; Lubar, 1985) which have found that ADHD is often accompanied by academic difficulties and specific learning disabilities. Although this study was not conducted to gather information regarding learning deficits or specific reasons for placement in special education settings, a question arises about whether or not the attentional difficulties displayed by at least some of these subjects were a direct or even indirect result of a specific learning deficit. Children who are given inappropriate instructional material and who are having difficulty keeping up with their classmates due to learning problems tend to display off-task behaviors and attentional problems (Meents, 1989), and all too often are quickly labelled ADHD by practitioners and educators alike. Thus, the learning disability which may have caused the attentional deficit to begin with becomes secondary to the ADHD diagnosis which becomes the primary focus of treatment. Because their behavior is often difficult for a regular classroom teacher to manage and they usually fall behind their classmates academically, many ADHD children are placed in special education settings. Certainly, in these settings their learning disabilities are addressed, but the ADHD label is still the central concern. It is imperative for

professionals to always look beyond the off-task and inattentive behaviors when initially assessing children. A thorough exploration of possible learning deficits, teaching styles, classroom environments, life stressors, and familial relationships is crucial before an accurate diagnosis of ADHD can be given.

Psychological Measures

Depression scores on the CDI did not generate significant results amongst the four experimental groups and indicate that neither medication nor age had any effect on the prevalence or severity of depression in this sample. Mean scores on the CDI ranged from 10.47 for the younger non-medicated group, 11.13 for the younger medicated group, 11.60 for the older non-medicated group, to 13.07 for the older medicated group. A criticism of the CDI is that no strict guidelines prevail for judging severity of depression relative to CDI score. According to Kovacs (1981), a cutoff score of 19 on the CDI indicates severe depression and places the subject in the ninethieth percentile in the normative sample. Lobovitz and Handal (1985) classified children with a cut-off score of 12 (one half standard deviation above the mean) on the CDI as moderately depressed in their study, while Cantwell and Carlson (1980) found that a cutoff score of 10 on the CDI discriminated major depressive disorders from other types of childhood psychopathology. Brown, Borden, Clingerman, & Jenkins

(1988) examined depression in ADHD children by comparing clinically referred children diagnosed with ADHD to a normal control group using the CDI and found the mean score for the control group was 6.41, while the ADHD group's mean score was 11.22. Therefore, all four experimental groups in this study could be classified as displaying at least mild levels of depression based upon the above cut-off and mean scores (i.e., 10 to 19) which concurs with previous studies indicating that ADHD children experience more depression than normal children (e.g., Cantwell, 1975; Lahey et al., 1984; Bohline, 1985; Brown et al., 1988). It seems that Bohline (1985) may be correct when he states that the "tendency toward showing depressive features would seem to be more of a general proclivity of the entire ADHD group, as opposed to registering the affective extremes of a relative few" (p. 607).

The above statements regarding depression are not conclusive based on the fact that the subjects selected for this study could not be initially assessed to ensure that none of them met diagnostic criteria for major depression, dysthymic disorder, or adjustment disorder with depressed mood. Inclusion of subjects with one of these diagnoses into the experimental groups would certainly cloud the overall results. Further, use of self-reports, such as the CDI, have been criticized in that they may be measuring what the child experienced in his/her life that particular day

rather than a more stable behavioral pattern (Clarizio, 1984). Also, some subjects may have had insufficient experiential and/or cognitive maturity to accurately rate the "frequency, severity, and duration of such depressive symptoms as self-regard, sleep disturbances, sad looks, or withdrawn posturing" as required on the CDI (Clarizio, 1984, p. 187). Lastly, although the CDI quantifies severity of depressive complaints, it may not be the best instrument for diagnosing the presence or absence of depressive disorders (Clarizio, 1984; Seligman, et al., 1984). Combining the CDI with parent and/or teacher ratings of depression may have been a more useful method for assessing depressive levels with these ADHD subgroups.

With respect to social self-esteem (SSEI), the finding that the older non-medicated group scored significantly higher than the older medicated group indicates that the latter group perceives a lack of necessary social skills and peer relationships, and that psychopharmacologic intervention does not appear to ameliorate and may, in fact, exacerbate the development of healthy social interactions. Peer relationships help children learn to get along with age-mates, acquire appropriate social attitudes and roles, develop sensitivity to cultural values, and arrive at a level of personal independence. Children's peer contacts markedly influence their ability to attain sociability and achieve normality by avoiding behavior that might be

labelled aberrant or eccentric (Havighurst & Neugarten, 1975). Stimulant medication for ADHD may decrease activity and distractibility levels, reduce off-task behaviors, and increase compliance to parental and teacher directives (Barkley, 1981) but has little or no effect on sustained attention or stimulus processing. The lack of or immaturity of these cognitive functions affects social relationships because successful social interactions require both the in-depth processing of relevant stimuli and simultaneous monitoring of several informational sources (e.g., partner, contextual, and self-produced stimulus sources), followed by the selection and emission of an appropriate social strategy (Argyle, 1972; cited in Hoy, Weiss, Minde, & Cohen, 1978). "Failure to monitor continually the effect of one's behavior on others, or to process existing social rules and implicit conventions would produce immature and aberrant social behaviors" (Hoy et al., 1978, p. 323), which in turn leads to rejection by peers, especially adolescents, and a subsequent loss of self-esteem. Although ADHD children must cope with the lack of healthy, adequate social contacts due in part to sustained attention and stimulus processing deficits, medicated ADHD adolescents unfortunately have to also cope with the social stigma and the concomitant self-stigma of taking medication.

