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Attention Deficit-Hyperactivity Disorder and Undifferentiated-Attention Deficit Disorder: Differences in Cognitive and Affective Characteristics and Responses to Stimulant Medication

Richard Alan Campbell
Utah State University

ATTENTION DEFICIT-HYPERACTIVITY DISORDER AND UNDIFFERENTIATED-ATTENTION DEFICIT DISORDER: DIFFERENCES IN COGNTIIVE AND AFFECTIVE CHARACTERISTICS AND RESPONSE TO STIMULANT MEDICATION

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Richard Alan Campbell

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Rick Campbell

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ABSTRACT

Attention Deficit-Hyperactivity Disorder and Undifferentiated-Attention Deficit Disorder: Differences in Cognitive and Affective Characteristics and Responses to Stimulant Medication

by

Richard Alan Campbell, Doctor of Philosophy
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Major Professor: Sebastian Striefel, Ph.D.
Department: Psychology

The cognitive and affective characteristics and responses to stimulant medication of children who were diagnosed as having attention deficit-hyperactivity disorder (AD-HD) or undifferentiated-attention deficit disorder (UADD) were investigated using a pretest-posttest experimental design. Nineteen AD-HD and 17 UADD children were compared using unpaired *t*-tests, prior to initiation of stimulant medication, on measures of intellectual functioning, impulsivity, problem behavior, and self-reported depression and self-esteem. Children from both the AD-HD (n = 12) and UADD (n = 12) groups were then compared before and after a 3-month trial of stimulant medication on measures of impulsivity, problem behavior, and self-reported depression and self-esteem using repeated measures analyses of variance.

No significant differences were found between groups in cognitive ability, impulsivity, depression, self-esteem, anxiety, peer relationships, or social withdrawal. AD-HD children were found to exhibit more hyperactive, aggressive, and delinquent problem behavior. Significant improvement was found in both groups in self-reported depression and self-esteem following a trial of stimulant medication. A trial of stimulant medication was found to reduce hyperactive problem behavior in AD-HD children. Stimulant medication had a beneficial effect on peer relationships and aggressive problem behavior in UADD children but did not produce similar positive effects in AD-HD children. These results are discussed as in relationship to the issue of whether AD-HD and UADD are separate syndromes and to the previous literature regarding attention deficit disorder with hyperactivity (ADD/H) and attention deficit disorder without hyperactivity (ADD/WO). Ramifications regarding appropriate treatment are also discussed.

(149 pages)

CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

Attention-deficit hyperactivity disorder (AD-HD) is a heterogeneous childhood disorder of unknown etiology. It is one of the most common behavior disorders of childhood (Cantwell, 1982) and one of the most frequent reasons for referral to child guidance clinics (Lahey, Delamater, & Kupfer, 1980). According to the American Psychiatric Association's (1987) Diagnostic and Statistical Manual of Mental Disorders-Third Edition-Revised (DSM-III-R), the essential features of the disorder are inattention, impulsivity, and hyperactivity exhibited to varying degrees by individuals and with onset of symptoms in late infancy or early childhood. The incidence of AD-HD is estimated to be approximately 3% of the school-age population and is 6-9 times more prevalent in males than in females. Follow-up studies indicate that AD-HD is a pervasive disorder of which children continue to display symptoms in adolescence and adulthood (Klee, Garfinkel, & Beauchesne, 1986; Wender, Reimher, & Wood, 1981). Affected children are at risk of developing conduct disorders in adolescence and severe psychopathology in adulthood (Weiss & Hechtman, 1986). Psychostimulants have been widely used in the treatment of AD-HD, with demonstrated effectiveness (Kavale, 1982; Rapaport, 1983).

AD-HD is one of the most widely researched childhood psychiatric disorders (Varley, 1984). Yet, despite the considerable research that has been generated on AD-HD,

there remain confusion and controversy concerning the disorder. This is reflected in the recurrent relabeling of the disorder. The current DSM-III-R diagnostic category of AD-HD was originally labeled hyperkinetic reaction of childhood in the DSM-II (American Psychiatric Association, 1968). It was revised to the category of attention-deficit disorder (ADD) in the Diagnostic and Statistical Manual of Mental Disorders-Third Edition (DSM-III; American Psychiatric Association, 1980). The essential features of ADD, according to the DSM-III, were developmentally inappropriate inattention and impulsivity of at least six-months duration and with onset of symptoms prior to age seven. The DSM-III category of ADD emphasized the problems of inattention and impulsivity as the core problematic symptoms. It provided for two subtypes, attention-deficit disorder with hyperactivity (ADD/H) and attention-deficit disorder without hyperactivity (ADD/WO). However, it has not been clear whether the subcategorization of ADD subtypes into ADD/H and ADD/WO is valid or clinically useful (Barkely, 1987).

Little research has been conducted regarding the distinction between ADD/H and ADD/WO subtypes. Most research since the publication of the DSM-III has ignored the subcategorization of ADD by referring to the disorder as ADD without specifying ADD/H or ADD/WO subtypes (Lahey, Schaughency, Strauss, & Frame, 1984). In a review of the limited number of published studies comparing ADD/H and ADD/WO subtypes, Carlson (1986) concluded that the two subtypes display quite different behavior patterns.

According to Carlson, children with ADD/WO typically display poor academic functioning, unpopularity with peers, lack of motivation, drowsiness, shyness, and social withdrawal and typically do not exhibit conduct problems. Children with ADD/H, similarly to children with ADD/WO, also typically display poor academic functioning but are often more socially rejected by peers and exhibit more aggression and conduct disorders.

Several studies have demonstrated an overlap of ADD and conduct disorders without distinguishing between ADD subtypes (Shapiro & Garfinkel, 1986; Steinhausen & Gobel, 1985; Stewart, Cummings, Singer, & de Blois, 1981; Trites & Laprade, 1983). Others have demonstrated an overlap of ADD and affective disorders (Biederman, Munir, Armantano, Autor, Waternaux, & Tsuang, 1987; Bohline, 1985). Only a few of the studies that have focused on defining characteristics of ADD/H and ADD/WO groups, however, have investigated the presence of anxiety or depression symptoms. Lahey et al. (1984) and Neeper (1985) reported on the basis of teacher ratings that their samples of children with ADD/WO were perceived by teachers as being more anxious than controls. On the other hand, Edelbrock, Costello, and Kessler (1984) found that ADD/H and ADD/WO groups did not differ from each other or controls, as measured by teacher ratings of anxiety. Lahey et al. (1984) also reported subjects in both groups as being more depressed than controls, as determined by the subjects' ratings of themselves on a self-report measure of

depression. This is the only study published to date investigating depression in children with ADD/WO.

Carlson (1986) identified several limitations with the existing research on ADD/WO. One limitation was the overall low number of children with ADD/WO in the various studies. Another limitation was related to the populations from which the samples were obtained. Of the 10 studies on ADD/WO, only two used clinical populations where subjects were drawn from children referred to child guidance clinics for identified problem behavior. Of the two studies using clinical populations, both diagnosed children on the basis of retrospective analysis of existing clinical records. The remaining studies experimentally identified subjects using teacher ratings of children from regular and special education classrooms. Prospective studies consisting of subjects from clinical populations identified by comprehensive evaluations and with adequate sample sizes of children diagnosed as having ADD/WO would have provided useful information concerning the clinical utility of the subcategorization and would have allowed stronger conclusions to be drawn concerning ADD/WO. Given the present state of knowledge concerning the subtypes of ADD/H and ADD/WO, it has not been clear whether the ADD/H and ADD/WO groups are subtypes of a single disorder or whether they are two distinct disorders.

Further research in this area would have been desirable. However, because of a lack of empirical evidence substantiating the subcategorizing of the ADD category, it was revised in the latest publication of the

DSM, (Barkley, 1987) thus rendering the diagnostic nomenclature of the DSM-III no longer current. Future research would be more clinically meaningful using the DSM-III-R criteria.

The DSM-III-R (American Psychiatric Association, 1987) considers the ADD/H and ADD/WO subtypes as two distinct disorders, attention-deficit hyperactivity Disorder (AD-HD) and undifferentiated attention-deficit disorder (UADD), respectively. The diagnostic category of AD-HD considers hyperactivity as a primary symptom of the disorder, along with inattention and impulsivity, and appears similar to the subtype of ADD/H. The DSM-III-R considers the essential feature of UADD to be developmentally inappropriate inattention and suggests "that some of the disturbances that in the DSM-III would have been categorized as ADD/WO could be included in this category." The DSM-III-R specified that future research is needed to determine the validity of this category and its differentiation from AD-HD.

Because of the recency of the DSM-III-R's publication, there is a lack of research on the distinction between AD-HD and UADD. It is not clear whether they are two distinct disorders or subtypes of the same disorder. Further, it is not clear whether there are differences in the clinical characteristics of the two disorders and, if so, whether such differences would suggest possible differences between AD-HD and UADD in terms of prognosis and treatment. For example, Carlson (1986) has pointed out that the presence of aggression and conduct problems has

been highly correlated with poor teenage outcomes for children identified as hyperactive (Loney, Kramer, & Milich, 1983). In addition, it is not known whether treatment interventions (e.g., stimulant medication) which have been demonstrated to be effective with children with AD-HD (or ADD/H) are as effective with children with UADD (or ADD/WO). No research has been published to date in this area. It may be that the treatment needs of children with UADD are quite different from children with AD-HD. Research efforts focusing on the distinction between the DSM-III-R categories of AD-HD and UADD in terms of their characteristics and treatment would contribute clinically useful information to the knowledge base of the field.

Statement of the Problem

There is a lack of research regarding the distinction between the DSM-III-R categories of AD-HD and UADD. Research is needed clarifying the differences in the cognitive, behavioral, and affective characteristics of children with AD-HD and UADD. Research is also needed to determine appropriate treatment interventions for UADD. Research investigating both the clinical characteristics of the disorders AD-HD and UADD and their treatment is needed to better define the clinical population with these two disorders and the validity of the two classifications.

Purpose and Objectives

The intent of the present study was to examine the characteristics and treatment of children with AD-HD

and UADD in order to better clarify the clinical pictures of the two disorders and their treatment.

Specifically, the objectives of the study were the following:

1. To identify the differences, if any, between children diagnosed as AD-HD and UADD on measures of intelligence, attention and impulsivity, behavior, depression, and self-esteem. The hypothesis tested was that there will be no significant difference ($p < .05$) between children with AD-HD and children with UADD on intelligence scores, impulsivity, parent and teacher ratings of problem behavior, self-reported depression, or self-esteem.

2. To determine the effectiveness of stimulant medication for children with UADD and AD-HD on measures of intelligence, impulsivity, behavior, depression, and self-esteem, and to determine the differences, if any, between the two groups. The hypotheses were as follows: (a) There will be no significant differences ($p < .05$) between pretest and posttest measures of impulsivity, parent and teacher ratings of problem behavior, and self-reported depression and self-esteem for children with UADD or AD-HD who received stimulant medication as treatment and (b) there will be no significant differences ($p < .05$) between children with AD-HD or UADD who have received stimulant medication as treatment on measures of impulsivity, parent and teacher ratings of problem behavior, or self-reported depression or self-esteem before or after treatment.

CHAPTER II

REVIEW OF THE LITERATURE

Attention

Attention is a complex neuropsychological construct which has enjoyed considerable investigation, particularly in regard to the study of children with attention-deficit disorders. Skinner (1953, 1969) conceptualized attention as a relationship or correlation between a stimulus and a response. Attention, in a behavioral framework, refers to the probability that a particular behavior will occur in the presence of a given stimulus. Skinner described this as stimulus control. Given such a perspective, variables that account for the poor correlation between a particular stimulus (e.g., a task) and the response (e.g., a child's behavior) are more important than implying a particular attention deficit (Barkley, 1988). If a child fails to respond to a task, then it is suggested that the task fails to provide enough stimulus control over the child's behavior. Stimulus control is dependent upon a number of factors including the maturation and/or the development of the child's nervous system and the physical properties of the stimulus. Another factor is the learning history of the child. The likelihood of a behavior occuring in the future when in the presence of the stimulus is dependent upon the contingency history (i.e., reinforcing or punishing events in the past that occured in the presence of a particular stimulus) of the child. Barkley (1988) suggests that sustained attention is said to be developing when the child attends longer and longer after being

reinforced for responding in the presence a stimulus. Impulse control is said to be developing when a child inhibits certain responses after being punished for a response in the presence of a particular stimulus. In such a framework, certain attention deficits to certain tasks may be a result of inadequate reinforcement histories. Other attentional problems may be the result of inadequate neurological substrates within the individual (Barkley, 1988).

Barkley (1988), in a review of attention processes, conceptualized attention as a multidimensional construct with several components. The components include (a) alertness or arousal, which refers to the degree of general wakefulness or state of responsiveness of the child to the environment; (b) selective or focused attention, which means the child's ability to focus on specific stimuli essential to a task in the presence of distracting elements; (c) distractibility, which relates to the degree to which a child responds to unessential aspects of a task; (d) impulsivity, which refers to the speed with which a child reacts to a stimulus, and has received considerable investigation in regards to ADD children (Douglas & Peters, 1979; Milich & Kramer, 1984); (e) sustained attention/vigilance, which refers to the time spent persisting to a task; (f) span of apprehension, which refers to the number of stimuli to which the child can attend simultaneously; and finally, (g) search, which refers to the strategies or rules the child uses while performing a task.

It has been suggested that 49% of boys and 27% of girls are described by teachers as inattentive (Lapouse & Monk, 1958; Werry & Quay, 1971). Serious attention deficits are estimated to occur in at least 3 to 10% of school-age children, making them the most prevalent of all childhood neuropsychological disorders (Barkley, 1981; Ross & Ross, 1982). Additionally, attentional deficits are commonly associated with other childhood disorders such as autism, pervasive developmental disorders, depression, conduct disorders, learning disabilities, closed-head injury, epilepsy, tic disorders, and other neurological conditions. Cognitively, attention deficits lead to difficulties in short-term memory, problem-solving, motor planning, coordination, and execution of tasks (Douglas, 1983). Further, attention deficits may have negative effects on the child's social interactions with parents, peers, and teachers (Barkley, 1985). Overall, attention deficits can have wide ranging negative effects on the child's cognitive, academic, and social functioning. As a result, child psychologists and neuropsychologists are very likely to be working a great deal with attentional deficits in children.

Hyperactivity, or attention deficit-hyperactivity disorder (AD-HD), as described by the American Psychiatric Association's (1987) Diagnostic and Statistical Manual of Mental Disorders-Third Edition-Revised (DSM-III-R), is one of the most common behavior disorders of childhood (Barkley, 1981; Cantwell, 1982; Ross & Ross, 1982) and one of the most frequent reasons for referral to child

guidance clinics (Lahey et al., 1980; Trites, Dugas, & Lynch, 1979). Due in large part to the interest, confusion, and controversy regarding the disorder, AD-HD has been the most widely studied childhood disorder during the last three decades. Well over 2700 research articles and numerous books have been published in the field (Weiss & Hechtman, 1986).

Despite the extensive research that has been generated, confusion still exists concerning the definition, diagnosis, etiology, prognosis, and treatment of AD-HD. Ross and Ross stated in their text,

> Hyperactivity is unique among the childhood disorders in that the whole field is characterized to an unusual degree by uncertainty, contradictions, the unexpected, and the bizzare. (1982, p. 6)

Indeed, despite the voluminous research that has been published, many questions regarding AD-HD remain unanswered. One is referred to texts by Conners and Wells (1986), Weiss and Hechtman (1986), Ross and Ross (1982), and Barkley (1981) for thorough discussions of the literature. In this review, an overview of the definition, diagnosis, etiology, prognosis, and treatment of AD-HD is provided as it relates to a general understanding of the disorder and as it pertains to the rationale and design of the present study.

History and Definition

In the published literature, AD-HD has been referred to by a variety of labels over the years, including attention deficit disorder with or without hyperactivity, hyperactivity, hyperkinesis, hyperkinetic impulse disorder,

minimal brain dysfunction, and minimal brain disorder. The many diagnostic labels reflect the progression and divergence in thinking between various researchers and theorists concerning the definition, diagnosis, and etiology of AD-HD.

Reports about hyperactive children can be found as early as the mid-1800's. In 1854, Hoffman, a German physician, described a youngster he named Fidgety Phil, who exemplified a group of children who displayed many behavioral characteristics of hyperactivity. The earliest paper published in the literature (Still, 1902) described a cluster of behaviors including restlessness, impulsivity, poor concentration, and overactivity in groups of retarded or brain damaged children. Still (1902) ascribed these behaviors to "defects in moral control" and believed organic factors to be chiefly responsible for their existence. Bradley (1937) demonstrated that stimulant medication could amelioarate hyperactive behavior in some hyperactive children. Strauss and Kephart (1955), based on Bradley's "paradoxical quieting effect", concluded that those children exhibiting similar behaviors described by Still must be "minimally brain damaged". It has since been argued that the brain damage etiology hypothesis is inappropriate since less than 5% of children with neurological impairment exhibit hyperactive behaviors (Cantwell, 1982; Routh, 1978). However, more recent research has suggested that there are some brain anamolies in children with AD-HD and will be reviewed in a later section.

Laufer and Denhoff (1957) provided the first systematic description of the hyperkinetic impulse syndrome, associating hyperactivity, short attention span, poor concentration, variability in performance and behavior, impulsiveness and inability to delay gratification, irritability, explosiveness, and poor school work to the syndrome. Laufer and Denhoff proposed hyperkinesis to be a medical syndrome resulting from a defect in the functioning of the diencephalon in the brain and recommended a multi-faceted treatment approach including stimulant medication, education, and psychotherapy.

The Diagnostic and Statistical Manual of Mental Disorders-Second Edition (DSM-II; APA, 1968) provided a diagnostic category of Hyperkinetic Reaction of Childhood, which reflected the Laufer-Denhoff syndrome's description. Excessive motor activity was proposed to be the primary problematic symptom of the disorder and research efforts were directed at objectively measuring motor activity.

Research during the 1970's suggested that the hyperactive child's symptomotalogy was more widespread than simply the presence of excessive motor activity. Noncompliance to parental commands, excessive attention-seeking, increased need for adult supervision, decreased positive interactions between children and mothers (Barkley & Cunningham, 1979; Campbell, 1975) and, most importantly, attention deficits (Douglas, 1972) received considerable research attention. These findings

were taken into account when the DSM-II was revised. The Diagnostic and Statistical Manual of Mental Disorders-Third Edition (DSM-III; APA, 1980) relabeled the DSM-II category of hyperkinetic reaction to attention-deficit disorder (ADD). Inattention and impulsivity were identified as the primary characteristics of the disorder. Further, the disorder could be diagnosed in two ways, as involving hyperactivity (ADD/H) or not involving hyperactive behavior (ADD/WO). This reflected a major shift in thinking about the disorder; the assumption that there are two subtypes of this disorder, and also that excess motor activity was not a sole symptom.

The revised edition of the DSM-III, published in 1987, eliminated the subcategorization of ADD. Instead, the category of attention deficit-hyperactivity disorder (AD-HD) was established, the primary symptoms of which are inattention, impulsivity and excessive motor activity. A second category, undifferentiated-attention deficit disorder (UADD), was included in the DSM-III-R, the primary symptom of which is inattention. Individuals receiving this diagnosis display symptomatology similar to those previously diagnosed in the DSM-III as ADD/WO. Further empirical investigations are needed to determine the validity of this category (American Psychiatric Association, 1987).

Since publication of the DSM-III and prior to the publication of the DSM-III-R, limited research has been generated on the subcategorization of ADD into ADD/H and ADD/WO. Carlson, Lahey, and Neeper (1987) attempted to

determine differences in the cognitive correlates of ADD/H and ADD/WO children. Twenty children with ADD/H and 15 children with ADD/WO were identified on the basis of DSM-III criteria from a large elementary school population. The ADD/WO group obtained IQ scores in the average range and did not differ significantly from a control group, whereas the children with ADD/H obtained significantly lower Full Scale and Verbal IQ scores than the children with ADD/WO. Neeper (1985) found no differences in cognitive functioning on standardized tests between groups of children with ADD/H and ADD/WO identified by teacher rating scales from a population of elementary-school children. Lahey et al. (1984) classified 10 children as ADD/H and 20 children as ADD/WO using the Revised Behavior Problem Checklist from a non-clinic referred population. It was found that both ADD groups exhibited depression and low self-esteem. In a review of the ten existing studies of ADD/WO, Carlson (1986) suggested that the two ADD subtypes display different patterns of behavior. According to Carlson, children with ADD/WO typically display poor academic functioning, poor peer relationships, sluggishness, drowsiness, anxiety, shyness, social withdrawl, and do not have conduct problems. Children with ADD/H, like children with ADD/WO also display poor academic functioning. However, children with ADD/H typically display more aggression and conduct disorders. Carlson suggested that the evidence indicates that they are separate and distinct disorders.

However, there are several methodological limitations in the above mentioned research (Carlson, 1986). One limitation of this research is that many of the studies drew their samples from subjects who were experimentally identified by ratings on teacher rating scales rather than from clinical populations in which subjects have been referred because of behavior problems. Of the ten studies reviewed, only two studies used clinical populations and both of these diagnosed children based on retrospective judgements of patient records (Edelbrock, Costello, & Kessler, 1984; Maurer & Stewart, 1980). The other studies (Carlson et al., 1987; King & Young, 1982; Lahey et al., 1984; Lahey, Schaugency, Frame, & Strauss, 1985; Neeper, 1985; Pelham, Atkins, & Murphy, 1981; Sergeant & Scholten, 1985a and 1985b) experimentally identified their subjects. Also, overall there were few ADD/WO subjects in these studies. These are important limitations to consider. Prospective studies using clinical populations and adequate sample sizes would provide more meaningful and clinically relevant information for clinicians and provide a clearer clinical description of the disorder. Further research is needed to better clarify the characteristics of children with ADD/H and ADD/WO in order to provide information on whether there are two subgroups of one disorder or two different disorders.

Most research investigating ADD published following the DSM-III, has failed to specify ADD/H and ADD/WO subtypes (Lahey et al., 1984). Several studies have demonstrated an overlap between ADD and conduct disorders

(Lahey et al., 1985; Shapiro & Garfinkel, 1986; Steinhausen & Gobel, 1985; Stewart et al., 1981; Trites & Laprade, 1983). For example, Shapiro and Garfinkel (1986) identified 2.3% of their sample of 315 nonreferred elementary school children to be pure ADD (i.e., ADD without any other diagnosable disorders present as defined by the DSM-III) and 3% to have ADD and conduct disorders (as defined by the DSM-III) using structured interviews and teacher rating scales. Other studies have demonstrated an overlap of ADD and affective disorders (e.g., depression, bipolar disorders) (Biederman et al., 1987; Bohline, 1985; Carlson & Cantwell, 1980; Steinhausen & Gobel, 1985). Biederman et al. (1987) investigating the incidence of affective disorders in ADD children and their families using structured interviews of ADD children and their parents, determined that 32% of children identified as ADD also demonstrated having an affective disorder and 31% of their parents had affective disorders. The associated problems identified are quite dissimilar and may be a result of the heterogeneous nature of the samples studied. By studying more homogeneous populations as specified in the studies of ADD/WO or UADD, a clearer picture of the clinical characteristics of this disorder is developing.

In summary, the 1980 DSM-III category of ADD has been revised to attention deficit-hyperactivity disorder in the DSM-III-R because of a lack of sufficient research evidence supporting the DSM-III category of ADD/WO (Barkley, 1987). The DSM-III-R provides for a separate category of undifferentiated-attention deficit disorder

(UADD). Individuals manifesting behavior that would have been categorized in the DSM-III as ADD/WO would be included in the UADD category. It is stipulated in the UADD description in the DSM-III-R (American Psychiatric Association, 1987) that future research is needed to determine the validity of this category.

Prevalence/Incidence

The incidence of attention deficit disorders varies depending upon the method of determination. Prevalence rates for hyperactivity have varied, ranging from 3 to 20% of the school-age population (Whalen & Henker, 1976). Trites and Laprade (1983) found a prevalence rate of 5.7% while the rate found by Trites et al. (1979) was 14.3%. Lambert, Sandoval, and Sassone (1978) examined the prevalence of hyperactivity as a function of "social system definers" and found a prevalence rate of 12.67% when rated by either teachers, parents, or physicians, but when consensus by all three was required, the rate was only 1.19%.

Additionally, prevalence rates vary as a function of gender, culture, and socioeconomic status. Hyperactivity and attentional deficits have been reported to occur more frequently in boys than girls by a ratio of approximately 6:1 (American Psychiatric Association, 1987; Trites et al., 1979) and more often and to a greater severity in lower socioeconomic populations (Loney, Langhorne, & Paternite, 1978). The fluctuation in reported incidence is a function of the defining criteria, instruments used to make

diagnosis, and sample heterogeneity, thus making comparisons between studies difficult, if not impossible, because of the inconsistencies (Shapiro & Garfinkel, 1986).

Diagnosis and Assessment

The diagnosis and assessment of AD-HD is quite difficult because of the lack of consensus concerning the definition of the disorder and the lack of a critical diagnosistic test. Barkley (1981) in reviewing over 200 studies on hyperactive children found that 70% of the studies failed to use objective or specifiable criteria for diagnosing individuals as hyperactive. Such inconsistencies make it difficult to compare results from various studies.

Clinicians and researchers in the field, suggest that a comprehensive evaluation is needed to obtain the necessary data in order to diagnose children as AD-HD (Cantwell, 1987, Barkley, 1987). Such data include information regarding the pregnancy and delivery of the child, the child's developmental and medical history, and the child's problem behavior. This information can be obtained through a variety of means including parent interviews, medical history questionnaires, child observations, behavior rating scales completed by parents and teachers, physical and neurological screening exams, and other assessment instruments such as tests of cognitive abilities. Surprisingly, simple measures of attention have not been included typically in test batteries of child psychologists or child neuropsychologists (Plaisted, Gustavson, Wilkening, & Golden, 1983; Rosenberg & Beck,

1986; Rourke, 1981). Below is a discussion of some of the more commonly used measures of attention in children.

Behavior rating scales. Behavior rating scales are commonly used to assess children's behavior. The advantages of behavior rating scales are: (a) that they are able to evaluate several dimensions of behavior in a short period of time, (b) that they provide information concerning the child's behavior within the natural environment without expensive and time-consuming direct observations, (c) that they assess significant others' perspectives concerning the child, (d) that comparisons of the child to his age-related peers can be performed statistically, and (e) that ratings can be obtained repetitively over time to assess progression and treatment effects. The limitations of rating scales are (a) that they are dependent upon the ratings of significant others and that the biases of the rater can not be controlled, (b) that there are limited dimensions assessed and other meaningful information may be excluded, and (c) the meanings of individual items may not be clearly defined (Barkley, 1988). Some of the more common behavior rating scales used include the Conners Rating Scales and the Child Behavior Checklist. The Conners scales are the most widely used rating scales for attention. There are both parent and teacher versions. The Conners Parent Rating Scale (CPRS; Conners, 1969) consists of items of various behavior problems in children. Each item is scored on a 4-point severity scale (not at all = 0, just a little = 1, pretty much = 2, very much = 3). The Revised Parent Rating Scale

(Goyette, Conners, & Ulrich, 1978) reduced the scale's length. Factor analysis revealed a factor pertaining to inattention, hyperactivity and impulsivity, but did not suggest a factor for inattention separate from the other disruptive behaviors. The Conners Teacher Rating Scale (Conners, 1969) consists of items reflecting behavior and learning problems. It too is scored on the same 4-point severity scale. Factor analytic studies on this scale do load on a single dimension of Inattentive-Passive, unlike the parent version. Both have satisfactory reliability and validity (Barkley, 1987) and are sensitive to stimulant drug effects (Cantwell & Carlson, 1978).

The Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983) is a rating scale to assess the presence of child psychopathology and social competence. There are both parent and teacher versions. Items are scored on a 3-point scale (not at all = 0, a little = 1, very much = 2) making up various scales that vary with age and gender. The parent form comprises a scale labeled Hyperactive consisting of items assessing inattention, impulsivity, and overactivity but does not discriminate between deficits solely related to attention. The teacher form has a scale labled Inattention and another labelled Nervous-Overactive (which can be used to distinguish between ADD/H and ADD/WO). Both have very good reliability and validity (Achenbach & Edelbrock, 1983).

Cognitive measures. Many psychometric devices have been developed to assess attention. However, it has been difficult to devise instruments that measure pure attention

exclusive of other neuropsychological functions. Further, there are questions as to the relationship of the various measures of attention to children's attentional abilities within a natural setting.

Various continuous performance tasks are available which are designed to assess attentional skills. Essentially, these tasks involve the flashing of muliple stimuli to the child and the child is to respond only to one particular stimulus while inhibiting responses to other stimuli. Most tasks last between 10 and 15 minutes. Measures of correct responses, errors of commission (impulsivity), and errors of omission (inattentiveness) are obtained. Continuous performance tasks have been demonstrated to discriminate between individuals diagnosed as ADD and individuals identified as normal and to be sensitive to treatment effects (Douglas, 1983; Swanson & Kinsbourne, 1979).

The Matching Familiar Figures Test (MFFT; Kagan, Rosman, Day, Albert, & Phillips, 1964) is the most widely used measure of impulsivity. This test involves the simultaneous presentation of a sample visual stimulus (e.g., person), five similar stimuli, and one stimulus identical to the sample stimulus. The child is instructed to point to the stimulus that matches the sample. Time to first response and number of errors are recorded for 12 trials. Normative data are available for ages 5 through 12 for both males and females (Salkind & Nelson, 1980). The MFFT has been demonstrated to be quite sensitive to

stimulant medication effects (Barkley, 1977b; Cantwell & Carlson, 1978).

Another measure of attention is the Freedom From Distractibility factor score (FFD) from the Wechsler Intelligence Scale for Children-Revised (WISC-R). Kaufman (1975) conducted a factor analysis of the WISC-R and established three factors associated with three cognitive constructs thought to be assessed by the WISC-R. The FFD factor consists of the Arithmetic, Digit Span and Coding subtests and is believed to measure distractibility and attention. There is contradictory evidence as to whether the FFD discriminates between children with ADD and normal children (Brown & Wynne, 1982; Milich & Loney, 1974). Because these tasks involve more complex neuropsychological processes including short-term memory, calculation ability, visuospatial constructional skills, flexibility of thought and psychomotor speed than purely attention, caution in interpreting the FFD has been suggested (Ownby & Matthews, 1985).

Direct observational techniques have been utilized in assessing attentional deficits and treatment effects in children (Barkley, 1988). Recording of on-task and off-task behavior in the classroom or using observation booths with one-way mirrors are some methods of assessment. More elaborate recording may include the coding of different types of off-task behaviors (e.g., vocalizations, fidgetiness, out-of-seat, etc.) as well as distinguishing between on-task and off-task behavior. Such methods are

limited by the lack of normative data to establish levels of deviant hyperactive/attention behavior (Barkley, 1988).

Etiology

The diversity of descriptors for AD-HD and the confusion over the definition of the disorder reflects the uncertainty concerning its etiology. Various theories have been proposed to account for the disorder including genetic, organic, environmental and psychosocial hypotheses.

Historically, the cause was considered to be some form of brain damage, however, this hypothesis has been somewhat weakened since less than 5% of children with brain damage exhibit hyperactive behaviors (Cantwell, 1982; Routh, 1978). It is possible that some children diagnosed as hyperactive do have brain damage that is the cause for the excessive motor activity. There appears to be some tentative evidence to suggest the existence of a genetic component to AD-HD. Family studies have found a higher prevalence rate of hyperactivity in parents and second-degree relatives of children diagnosed as hyperactive (Cantwell, 1972; Morrison & Stewart, 1971) and that there is a greater occurence of hyperactivity in siblings of those who were labelled hyperactive as children (Boreland & Heckman, 1976).

The monoamine hypothesis (Garfinkel & August, 1987; Wender, Epstein, Kopin, & Gordon, 1971) proposes that the disorder is a result of possible brain metabolism abnormalities, specifically lower levels of dopamine and noradrenaline in those who are hyperactive. Proponents of

the monoamine hypothesis are of the opinion that stimulants such as methylphenidate and dextroamphetamine function to inhibit catecholamine reuptake by the presynaptic neuron, increase release of norepinephrine and dopamine into the extraneuronal space, and are inhibitors of monoamine oxidase (Zametkin, Rapoport, Murphy, Linnoila, and Ismond, 1985), thereby ameliorating hyperactive symptoms.

Single photon emission computed tomography studies have found hypoperfusion (reduced cerebral blood flow) in the periventricular structures, particularly the right striatal region (caudate nucleus and putamen), and hyperperfusion in the primary sensory and sensorimotor regions in children with AD-HD (Lou, Henriksen, Bruhn, Borner, & Nielsen, 1989; Lou, Henriksen, & Bruhn, 1984). Further, it was found that methylphenidate increased cerebral blood flow to striatal and posterior periventricular regions and tended to decrease flow to primary sensory regions. The evidence of hypoperfusion in the periventricular regions is consistent with the hypothesis that early hypoxic-ischemic events could play a role in the development of attentional deficits in children (Lou, 1980).

Probably the most publicized and controversial explanation proposed for hyperactivity has been that of Feingold (1976). Feingold has stated that food additives and sugars in genetically predisposed children produce toxic reactions of cerebral irritability and associated behavioral symptoms of hyperactivity and suggested that implementation of a highly regimented diet would ameliorate

the symptoms. Early empirical evidence tended not to support the diet's efficacy with the exception of a small percentage of children diagnosed as hyperactive (Conners, Goyette, Southwick, Lees, & Andrulonis, 1976; Kavale & Forness, 1983; Lipton, Nemeroff & Mailman, 1979, Sobotka, 1978; Wender, 1986). However a few recent studies have supported the Feingold hypothesis (Egger, Carter, Graham, Gumleys, & Soothill, 1985; Swanson & Kinsbourne, 1979; Weiss et al., 1980). Certain methodological differences between earlier and later studies may provide reasons for the conflicting experiemental results (Lester & Fishbein, 1988). Previous studies used rather small doses and behavioral rating scales, whereas the later studies used larger challenge doses and paired associate learning tasks to measure sensitivity. Later studies suggest that food additives may be implicated in some attention deficit disorders.

Other suggested causative factors in AD-HD include food allergies (Varley, 1984), fluorescent lighting (O'Leary, Rosenbaum, & Hughes, 1978; Ott, 1974), lead poisoning (David, 1974), prenatal and perinatal factors (Denson, Nanson, & McWatters, 1975), academic failure (Cunningham & Barkley, 1978), and increased cultural tempo (Block, 1977).

At best, it can be concluded that there has been no demonstrated single etiology to explain hyperactivity, which is not surprising given the heterogeneous nature of the disorder. The empirical findings using computed tomography suggesting hypoperfusion of the periventricular

structures and hyperperfusion of the primary sensory and sensorimotor regions point to a promising future direction in the investigation of the origins of attentional deficits. The focus of etiological research is shifting from identifying single causative determinants to an interactionist position that proposes multiple etiological factors (Porges & Smith, 1980). Conners and Wells (1986) summarizing the current state of research on AD-HD and identifying directions for further research state,

> until one knows how to classify subjects into homogeneous groups there is no hope of finding either unique biological or environmental causes, to say nothing of the transactional causative networks that, in the final analysis, are the most likely explanatory systems for such complex behavioral manifestations. (p. 24)

Fortunately, knowledge of etiology is often not required for treatment. Organic disorders do not, always, preclude response to psychological treatment, nor do disorders of psychogenic etiology always fail to respond to pharmacological treatment.

Outcome/Prognosis

It was previously thought that symptoms of hyperactivity diminished with the onset of puberty (Boreland & Heckman, 1976). Present research suggests that behavioral and cogntive symptoms persist well into adolescence and adulthood (Hechtman, Weiss, Perlman, & Tuck, 1981; Klee, Garfinkel, & Beauchesne, 1986; Weiss & Hechtman, 1986). Also, secondary problems of poor self-esteem, aggressiveness, academic difficulties, poor peer interactions, depression, and antisocial behavior are

exibited more as children with ADD move into adolescence. From longitudnal studies of children diagnosed as ADD, it has been found that there is an association between childhood ADD and delinquency and antisoical behavior in adolescents (Huessey, Metoyer, Townsend, 1974; Weiss, Hechtman, Perlman, Hopkins, & Wener, 1979) and psychopathology in adults (Cantwell, 1972; Mendelson, Johnson, & Stewart, 1971). Also, studies of family members of children with hyperactivity indicate an increased risk of alcoholism, sociopathy, and somatization disorder in the biological parents of hyperactive children and also that a high percentage of these parents were previously diagnosed as hyperactive (Cantwell, 1972; Morrison & Stewart, 1971). Cantwell found that 10% of the parents of children with hyperactivity were formerly hyperactive and all of these had psychiatric problems as adults. Morrison and Stewart found that 30% of their hyperactive population had parents who were hyperactive and 70% of these parents had psychiatric problems.

Treatment

Since AD-HD is a heterogeneous disorder of unknown etiology, it is unlikely that any one therapuetic approach would be successful in all cases. Multimodal treatment approaches have been found to be most successful in the management of AD-HD (Cantwell, 1982; Weiss & Hechtman, 1986). Parent training in child management skills, environmental modifications, special education, social skills training, individual counseling for older children and adolescents with ADHD, psychopharmacological

intervention and biofeedback have been proven to be useful in the short-term for some individuals but no long-term efficacy has been demonstrated (Ross & Ross, 1982).

Psychoactive stimulants have been widely used since the mid-1930's to treat hyperactivity as well as other childhood disorders. Stimulants are now the most common treatment for hyperactive children to manage their behavior problems (Barkley, 1981). Three psychostimulant medications have been commonly used in treating AD-HD: dextroamphetamine (Dexadrine), methylphenidate (Ritalin), and Pemoline (Cylert). Stimulants are sympathomimetic agents that increase the arousal or alertness of the central nervous system. The primary mode of action of methylphenidate and d-amphetamine is believed to be one of increasing catecholamine activity in the CNS, by increasing the availability of the catecholamines at the synaptic cleft. Both dopamine and norepinephrine are believed to be effected. The mechanism of pemoline is not clear. The site of action within the CNS of stimulants is not clear as well, although it is suggested that the brain stem or frontal cortex is involved (Barkley, 1981). Estimates are that .6% to 1% of school-age children are receiving stimulants (Sandoval, Lambert & Sassone, 1980).

Many well-designed studies have demonstrated the efficacy of stimulants in the treatment of AD-HD. Several comprehensive reviews (Kavale, 1982; Rapoport, 1983; Thurber & Walker, 1983) concluded that 70-75% of children with ADD/H respond positively to stimulant medication on one or more measures of drug efficacy such as rating

scales, observed and quantitative motor activity, cognitive and perceptual tests, detection of speech in background noise, speech fluency, handwriting, EEG and evoked potentials, peer perceptions, and academic performance (Conners & Wells, 1986). However, problems have been identified in the use of stimulants including their short half-life, retardation of weight and height (Garfinkel, 1986), lack of long-term benefits on school performance and frequent side effects such as insomnia, anorexia, and irritability (Barkley, 1977a). Very few studies have investigated the long-term effects of stimulants on hyperactive children, with generally negative results found (Barkley, 1981).

Antidepressant medications have also been found to be effective in the treatment of with hyperactivity, particularly with children identified as hyperactive with depressive symptoms. Imipramine (Tofranil) has been the antidepressant most widley studied with children diagnosed as hyperactive (Barkley, 1981).

Several studies have addressed the question whether stimulant medication, behavior therapy, or a combination is the best treatment approach. Barkley (1981) reviewing the literature concluded that behavior therapy alone is not as effective as stimulant medication in managing hyperactive and disruptive behavior and combined approaches were most beneficial.

There have been no studies published to date that have sought to determine whether stimulant medication is an effective treatment with children diagnosed with UADD (or

the previous diagnostic category of ADD/WO). Given the possible differing clinical pictures of children with ADD/H and ADD/WO and the uncertainty of the diagnostic category of UADD, it may be that the treatment needs of children with UADD or ADD/WO may be different from the treatment needs of children with AD-HD, therefore requiring alternative treatment interventions. Research is needed to determine the characteristics and treatment needs of children with UADD and whether stimulant medication is an effective treatment for these children.

CHAPTER III

METHOD

In this study, the intellectual, behavioral, and affective characteristics and responses to stimulant medication of children with AD-HD and UADD were examined to determine the differences, if any, between these two groups.