Medication also had a complex significant effect on academic self-esteem (ASEI) in that the younger medicated

group had significantly higher academic self-esteem than the younger non-medicated group. Conversely, the older medicated group had lower, although not significantly, academic self-esteem than the older non-medicated group. It may be that initially the use of stimulant medication helps the ADHD child to focus and inhibit off-task behaviors enough to perform better in a classroom setting than non-medicated ADHD children. However, studies suggest that as the child ages the debilitating cognitive and affective effects of ADHD seem to overtake the positive effects of stimulant treatment and academic achievement decreases to the point where most ADHD adolescents, regardless of medication treatment, are at least two grade levels behind in core subjects, have great pessimism about future goals and low aspirations for vocational success (Conners, 1985; Hechtman, 1985). Even though the older medicated adolescents had a mean length of time on medication of 3.6 years, it appears that the earlier onset of and/or the long term administration of stimulant treatment do not have a positive effect on later academic achievement.

Another possible explanation regarding the relationship between stimulant medication and both social and academic self-esteem pertains to the fact that significant others, including parents and teachers, perceive medicated ADHD males as better able to regulate aberrant behavior and control emotions and, in turn, be more accepted by peers and

be able to develop healthy social relations. In other words, significant adults believe that medication should normalize ADHD children's behaviors and decrease the need for adjunctive therapies such as social skills training or cognitive behavioral therapy. Accordingly, Cohen and Thompson (1982) purport that previous studies examining stimulant medication effects with this population generally relied on soliciting the judgements of significant adults who assumed that if they perceived positive changes in the child's behavior than these changes would also be perceived by the child. Instead, Cohen and Thompson found that older ADHD children did not agree with their mother's perceptions regarding the effects of stimulant medication and were less optimistic about its long term benefits. Although parents' perceptions regarding drug effects were not solicited in this current study, one could surmise that they believe that drug therapy is alleviating their children's difficulties and are unaware that medication is not fostering and may even be deleterious to the development of healthy social and academic self-esteem.

An interesting study was conducted by Hinshaw, Henker, and Whalen (1984) who studied the comparative and combined effects of cognitive behavioral and psychopharmacologic interventions with ADHD boys and found that methylphenidate significantly enhanced the accuracy of the participants' self-evaluations. With this in mind one could hypothesize

that the older medicated group may have reported lower academic and social self-esteem due to the fact that the stimulant medication heightened their ability to accurately self-evaluate as compared to the non-medicated group and that the non-medicated ADHD children could be experiencing the same low levels of self-esteem but are inaccurate in their reporting.

With respect to total self-esteem (TSEI), significant results were not demonstrated among the four experimental groups. Mean scores do indicate that these four ADHD subgroups were generally lower in overall self-esteem than normal controls (e.g., Rosenberg & Gaier, 1977; Roberson & Miller, 1986). Means for the TSEI range from 70 to 80 with an approximate standard deviation of 11 and are negatively skewed in the direction of high self-esteem (Coopersmith, 1986). The older non-medicated group had the highest TSEI mean score ($M=62.13$, $SD=17.67$), while the older medicated group scored the lowest ($M=52.93$, $SD=8.65$), with the two younger groups falling within these mean scores. The relatively low score for the older medicated group suggests that this group, as a whole, is more affected by having to take medication in terms of how they evaluate their overall attitudes towards the self.

This finding is interesting in light of the fact that the older medicated ADHD males also reported the highest levels of depression and lowest levels of academic and

social self-esteem amongst the four groups. These findings appear to support the validity of a concomitant demoralization syndrome in at least those ADHD adolescents being treated with stimulant medication and may even apply to the majority of ADHD adolescents. The activity level of ADHD children generally decreases during adolescence but attentional, educational, and social difficulties continue. Perhaps, the repeated experience of being unable to fit in socially and academically, the increased awareness of their differences from other children, and their maturing cognitive schematas combine to reduce the intensity and diffuseness of their hyperactive and aggressive behaviors while increasing the likelihood of depression, low self-esteem and discouragement. Numerous studies have shown that demoralization is a common syndrome in older children and adults suffering from a variety of psychopathology (e.g., Cantwell & Carlson, 1980) and would appear to apply in the case of older ADHD children.

The results of this study also show that high self-esteem subjects tended to attribute positive events to internal causes and negative events to external causes while low self-esteem (depressed) individuals made internal attributions for negative events, supporting the results of Fitch (1970), Ickes and Layden (1978), and Tennen and Herzberger (1987). Seligman and Peterson's (1986) study is also validated and confirms that as depression increases and

self-esteem decreases a depressive attributional style develops. However, these results do not prove that attributing failure to self leads to loss of self-esteem.

The disordinal interaction for the positive internality dimension was significant in that as age increases the medicated subjects decrease internal attributions for positive events, whereas the non-medicated subjects increase internal attributions for positive events. It seems that the longer ADHD children are medicated the less they perceive internal control over positive events occurring in their lives. Perhaps, the combination of stimulant medication use, or for that matter any medication prescribed on a continual basis, having others control treatment, and being told that medication will increase self-control and self-regulatory abilities contributes to ADHD children developing feelings of external locus of control for at least positive events which would seem to fit with regard to the demoralization syndrome. In other words, older medicated ADHD males may be more demoralized by their disorder than other ADHD subgroups so much so that they cannot perceive that when good things happen it may be due to some internal attribute. When a positive event occurs with an older medicated ADHD child he may believe that it is due to forces external to the self.

Further, Dulcan (1986) posits that ADHD children on stimulant medication would eventually tend to attribute

their problems to physiological causes rather than social or personal problems and attribute behavior change to the medication or to physiological causes. They may feel that they have little or no impact on their own difficulties and are simply a victim of their "disease", and this may be the case with the older medicated ADHD male. Whalen and Henker (1980) also provide evidence to illustrate the potential negative expectancy a child can develop regarding his ability to control his own behavior without medication once such medication has been given and its intended effects described. Matters are further complicated by the fact that medicated children are often reacted to in different and confusing ways by parents, teachers, siblings, and peers who have differing amounts of understanding and expectancies regarding the medicated child.

The disparity between the younger and older ADHD subgroups with regard to depression and self-esteem may be due in part to varying levels of cognitive maturity. Developmental variations in cognitive structures cause children to employ different strategies to interpret, express and defend against their affective states depending upon their age. Cognitive development appears to play a significant role in how children manifest depressive symptoms and low self-esteem, and in order to feel depressed and helpless a child must be able to correctly formulate expectations and understand the concept of the future, be

able to perceive how others think and feel and have a self representation. Thus, it may be that the younger ADHD children have not developed the cognitive capacity to experience and subsequently describe feelings of depression, low self-esteem or even helplessness (Cicchetti, & Schneider-Rosen, (1984).

Also, it may be that initially younger ADHD children may not experience a great deal of negative feedback or lack of successes in academic and social settings. Also, to keep school tolerable and interesting they often adopt the role of the class clown which appeals to classmates, along with their unpredictability and freshness. In other words, their negative behaviors may be tolerated and even condoned by peers. However, the cumulative effects of punishment, failure, rejection and not fitting in take their toll, and the adolescent ADHD child begins to manifest depressive symptoms and low self-esteem as a result of these experiences.

With respect to the correlations between attributions and depression, the results suggest that as the level of depression increases, ADHD males, regardless of age or medication, tend to attribute positive events to external, unstable and specific causes, and negative events to internal, stable and global. Conversely, as the level of depression decreases, ADHD males tend to attribute negative events to external, unstable and specific causes and

positive events to internal, stable and global causes. Although the relationship between depression and negative internal and stable attributions was not as significant as the relationship between depression and negative global attributions, the negative composite score was significantly correlated with depression. The significant relationship between depression and attributional style in this study concurs with other studies investigating the validity of the reformulated learned helplessness model of depression with children (e.g., Seligman et al., 1984; Kaslow, Rhem, & Siegel, 1984; Seligman & Peterson, 1986).

With respect to externalizing behaviors, the younger subjects, as a whole, had significantly higher levels of externalizing behaviors (i.e., inattention, aggression) than the older subjects which concurs with previous studies (Barkley, 1981; Kendall & Braswell, 1985). Younger children often exhibit the more obvious external symptoms of ADHD, including overactivity, impulsivity, aggressiveness, and distractibility, but in adolescence a major shift occurs in that externalizing behaviors such as restlessness, aggression, and distractibility diminish and difficulties associated with social behavior and interpersonal relationships emerge (Weiss, 1985). However, what is surprising in this study is that when analyzing the results of the teacher-reported levels of externalizing behaviors there was no significant difference between the medicated

and non-medicated groups, regardless of age, even though methylphenidate is purported to significantly decrease the externalizing behaviors of impulsivity, distractibility, and gross motor movement. Why is it then that teachers are not reporting that medicated ADHD children have significantly lower levels of externalizing behaviors?