Subjects

This study involved 17 children diagnosed as having an undifferentiated-attention deficit disorder (UADD) and 19 children diagnosed as having an attention deficit-hyperactivity disorder (AD-HD). The UADD sample was composed of 16 males and 1 female with a mean age of 10 years. The AD-HD sample was composed of 14 males and 5 females with a mean age of 9. A Fisher's Test for 2 X 2 indicated no significant difference in gender between the two groups ($p = .11542$). An unpaired t-test revealed a significant difference in age between the two groups (see Table 1).

Table 1

T-test Analysis of Mean Ages and Standard Deviations for UADD and AD-HD Groups

	UADD ($n = 17$)	AD-HD ($n = 19$)	T-value
M	10.00	9.00	2.09*
SD	1.32	1.52	

*$p < .05$

Subjects were clinical patients recruited from referrals to (a) the Developmental Center for Handicapped Persons, Clinical Services Unit, Utah State University (n = 31); (b) the University-Affiliated Center, University of Texas Southwestern Medical School at Dallas (UTSMSD)(n = 2); (c) ADD Associates, Dallas, Texas (n = 2); and (d) the Neuropsychiatry Psychopharmacology Clinic, Children's Medical Center (CMC) at Dallas (n = 1). The only subjects included in the study were as follows: (a) Subjects who were diagnosed as having either AD-HD or UADD by three independent raters (i.e., pediatrician, psychiatrist, psychologist, and psychology intern; (see Table 2) according to the Diagnostic and Statistical Manual of Mental Disorders- Third Edition-Revised (DSM-III-R) criteria, (b) Subjects for whom informed parental consent for participation in the study was obtained (see Appendix A), and (c) Subjects who were recommended for treatment with stimulant medication were included in the study. Diagnoses were made on the basis of comprehensive evaluations including developmental and medical history, physical and neurological screening exams, and psychoeducational evaluations. Interrater agreements for the various settings were determined by determining the percentage of cases in which all three of the raters agreed on the same diagnosis (see Table 3). There was agreement on 31 of 34 subjects on ratings by a pediatrician, psychologist, and psychology intern at the DCHP; 2 out of 2 subjects on ratings by a pediatrician, psychologist, and and psychology intern at ADD Associates; and 1 out of 3

Table 2

Raters' Qualifications by Site

Site	Rater	Qualifications
DCHP	Psychologist	10+ years experience in the treatment and research on children with attentional problems, learning disabilities, developmental disabilities, and behavior disorders
	Pediatrician	6+ years experience in the treatment and research on children with attentional problems, learning disabilities, developmental disabilities, and behavior disorders
	Psychology Intern	trained in the diagnosis and treatment of children with attentional problems, learning disabilties, developmental disabilities, and behavior disorders
UTSMC	Pediatrician	15+ years experience in the treatment and research on children with attention problems and developmental disabilities,
	Pediatric Fellow	1+ years experience as a pediatrician for a university-affiliated clinic for children with attention problems, learning disabilities, developmental disabilities, and behavior problems
	Psychology Fellow	5+ years experience in the diagnosis and treatment of children with attentional problems, learning disabilities, developmental disabilities, and behavior problems
ADD Assoc.	Psychologist	3+ years experience in the treatment and research on children with attentional problems and behavior disorders
	Pediatrician	10+ years experience in the diagnosis and treatment of children with attentional problems

(table continues)

Table 2 (continued)

Raters' Qualifications by Site

Site	Rater	Qualifications
	Psychology Fellow	5+ years experience in the diagnosis and treatment of children with attentional problems, developmental disabilities, learning disabilities, and behavior problems
CIC	Psychiatrist	3+ years as child psychiatrist in clinic for children with attention-deficit disorder
	Psychologist	5+ years experience in the diagnosis and treatment of children with behavioral and emotional problems
	Psychology Fellow	5+ years experience in the diagnosis and treatment in children with attentional problems, learning disabilities, developmental disabilities, and behavior problems

Table 3

Number of Potential AD-HD and UADD Subjects and Interrater Agreement Between Independent Raters Among Sites

Site	n potential subjects	n agreement	n non-agreement	%
DCHP	34	31*	3	91
UTSMC	2	2*	0	100
ADD Assoc.	2	2*	0	100
Total	41	36*	5	88

* subjects included in the study

subjects at CMC. Approval for the study was obtained from the Utah State University Human Subjects Review Board (see Appendix B) and the University of Texas Southwestern Medical Center at Dallas Institutional Review Board (see Appendix C).

Procedures

A pretest-posttest experimental design (Campbell & Stanley, 1963) was used to determine the cognitive and affective characteristics of children with AD-HD and UADD, and to determine their long-term response to stimulant medication. Subjects from both groups were administered a battery of instruments prior to initiation of treatment including measures of intelligence, impulsivity, self-reported depression and self-esteem. The battery was readministered, with the exception of the intelligence scales, three months after treatment. Parents and teachers were asked to complete behavior rating scales of attention

and problem behavior before and three months after treatment. Five UADD subjects and seven AD-HD were not included from the above mentioned sample for the treatment portion of the study for various reasons including (a) parental choice to forego psychopharmacological intervention (UADD = 1, AD-HD = 1), (b) adverse side effects (UADD = 1, AD-HD = 1), (c) noncompliance to medication treatment (AD-HD = 1), (d)dropped out for unknown reasons (UADD = 1, AD-HD = 1), and (e) identified and placed on medication prior to initiation of treatment study (UADD = 2, AD-HD = 3). A total of 12 AD-HD subjects (n = 11 males, n = 1 female; mean age = 8.9) and 12 UADD subjects (n = 8 males, n = 4 females; mean age = 9.8) completed the treatment phase and were included in the pretest and posttest analyses. There was not a significant difference between the two groups in gender (Fisher's Test for 2 X 2, p = .15839) or age (t = 1.46, p = .1567).

Materials

The battery of instruments included the following:

1. Wechsler Intelligence Scale for Children-Revised (WISC-R; Wechsler, 1974). The WISC-R is the most widely administered intelligence test for school-age children, ages 6-16, with excellent psychometric properties (Sattler, 1982). Reliability and validity information is provided within the test manual. Average split-half coefficients for the verbal, performance, and full scale scores are reported to be .94, .90, and .96, respectively. Concurrent validity has been demonstrated comparing the WISC-R with the 1972 norms of the Stanford-Binet Intelligence Scale

(Form L-M) reporting a coefficient of .73. The WISC-R is given to evaluate cognitive and problem-solving abilities and can also provide information regarding attention deficits. The Freedom From Distractibility Index (FFD), consisting of the digit span, arithmetic, and coding subtests and derived from factor analysis (Sattler, 1982), has been used as a indice of attentional deficits (Lufi & Cohen, 1985; Wynne, 1979). Children from the two groups were compared based on the Full Scale IQ, Verbal IQ, and Performance IQ scores as well as the Freedom From Distractibility Index scores.

2. Piers-Harris Self-Concept Scale ("The Way I Feel About Myself") (Piers, 1984). This is a self-report instrument designed to measure a child's self-perceptions concerning his self-image, school performance, body image, and interpersonal relationships. It involves a series of 80 first-person declarative statements, to which the child responds "yes" or "no". It yields an overall self-concept score and six subscale cluster scores (Behavior, Intellectual and School Status, Physical Appearance and Attributes, Anxiety, Popularity, and Happiness and Satisfaction), which can be converted to percentiles, stanines, and T-scores. It was standardized on a sample of 1,183 children in grades 4 through 12. It has been widely used in clinical and research practices and is suggested for use with children 8-18 years of age. Test-retest reliability coefficients range from .42 to .96 with a median coefficient of .73. Construct validity correlations with other self-report self-concept measures range from .32

to .85. Additional reliability and validity data are available in the test manual (Piers, 1984).

3. Children's Depression Inventory (CDI; Kovacs, 1985). The Children's Depression Inventory (see Appendix D) is the most commonly used self-report questionnaire for assessing depressive symptoms in children and adolescents. It consists of 27 items that assess the presence and severity of affective, cognitive, motivational, vegetative, and psychomotor components of depression. Each item consists of three statements relating to severity levels of a depressive symptom, rated from 0 to 2. The child chooses the statement which best describes himself or herself over the past 2 weeks. High scores indicate high levels of self-reported depression. Reliability data on the CDI is acceptable with an internal consistency coefficient of .82 and a test-retest coefficient of .82. Concurrent validity of the CDI was determined against two self-report measures, the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1978) and the Coopersmith Self-Esteem Inventory (Coopersmith, 1967). The correlation between the depression and anxiety scales was highly significant (r = .65, p < .0001); self-rated depressive symptomatology and low self-esteem were also correlated (r = -.59, p < .0001). Additional reliability and validity data have been reported which showed that the CDI could be used as an index of the severity of depression and a measure of change as a result of treatment intervention (Kovacs, 1985). No age-related normative data is available.

4. Matching Familiar Figures Test (MFFT; Kagan, 1964). The MFFT has been widely used as a measure of impulsivity. On this instrument, the child is presented with a stimulus picture on one page and six pictures on another page, five which are slightly different and one which is exactly the same as the stimulus picture. The child is instructed to find the picture which is the same as the stimulus picture. Response times and errors are scored. The MFFT has been found to differentiate between children identified as hyperactive and children considered normal on the construct of impulsiveness (Quay & Brown, 1980). No validity or reliability data is provided within the test manual. Messer (1976) reported convergent validity correlations on the MFFT response times and errors to be .73 for response time and .68 for errors obtained.

5. Conners Parent Rating Scale-Revised (CPRS-R; Conners, 1969) and Conners Teacher Rating Scale (CTRS; Conners, 1973). The CPRS-R (see Appendix E) and CTRS (see Appendix F) have been extensively employed in both clinical and research practices (Brown, 1982; Garfinkel & Klee, 1986) in the assessment and diagnosis of attention deficit disorders, and to measure treatment effects. It provides indices of hyperkinesis, conduct problems, and anxiety. T-scores for the hyperkinesis index were compared on both the parent's (mother) and teacher's form for children in both samples for this study. Normative data is available for sex and ages 3-17 years (Goyette, Conners, & Ulrich, 1978). Test-retest reliability for the CTRS ranges from

.70 to .90 (Conners, 1973). No validity data has been reported on the CPRS-R.

6. Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983). The CBCL is a questionnaire used to assess the behavioral problems and adaptive social competencies of 4 to 16 year old children. Both parent and teacher versions are available. The Parent Form consists of 118 items related to behavior problems on which the parent rates the child using a 3-point scale ("not true," "somewhat or sometimes true," "very true or often true"). There are 20 additional social competency items, which assess the amount and quality of children's activities, social interactions, and school performance. Factor analytic studies of the CBCL for males and females at ages 4 to 5, 6 to 11, and 12 to 16 for both parents and teachers were completed to derive various behavior problem scales. Raw scores can be converted to T-scores and percentiles. According to the test manual, children of different ages and sex can be compared on similar scales. Test-retest reliability ranges from .61 to .92. Construct validity correlation coefficients with the Revised Behavior Problem Checklist range from .71 to .92. More detailed reliability and validity data including criterion-related validity and discriminant analysis are provided in the instrument's manual (Achenbach & Edelbrock, 1983).

Treatment

Subjects from both samples received methlyphenidate (Ritalin) 0.3 mg/kg/dose given twice daily. Compliance was

monitored by the prescribing of one-month allottments of medication and requiring the parents to call the physician for additional prescriptions. Noncompliance (AD-HD = 1, UADD = 0) was suspected if parents failed to contact the physician for renewal of their prescription after the one-month allottment would be expected to have run out, or if the physician was contacted for renewal of the prescription prior to when the allotment of medication was expected to have run out.

Data Analysis

Unpaired *t*-tests were performed to determine the differences between UADD and AD-HD subjects on measures of intellectual functioning, impulsivity, parent- and teacher-rated behavior, self-reported depression, and self-esteem prior to treatment. Paired *t*-tests were computed on pretest and posttest measures of impulsivity, self-reported depression and self-esteem, and parent and teacher-rated behavior for each group to determine their response to stimulant medication. A repeated measures ANOVA was used to determine the differences between the two groups in their response to stimulant medication on measures of impulsivity, self-reported depression and self-esteem, and parent and teacher-rated behavior.

CHAPTER IV

RESULTS

The intent of this study was to improve our understanding of the clinical characteristics and treatment of children with AD-HD and UADD. Two specific objectives and related hypotheses were addressed in this study. The results are discussed below.

Objective 1

The first objective of this study was to identify the cognitive and affective characteristics of children diagnosed as AD-HD and UADD and determine the differences, if any, between these children. Seventeen children diagnosed as UADD and 19 children diagnosed as AD-HD were compared on measures of intelligence, impulsivity, problem behavior, depression, and self-esteem in order to clarify the clinical characteristics of these disorders. The null hypothesis tested was: (a) There will be no significant difference ($p < .05$) between children with AD-HD and children with UADD on intelligence scores, measures of impulsivity, parent and teacher ratings of problem behavior, or self-reported depression or self-esteem.

Intellectual functioning. WISC-R Full Scale IQ, Verbal IQ, and Performance IQ scores were obtained prior to treatment for both UADD and AD-HD groups and compared. Kaufman's (1975) Verbal Comprehension, Perceptual Organization, and Freedom From Distractibility Index scores derived from factor analytic studies were also compared for each group. Separate unpaired t-tests were performed to

compare the means for each group on each of these cognitive variables. The results of the statistical analysis are presented in Table 4. No statistically significant differences ($p < .05$) were found between the two groups on the Full Scale IQ, Verbal IQ, or Performance IQ scores. Also, there were no significant differences found on the Verbal Comprehension, Perceptual Organization, or Freedom From Distractibility Index scores. These results support the aceptance of the null hypothesis.

Impulsivity. Percentile ranks of the total number of errors obtained and mean latency time on the MFFT for UADD subjects and AD-HD subjects were compared using unpaired t-tests (see Table 5). There was not a statistically significant difference ($p < .05$) between AD-HD subjects ($M = 50.94$) and UADD subjects ($M = 45.82$) in the total number of errors, t (33) = -0.50. There was also no significant difference ($p < .05$) between AD-HD subjects ($M = 20.00$) and UADD subjects ($M = 34.88$) in mean latency time t (33) = 1.73. However, there was a difference at $p < .10$. These results indicate evidence that supports rejection of the null hypothesis.

Depression and self-esteem. CDI total scores were compared for both the UADD ($M = 11.19$) and AD-HD ($M = 13.33$) groups using an unpaired t-test. Results are presented in Table 6. It can be seen that no statistically significant differences ($p < .05$) were found between the two groups, t (32) = -0.74 in self-reported depression. These results support acceptance of the null hypothesis.

Table 4

Intellectual Functioning: T and p-values for Group Mean IQ Scores and Standard Deviations for UADD and AD-HD Subjects

IQ Score	n	M	SD	t	df	p
Full Scale						
UADD	16	97.56	11.74	-0.18	33	.8588
ADHD	19	98.42	16.50			
Verbal						
UADD	16	94.44	13.16	-0.18	32	.8597
ADHD	18	95.33	16.14			
Performance						
UADD	16	101.63	13.31	0.14	32	.8874
ADHD	18	106.89	16.72			
Verbal Comprehension						
UADD	12	101.67	13.34	0.97	24	.33377
ADHD	14	96.21	15.13			
Perceptual Organization						
UADD	12	102.97	14.18	-0.28	24	.7743
ADHD	14	104.79	18.66			
Freedom From Distractibility						
UADD	12	94.83	13.92	-0.41	24	.6919
ADHD	14	96.86	11.40			

*$p < .05$

Table 5

Impulsivity: T and p-values for Group Mean Percentile Ranks and Standard Deviations on MFFT for UADD and AD-HD Subjects

Variable	UADD (n = 17)	ADHD (n = 18)	t (33)	p
MFFT Total Errors				
M	45.82	50.94	-0.50	.6196
SD	27.84	32.58		
MFFT Mean Latency Time				
M	34.88	20.00	1.73	.0957
SD	30.91	18.06		

*p < .05

Additional analysis revealed that five of the 17 UADD children scored above the cut-off (> 2 Standard Deviations above the mean) on the CDI, while 10 of the 19 AD-HD children scored above the cut-off. A Fisher's Test for 2 X 2 was computed revealing no significant difference (p = .4037) between the two groups (see Table 7).

Piers-Harris Total Scale T-scores and cluster scale T-scores for the six subscales were compared. Unpaired t-tests were computed with results reported in Table 6. No statistically significant differences (p < .05) were found between the two groups. These results support acceptance of the null hypothesis.

Table 6

Self-Reported Depression and Self-Esteem: T and p-values for Group Means and Standard Deviations on the CDI and Piers-Harris for UADD and AD-HD Groups

Variable	UADD (n = 16)	ADHD (n = 18)	t (32)	p
CDI Total Score[a]				
M	11.19	13.33	-0.74	.4674
SD	9.12	7.72		
Piers-Harris Total T-score[b]				
M	52.50	50.44	0.43	.6678
SD	15.65	11.36		
Behavior Cluster[b]				
M	45.81	44.00	0.37	.7154
SD	16.05	12.10		
Intellectual and School Status[b]				
M	46.06	48.89	-0.70	.4882
SD	13.74	8.85		
Physical Appearance and Attributes[b]				
M	50.25	55.28	-1.33	.1976
SD	11.97	10.06		
Anxiety[b]				
M	52.06	49.11	0.66	.5134
SD	13.41	12.52		
Popularity[b]				
M	46.13	43.94	0.54	.5951
SD	13.47	9.60		
Happiness and Satisfaction[b]				
M	48.50	49.83	-0.34	.7377
SD	12.56	10.14		

*$p < .05$

[a] $M = 9$, $SD = 4$

[b] T-score > 70 indicates significant problem behavior

Table 7

Number of Depressives versus Nondepressives on the CDI for UADD and AD-HD Groups Using Fisher's Test for 2 X 2

	UADD (n = 17)	AD-HD (n = 19)	p
Depressed (CDI>2 standard deviations)	5	10	.1404
Non-depressed (CDI<2 standard deviations)	11	8	

* $p < .05$

Problem behavior. Unpaired t-tests were computed to determine if there were any statistically significant differences in the means between the two groups on the Hyperactivity Index T-scores of the CPRS-R and the TBRS (see Table 8). No significant difference was found between the UADD subjects ($M = 63.18$) and the AD-HD subjects ($M = 69.29$) on the TBRS Hyperactivity Index ($t\ \{32\} = -1.44$, $p = .1586$). AD-HD subjects ($M = 77.74$) were rated significantly higher than UADD subjects ($M = 67.53$) by their parents on the CPRS-R ($t\ \{32\} = -2.34$, $p < .05$). These results support rejection of the null hypothesis.

Parent and teacher ratings of problem behavior using the CBCL were compared for children with UADD and AD-HD. The following problem behavior scales on the parent form were of interest because of their clinical and research utility in measuring inattention and hyperactivity, emotional problems, and conduct problems (Achenbach &

Table 8

Parent and Teacher Ratings of Inattention/Hyperactivity: T and p-values for Group Mean Hyperactivity Index T-scores and Standard Deviations on the CPRS-R and TBRS for UADD and AD-HD Groups

Scale	n	M	SD	t	df	p
CPRS-R[a]						
UADD	17	67.53	11.62	-2.34	34	.0255*
ADHD	19	77.74	14.25			
TBRS[a]						
UADD	17	63.18	13.16	-1.44	32	.1586
ADHD	17	69.29	11.49			

*$p < .05$

[a] T-score > 70 indicates significant problem behavior

Edelbrock, 1983). On the parent form, the Aggressive, Hyperactive, Delinquent, Depression, Social Withdrawl, Anxious, and Uncommunicative scales were utilized. The Anxiety, Social Withdrawl, Unpopular, Inattention, Hyperactive, and Aggressive scales on the teacher form were of interest. Mean scale T-scores on the CBCL (parent form) were compared for each group using unpaired t-tests (see Table 9). It can be seen that AD-HD subjects were rated significantly higher than the UADD subjects on the Aggressive, Hyperactive, and Delinquent problem behavior scales. There were no significant differences between the two groups on the Depressive, Social Withdrawl, Anxious, and Uncommunicative problem behavior scales. Some of these results (aggressive, hyperactive, and delinquent) support rejection of the null hypothesis.