In response to this question, it may be that the rating scales employed in this study have poor reliability due to fallible human judgement and the fact that each subject's classroom teacher rated their particular student's behavior instead of a single tester for all the students, thus decreasing the overall reliability. In other words, different results may have been obtained if another person had completed the ratings, or if they had been completed at another time. Further, Kendall and Braswell (1985) suggest that, when raters are trained mental health professionals or when multiple raters are employed, ADHD children's levels of externalizing behaviors tend to be lower than those produced in studies using teachers as raters.

Also, Schachar, Sandberg and Rutter (1986) noted that displays of defiance toward a teacher increased the likelihood that a child would be rated as hyperactive or inattentive regardless of his observed level of activity or attentiveness. Children who had poor relationships (i.e., frequent negative interactions and infrequent positive interactions with peers and teachers) resulted in higher

ratings of hyperactivity irrespective of observed hyperactivity. They contend that a child's defiance and disobedience toward a teacher are significant causes of misclassification and inaccurate assessments of behavior when using teacher ratings, and that these higher ratings for negative externalizing behaviors are evidence of a halo effect of difficult relationships with teachers. Also, Dulcan (1986) suggests that teachers form an impression of a student within the first few weeks of school which will be relatively unchangeable in the course of the year. Therefore, if the child required medication at some point after the beginning of school, the medication would not significantly affect the teacher's rating of the child's deviant behaviors.

Another factor which needs to be addressed pertains to the significantly higher levels of aggression reported with the younger subjects as a whole. In the past, few practitioners had adequately distinguished between hyperactive and aggressive dimensions of behaviors. In 1983 August, Stewart, and Holmes showed that aggression during childhood predisposed hyperactive children to conduct disorders in early adolescence, but that the symptoms of hyperactivity without aggression predicted continued inattention and impulsivity, not necessarily antisocial behavior. McGee, Williams, and Silva (1985) suggested that it is relevant to identify children with pure and mixed

forms of a disorder such as pure hyperactivity without conduct disorder or conduct disorder with or without hyperactive behavior at an early age. They also argued that, although inattention represents the core dysfunction in ADHD, inattention, hyperactivity, and antisocial behaviors should be regarded as at least partially independent dimensions.

Hinshaw (1987) argues that research provides support for the separation of hyperactive, aggressive, and aggressive-hyperactive subgroups of children and that appropriate assessment strategies specifically targeting these subgroups must be implemented. He also contends that much of the extant validation research on ADHD and conduct problems is inconclusive owing to the contaminated nature of samples that have been selected. With regard to the current study, the subjects chosen had been previously diagnosed as ADHD by health care practitioners and were not assessed for sample suitability with respect to possible diagnoses of conduct disorder. Thus, it may be the case that some of these subjects are not attention disordered children in the purest sense and may, instead, display a combination of behaviors appropriate for either conduct disorder or ADHD. Finally, Hinshaw suggests that longitudinal studies with clearly defined contrast groups should be employed for ascertaining the ultimate validity of narrow-band externalizing dimensions (i.e., aggression, inattention,

nervous/overactive) and that much more information needs to be gathered about the nature of the putative category of Attention-deficit Hyperactivity Disorder.

Limitations of Study and Future Recommendations

There are limitations to this study which should be discussed as follows. First, it would have been useful to include teacher and/or parent ratings of depression so as to compare significant others' ratings for each experimental group with the self-reports. This method would have also helped to gain a better perspective of exactly how and to what extent depression is manifested in these four ADHD subgroups. Second, it was impossible to control for the use of medication and/or whether or not subjects had taken their daily dosage during the testing period. Thus, it was also impossible to accurately discern whether or not symptomatology was due to the use of or absence of medication and/or possible side effects during testing. Third, it would have been interesting to include placement in special education classes as a sociodemographic variable in order to examine what effect placement had on the psychological variables. Fourth, a larger sample size would have been more statistically sound even though 15 subjects per group is sufficient to avoid Type II error 80% of the time when the Type I error rate is fixed at .05, assuming an effect size of .5 (Bartko et al., 1988). Lastly, one must keep in mind that, regardless of this study's research

findings, there is a high level of variability in the behavior of adolescents as a whole. Thus, it is often difficult to differentiate those behaviors and emotions that are a function of ADHD, medication, or even contributed to other factors such as hormones, individuation struggles and rebellion against authority.

With regard to the above mentioned limitations, future studies could control for drug use and possibly test for side effects before inclusion in study to decrease the likelihood that existing symptomatology may be influenced by pharmacogenic effects. Also, the relationship between learning disabilities and ADHD subgroups, such as medicated adolescents, would be a viable research area in order to understand how dual diagnosis affects this population; how effective special education placements are; and how to develop and implement appropriate interventions.

Future studies could also do 6 week, 3 month, 6 month, or even 1 year follow-up assessments to evaluate whether depression, attributional style and self-esteem were stable over time for each subgroup. A study such as this could also be done on a longitudinal basis which would gather a significant amount of information about the differences between these ADHD subgroups. Also, studies which examine the correlates of clinical entities, such as depression, are generally unable to gain knowledge about the directionality of the variables involved. In other words, which comes

first - the depressive attributional style or the depression? Does low self-esteem cause depression or vice versa? Is there a reciprocal interaction between low self-esteem and depression? Longitudinal studies would help in gathering important and relevant information regarding directionality.

Specific treatment programs could be applied with these subgroups to help improve depressive levels and self-esteem. An example of an adjunctive intervention appropriate for ADHD children, especially with medication treatment, is the cognitive behavioral procedure of reinforced self-evaluation (RES) (Hinshaw et al., 1984). RES is based on training ADHD children self-instructional procedures to academic tasks, anger control in peer provocation situations and self-evaluation techniques. It has been found to, not only suppress negative social behavior, but also to significantly enhance cooperation and other appropriate social interactions. Hinshaw et al. contend that making ADHD children active participants in evaluating their behavior enhances treatment outcomes and ameliorates both social and overall self-esteem.

Ziegler (1988) has developed a child and family therapy model for children with learning disabilities and ADHD who are vulnerable to low self-esteem, poor self-control, and low frustration tolerance. This model focuses on both the child's developmental problems, the family's organizational

structure and attitudinal biases. Families are initially assessed to determine the family type (i.e., fragile, healthy, disorganized, split, and blaming), and strategies involving family/parent and child work and treatment plans are then implemented based on the family type. Within a psychotherapeutic-educational framework the child and parents are taught to distinguish the impact of learning disabilities, medication use and attentional deficits from each child's emotional reactions and other aspects of his/her personality. This therapeutic model has been successful in alleviating the demoralizing symptoms of both learning disabilities and ADHD which all too often go hand in hand.

Any treatment modality applying cognitive-behavioral techniques with this population should consider attributional style since the explanations children generate for the events and behavior they anticipate or observe may be a variable that moderates their behavior and the potential treatment effects. Children who attribute behavior change to luck, fate, chance, or anything external to themselves will be less likely to show generalization of the improvement than children who attribute their behavioral improvement to personal effort. For example, if an ADHD child firmly believes that his better self-controlled behavior is the direct result of taking medication, he may not even attempt to display self-control when not receiving

medication. Those ADHD children who are not medicated or who have a strong sense of personal control would benefit more from self-control intervention than from a social reinforcement program.

It may also be useful to place those children who are reporting depression and low self-esteem on anti-depressant medication instead of methylphenidate, considering that research indicates that tricyclics appear superior to stimulant medication in ameliorating mood disturbance symptoms (Cantwell, 1975; Pliszka, 1987). Because there have been reported cases of ADHD children experiencing depression as a result of methylphenidate use, it may also be appropriate to discontinue or at least decrease the daily dosage. Regardless of the type of medication regimen prescribed, it is essential that practitioners closely monitor the child's behavior and affective state to ensure that the use of medication proves positive for the child in all respects.

Summary and Conclusions

The purpose of this study was to: 1) explore the nature of depression and self-esteem in males diagnosed with Attention-deficit Hyperactivity Disorder who are medicated as compared to non-medicated ADHD males; 2) examine whether or not those subjects reporting depression experience a concomitant depressive attributional style; 3) determine how and to what extent depression, attributional style and

self-esteem are manifested in two distinct age groups; and, 4) explore medication effects with respect to teacher-reported levels of externalizing behaviors (i.e., impulsivity, nervousness/overactivity, inattention, and aggression).

Results indicated that younger ADHD males, regardless of medication, had significantly higher teacher-reported levels of inattentive, aggressive and externalizing behaviors than older ADHD males. Also, older medicated ADHD males had significantly lower levels of social self-esteem than the other subgroups, but younger medicated ADHD males had significantly higher academic self-esteem than younger non-medicated ADHD males. Results also suggest that as age increased medicated subjects decreased internal attributions for positive events, whereas non-medicated subjects increased internal attributions for positive events. Empirical evidence was found to support the validity of both the reformulated learned helplessness model of depression and the demoralization syndrome, especially with medicated ADHD adolescents. Overall results indicate that ADHD is displayed differentially across age and is consistent with a developmental perspective which predicts varying behavioral manifestations of the phenomenon at different ages.

It would appear that, contrary to popular opinion, psychopharmacologic treatment for ADHD children may not be

the panacea it has been touted as, especially for adolescents, and may in fact hamper the development of positive academic and social self-esteem, contribute to feelings of depression, and foster the development of a depressive attributional style. No matter how successful stimulant medication supposedly may be in reducing ADHD symptomatology it has little positive effect on ADHD children's subsequent emotional and social adjustment in adolescence. Further, short-term treatments aimed at one or two of the more salient aspects of this disorder are not useful. Treatment modalities that address the complexity and pervasiveness of ADHD would be far more appropriate and may, ultimately, improve ADHD children's affective states and overall self-concept. As Brown et al. (1988) conclude, ADHD is not a unitary behavioral dimension but a complex constellation of a number of related symptoms, and multitrait/multimethod assessment techniques and interventions must be applied with this population.