Table 9

Parent Ratings of Problem Behavior: T and p-values for Group Mean CBCL T-scores and Standard Deviations for UADD and AD-HD Groups

Scale	n	M	SD	t	df	p
Aggressive[a]						
UADD	17	62.06	9.83	-3.83	34	.0005*
ADHD	19	75.05	10.47			
Hyperactive[a]						
UADD	16	71.94	8.90	-2.21	33	.0343*
ADHD	19	78.00	7.35			
Delinquent[a]						
UADD	16	64.19	8.92	1.99	33	.0545*
ADHD	19	70.05	8.46			
Depression[a]						
UADD	14	67.07	8.73	6.18	29	.9511
ADHD	17	66.88	8.25			
Social Withdrawl[a]						
UADD	15	66.53	8.80	-9.60	31	.9241
ADHD	18	66.83	9.05			
Anxious[a]						
UADD	13	64.38	9.26	0.60	23	.6486
ADHD	12	62.58	5.33			
Uncommunicative[a]						
UADD	15	64.27	9.67	5.72	27	.9548
ADHD	14	64.07	8.64			

* $p < .05$

[a] T-score > 70 indicates significant problem behavior

Results of unpaired t-tests were computed to compare teacher ratings of problem behavior for UADD and AD-HD subjects using the CBCL and are reported in Table 10. No statistically significant ($p < .05$) differences were found on any of the problem behavior scales. These results support acceptance of the null hypothesis.

Overall, the results support acceptance of the null hypothesis concerning intellectual functioning, depression, and self-esteem. No significant differences ($p < .05$) were found between the two groups on measures of intellectual functioning, self-reported depression or self-esteem. The results support the rejection of the null hypothesis that there would be no differences between the two groups in problem behavior as reported by parents or teachers. Parents rated AD-HD subjects as displaying significantly more hyperactive, aggressive, and delinquent problem behavior than UADD subjects. There were no differences in parent-ratings in anxious, social withdrawl, depressive, or uncommunicative problem behavior. There were also no differences in teacher-ratings of problem behaviors.

Objective 2

The second objective of this study was to determine the treatment effects of stimulant medication (methylphenidate) on UADD and AD-HD children and to determine the differences, if any, between the two groups. Twelve UADD and 12 AD-HD subjects were compared on measures of impulsivity, teacher and parent ratings of problem behavior, and self-reported depression and self-esteem, to

Table 10

Teacher Ratings of Problem Behavior: T and p-values for Group Mean CBCL T-scores and Standard Deviations for UADD and AD-HD Groups

Scale	n	M	SD	t	df	p
Anxiety[a]						
UADD	17	59.82	6.82	0.62	32	.5413
ADHD	17	58.47	5.93			
Social Withdrawl[a]						
UADD	17	65.59	8.49	1.57	32	.1272
ADHD	17	59.59	13.32			
Unpopular[a]						
UADD	17	63.53	8.41	0.21	32	.8330
ADHD	17	62.94	7.72			
Inattention[a]						
UADD	14	66.00	5.75	-1.03	27	.3112
ADHD	15	68.20	5.73			
Hyperactive[a]						
UADD	17	64.06	10.36	-1.17	32	.2519
ADHD	17	67.71	7.65			
Aggressive[a]						
UADD	17	62.24	10.18	-0.94	32	.3570
ADHD	17	65.12	7.61			

* $p < .05$

[a] T-score > 70 indicates significant problem behavior

determine their response to stimulant medication. The null hypotheses tested were as follows:

1. There will be no significant differences ($p < .05$) between pretest and posttest measures of impulsivity, parent and teacher ratings of problem behavior, and self-reported depression and self-esteem for children with UADD or AD-HD who received stimulant medication as treatment.

2. There will be no significant differences ($p < .05$) between children with AD-HD or UADD who have received stimulant medication as treatment on measures of impulsivity, parent and teacher ratings of problem behavior, or self-reported depression or self-esteem before or after treatment.

Impulsivity. Two repeated measures two-way analyses of variance and post hoc paired t-tests were performed to compare pretest and posttest percentile rankings of mean latency and total errors scores on the MFFT for UADD and AD-HD subjects (see Table 11). In terms of total errors, there was no significant difference ($p < .05$) between the two groups in the total errors scores on pretest, F (1,20) = 0.52. There was also no significant difference between pretest and posttest total error scores for either the UADD group, t (20) = 1.47, or the AD-HD group, t (20) = 1.03. No significant group X treatment interaction was found, F (1,43) = .06. These results support acceptance of the null hypothesis. A significant difference was found, F (1,20) = 5.81, in the mean latency time between the UADD (M = 40.09) and AD-HD (M = 17.91) groups. No significant difference (p

Table 11

Impulsivity: F-Ratios, T-Values and p-values for Group Mean Scores and Standard Deviations on MFFT for UADD and AD-HD Groups

REPEATED MEASURES ANOVA

	df	SS	F	p
Total Errors				
Group	1,20	484.454	0.52	.4783
Treatment	1,20	1223.273	2.51	.1288
Interaction	1,43	29.454	0.06	.8083
Mean Latency Time				
Group	1,20	6925.097	5.81	.0256*
Treatment	1,20	2.404	0.00	1.0000
Interaction	1,43	93.090	0.42	.5255

* $p < .05$

PAIRED T-TESTS

	n	Pre M	Post M	t	p
Total Errors					
UADD	11	36.82	27.91	1.47	.1721
ADHD	11	45.09	32.91	1.03	.3284
Mean Latency Time					
UADD	11	40.09	43.00	-0.35	.7342
ADHD	11	17.91	15.00	0.85	.4146

* $p < .05$

< .05) was found between the pretest and posttest mean latency time for either the UADD group, t (20) = -.39, or the AD-HD group, t (20) = .85. Also, no significant group X treatment interaction ($p < .05$) was found, F (1,43) = .42. These results support acceptance of the null hypothesis.

Depression and self-esteem. Pretest and posttest CDI total scores for UADD and AD-HD groups were compared by a repeated measures two-way analysis of variance (see Table 12) and post hoc paired t-tests (see Table 13). There was not a significant group X group main effect for mean scores, F (1,20) = 0.00, between UADD and AD-HD groups. There was a significant treatment main effect, F (1,20) = 15.77, $p < .007$, between pretest and posttest scores for UADD and AD-HD subjects. Paired t-tests revealed statistically significant differences in pretest and posttest CDI total scores for both the UADD group, t (10) = 2.8, $p < .03$ and the AD-HD group, t (12) = 2.82, $p < .02$.

Figure 1 graphically shows the change in pretest and posttest group mean scores on the CDI for both UADD and AD-HD groups. Further, 5 of the five UADD subjects and 5 out of the six AD-HD subjects who scored above the cut-off (CDI Total Score > 2 standard deviations above the mean) before treatment scored below the cut-off(< 1 standard deviation above the mean) after treatment. A Fisher's Test for 2 X 2 revealed no significant differences (p = .14037) between the two groups (see Table 14). There was no significant group X treatment interaction effect, F (1,43) = 0.15, between UADD and AD- HD groups before and

Table 12

Self-Reported Depression and Self-Esteem: F-Ratios and p-values for Group Mean Scores on CDI and Piers-Harris for UADD and AD-HD Groups

	df	SS	F	p
CDI Total Score				
Group	1,20	.221	0.00	.9521
Treatment	1,20	664.568	15.77	.0068*
Interaction	1,43	6.274	0.15	.7037
Piers-Harris Total Score				
Group	1,20	48.878	0.45	.5110
Treatment	1,20	1070.205	14.27	.0012*
Interaction	1,43	30.912	0.41	.5282
Behavior Cluster				
Group	1,20	17.740	0.11	.7400
Treatment	1,20	1276.568	11.07	.0034*
Interaction	1,43	2307.325	0.27	.6121
Intellectual and School Status Cluster				
Group	1,20	132.361	1.33	.2624
Treatment	1,20	1298.205	17.15	.0005*
Interaction	1,43	121.212	1.60	.2203
Physical Appearance and Attributes				
Group	1,20	578.619	3.91	.0618
Treatment	1,20	11.364	2.03	.1696
Interaction	1,43	62.836	1.15	.2972
Anxiety				
Group	1,20	8.358	0.07	.7937
Treatment	1,20	525.091	6.15	.0222*
Interaction	1,43	9.187	0.00	.9974
Popularity				
Group	1,20	184.112	1.50	.2356
Treatment	1,20	349.455	5.43	.0303*
Interaction	1,43	3.704	0.00	.9811
Happiness and Satisfaction Cluster				
Group	1,20	70.020	0.91	.3513
Treatment	1,20	1171.114	14.96	.0001*
Interaction	1,43	22.936	0.29	.5943

* $p < .05$

Table 13

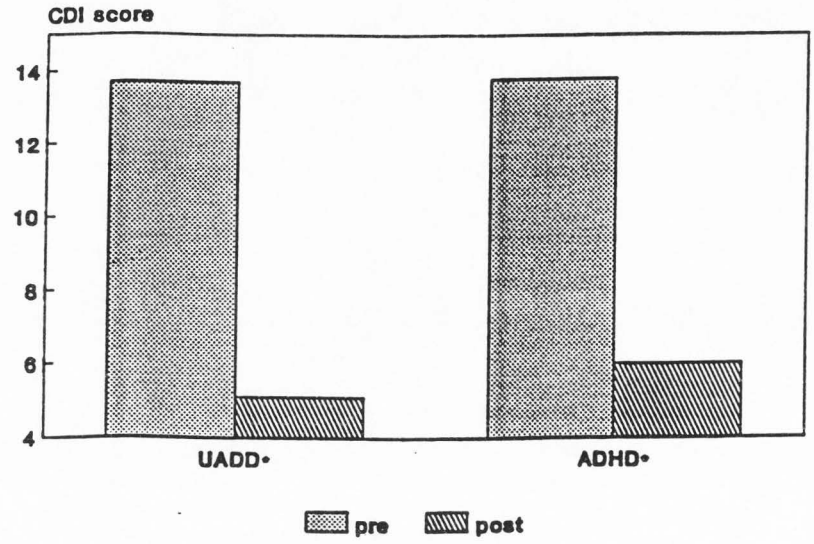
Self-Reported Depression and Self-Esteem: T and p-values for Pretest and Posttest Group Means on CDI and Pier-Harris for UADD and AD-HD Groups

Variable	n	Pre M	Post M	t	p
CDI Total Score[a]					
UADD	10	13.7	5.1	2.80	.0208*
ADHD	12	13.08	6.00	2.82	.0168*
Piers-Harris Total Score[b]					
UADD	10	47.70	59.40	-2.59	.0291*
ADHD	12	51.50	59.83	-2.80	.0173*
Behavior Cluster[b]					
UADD	10	41.80	54.40	-2.46	.0363*
ADHD	12	44.75	54.00	-2.24	.0466*
Intellectual and School Status Cluster[b]					
UADD	10	43.10	57.60	-3.36	.0084*
ADHD	12	49.92	57.75	-2.45	.0325*
Physical Appearance and Attributes[b]					
UADD	10	48.90	54.70	-1.37	.2037
ADHD	12	58.58	59.58	-0.48	.6432
Anxiety Cluster[b]					
UADD	10	48.80	55.70	-1.62	.1403
ADHD	12	49.67	56.58	-1.89	.0861
Popularity Cluster[b]					
UADD	10	41.50	47.20	-1.36	.2055
ADHD	12	45.67	51.25	-2.03	.0678
Happiness and Satisfaction Cluster[b]					
UADD	10	45.60	57.50	-2.80	.0207*
ADHD	12	49.58	58.58	-2.66	.0220*

* $p < .05$

[a] CDI $M = 9$, $SD = 4$

[b] T-score > 70 indicates significant problem behavior



* p < .05

Figure 1. Group mean pre and post scores for self-reported depression.

Table 14

Number of Responders versus Nonresponders to Stimulant Medication Based on CDI Scores for UADD and AD-HD Groups Using Fisher's Test for 2 X 2

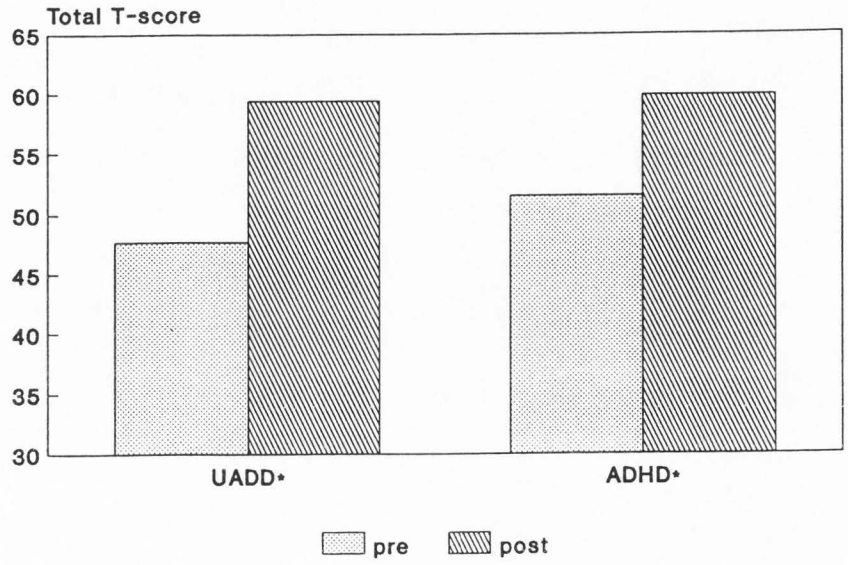
	UADD (n = 5)	ADHD (n = 6)
Responders (CDI < 14)	5	6
Nonresponders (CDI > 14)	0	1

* p < .05

[a] CDI M = 9, SD = 4

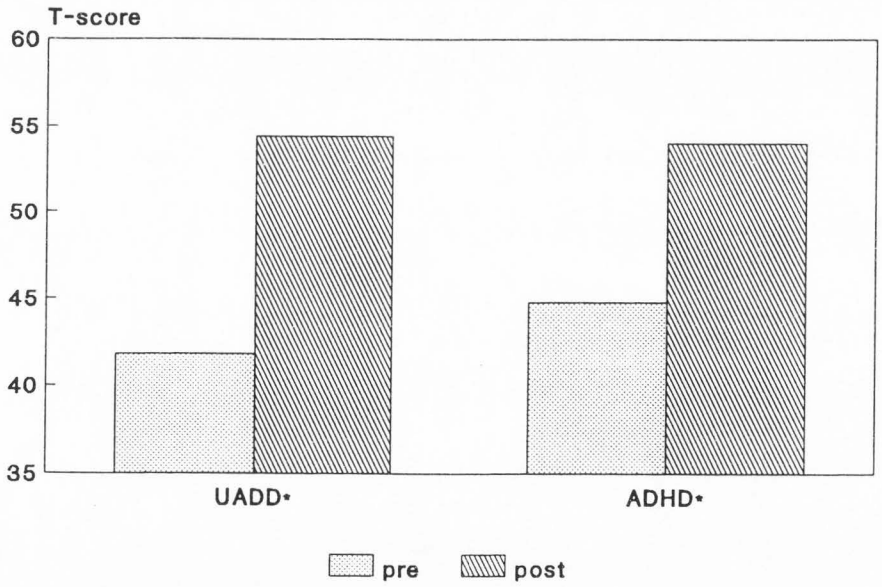
after stimulant medication. The results support rejection of the null hypothesis that there would be no improvement in self-reported depression following a trial of stimulant medication. The results support acceptance of the null hypothesis that there would be no significant differences between the two groups in their response to stimulant medication on self-reported depression.

Pretest and posttest Piers-Harris Total Score T-scores and cluster scale T-scores were compared for UADD and AD-HD subjects by repeated measures two-way analyses of variance (see Table 12) and post hoc paired t-tests (see Table 13). There was not a significant group X group main effect between UADD and AD-HD groups for the pretest Total score or cluster scale scores. There were significant treatment main effects for both groups in Total Score T-scores and the Behavior, Intellectual and School Status, Popularity, and Happiness and Satisfaction cluster scores. Figures 2 through 5 demonstrate the changes in pretest and posttest mean scores on the Piers-Harris Total Score and cluster scores. No significant treatment X group interaction effects between UADD and AD-HD groups on stimulant medication were found on the Piers-Harris Total Scores or cluster scores. Results support rejection of the null hypothesis that there would be no differences between pretest and posttest scores for self-reported self-esteem for UADD or AD-HD groups. Results support acceptance of the null hypothesis that there would be no differences between UADD and AD-HD groups in their response to stimulant medication on self-reported self-esteem.



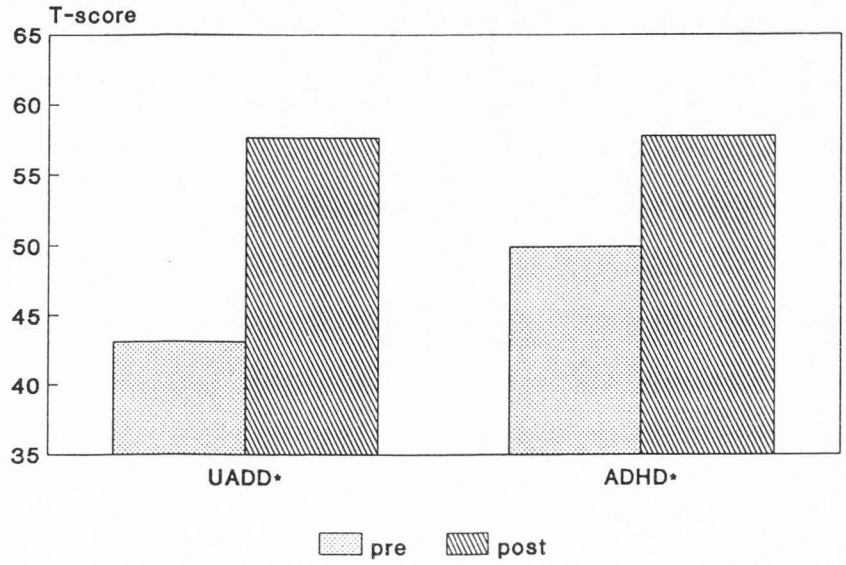
* p < .05

Figure 2. Mean pre and post scores for Piers-Harris Total Score.



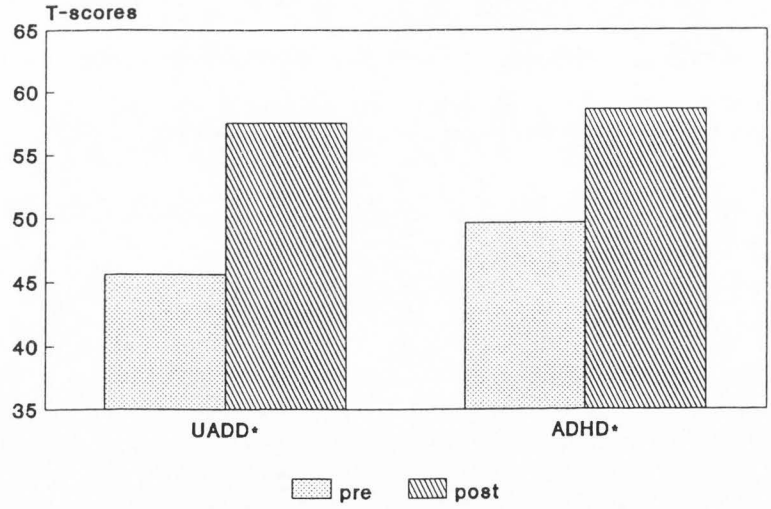
* p < .05

Figure 3. Mean pre and post scores for Piers-Harris Behavior Cluster.



*p < .05

Figure 4. Mean pre and post scores for Piers-Harris Intellectual Cluster.



* p < .05

Figure 5. Mean pre and post scores for Piers-Harris Happiness Cluster.

Problem behavior. Repeated two-way analyses of variance and post hoc paired *t*-tests were computed to compare pretest and posttest mean Hyperactivity Index T-scores on the CPRS-R and TBRS for both UADD and AD-HD groups (see Table 15). There was not a significant group X group main effect ($p < .05$) between UADD and AD- HD groups on the mean pretest CPRS-R Hyperactivity Index T-score, F (1,20) = 2.35. A significant treatment main effect between pretest and posttest scores was found on the CPRS-R, F (1,45) = 11.70, $p < .003$. There was significant improvement in the mean CPRS-R Hyperactivity Index T-score for the AD-HD group, t (12) = 2.92, $p < .02$, but not for the UADD group, t (11) = 1.86 (see Figure 6). There was not a significant group X treatment interaction ($p < .05$), F (1,43) = 0.65 between UADD and AD-HD subjects and stimulant medication on the CPRS-R group mean Hyperactivity Index T-scores. The results support rejection of the null hypothesis that there would be no differences between pretest and posttest parent ratings of inattentive/hyperactive behavior for either UADD or AD-HD groups. Results support acceptance of the null hypothesis that there would be no significant differences between UADD and AD-HD groups in their response to stimulant medication on parent ratings of inattentive/hyperactive behavior.