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Appendix A - Children's Depression Inventory

INVENTORY

STUDENT NAME: _____

AGE: _____

HOME PHONE NUMBER: _____

SEX: MALE _____ FEMALE _____

KIDS SOMETIMES HAVE DIFFERENT FEELINGS AND IDEAS. THIS FORM
LISTS THE FEELINGS AND IDEAS IN GROUPS. FROM EACH GROUP, PICK ONE
SENTENCE THAT DESCRIBES YOU BEST FOR THE PAST TWO WEEKS.

THERE ARE NO RIGHT OT WRONG ANSWERS. JUST PICK THE SENTENCE
THAT BEST DESCRIBES THE WAY YOU HAVE BEEN RECENTLY. PUT AN X NEXT
TO YOUR ANSWER.

Pick out the sentence that describes your feelings and ideas in the past two weeks, and mark an X on the line beside that sentence.

-
1. ☐ I am sad once in a while
 ☐ I am sad many times
 ☐ I am sad all the time
 2. ☐ Nothing will ever work out for me
 ☐ I am not sure if things will work out for me
 ☐ Things will work out for me O.K.
 3. ☐ I do most things O.K.
 ☐ I do many things wrong
 ☐ I do everything wrong
 4. ☐ I have fun in many things
 ☐ I have fun in some things
 ☐ Nothing is fun at all
 5. ☐ I am bad all the time
 ☐ I am bad many times
 ☐ I am bad once in a while
 6. ☐ I think about bad things happening to me once in a while
 ☐ I worry that bad things will happen to me
 ☐ I am sure that terrible things will happen to me
 7. ☐ I hate myself
 ☐ I do not like myself
 ☐ I like myself
 8. ☐ All bad things are my fault
 ☐ Many bad things are my fault
 ☐ Bad things are not usually my fault
 10. ☐ I feel like crying every day
 ☐ I feel like crying many days
 ☐ I feel like crying once in a while
 11. ☐ Things bother me all the time
 ☐ Things bother me many times
 ☐ Things bother me once in a while
 12. ☐ I like being with people
 ☐ I do not like being with people many times
 ☐ I do not want to be with people at all

13. ☐ I cannot make up my mind about things
☐ It is hard to make up my mind about things
☐ I make up my mind about things easily
14. ☐ I look O.K.
☐ There are some bad things about my looks
☐ I look ugly
15. ☐ I have to push myself all the time to do my school work
☐ I have to push myself many times to do my school work
☐ Doing school work is not a big problem

Remember, describe how you have been in the past two weeks.

16. ☐ I have trouble sleeping every night
☐ I have trouble sleeping many nights
☐ I sleep pretty well
17. ☐ I am tired once in a while
☐ I am tired many days
☐ I am tired all the time
18. ☐ Most days I do not feel like eating
☐ Many days I do not feel like eating
☐ I eat pretty well
19. ☐ I do not worry about aches and pains
☐ I worry about aches and pains many times
☐ I worry about aches and pains all the time
20. ☐ I do not feel alone
☐ I feel alone many times
☐ I feel alone all the time
21. ☐ I never have fun at school
☐ I have fun at school only once in a while
☐ I have fun at school many times
22. ☐ I have plenty of friends
☐ I have some friends but I wish I had more
☐ I do not have any friends
23. ☐ My school work is alright
☐ My school work is not as good as before
☐ I do very badly in subjects I used to be good in
24. ☐ I can never be as good as other kids
☐ I can be as good as other kids if I want to
☐ I am just as good as other kids
25. ☐ Nobody really loves me

- _____ I am not sure if anybody loves me
_____ I am sure that somebody loves me
26. _____ I usually do what I am told
_____ I do not do what I am told most times
_____ I never do what I am told
27. _____ I get along with people
_____ I get into fights many times
_____ I get into fights all the time

The End

Thank you for filling out this form

Appendix B:

Children's Attributional Style Questionnaire

1. You get an 'A' on a test:
A. I am smart.
B. I am good in the subject that the test was in.
2. You play a game with some friends and you win:
A. The people that I played with did not play the game well.
B. I play that game well.
3. You spend a night at a friend's house and you have a good time:
A. My friend was in a friendly mood that night.
B. Everyone in my friend's family was in a friendly mood that night.
4. You go on a vacation with a group of people and you have fun:
A. I was in a good mood.
B. The people I was with were in a good mood.
5. All of your friends catch a cold except you:
A. I have been healthy lately.
B. I am a healthy person.
6. Your pet gets run over by a car:
A. I don't take good care of my pets.
B. Drivers are not cautious enough.
7. Some kids that you know say that they do not like you:
A. Once in a while people are mean to me.
B. Once in a while I am mean to other people.
8. You get very good grades:
A. School work is simple.
B. I am a hard worker.
9. You meet a friend and your friend tells that you look nice:
A. My friend felt like praising the way people looked that day.
B. Usually my friend praises the way people look.
10. A good friend tells you that he hates you:
A. My friend was in a bad mood that day.
B. I wasn't nice to my friend that day.
11. You tell a joke and no one laughs:
A. I do not tell jokes well.
B. The joke is so well known that it is no longer funny.

12. Your teacher gives a lesson and you do not understand it:
 - A. I didn't pay attention to anything that day.
 - B. I didn't pay attention when my teacher was talking.
13. You fail a test:
 - A. My teacher makes hard tests.
 - B. The past few weeks my teacher has made hard tests.
14. You gain a lot of weight and start to look fat:
 - A. The food that I have to eat is fattening.
 - B. I like fattening foods.
15. A person steals money from you:
 - A. That person is dishonest.
 - B. People are dishonest.
16. Your parents praise something that you make:
 - A. I am good at making some things.
 - B. My parents like some things I make.
17. You play a game and you win money:
 - A. I am a lucky person.
 - B. I am lucky when I play games.
18. You almost drown when swimming in a river:
 - A. I am not a very cautious person.
 - B. Some days I am not a cautious person.
19. You are invited to a lot of parties:
 - A. A lot of people have been acting friendly toward me lately.
 - B. I have been acting friendly toward a lot of people lately.
20. A grownup yells at you:
 - A. That person yelled at the first person he saw.
 - B. That person yelled at a lot of people lately.
21. You do a project with a group of kids and it turns out badly:
 - A. I don't work well with the people in the group.
 - B. I never work well with a group.
22. You make a new friend:
 - A. I am a nice person.
 - B. The people that I meet are nice.
23. You have been getting along well with your family:
 - A. I am easy to get along with when I am with my family.
 - B. Once in a while I am easy to get along with when I am with my family.

24. You try to sell candy, but no one will buy any:
A. Lately a lot of children are selling things, so people don't want to buy anything else from children.
B. People don't like to buy things from children.
25. You play a game and you win:
A. Sometimes I try as hard as I can at games.
B. Sometimes I try as hard as I can.
26. You get a bad grade in school:
A. I am stupid.
B. Teachers are unfair graders.
27. You walk into a door and you get a bloody nose:
A. I wasn't looking where I was going.
B. I have been careless lately.
28. You miss the ball and your team loses the game:
A. I didn't try hard while playing ball that day.
B. I usually do not try hard when I am playing ball.
29. You twist your ankle in gym class:
A. The past few weeks the sports we played in gym class have been dangerous.
B. The past few weeks I have been clumsy in gym class.
30. Your parents take you to the beach and you have a good time:
A. Everything at the beach was nice that day.
B. The weather at the beach was nice that day.
31. You take a train which arrives so late that you miss a movie:
A. The past few weeks there have been problems with the train being on time.
B. The trains are almost never on time.
32. Your mother makes you your favorite dinner:
A. There are a few things that my mother will do to please me.
B. My mother likes to please me.
33. A team that you are on loses a game:
A. The team members don't play well together.
B. That day the team members didn't play well together.
34. You finish your homework quickly:
A. Lately I have been doing everything quickly.
B. Lately I have been doing schoolwork quickly.

35. Your teacher asks you a question and you give the wrong answer:
A. I get nervous when I have to answer questions.
B. That day I got nervous when I had to answer questions.
36. You get on the wrong bus and you get lost:
A. That day I wasn't paying attention to what was going on.
B. I usually don't pay attention to what's going on.
37. You go to an amusement park and you have a good time:
A. I usually enjoy myself at amusement parks.
B. I usually enjoy myself.
38. An older kid slaps you in the face:
A. I teased his younger brother.
B. His younger brother told him I had teased him.
39. You get all the toys you want on your birthday:
A. People always guess what toys to buy me for my birthday.
B. This birthday people guessed right as to what toys I wanted.
40. You take a vacation in the country and you have a wonderful time:
A. The country is a beautiful place to be.
B. The time of the year that we went was beautiful.
41. Your neighbors ask you over for dinner:
A. Sometimes people are in kind moods.
B. People are kind.
42. You have a substitute teacher and she likes you:
A. I was well behaved during class that day.
B. I am almost always well behaved during class.
43. You make your friends happy:
A. I am a fun person to be with.
B. Sometimes I am a fun person to be with.
44. You get a free ice cream cone:
A. I was friendly to the ice cream man that day.
B. The ice cream man was feeling friendly that day.
45. At your friend's party the magician asks you to help him out:
A. It was just luck that I got picked.
B. I looked really interested in what was going on.
46. You try to convince a kid to go to the movies with you, but he won't go:
A. That day he did not feel like doing anything.
B. That day he did not feel like going to the movies.