A significant group X group main effect was found in the TBRS pretest mean Hyperactivity Index T-scores between the UADD and AD-HD groups, F (1,20) = 20.39, $p < .0001$. AD-HD subjects were rated significantly higher (M = 74.1) than UADD (M = 63.75) before treatment on the TBRS. There

Table 15

Parent and Teacher Ratings of Problem Behavior: F-Ratios, T-values and p-values for Pretest and Posttest Group Mean T-scores on the CPRS-R and TBRS for UADD and AD-HD Groups

REPEATED MEASURES ANOVA

Scale	df	SS	F	p
CPRS-R				
Group	1,20	514.79	2.35	.1404
Treatment	1,20	1840.891	11.70	.0026*
Interaction	1,43	101.746	0.65	.4303
TBRS				
Group	1,20	1794.315	20.39	.0002*
Treatment	1,20	1584.000	32.59	.0000*
Interaction	1,43	66.826	1.37	.2548

PAIRED T-TEST

Scale	n	Pre M	Post M	T	p
CPRS-R[a]					
UADD	11	70.91	61.36	1.86	.0923
ADHD	12	80.58	65.08	2.92	.0139*
TBRS[a]					
UADD	10	63.75	49.50	6.13	.0001*
ADHD	10	74.10	64.80	2.51	.0331*

* $p < .05$

[a] T-score > 70 indicates significant problem behavior

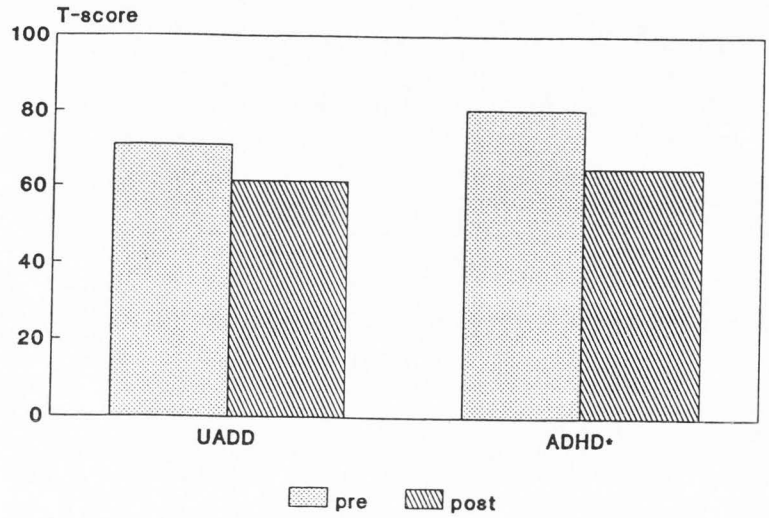


Figure 6. Mean pre and post scores for parent-rated attention problems on CPRS.

was also a significant treatment main effect found for both groups, F (1,20) = 32.59, $p < .0000$. There was a significant change from pretest to posttest on the TBRS Hyperactivity Index for both the UADD group, t (12) = 6.13, $p < .0002$, and the AD-HD group, t (10) = 2.51, $p < .04$ (see Figure 7). A significant group X treatment interaction between UADD and AD-HD groups and stimulant medication ($p < .05$) was not found, F (1,43) = 1.37. AD-HD subjects' teachers perceived their children as exhibiting significantly more hyperactive behavior than UADD subjects prior to a trial of stimulant medication. There was significant improvement in teacher ratings of attention/hyperactive behavior for both UADD and AD-HD

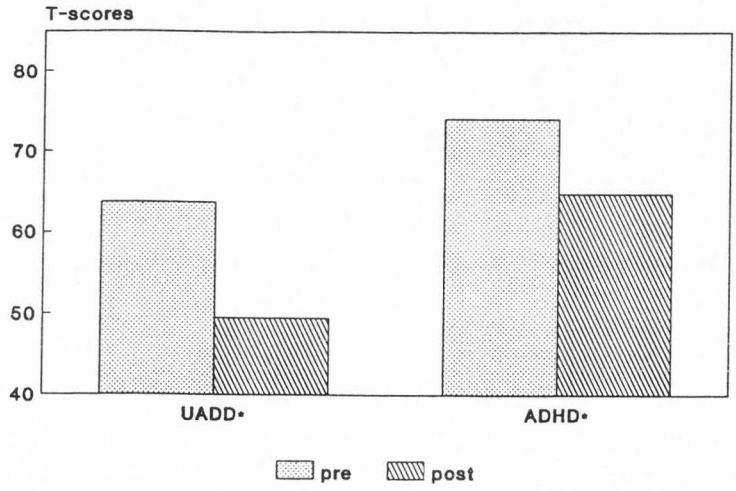


Figure 7. Mean pre and post scores for teacher-rated attention problems on TBRS.

groups following a trial of stimulant medication. These results support rejection of the null hypothesis that there would be no difference between pretest and posttest scores. Results support the acceptance of the null hypothesis that there would be no significant differences between UADD and AD-HD groups in their response to medication on hyperactive problem behavior.

Mean pretest and posttest subscale T-scores on the CBCL (parent and teacher forms) for UADD and AD-HD groups were compared using repeated measures two-way analyses of variance (see Table 16) and post hoc paired t-tests (see Table 17). Significant group X group main effects ($p<.05$)

Table 16

Teacher Ratings of Problem Behavior: F-Ratios and p-values for Group Mean T-scores on CBCL for UADD and AD-HD Groups

REPEATED MEASURES ANOVA

	df	SS	F	p
Aggressive				
Group	1,19	407.154	6.89	.0167*
Treatment	1,19	148.593	4.50	.0474*
Interaction	1,41	31.002	0.94	.3449
Hyperactive				
Group	1,19	488.202	4.27	.0528
Treatment	1,19	77.357	1.02	.3251
Interaction	1,41	10.87	0.14	.7092
Inattention				
Group	1,17	150.332	5.79	.0278*
Treatment	1,17	751.605	28.07	.0001*
Interaction	1,37	6.639	0.25	.6249
Social Withdrawl				
Group	1,19	11.811	0.11	.7444
Treatment	1,19	106.881	1.92	.1821
Interaction	1,41	2.716	0.05	.8276
Anxiety				
Group	1,19	18.651	0.90	.3560
Treatment	1,19	1.190	0.00	1.0000
Interaction	1,41	28.097	1.48	.2382
Self-Destructive				
Group	1,19	171.547	6.48	.0197*
Treatment	1,19	34.381	1.55	.2279
Interaction	1,41	3.841	0.17	.6817
Unpopular				
Group	1,19	52.737	0.65	.4302
Treatment	1,19	247.714	8.13	.0102*
Interaction	1,41	4.383	0.14	.7087

* $p < .05$

Table 17

Teacher Ratings of Problem Behavior: T and p-values for Pretest and Posttest Group Mean T-scores on CBCL for UADD and AD-HD Groups

PAIRED T-TEST

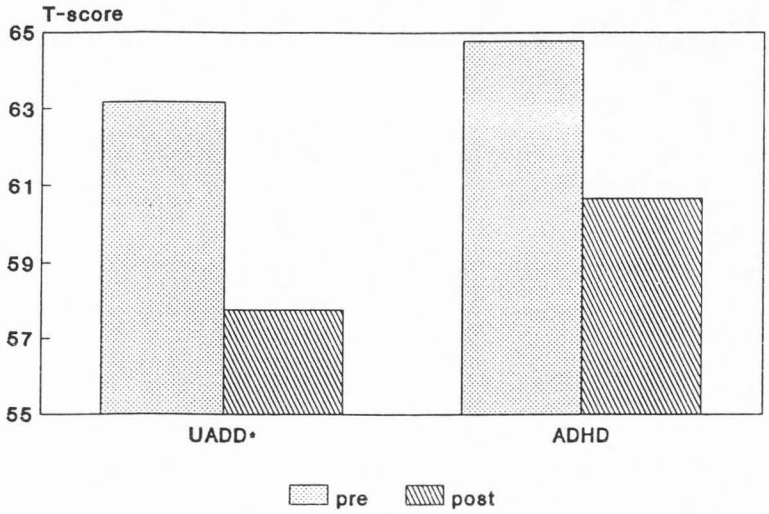
Scale	n	Pre M	Post M	t	p
Aggressive[a]					
UADD	12	62.33	57.08	2.47	.0313*
ADHD	9	66.89	65.11	0.59	.5726
Hyperactive[a]					
UADD	12	62.42	60.58	0.42	.6802
ADHD	9	70.33	66.44	1.64	.1397
Inattention[a]					
UADD	11	65.00	56.82	4.42	.0013*
ADHD	8	69.88	60.00	3.20	.0152*
Social Withdrawl[a]					
UADD	12	63.33	60.58	0.80	.4381
ADHD	9	62.78	59.00	1.34	.2183
Anxiety[a]					
UADD	12	57.58	59.00	-0.68	.5091
ADHD	9	57.89	56.00	1.30	.2282
Unpopular[a]					
UADD	12	63.17	57.75	2.47	.0311*
ADHD	9	64.78	60.67	1.53	.1656

* $p < .05$

[a] T-score > 70 indicates significant problem behavior

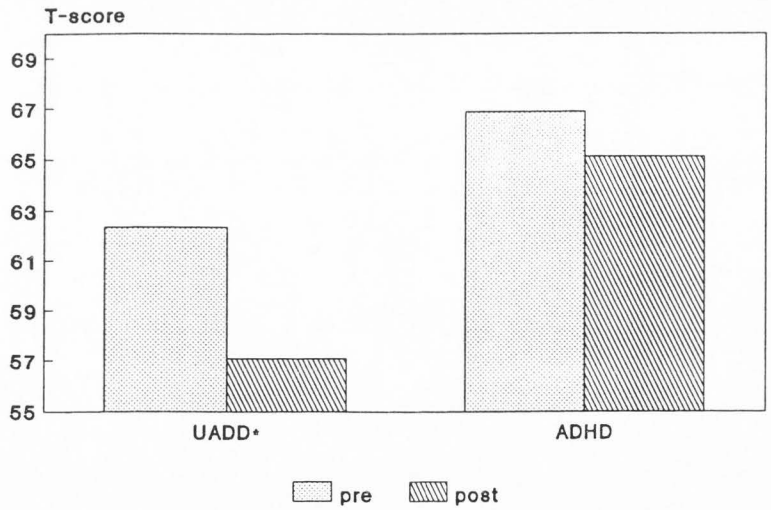
between UADD and AD-HD groups were revealed for the Aggressive (F = 6.89) and Inattention (F = 5.79) scales on the CBCL (teacher form). AD-HD children (M = 66.89) were rated significantly higher than UADD subjects (M = 62.33) on the Aggressive scale. AD-HD children (M = 69.88) were rated higher than UADD children (M = 65.00) on the Inattentive scale. Significant treatment main effects were found on the Unpopular (F = 8.13, p < .02), Inattention (F = 28.07, p < .0001), and Aggressive (F = 4.50, p < .05) subscales. Post hoc t-tests revealed significant improvement on the Unpopular (t {11} = 2.47, p < .05), Inattention (t {10} = 4.43, p < .05), and Aggressive (t {11} = 2.47, p < .05) scales for the UADD group, while significant improvement was only found on the Inattention scale, t (7) = 3.20, p < .05, for the AD- HD group (see Figures 8 through 10). No significant group X treatment interaction effects between UADD and AD-HD subjects and stimulant medication were found. These results support rejection of the null hypothesis.

A significant group X group main effect (p < .05) was revealed between the UADD and AD-HD groups on the pretest Hyperactive subscale of the CBCL (parent form), F (1,21), p < .03 (see Table 18). AD-HD subjects (M = 77.75) were rated significantly higher by parents than UADD subjects (M = 70.27). No other significant group X group main effects between UADD and AD-HD groups were found. Significant treatment main effects from before treatment to after treatment were found on the Depressive, Aggressive, Hyperactive, and Delinquent subscales (see Table 19).



* p < .05

Figure 8. Mean pre and post scores for teacher-rated unpopularity on CBCL.



* p < .05

Figure 9. Mean pre and post scores on teacher-rated aggression on CBCL.

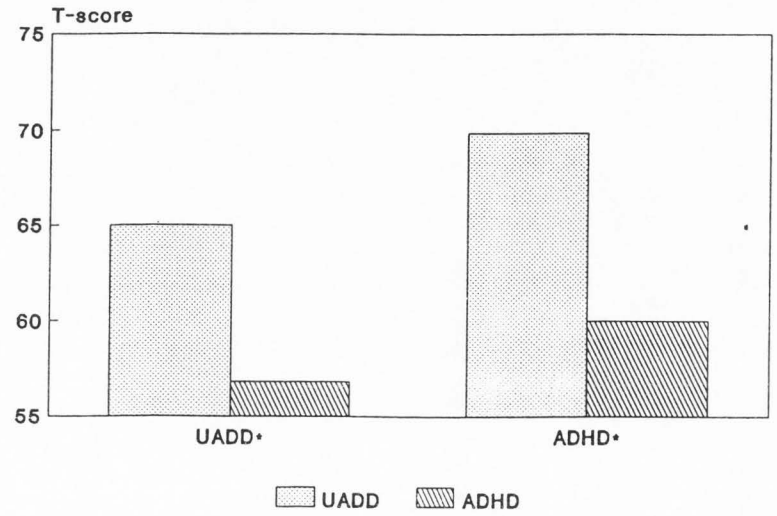


Figure 10. Mean pre and post scores for teacher-rated inattention on CBCL.

Significant improvement was revealed from pretest to posttest on the Anxious (t = 2.40), Depressive (t = 4.00), Uncommunicative (t = 2.40), Hyperactive (t = 2.50), and Aggressive (t = 3.27) scales for the UADD group (see Figures 11 through 16). Significant improvement was found on the Aggressive (t = 2.2) and Hyperactive (t = 2.88) scales for the AD-HD group. A significant group X treatment interaction was revealed on the Uncommunicative scale, F (1,33) = 4.80, between UADD and AD-HD subjects and response to stimulant medication (See Figure 15 and 16). These results support rejection of the null hypothesis.

Table 18

Parent Ratings of Problem Behavior: F-Ratios and p-values for Pretest and Posttest Group Mean T-Scores on CBCL for UADD and AD-HD Groups

REPEATED MEASURES ANOVA

Scale	df	SS	F	p
Anxious				
Group	1,14	14.860	0.20	.6633
Treatment	1,14	69.031	3.23	.0937
Interaction	1,31	76.612	3.59	.0790
Social Withdrawl				
Group	1,20	56.447	0.37	.5483
Treatment	1,20	27.841	0.89	.3577
Interaction	1,43	3.400	0.11	.7456
Depressive				
Group	1,19	19.281	0.18	.6737
Treatment	1,19	408.595	8.90	.0076*
Interaction	1,41	149.832	3.26	.0867
Uncommunicative				
Group	1,15	150.010	0.86	.3672
Treatment	1,15	16.941	0.40	.5345
Interaction	1,33	201.309	4.80	.0446*
Hyperactive				
Group	1,21	533.032	6.06	.0226*
Treatment	1,21	887.043	14.50	.0001*
Interaction	1,45	5.044	0.08	.7768
Aggressive				
Group	1,21	1300.448	8.69	.0077*
Treatment	1,21	801.392	14.75	.0010*
Interaction	1,45	5.336	0.10	.7571

* $p < .05$

Table 19

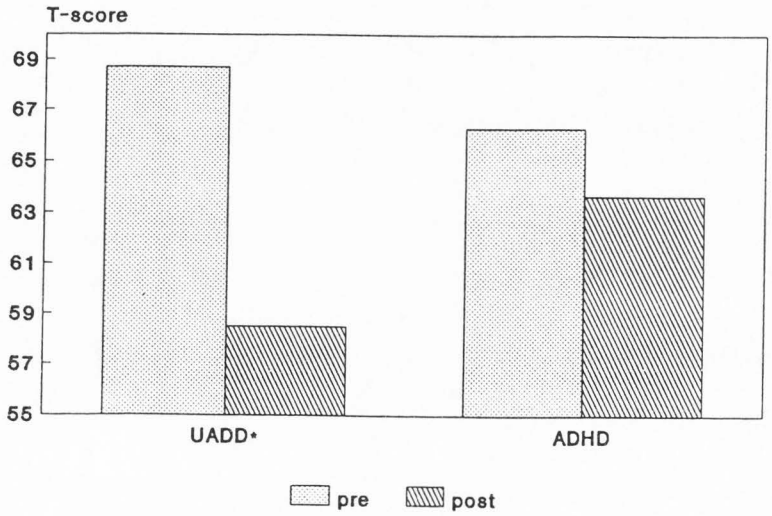
Parent Ratings of Problem Behavior: T and p-values for Pretest and Posttest Group Mean T-scores on CBCL for UADD and AD-HD Groups

PAIRED T-TEST

Scale	n	Pre M	Post M	T	p
Anxious[a]					
UADD	9	63.89	58.22	2.53	.0354*
ADHD	7	62.14	62.71	-0.24	.8174
Social Withdrawl[a]					
UADD	10	67.00	64.80	0.73	.4845
ADHD	12	64.17	63.08	0.60	.5633
Depressive[a]					
UADD	10	68.70	58.50	3.96	.0033*
ADHD	11	66.27	63.64	0.82	.4332
Uncommunicative[a]					
UADD	9	64.67	58.67	2.35	.0464*
ADHD	8	64.00	67.75	-1.00	.3512
Hyperactive[a]					
UADD	11	70.27	62.18	2.50	.0316*
ADHD	12	77.75	68.33	2.88	.0151*
Aggressive[a]					
UADD	11	64.09	56.45	3.27	.0085*
ADHD	12	75.42	66.42	2.52	.0284*

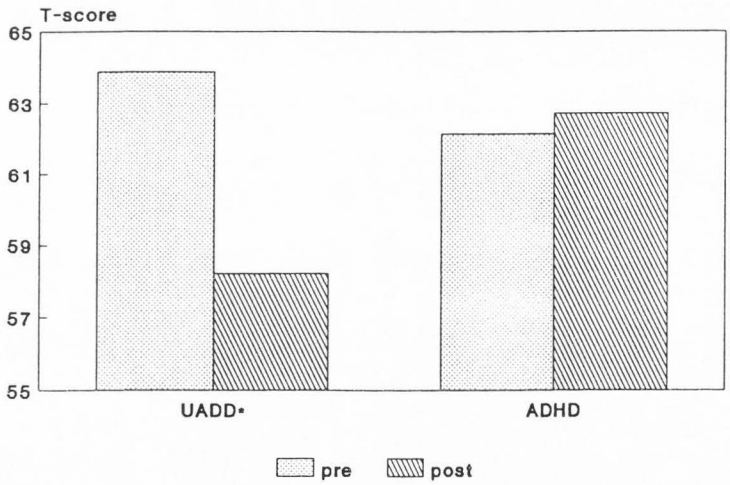
* $p < .05$

[a] T-score > 70 indicates significant problem behavior



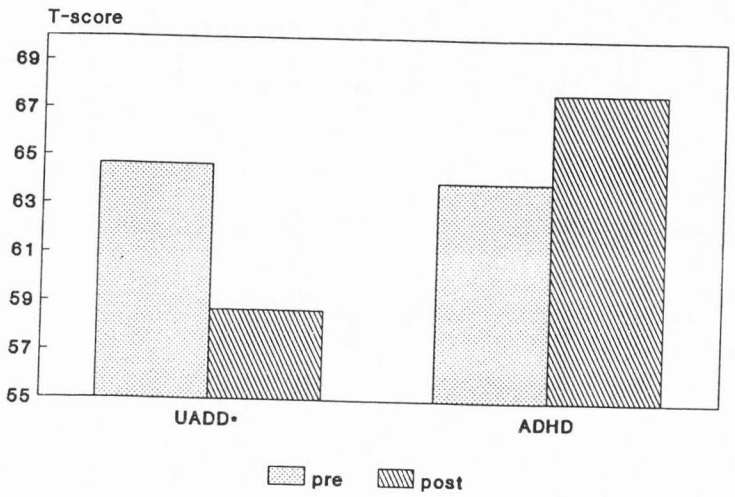
* p < .05

Figure 11. Mean pre and post scores for parent-rated depression on CBCL.



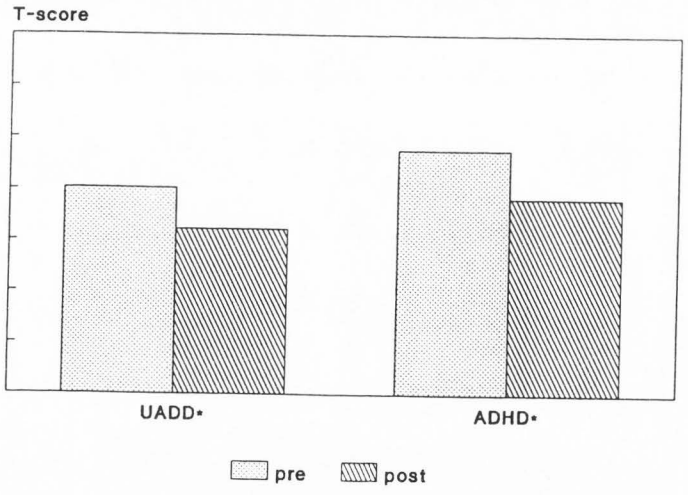
* p < .05

Figure 12. Mean pre and post scores for parent-rated anxiety on CBCL.



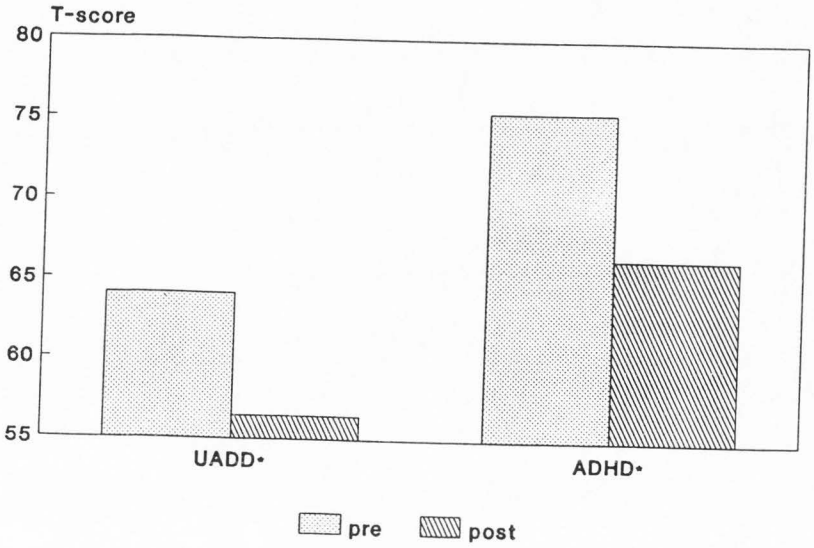
* p < .05

Figure 13. Mean pre and post scores for parent-rated uncommunicativeness on CBCL.



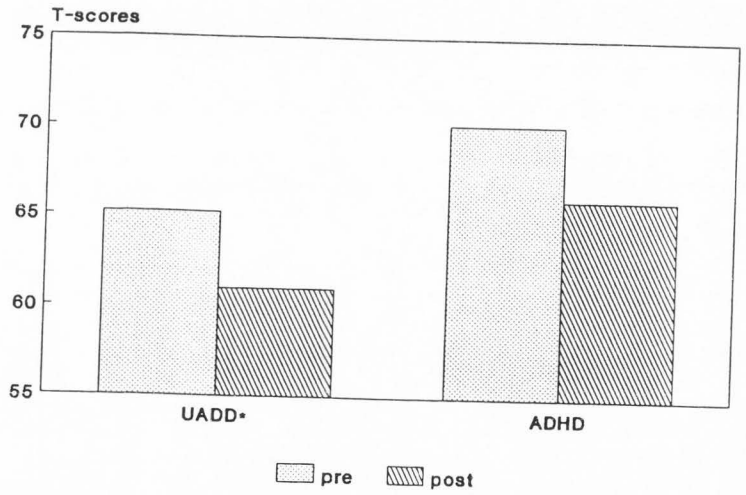
*p < .05

Figure 14. Mean pre and post scores for parent-rated hyperactivity on CBCL.



* p < .05

Figure 15. Mean pre and post scores for parent-rated aggression on CBCL.



* p < .05

Figure 16. Mean pre and post scores for parent-rated delinquency on CBCL.

Overall, results support acceptance of the null hypothesis that there would be no differences in pretest and posttest scores of impulsivity following a trial of stimulant medication for either UADD or AD-HD groups. Results support rejection of the null hypothesis that there would be no differences between pretest and posttest measures of depression, self-esteem, or problem behavior following a trial of stimulant medication for either UADD or AD-HD groups. Significant improvement was found from pretreatment to posttreatment in self-reported depression and self-esteem and inattention for both groups. Significant improvement was found for the UADD group in uncommunicative, hyperactive, unpopular, and aggressive problem behavior while only improvement in hyperactive behavior for the AD-HD group. Results support acceptance of the null hypothesis that there would be no differences in the response to stimulant medication on measures of self-reported depression or self-esteem or impulsivity between UADD and AD-HD groups occurred. Results support rejection of the null hypothesis that there would be no differences between UADD and AD-HD groups in their response to stimulant medication on ratings of problem behavior.

Table 20 presents a summary of all significant findings.

Table 20

Summary of Significant Findings

1.	AD-HD group > UADD group in parent-rated inattention/ hyperactive problem behavior
2.	AD-HD group > UADD group in parent-rated aggressive, hyperactive, and delinquent problem behavior
3.	Both AD-HD and UADD groups improved in self-reported depression following a trial of stimulant medication
4.	Both AD-HD and UADD groups improved in self-reported self-esteem
5.	Improvement in parent-rated inattention/hyperactive problem behavior for AD-HD group but not for UADD group
6.	Improvement in teacher-rated inattention/hyperactive problem behavior for both AD-HD and UADD groups
7.	Improvement in teacher-rated aggressive and unpopular problem behavior for UADD group, but not for AD-HD group
8.	Improvement in teacher-rated inattentive problem behavior for both AD-HD and UADD groups
9.	Improvement in parent-rated anxious, depressive, uncommunicative, hyperactive, and aggressive problem behavior in UADD group
10.	Improvement in parent-rated hyperactive and aggressive problem behavior in AD-HD group

CHAPTER V

DISCUSSION

Despite extensive research efforts, there remains considerable controversy and confusion concerning children with attention deficit disorders. Very few studies have been conducted that investigated the differences between children with ADD/H and children with ADD/WO. Of these studies, only a handful were prospective in nature, utilized clinically-referred populations and were free of significant methodological flaws. From the findings of this limited research, there were indications that ADD/H and ADD/WO groups represented two distinct disorders, rather than subtypes of the same disorder. To date, no studies have compared the more recent DSM-III-R categories of AD-HD and UADD in terms of their clinical picture or treatment. There continues to be a need for empirical investigations designed to clarify the etiology, diagnosis and assessment, and treatment of attention deficit disorders in children. The present study was designed to provide information that contributes to the understanding of attention deficit disorders in children by prospectively investigating clinically-referred children diagnosed as UADD or AD-HD.

Objective 1

The first objective of this study was to identify the cognitive and affective characteristics of children with AD-HD and UADD and to determine the differences, if any, between these two groups. It was hypothesized that there

would be no significant differences ($p < .05$) between these two groups on measures of intelligence, impulsivity, problem behavior, depression and self-esteem.

Intellectual functioning. The results of this study support acceptance of the null hypothesis. No significant differences in the Full Scale IQ, Verbal IQ, or Performance IQ scores between UADD or AD-HD groups were revealed. Group mean Full Scale IQ, Verbal IQ and Performance IQ scores on the WISC-R were in the average range for both the UADD and AD-HD groups. There were also no significant differences on Kaufman's Verbal Comprehension, Perceptual Organization, or Freedom From Distractibility Index scores. The group mean scores for both the AD-HD and UADD groups were all in the average range. These results differ from previous research in certain respects. Four studies investigated the intellectual abilities of ADD/WO subjects (Carlson, Lahey, & Neeper, 1987; King & Young, 1982; Maurer & Stewart, 1980; & Neeper, 1985). In general, it was found that children with ADD/WO display average intellectual abilities. However, only three studies have compared the intellectual abilities of children with ADD/H and ADD/WO. Carlson et al. (1987) found that ADD/H subjects obtained significantly lower Full Scale IQ and Verbal IQ scores than ADD/WO subjects. The results of the present study are inconsistent with the findings of Carlson et al. (1987). However, the subjects from their study were not clinic-referred and were classified into diagnostic groups on the basis of teacher ratings alone. The findings of this study are consistent with the findings of Lorys, Hynd,

and Lahey (1990) and Hynd, Lorys-Vernon, Semrud-Clikeman, Nieves, Huettner, and Lahey (in press) which found that both ADD/H and ADD/WO groups possessed average intellectual abilities with no differences in verbal and nonverbal abilities. Further, there were no significant differences in the Freedom From Distractibility Index scores between the two groups. These results parallel the findings of Lorys et al. (1990), Bohline (1985) and Rubenstein and Brown (1984) who compared the Freedom From Distractibility Index scores of ADD/WO and ADD/H subjects and found no significant differences.

Impulsivity. Results of the present study provide some evidence to reject the null hypothesis. It was hypothesized that no significant differences would be found between children with UADD and AD-HD on measures of impulsivity. No significant differences ($p < .05$) between AD-HD and UADD subjects in impulsivity as indicated by the total number of errors on the MFFT was found. However, there was a difference that approached significance ($p < .10$) in mean latency time between AD-HD and UADD subjects with AD-HD subjects exhibiting a smaller mean latency time than UADD subjects. These results suggest that children with UADD are less impulsive and able to inhibit their impulses better than children with AD-HD. These results parallel the findings in studies looking at children with ADD/WO. Findings from previous research on ADD/WO have questioned the presence of impulsivity symptoms in ADD/WO subjects (Edelbrock et al., 1984; Lahey et al., 1985; Maurer & Stewart, 1980; and Pelham et al., 1981). Lahey et

al. (1985) suggested that impulsivity is a correlate of excess motor activity rather than inattentiveness and that impulsivity should not be required for a diagnosis of ADD/WO. Interestingly, the degree or severity of impulsivity was not found to be clinically significant for either group (i.e., group mean score > 1 standard deviation below the mean), particularly the AD-HD group in this study, which could explain the lack of robustness in terms of differences in impulsivity between the AD-HD and UADD groups. However, the failure to find significant differences may also be related to the imprecision of the MFFT used to assess impulsivity. The psychometric properties of the MFFT are not particularly strong (see discussion in Methods section) and may not have been sufficiently sensitive. There are other instruments that have been recently developed utilizing computer technology to assess impulsiveness and have been proven to be more accurate and reliable than the MFFT such as computerized continuous performance tasks (e.g., Gordon, 1979).

Depression, anxiety, and self-esteem. It was hypothesized that there would be no significant differences ($p < .05$) between children with UADD and AD-HD in self-reported depression and self-esteem or behavior ratings of affective problem behavior. No significant difference was found between AD-HD and UADD groups in self-reported depression suggesting acceptance of the null hypothesis. The results are consistent with the findings of Lahey et al. (1984) comparing ADD/H and ADD/WO subjects

in self-reported depressive symptomatology. Lahey et al. (1984) found that subjects in both ADD/H and ADD/WO groups reported more depression than controls, but found no differences between ADD/H and ADD/WO groups in self-reported depression. No other studies have investigated the differences between ADD/WO and ADD/H groups to date. It is unclear how children with UADD and AD-HD compare to normal children in depressive symptomatology from the present study since no normal control group was utilized. However, comparing group means to the normative sample indicated that they did not experience significant depressive symptoms as groups. Results of parent and teacher ratings of affective problem behavior support acceptance of the null hypothesis. There were no differences between AD-HD and UADD subjects in parent or teacher ratings of depressive or anxious problem behavior. Both teacher and parent perceptions of depressive behavior were within the normal range (CBCL scaled T-score < 70). The results of the present study are not consistent with the findings of Lahey et al. (1984) and Neeper (1985) who investigated the teacher ratings of affective problem behavior in children with ADD/H and ADD/WO, but do parallel the findings of Edelbrock and Achenbach (1984). Neeper found that children with ADD/WO were judged as more anxious-depressed than controls by teachers. Lahey et al. (1984) found teacher to perceived children with ADD/WO as more anxious-withdrawn than controls. Edelbrock and Achenbach (1984) on the other hand, found that ADD/H and ADD/WO groups did not differ

from each other or from controls on teacher ratings of anxiety. Uncommunicative behavior as rated by parents has been suggested to be related to depression in children (Achenbach & Edelbrock, 1983). No significant differences between children with UADD and AD-HD in uncommunicative behavior were found.

In terms of self-esteem, the present study found no differences between the UADD and AD-HD groups in self-reported self-esteem. Both groups possessed self-perceptions within normal limits in terms of overall self-esteem, as well as their behavior, academic functioning, physical appearance, anxiety, and general level of happiness and satisfaction, suggesting acceptance of the null hypothesis. These results are inconsistent with the research with children with ADD/WO (Lahey et al., 1984) that found children with ADD/WO rated themselves as less happy and reported lower self-esteeem concerning their physical appearance and anxiety experienced than did controls (Lahey et al., 1984). However, the subjects for the Lahey study were not clinic-referred and were classified into diagnostic categories based solely on teacher ratings which may account for the differences in the results.

Problem behavior. Several problem behavior areas were the focus of the present study. It was hypothesized that there would be no significant differences in inattention/hyperactivity, peer relations, or conduct problem behaviors. Results of the present study indicate some evidence to support rejection of the null hypothesis,

while other evidence supports acceptance of the null hypothesis.

In terms of attention/hyperactive problem behavior, there were no significant differences between children with UADD and ADHD in their teachers' perceptions of attention or hyperactive problem behavior. Interestingly, in looking at the groups' mean scores, neither group showed significant clinical impairment (i.e., Mean Hyperactivity Index T-score > 70). AD-HD subjects were rated as more inattentive/hyperactive than UADD subjects by their parents. However, this may reflect the presence of more aggressive problem behaviors in children with AD-HD and not more inattentive/hyperactive behavior. It has been suggested that the Hyperactivity Index scale of the CPRS-R is more reflective of conduct problems than simply inattention/hyperactivity (Barkley, 1988). As will be discussed below, children with AD-HD were rated by parents as exhibiting more aggressive and delinquent problem behaviors. Overall, there do not appear to be differences between the two groups in inattentive/hyperactive problem behaviors, suggesting acceptance of the null hypothesis.

In terms of peer relationships, this study found no significant differences between UADD and AD-HD groups in social withdrawl on teacher or parent ratings, supporting acceptance of the null hypothesis. These results are inconsistent with previous literature investigating differences between children with ADD/H and ADD/WO. Peer relationship problems have been described in children with ADD/H (e.g., Hynd et al., in press; Edelbrock et al., 1984;

King & Young, 1982; Lahey et al, 1984) and in children with ADD/WO (King & Young, 1982; Lahey et al., 1984). Particularly, differences have been found between ADD/H and ADD/WO in social withdrawl. Pelham et al. (1981) found that peers perceived girls with ADD/WO as more withdrawn than girls with ADD/H. Edelbrock et al. (1984) found that teacher ratings of boys with ADD/WO in terms of unpopularity were not significantly different from a group of control children, but did find that boys with ADD/WO were seen as significantly more socially withdrawn than boys with ADD/H. The results of the present study, indicating that children with UADD did not exhibit significant social withdrawl, are somewhat unexpected in comparison to the literature on ADD/WO and difficult to explain. The rather small sample size of the present study may account for the lack of significant differences in social withdrawl between AD-HD and UADD groups. It may also be possible that the UADD and ADD/WO diagnostic categories are not equivalent and that the presence or absence of social withdrawl is a differentiating factor.

In terms of aggressive, delinquent, and conduct problem behaviors, this study found mixed results. There were no significant differences in teacher perceptions of aggressive or conduct problem behavior between the UADD and AD-HD groups. Further, teacher ratings of aggressive and conduct problems were not clinically significant for either the AD-HD or UADD groups. However, AD-HD subjects were perceived as exhibiting more aggressive, hyperactive, and delinquent problem behaviors than UADD subjects by their

parents. These results suggest rejection of the null hypothesis. The higher incidence of conduct/aggressive problem behavior in AD-HD subjects compared to UADD subjects found in the present study corresponds consistently with the results of previous studies. Children with ADD/H are frequently characterized by aggression and or conduct disorders while children with ADD/WO are not (e.g., Hynd et al., in press; Edelbrock et al., 1984; King & Young, 1982; Lahey et al., 1984). Further, only one study has found that children with ADD/WO had conduct problems (Maurer & Stewart, 1980). The results of the present study suggest that the behavior problems children with AD-HD and UADD are similar to those of ADD/H and ADD/WO in that children with UADD have an absence of conduct behavior problems similar to ADD/WO whereas children with AD-HD possess significant aggressive-conduct problem behaviors.

Objective 2

The second objective of this study was to determine the effects of stimulant medication on children diagnosed as UADD and AD-HD and determine if differences between the two groups on measures of impulsivity, problem behavior, and self-reported depression and self-esteem existed. Twelve children diagnosed as UADD and 12 children diagnosed as AD-HD were compared before and after a trial of methylphenidate. There were two null hypotheses. First, it was hypothesized that there would be no significant differences in the pretest and posttest scores before and after a trial of stimulant medication for either UADD or

AD-HD groups. The second hypothesis was that there would be no differences between children with UADD and AD-HD in their response to stimulant medication.

Impulsivity. Results of this study support acceptance of the null hypothesis in terms of impulsivity. There were no significant differences between UADD and AD-HD subjects who were included in the treatment study on measures of impulsivity before or after a trial of stimulant medication. Further, results indicated no significant changes in mean latency time or total errors on the MFFT from before treatment to after treatment for either group. Neither was there any significant differences between the two groups in response to stimulant medication on measures of impulsivity. These results were rather unexpected given that stimulants have been demonstrated to improve impulsive behavior (Barkley, 1988). It may be that since impulsivity was not found to be a significant problem behavior for subjects in either group in this study, any changes that were to be found would not be great enough to produce statistically significant results. The lack of significant differences in impulsive behavior between UADD and AD-HD groups are consistent with the findings of Lahey et al. (1984) which were previously discussed, and suggests that impulsivity may not be as critical a problem behavior in individuals with attention deficit disorders as believed. Further, it might be that the MFFT is an inadequate measure of impulsivity.

Depression, anxiety, and self-esteem. It was hypothesized that there would be no significant differences

($p < .05$) in self-reported depression or self-esteem or behavior ratings of affective problem behavior as a result of a trial with stimulant medication for either UADD or AD-HD subjects. Results of the present study support rejection of the null hypothesis. Significant changes in self-reported depression from before treatment to after treatment was found for both groups. While it is found that adults will report significantly improved mood when taking stimulant medication, children rarely report elevations in mood as a result of stimulant medication (Barkley, 1981). In fact, several studies in the literature report that children experience negative emotions as a results of stimulant medication (e.g., Barkley, 1981). There was no significant difference between AD-HD and UADD groups in their response to stimulant medication on measures of self-reported depression, supporting acceptance of the null hypothesis that there would be no differences between children with AD-HD and UADD in their response to stimulant medication on measures of self-reported depression. There are no previous studies that have investigated differences between ADD/H and ADD/WO groups in their response to stimulant medication.