47. Your parents get a divorce:
- A. It is hard for people to get along well when they are married.
 - B. It is hard for my parents to get along well when they are married.
48. You have been trying to get into a club and you don't get in:
- A. I don't get along well with other people.
 - B. I can't get along well with the people in the club.

Appendix C

PARENT/GUARDIAN CONSENT FORM

Dear Parent/Guardian:

I am a graduate student in the Faculty of Educational Psychology at the University of Calgary, working under the supervision of Dr. D. Romney. This letter is a request for your permission to allow your child to participate in a proposed research study which I am undertaking. The study will be examining whether or not children diagnosed as having Attention-deficit Hyperactivity Disorder (ADHD) experience any level of depression, how they attribute events in their lives, and to what extent this affects their self-esteem.

The research itself will involve having the children complete questionnaires dealing with depression, attributional style, and self-esteem which will take approximately one hour of school time. Classroom teachers will be asked to complete questionnaires requiring about thirty minutes of their time. These questionnaires deal with the social functioning of the child. Parents will be asked to give permission for their child's participation and also to provide information regarding the use of prescribed medication for ADHD.

The answers to all questions will be voluntary and kept in strictest confidence. Parents will have the right to withdraw their child from the study at any time without penalty, and the researcher may terminate the child's involvement at any time. Further, no reference to any child, parent, or teacher by name will be made as the findings of the study will be reported in a statistical manner. Anonymity will be fully ensured. A summary of the research results will be made available to all involved in the study.

If you are willing to have your child participate in this study, please sign below to indicate your understanding of the above information and to authorize your child's involvement. Please return the signed consent form to your child's classroom teacher.

Should you wish to contact me, my telephone number at the university is 220-5728. Thank you very much for your co-operation.

Sincerely,

Cheryl Alston
Graduate Student
Department of Educational Psychology

I agree to my child's participation in Cheryl Alston's study in depression, attributional style, and self-esteem with respect to Attention-deficit Hyperactivity Disorder.

My child is currently receiving the following daily medication for ADHD:

Medication	-	Yes _____ No _____
Type of Medication	-	_____
Dosage	-	_____
Length of Time on Medication	-	_____

Student Name

Signature of Parent/Guardian

School

Date

Telephone Number

Appendix D

PRINCIPAL CONSENT FORM

Dear Principal:

I am a graduate student in the Faculty of Educational Psychology at the University of Calgary, working under the supervision of Dr. D. Romney. This letter is a request for your permission to allow my research study to be conducted in your school. The study will be examining whether or not children diagnosed as having Attention-deficit Hyperactivity Disorder (ADHD) experience any level of depression, how they attribute events in their lives, and to what extent this affects their self-esteem.

The research itself will involve having classroom teachers select students who meet the study's selection criteria and then complete questionnaires regarding the child's level of attentional deficits and depression. The students will be required to complete questionnaires dealing with depression, attributional style, and self-esteem which will take approximately one hour of school time. Parents will be required to give permission for their child's participation and also to provide information regarding the use of prescribed medication for ADHD.

The answers to all questions will be voluntary and kept in strictest confidence. No reference to any child, parent, or teacher by name will be made as the findings of the study will be reported in a statistical manner. Anonymity will be fully ensured. A summary of the research results will be made available to all involved in the study.

If you are willing to have your students and teachers become involved in this study, please sign below to indicate your understanding of the above information and to authorize your school's involvement.

Should you wish to contact me, my telephone number at the university is 220-5728. Thank you very much for your co-operation.

Sincerely,

Cheryl Alston
Graduate Student
Department of Educational Psychology

CONSENT GIVEN BY:

Name of Principal

School

Signature

Date

Appendix E

TEACHER CONSENT FORM

Dear Teacher:

I am a graduate student in the Faculty of Educational Psychology at the University of Calgary, working under the supervision of Dr. D. Romney. This letter is a request for your permission to participate in my research study to be conducted in your school. The study will be examining whether or not children diagnosed as having Attention-deficit Hyperactivity Disorder (ADHD) experience any level of depression, how they attribute events in their lives, and to what extent this affects their self-esteem.

The research itself will involve having classroom teachers select students who meet the study's selection criteria and then completing questionnaires regarding the child's level of attentional deficits and depression which will take approximately 30 minutes. The students will be required to complete questionnaires dealing with depression, attributional style, and self-esteem which will take approximately one hour of school time. Parents will be required to give permission for their child's participation and also to provide information regarding the use of prescribed medication for ADHD.

The answers to all questions will be voluntary and kept in strictest confidence. No reference to any child, parent, or teacher by name will be made as the findings of the study will be reported in a statistical manner. Anonymity will be fully ensured. A summary of the research results will be made available to all involved in the study.

If you are willing to participate in this study, please sign below to indicate your understanding of the above information and to authorize your involvement. Thank you very much for your co-operation.

Sincerely,

Cheryl Alston
Graduate Student
Department of Educational Psychology

CONSENT GIVEN BY:

Name of Teacher

School

Signature

Date