Interestingly, parents judged children with UADD as exhibiting significantly less depressive problem behavior after a trial of stimulant medication while there was not any significant change in parents' perceptions of depressive symptoms in children with AD-HD following a trial of stimulant medication. Also, parents rated children

with UADD as exhibiting significantly less uncommunicative behavior after a trial of stimulant medication. There was no significant change in parents' perceptions of uncommunicative behavior exhibited in children diagnosed as AD-HD after a trial of stimulant medication. However, there was no significant difference between UADD and AD-HD groups in their response to stimulant medication based on parent ratings of depressive and uncommunicative problem behavior observed. Only one study has been identified which reported improved mood as a result of stimulants in children identified as hyperactive (Rapaport, Buchsbaum, Zahn, Weingarten, Ludlow, & Mikkelsen, 1978). She looked at the effects of Dexedrine in children with hyperactivity children and found that they reported having feelings which they described as "funny" or "different". On the other hand, Barkley (1977a) noted in a review of stimulant medication effects that several studies have found negative emotional side effects as a result of stimulants. No previous studies have been conducted looking at differences between children diagnsosed as having ADD/H and UADD in their response to stimulant medication based on affective functioning.

It was also shown that stimulant medication was effective in improving both UADD and AD-HD subjects' self-perceptions, suggesting rejection of the null hypothesis. There was a significant improvement in children's overall self-esteem as well as their perceptions concerning their behavior, academic performance and potential, and feeling of happiness after a trial of

stimulant medication in comparison to their self-reported self-esteem prior to a trial of stimulant medication for both AD-HD and UADD groups. There were no significant differences between the two groups in self-reported self-esteem following stimulant medication, suggesting acceptance of the null hypothesis. Again, no other studies to date have been conducted looking at the differential effects of stimulant medication between children with ADD/H and ADD/WO on measures of self-esteem.

Problem behavior. It was hypothesized that there would be no significant changes in problem behaviors on measures of attention/hyperactivity, peer relationships, or aggressive/conduct problems following a trial of stimulant medication or significant differences between UADD and AD-HD groups in their response to stimulant medication. Results of the present study support rejection of the null hypothesis.

In terms of inattentive/hyperactive problem behaviors, Parents rated AD-HD subjects as significantly improved in hyperactive behavior following a trial of methylphenidate, while there was no significant changes in parents' perceptions of inattentive/hyperactive behavior in children with UADD following a trial of stimulant medication. There was significant improvement in teachers' ratings of attention/hyperactive behavior for both UADD and AD-HD groups following a trial of stimulant medication. Numerous studies have demonstrated decreased motor activity in children with hyperactivity as a result of stimulant medication (e.g., Barkley, 1977b). No previous research

has been conducted looking at the differences between children with ADD/H and ADD/WO in their response to stimulant medication in terms of hyperactive/inattentive behavior.

In terms of social withdrawl, there were no significant changes in teacher or parent ratings of social withdrawl as a result of a trial of stimulant medication in either the UADD or AD-HD group. Nor were there significant differences between AD-HD subjects and UADD subjects in their response to stimulant medication based on parent or teacher ratings of social withdrawl problem behavior. UADD subjects were perceived by their teachers as having improved peer relations after a trial of stimulant medication. There were no significant changes in teachers' perceptions of children with AD-HD in their peer relationships. These results support rejection of the null hypothesis. No significant difference was found between UADD and AD-HD in the teacher ratings of peer relationships from before treatment to after treatment. These results support acceptance of the null hypothesis. Cantwell (1990) has reported that the peer, parent and teacher interactions of children with hyperactivity improve as a result of stimulant medication. This was not found in the present study. The lack of significant improvement in peer relations following a trial of stimulant medication may be accounted for by the fact that poor interpersonal relationships were not identified to be a significant problem in the present study. No studies to date are available which have looked at the differential effects of

stimulant medication on anxiety or peer relationships between ADD/H or ADD/WO.

In terms of aggressive and conduct problem behaviors, AD-HD subjects were rated as significantly more aggressive by both parents and teachers prior to a trial of stimulant medication. There was significant improvement in parent ratings of aggressive behavior from before stimulant medication to after stimulant medication for both UADD and AD-HD groups. There was also significant improvement in teacher ratings of aggressive behavior from before stimulant medication to after stimulant medication for children with UADD but not for children with AD-HD But, there was no significant differences between the groups in their response to stimulant medication on teacher or parent ratings of aggressive behavior. These results suggest acceptance of the null hypothesis. Results are contrary to studies demonstrating reduced aggressive behavior and improved compliance to teacher and parent commands as a result of stimulants (Cantwell, 1990).

Limitations

A major difficulty encountered in conducting the present study was obtaining a sufficient number of subjects. Based on the number of clients seen in previous years in the Clinical Service Unit of the Developmental Center for Handicapped Persons at Utah State University, it was expected that there would be ample referrals from which to recruit potential subjects. Unfortunately, the number of referrals for possible attention deficit disorders to

the Clinical Services Unit decreased dramatically at approximately the same time as the present study was initiated. Several explanations for the decrease are plausible. First, a media campaign within the state of Utah was launched at approximately the same time which had a goal of raising the public's consciousness to the high prescription rate of methylphenidate in the state and to discourage parents from having their children evaluated and/or treated with stimulant medication. In fact, the clinical services staff encountered numerous families who refused to place their children on stimulant medication because of their concerns about the adverse effects of stimulant medication. Another plausible explanation for the decrease in referrals was the increase in other health professionals and agencies providing similar services within the area. Another possible reason was simply that there was a regression to the mean in the number of referrals for attention deficit disorder evaluations. It could be that the number of referrals in the year prior to the initiation of the present study from which an estimate of potential referrals was derived could have been at its peak, resulting in an exaggerated number of potential referrals expected. The statistical power of this study is a major weakeness of the study due to the low number of subjects available.

Another limitation of the current study was the lack of a normal control group and non-ADD psychiatric control group with which to compare children diagnosed as UADD and children diagnosed as AD-HD so that more conclusive

statements could be made concerning the incidence or presence of problem behaviors within the experimental populations relative to normal and non-ADD psychiatric populations. Further, such control groups would have helped strengthen the conclusions drawn concerning the efficacy of stimulant medication with AD-HD and UADD groups. However, this would have been quite difficult to achieve, since it would have been very unlikely that parents of normal children would be willing to allow their children to participate in a drug efficacy study. A possible means with which to deal with this limitation in future studies is to utilize a double-blind treatment control group cross-over design in which the two experimental groups would be randomly assigned to both the stimulant medication and a placebo condition at different times to explore the effectiveness of the medication.

Another limitation of the study concerned the methods implemented to identify the children as UADD or AD-HD. Independent diagnosis by three raters was used to accurately identify and classify subjects into two categories. Current state of the art procedures utilitized include the use of structured interviews with parents and child. However, such procedures were not used due to the various clinical procedures among the various sites. Each of the sites from which subjects were recruited involved clinical populations and utilized unstructured clinical interviews rather than structured interviews. None of the sites were willing or able to change their practices to include the use of a structured interview.

Another potential limitation of the present study was the use of the MFFT as discussed above. The MFFT has been used extensively in the research as a measure of impulsivity, but lacks the precision of other instruments more recently developed. Future research should utilize more objective, precise measures of cognitive functions such as computerized performance tasks.

Conclusions

The purpose of the present study was to determine the cognitive and affective characteristics and the effects of stimulant medication on children identified as having UADD and AD-HD in order to gain a better understanding of the clinical pictures of the two disorders and their treatment.

Intellectual functioning. It is concluded that there are no significant differences in the intellectual abilities of children diagnosed with AD-HD and UADD. Both children with AD-HD and UADD demonstrated intellectual functioning in the average range in terms of verbal, performance, and overall intellectual abilities. Further, there do not appear to be differences between the two groups in attention/concentration abilities. It is suggested that measures of intellectual functioning do not differentiate UADD and AD-HD.

Impulsivity. It is unclear whether there are significant differences in impulsivity between AD-HD and UADD. There were some indications that children with AD-HD may have more difficulty in inhibiting their impulses than children with UADD similar to the findings of previous studies on ADD/WO that questioned the presence of

impulsivity in these children. Also, it is unclear whether stimulant medication produces any beneficial effect on impulsivity (i.e., reduction in impulsivity) in either children with UADD or AD-HD. Further research is needed in this area utilizing more sensitive measures.

Depression, anxiety, and self-esteem. There appear to be no differences in affective characteristics between children with UADD and AD-HD. No differences were found between the two groups in self-reported depression or self-esteem or ratings of affective problem behavior. Further, it is unclear whether children with UADD and/or AD-HD experience more or less the same degree of depression as normal, however, there are indications that they do not exhibit depressive or anxious problem behavior or low self-esteem to a clinically significant degree as a group. This is quite different than what was expected given the literature on ADD/WO. It suggests that ADD/WO and UADD may not be comparable diagnostic categories. However, it may also be that what was considered affective problem behavior in the ADD/WO population was actually a sluggish tempo as described by Carlson (1986). Stimulant medication appears to have a beneficial effect in reducing depressive symptoms in both UADD and AD-HD. Stimulant medication with children with AD-HD and UADD also appears to improve overall self-esteem as well as self-perceptions concerning their behavior, school functioning, physical appearance, anxiety experienced and overall happiness. Stimulant medication does not appear to have any differential effect

between children with UADD and AD-HD on their affective functioning.

Problem behavior. There appear to be significant differences in the peer relationships and problem behaviors exhibited between children with UADD and AD-HD. Children with AD-HD seem to exhibit significantly more externalizing behaviors such as inattentive/hyperactive, aggressive and delinquent problem behaviors than children with UADD. Additionally, the problems with social withdrawl as found in ADD/WO was not found in the UADD population suggesting that the two sets of children are not comparable. Stimulant medication appears to have a benefical response in reducing the hyperactive problem behavior in children with AD-HD. Also, stimulant medication appears to have a beneficial response in improving the peer relations and reducing aggressive problem behavior in children with UADD but not in children with AD-HD.

These results suggest that the clinical pictures of AD-HD and UADD categories reflect two distinct disorders, AD-HD, representing a disorder which has primary difficulties in inattention and possibly impulsivity and associated externalizing problem behaviors such as aggression and delinquency, and UADD, primarily involving deficits in attention. UADD does not seem to encompass internalizing affective problem behaviors such as depression, low self-esteem or anxiety such as found in ADD/WO and are not likely representing the same disorder.

The findings also suggest that the treatment needs of the two disorders AD-HD and UADD differ because of the

additional associated problem behaviors of aggressiveness, poor peer relationships, and conduct problems of the AD-HD category. The findings of the present study suggest that stimulant medication is indicated as part of a comprehensive treatment plan for treating the inattention/hyperactive problem behavior of children with AD-HD, particularly, it there is the presence of depressive symptomatology or low self-esteem. Further, stimulant medication appears to be indicated for children with UADD who present with poor peer relationships or aggressive behavior.

Stimulant medication appears to be insufficient as the sole intervention in the treatment of AD-HD, particularly if children with AD-HD present with aggressive,peer relations, or conduct behavior problems. Children with AD-HD have been purported to have deficits in social skills which result in significant problems in peer relationships and adversely affects their adjustment (Cantwell, 1990). Undoubtedly, this suggests a poor prognosis for such children. Results from this study suggest that it is crucial for the treatment plans for children with AD-HD include intervention strategies beyond stimulant medication that are designed to help foster positive interpersonal relationships and reduce conduct/aggressive problem behaviors. Social skills training and problem-solving skills training have been implemented to help children with attention-deficit disorders develop self-control with some success (e.g., Kendall, 1985; Braswell & Kendall, 1988). Additionally, programs for parent training and behavioral

consultation within the schools have been developed and implemented to help children with attentional deficits learn the behavior repetoires so that they may meet the behavioral expectencies of the various settings in which they function (e.g., Barkley, 1981; Braswell, 1990).

Recommendations for Future Reseach

Findings of the current study suggest children with AD-HD and ADD/H are similar in their clinical pictures while the clinical pictures of UADD and ADD/WO are not and likely do not represent the same disorder. However, additional systematic studies comparing these two groups are needed to better clarify these categories.

Findings suggest that children with AD-HD exhibit more aggressive/conduct problem behavior and poor peer relationships. Further, stimulants do not appear to be helpful in ameliorating these associated problem features. Such findings suggest a poorer prognosis for such children. Further research is needed to clarify the outcome of these children. Research is also needed to develop and implement alternative interventions such as social skills training and parent training in order to better meet the needs of AD-HD children. Such studies should be prospective, utilizing clinically-referred populations and double-blind treatment control group cross-over designs.

The results of the present study suggest that stimulants may be effective in treating the problematic affective symptoms in attention-deficit disordered children. Research is needed that better clarifies the

potential efficacy of stimulants in improving the mood of attention-deficit disordered children.

Research has been initiated in order to investigate the neurocognitive correlates that may differentiate ADD/H and ADD/WO (Hynd et al., in press; Lorys, et al., 1990). This area of research may be quite promising in clarifying the possible etiology of attentional deficits. Research investigating the neuropsychological correlates differentiating AD-HD and UADD may be illuminating in distinguishing between these disorders.

REFERENCES

Achenbach, T. M., & Edelbrock, C. (1983). Manual for child behavior checklist and revised child behavior profile. Department of Psychiatry, University of Vermont, Burlington, VT.

American Psychiatric Association (1968). Diagnostic and statistical manual of mental disorders-second edition. Washington, DC: Author.

American Psychiatric Association (1980). Diagnostic and statistical manual of mental disorders-third edition. Washington, DC: Author.

American Psychiatric Association (1987). Diagnostic and statistical manual of mental disorders-third edition-revised. Washington, DC: Author.

Barkley, R. A. (1977a). A review of stimulant drug research of hyperactive children. Journal of Child Psychology and Psychiatry, 18, 327-345.

Barkley, R. A. (1977b). The effects of methylphenidate on various measures of activity level and attention in hyperkinetic children. Journal of Abnormal Child Psychology, 5, 351-369.

Barkley, R. A. (1981). Hyperactive Children: A handbook for diagnosis and treatment. New York: Guilford Press.

Barkley, R. A. (1985). Family interaction patterns in hyperactive children: Precursors to aggressive behavior? In M. Wolrarch & D. Routh (Eds.), Advances in behavioral pediatrics (pp. 117-150). Greenwich, CT: JAI Press.

Barkley, R. A. (1987, June). Attention deficit deficiency: differential diagnosis and assessment. Attention Deficit-Hyperactivity Disorders in Children and Adolescents: Assessment and Intervention Techniques. Conference in Minneapolis, MN.

Barkley, R. A. (1988). Attention. In M. G. Tramontana & S. R. Hooper (Eds.), Assessment issues in child neuropsychology (pp. 145-176). NY: Plenum.

Barkley, R. A., & Cunningham, C. E. (1979). The effects of methylphenidate on the mother-child interaction of hyperactive children. Archives of General Psychiatry, 36, 201-208.

Biederman, J., Munir, K., Armantano, M., Autor, S., Waternaux, C., & Tsuang, M. (1987). High rate of affective disorders in probands with attention deficit disorder and in their relatives: A controlled family study. American Journal of Psychiatry, 144, 330-333.

Block, G. H. (1977). Hyperactivity: A cultural perspective. Journal of Learning Disabilities, 10, 236-240.

Bohline, D. S. (1985). Intellectual and affective characteristics of attention deficit disordered children. Journal of Learning Disabilities, 18, 604-608.

Boreland, B. C., & Heckman, H. K. (1976). Hyperactive boys and their brothers: A 25-year follow-up study. Archives of General Psychiatry, 33, 669-675.

Bradley, C. (1937). The behavior of children receiving benzedrine. American Journal of Psychiatry, 94, 577-585.

Braswell, L. (1990, June). Comprehensive child and family intervention for AD-HD children. Paper presented at conference on Attention Deficit-Hyperactivity Disorders in Children and Adolescents: Assessment and Intervention Techniques for Professionals, San Antonio, TX.

Braswell, L., & Kendall, P. C. (1988). Cognitive-behavioral methods with children. In K. S. Dobson (Ed.), Handbook of cognitive-behavioral therapies (pp. 167-213). New York: Guilford Press.

Brown, R. T. (1982). Hyperactivity: Assessment and evaluation of rating instruments. Journal of Psychiatric Treatment, and Evaluation, 4, 359-369.

Brown, R. T., & Wynne, M. E. (1982). Correlates of teacher ratings, sustained attention, and impulsivity in hyperactive and normal boys. Journal of Clinical Child Psychology, 11, 262-267.

Campbell, S. B. (1975). Mother-child interaction: A comparison of hyperactive, learning disabled, and normal boys. American Journal of Orthopsychiatry, 45, 51-57.

Campbell, D. T., & Stanley, J. C. (1963). Experimental and quasi-experimental designs for research on teaching. In N. L. Gage (Ed.), Handbook of research on teaching (pp. 171-246). Chicago, IL: Rand McNally.

Cantwell, D. P. (1972). Psychiatric illness in the familes of hyperactive children. Archives of General Psychiatry, 27, 414-417.

Cantwell, D. P. (1982). Attention deficit disorders and hyperactivity. Resident and Staff Physician, 21, 86-98.

Cantwell, D. P. (1987, June). The clinical description of AD-HD individuals. Paper presented at conference on Attention Deficit-Hyperactivity Disorder in Children and Adolescents: Assessment and Intervention Techniques, Minneapolis, MN.

Cantwell, D. P. (1990, June). The clinical description of AD-HD individuals. Paper presented at conference on Attention Deficit-Hyperactivity Disorder in Children and Adolescents: Assessment and Intervention Techniques for Professionals, San Antonio, TX.

Cantwell, D. P., & Carlson, C. L. (1978). Stimulants. In J. Werry (Ed.), Pediatric psychopharmacology (pp. 171-207). New York: Brumer/Muzel.

Carlson, C. L. (1986). Attention deficit disordered without hyperactivity. In B. B. Lahey & A. E. Kazdin (Eds.), Advances in clinical child psychology (pp. 153-175). New York: Plenum.

Carlson, G. A., & Cantwell, D. P. (1980). A survey of depressive symptoms, syndome and disorder in a child psychiatric population. Journal of Child Psychology, 11, 19-25.

Carlson, C. L., Lahey, B. B., & Neeper, R. (1987). Direct assessment of the cognitive correlates of attention deficit disorders with and without hyperactivity. Journal of Behavioral Assessment and Psychopathology, 8, 69-86.

Conners, C. K. (1969). A teacher rating scale for use in drug studies with children. American Journal of Psychiatry, 126, 885-888.

Conners, C. K. (1973). Rating scales for use in drug studies with children. Psychopharmacology Bulletin (Special issue, Pharmacotherapy of Children), 24-88.

Conners, C. K., Goyette, C. H., Southwick, D. A., Lees, A. & Andrulonis, S. (1976). Food additives and hyperkinesis: A controlled double-blind experiement. Pediatrics, 58, 154-166.

Conners, C. K., & Wells, K. C. (1986). Hyperkinetic children: a neuropsychosocial approach. Beverly Hills: Sage Publications.

Coopersmith, S. (1967). The antecedents of self-esteem (pp. 23-66). San Francisco: Freeman.

Cunningham, C. E., & Barkely, R. A. (1978). The role of academic failure in hyperactive behavior. Journal of Learning Disabilities, 11, 15-21.

David, O. J. (1974). Association between lower level lead concentration and hyperactivity in children. Environmental Health Perspectives, 8-9, 17-25.

Denson, R., Nanson, I. L., & McWatters, M. A. (1975). Hyperkinesis and maternal smoking. Canadian Psychiatric Association Journal, 20, 183-187.

Douglas, V. I. (1972). Stop, look and listen: The problem of sustained attention and impulse control in hyperactive and normal children. Canadian Journal of Behavioural Science, 4, 259-282.

Douglas, V. I. (1983). Attention and cognitive problems. In M. Rutter (Eds.), Developmental Neuropsychiatry (pp. 280-329). NY: Guilford Press.

Douglas, V. I. & Peters, K. G. (1979). Toward a clearer definition of the attentional deficits of hyperactive children. In G. A. Hale & M. Lewis (Eds.), Attention and cognitive development (pp. 173-248). NY: Plenum.

Edelbrock, C., & Achenbach, T. M. (1984). The teacher version of the Child Behavior Profile: I. Boys Aged 6-11. Journal of Consulting and Clinical Psychology, 52, 207-213.

Edelbrock, C., Costello, A. J., & Kessler, M. D. (1984). Empirical corroboration of attention deficit disorder. Journal of the American Academy of Child Psychiatry, 23, 285-290.

Egger, J., Carter, C. M., Graham, P. J., Gumley, D., & Soothil, J. F. (1985). Controlled trial of oligoantigenic treatment in the hyperkinetic syndrome. Lancet, 14, 540-545.

Feingold, B. F. (1976). Hyperkinesis and learning disabilities linked to the ingestion of artificial food colors and flavors. Journal of Learning, Disabilities, 9, 551-559.

Garfinkel, B. D. (1986). Recent developments in attention deficit disorder. Psychiatric Annals, 16, 11-15.

Garfinkel, B. D., & August, G. (1987, March). What is attention deficit disorder and how does medication help? Unpublished manuscript, University of Minnesota. Division of Child and Adolescent Psychiatry, Minneapolis.

Garfinkel, B. D., & Klee, S. H. (1986). A computerized assessment battery for attention deficits. The Psychiatric Hospital, 14, 163-166.

Gordon, M. (1979). The assessment of impulsivity and mediating behaviors in hyperactive and nonhyperactive boys. Journal of Abnormal Child Psychology, 7, 317-326.

Goyette, C. H., Conners, K. C., & Ulrich, R. F. (1978). Normative data on revised Conners Parent and Teacher Rating Scale. Journal of Abnormal Child Psychology, 6, 221-236.

Hechtman, L., Weiss, G., Perlman, T., & Tuck, D. (1981). Hyperactives as young adults: Various clinical outcomes. Adolescent Psychiatry, 9, 295-306.

Huessy, H. R., Metoyer, M., & Townsend, M. (1974). 8-10 year follow-up of 84 children treated for behavioral disorder in rural Vermont. Acta Paedopsychiatrica, 40, 230-235.

Hynd, G. W., Lorys-Vernon, A. R., Semrud-Clikeman, M., Nieves, N., Huettner, M.I.S., & Lahey, B.B. (in press). Attention deficit disorder without hyperactivity (ADD/WO): A distinct behavioral and neurocognitive syndrome. Journal of Child Neurology.

Kagan, J. (1964). The matching familiar figures test. Cambridge, MA: Harvard University.

Kagan, J., Rosman, B., Day, D., Albert, J., & Phillips, W. (1964). Information processing in the child: Significance of analytic and reflective attitudes. Psychological Monographs, 78, 1-578.

Kaufman, A. S. (1975). Factor analysis of the WISC-R at elementary age levels between 6 1/2 and 16 1/2 years. Journal of Consulting and Clinical Psychology, 43, 135-147.

Kavale, K. (1982). The efficacy of stimulant drug treatment for hyperactivity: A meta-analysis. Journal of Learning Disabilities, 15, 280-289.

Kavale, K., & Forness, S. R. (1983). Hyperactivity and diet treatment: A meta-analysis of the Feingold hypothesis. Journal of Learning Disabilities, 16, 324-330.

Kendall, P. C. (1985). Toward a cognitive-behavioral model of child psychopathology and a critique of related interventions. Journal of Abnormal Child Psychology, 13, 357-372.

King, C., & Young, R. D. (1982). Attentional deficits with and without hyperactivity: Teacher and peer perceptions. Journal of Abnormal Child Psychology, 10, 483-495.

Klee, S. H. (1986). The clinical psychological evaluation of attention deficit disorder. Psychiatric Annals, 16, 43-46.

Klee, S. H., Garfinkel, B. D., & Beauchesne, H. (1986). Attention deficits in adults. Psychiatric Annals, 16, 52-56.

Kovacs, M. (1985). The Children's Depression Inventory (CDI). Psychopharmacology Bulletin, 21, 995-998.

Lahey, B. B., Delamater, A., & Kupfer, D. (1980). Intervention strategies with hyperactive and learning disabled children. In S. M. Turner, K. S. Calhoun, & H. E. Adams (Eds.), Handbook of clinical behavior therapy (pp. 115-199). New York: Wiley and Sons.

Lahey, B. B., Schaughency, E. E., Strauss, C. C., & Frame, C. L. (1984). Are attention deficit disorders with and without hyperactivity similar or dissimilar disorders? Journal of the American Academy of Child Psychiatry, 23, 302-309.

Lahey, B. B., Schaughency, E. A., Frame, C. C., & Strauss, C. C. (1985). Teacher ratings of attention problems in children experimentally classified as exhibiting attention deficit disorder with and without hyperactivity. Journal of the American Academy of the American Academy of Child Psychiatry, 24, 613-616.

Lambert, N. M., Sandoval, J., & Sassone, D. (1978). Prevalence of hyperactivity in elementary school children as a function of social system definers. American Journal of Orthopsychiatry, 48, 446-463.

Lapouse, R., & Monk, M. (1958). An epidemiological study of behavior characteristics in children. American Journal of Public Health, 48, 1134-1144.

Laufer, M. W., & Denhoff, R. (1957). Hyperkinetic behavior syndrome in children. Journal of Pediatrics, 50, 463-474.

Lester, M. L., & Fishbein, D. H. (1988). In R. E. Tarter, D. H. Van Thiel, & K. L. Edwards (Eds.), Medical neuropsychology: the impact of disease on behavior (pp. 291-323). New York: Plenum Press.

Lipton, M. A., Nemeroff, C. B., & Mailman, R. B. (1979). Hyperkinesis and food additives. In R. J. Wurtman & J. J. Wurtman (Eds.), Nutrition and the brain, Vol. 4, Toxic effects of food constituents on the brain (pp. 1-27). New York: Raven.

Loney, J., Kramer, J., & Milich, R. (1983). The hyperkinetic child grown up: Predictors of symptoms, delinquency, and achievement at follow-up. In K. Gadow & J. Loney (Eds.), Psychosocial aspects of drug treatment for hyperactivity (pp. 381-415). Boulder, CO: Westview.

Loney, J., Langhorne, J. E., & Paternite, C. E. (1978). An empirical basis for subgrouping the Hyperkinetic/MBD syndrome. Journal of Abnormal Psychology, 87, 431-441.

Lorys, A. R., Hynd, G. W., & Lahey, B. B. (1990). Do neurocognitive measures differentiate attention deficit disorder (ADD) with and without hyperactivity? Archives of Clinical Neuropsychology, 5, 119-135.

Lou, H. C. (1980). Perinatal hypoxic ischemic brain damage and intraventicular hemorrhage: A pathogenic model. Archives in Neurology, 37, 585-587.

Lou, H. C., Henriksen, L., & Bruhn, P. (1984). Focal cerebral hypoperfusion in children with dysphasia and/or attention-deficit disorder. Archives in Neurology, 41, 825-829.

Lou, H. C., Henricksen, L., Bruhn, P., Borner, H., & Nielsen, J. B. (1989). Striatal dysfunction in attention deficit and hyperkinetic disorder. Archives in Neurology, 46, 48-52.

Lufi, D., & Cohen, A. (1985). Using the WISC-R to identify attentional deficit disorder. Psychology in the Schools, 22, 40-42.

Maurer, R. G., & Stewart, M. A. (1980). Attention deficit without hyperactivity in a child psychiatry clinic. Journal of Clinical Psychiatry, 417, 232-233.

Mendelson, W. B., Johnson, N. E., & Stewart, M. A. (1971). Hyperactive children as teenagers: A follow-up study. Journal of Nervous and Mental Disease, 153, 273-279.

Messer, S. B. (1976). Reflection-Impulsivity: A review. Psychological Bulletin, 83, 1026-1052.

Milich, R., & Kramer, J. (1984). Reflections on impulsivity as a construct. In K. Gadow & I. Bigler (Eds.), Advances in learning and behavioral disabilities (Vol. 3, pp. 57-94). Greenwich, CT: JAI Press.

Milich, R., & Loney, J. (1974). The factor composition of the WISC for hyperkinetic/MBD males. Journal of Learning Disabilities, 12, 67-71.

Morrison, J. R., & Stewart, M. A. (1971). A family study of the hyperactive child syndrome. Biological Psychiatry, 3, 189-195.

Neeper, R. (1985). Toward the empirical delineation of learning disability subtypes. Unpublished doctoral dissertation, University of Georgia.

O'Leary, K. D., Rosenbaum, A., & Hughes, P. C. (1978). Fluorescent lighting: A purported source of hyperactive behavior. Journal of Abnormal Child Psychology, 6, 285-289.

Ott, J. (1974). The eyes' dual function, II. Eye, Ear, Nose, and Throat Monthly, 53, 377-381.

Ownby, R. L., & Matthews, C. G. (1985). On the meaning of the WISC-R third factor: Relations to selected neuropsychological measures. Journal of Consulting and Clinical Psychology, 53, 531-534.

Pelham, W. E., Atkins, M. S., & Murphy, H. A. (1981, August). Attention Deficit Disorder with and without Hyperactivity: Definitional issues and correlates. In W. Pelham (Chair), DSM-III category of Attention Deficit Disorders: Rationale, Operationalization, and Correlates. Symposium presented at the annual meeting of the American Psychological Association, Los Angeles,

Piers, E. V. (1984). Piers-Harris Children's Self-Concept Scale Revised Manual 1984. Los Angeles, CA: Wester Psychological Services.

Plaisted, J. R., Gustavson, J. L., Wilkening, G. N., & Golden, C. J. (1983). The Luria-Nebraska Neuropsychological Battery-Children's Revision: Theory and current research findings. Journal of Clinical Child Psychology, 12, 13-21.

Porges, S. W., & Smith, K. M. (1980). Defining hyperactivity: Psychophysiological and behavioral strategies. In C. K. Whalen & B. Henker (Eds.), Hyperactive children: The social ecology of identification and treatment (pp. 145-178). New York: Academic Press.

Quay, L., & Brown, R. (1980). Hyperactivity and normal children and the error latency, and double median split scoring procedures of the Matching Familiar Figures Test. Journal of School Psychology, 18, 12-16.

Rapaport, J. L. (1983). The use of drugs, trends in research. In M. Rutter (Ed.), Developmental neuropsychiatry (pp. 381-403. New York: The Guilford Press.

Rapaport, J. L., Buchsbaum, M. S., Zahn, T. P., Weingarten, H., Ludlow, C., & Mikkelsen, E. (1978). Dextroamphetamine: Cognitive and behavioral effects in normal prepupertal boys, Science, 199, 560-563.

Reynolds, C. R., & Richmond, B. O. (1978). What I Think and Feel: A revised measure of children's manifest anxiety. Journal of Abnormal Child Psychology, 6, 271-280.

Rosenberg, R. P., & Beck, S. (1986). Preferred assessment methods and treatment modalities for hyperactive children among clinical child and school psychologists. Journal of Clinical Child Psychology, 15, 142-147.

Ross, D. M., & Ross, S. A. (1982). Hyperactivity: current issues, research, and theory. New York: John Wiley and Sons.

Rourke, B. P. (1981). Neuropsychological assessment of children with learning disabilities. In S. Filskov & T. Boll (Eds.), Handbook of clinical neuropsychology (Vol. 1, pp. 453-480). NY: John Wiley and Sons.

Routh, D. K. (1978). Hyperactivity. In P.R. Magrab (Ed.), Psychological management of pediatric problems, Vol. 2 (pp. 3-47). Baltimore: University Park Press.

Rubenstein, R. A., & Brown, R. T. (1984). An evaluation of the validity of the diagnositic category of attention deficit disorder. American Journal of Orthopsychiatry, 54, 398-414.

Salkind, N. S., & Nelson, C. F. (1980). A note on the developmental nature of reflection-impulsivity. Developmental Psychology, 16, 237-238.

Sandoval, J., Lambert, N. M., & Sassone, D. (1980). The identification and labeling of hyperactivity in children: An interactive model. In C. K. Whalen & B. Henker (Eds.), Hyperactive children: The social ecology of identification and treatment (pp.315-392). New York: Academic Press.

Sattler, J. M. (1982). Assessment of children's intelligence and special abilities, second edition. Boston: Allyn and Bacon, Inc.

Sergeant, J. A., & Scholten, C. A. (1985a). On data limitations in hyperactivity. Journal of Child Psychology and Psychiatry, 26, 111-124.

Sergeant, J. A., & Scholten, C. A. (1985b). On resource strategy limitations in hyperactivity: Cognitive impulsivity reconsidered. Journal of Child Psychology and Psychiatry, 26, 97-109.

Shapiro, S. K., & Garfinkel, B. D. (1986). The occurence of behavior disorders in children: The interdependence of attention deficit disorder and conduct disorder. Journal of the American Academy of Child Psychiatry, 25, 809-819.

Skinner, B. F. (1953). Science and human behavior. New York: Macmillan.

Skinner, B. F. (1969). Contingencies of reinforcement and theoretical analysis. New York: Appleton-Century-Crofts.

Sobotka, T. J. (1978). Hyperkinesis and food additives: A review of experimental work. FDA ByLines, 4, 165-176.

Steinhausen, H. C., & Gobel, D. (1985). The validity of the hyperkinetic syndrome: A study in child psychiatric clinic attenders. European Archives of Psychiatric Neurological Science, 235, 122-128.

Stewart, M. A., Cummings, C., Singer, S., & deBlois, C. S. (1981). The overlap between hyperactive and unsocialized aggressive children. Journal of Child, Psychology and Psychiatry, 22, 35-45.

Still, G. F. (1902). The Coulstonian Lectures on some abnormal physical conditions in children. Lancet, 1, 1008-1168.

Strauss, A. A., & Kephart, N. C. (1955). Psychopathology and education of the brain-injured child (Vol. 1 and 2). New York: Grune and Stratton.

Swanson, J., & Kinsbourne, M. (1979). The cognitive effects of stimulant drugs on hyperactive children. In G. Hale & M. Lewis (Eds.), Attention and development (pp. 249-278). New York: Plenum.

Thurber, S., & Walker, C.E. (1983). Medication and hyperactivity: A meta-analysis. Journal of General Psychiatry, 108, 79-86.

Trites, R. L., Dugas, E., & Lynch, G. (1979). Prevalence of hyperactivity. Journal of Pediatric Psychology, 4, 179.

Trites, R. L., & Laprade, K. (1983). Evidence for an independent syndrome of hyperactivity. Journal of Child Psychology and Psychiatry, 24, 573-586.

Varley, C. K. (1984). Diet and the behavior of children with attention deficit disorder. Journal of the American Academy of Child Psychiatry, 3, 189-195.

Wechsler, D. (1974). Wechsler Intelligence Scale for Children-Revised. New York: Psychological Corporation.

Weiss, G., & Hechtman, L.T. (1986). Hyperactive children grown-up: Empirical findings and theoretical considerations. New York: Guilford Press.

Weiss, G. Hechtman, L., Perlman, T., Hopkins, J., & Wener, A. (1979). Hyperactive children as young adults: A controlled prospective 10 year follow-up of the psychiatric status of 75 hyperactive children. Archives of General Psychiatry, 36, 675-681.

Weiss, B., Williams, J., Margen, S., Abrams, B., Caan, B., Citron, L., Cox, C., McKibben, J., Ogar, D., & Schultz, S. (1980). Behavioral responses to artificial food colors, Science, 270, 1487-1489.

Wender, E. H. (1986). The food additive-free diet in the treatment of behavior disorders: A review. Developmental and Behavioral Pediatrics, 7, 35-42.

Wender, P. H., Epstein, R. S., Kopin, J. J., & Gordon, E. K. (1971). Urinary monoamine metabolites in children with minimal brain dysfunction, American Journal of Psychiatry, 127, 1411-1415.

Wender, P. H., Reimherr, F. W., & Wood, D. R. (1981). Attention Deficit Disorder (`Minimal Brain Dysfunction') in adults: A replication study of diagnosis and drug treatment. Archives of General Psychiatry, 38, 449-456.

Werry, J., & Quay, H. (1971). The prevalence of behavioral symptoms in younger elementary school children. American Journal of Orthopsychiatry, 41, 136-143.

Whalen, C. K., & Henker, B. (1976). Psychostimulants and children: A review and analysis. Psychological Bulletin, 83, 1113.

Wynne, M.(1979). Time estimation as a measure of impulsivity in emotionally disturbed adolescent females. Unpublished doctoral dissertation, University of Michigan.

Zametkin, A., Rapaport, J. L., Murphy, D. L., Linnoila, M., & Ismond, D. ((1985). Treatment of hyperactive children with monoamine oxidase inhibitors. Archives of General Psychiatry, 42, 962-967.

APPENDICES

Appendix A
Informed Consent Forms

CONSENT FOR PARTICIPATION IN ATTENTION
DEFICIT DISORDER STUDY

We are conducting a research study designed to help in the assessment of two types of attention deficit disorders and to study stimulant medication effects for each type. Each child included in the study has already had a diagnosis of Attention-Deficit Hyperactivity Disorder or Undifferentiated Attention-Deficit Disorder, and the decision has been made to institute stimulant medication as part of the treatment program for your child.

We are requesting your permission to use the data obtained during the evaluation and treatment of your child in order to obtain more information about children with Attention-Deficit Disorder as a whole.

The risks of participating in this study are minimal. Participation is strictly voluntary, and you or your child may withdraw at any time without affecting your child's treatment program.

All records and information on your child will be kept in strict confidence with records kept in a locked area. No identification of your child will be made in any written or published reports of the study and you may request and receive the results of the study when completed.

_____ _____
Signature Date

_____
Relationship to Child

_____
Witness

Information Sheet on Stimulant Medication

Your child has been prescribed one of the stimulant medicines used to treat attention deficit disorder. These include Ritalin (methylphenidate), Dexedrine, Desoxyn, and Cylert. The following summarizes side effects and other important information.

Short Term Side Effects: Most common are: appetite suppression, insomnia, irritability, weight loss, and occasionally headaches and abdominal pain. These are usually dose related and temporary. Nervous tics are also seen occasionally and usually stop when medication is discontinued. Rarely, a serious disorder called Tourette syndrome can be precipitated. This disorder involves irreversible, multiple tics and compulsive vocalizations. Because of the concern of developing Tourettte syndrome, if a child taking stimulant medication develops tics, his/her physician should be contacted, and medication discontinued.

All of these medications can produce signs of psychosis at high doses. Cylert uncommonly can cause liver abnormalities, and for this reason periodic blood tests are recommended when Cylert is prescribed.

Long Term Side Effects: Potential long term side effects include height and weight suppression and cardiovascular effects such as increased blood pressure and heart rate. The risk for all of these appears quite low. Because improvements are often quite dramatic, there is a potential for psychologic dependence. Emphasis should be made that medication is an adjunct to treatment and crediting a child's major successes to the stimulant medication should be avoided. Concern is often raised about potential physical dependence or future drug abuse. Evidence suggests that this is very unlikely.

Prescribing Information: With the exception of Cylert, the prescribing of all of these medications is tightly controlled by the Federal Drug Administration (FDA). Only a one month supply of medication can be prescribed at one time. Prescriptions cannot be called in over the phone and prescriptions are not refillable. We request that you give us one week notice when a new prescription is needed so that there is no delay in you receiving the prescription. Prescriptions need to be filled within 24 hours of the date of the prescription.

If there are any questions regarding side effects or medication problems please contact either Louise Warren, R.N. or Dennis Odell, M.D. at 750-2750.

Appendix B
Utah State University Human Subjects Review Board

UTAH STATE UNIVERSITY · LOGAN, UTAH 84322-1450

OFFICE OF THE VICE PRESIDENT
FOR RESEARCH
Telephone (801) 750-1180

MEMORANDUM

TO: Dr. Sebastian Striefel
Dr. Phyllis Cole
Richard Alan Campbell

FROM: Sydney Peterson

DATE: April 21, 1988

SUBJECT: Proposal Entitled, "Attention-deficit Hyperactivity Disorder and Undifferentiated Attention-deficit Disorder: Differences in Cognitive and Affective Characteristics and Response to Stimulant Medication"

The above referenced proposal has been reviewed and approved by the Institutional Review Board.

Appendix C
University of Texas Southwestern Medical Center at Dallas Institutional Review Board

THE UNIVERSITY OF TEXAS
Southwestern Medical Center
AT DALLAS

Institutional Review Board

Southwestern Medical School
Southwestern Graduate School of Biomedical Sciences
Southwestern Allied Health Sciences School

January 9, 1990

Mark Swanson, M.D.
Department of Pediatrics

RE: IRB FILE # 0190 03200

Attention-Deficit Hyperactivity Disorder and Undifferentiated Attention-Deficit Disorder

Dear Dr. Swanson:

On January 9, 1990, the Institutional Review Board considered the above-referenced study and approved the protocol and consent form as enclosed. Please use this approved consent form and destroy all other drafts or undated copies. The annual review of this study is scheduled for January 1991.

University and Federal regulations require that written consent be obtained from all human subjects in your studies. The consent form should be kept on file for a period of three years past completion of the study. A copy of the consent form should be given to each participant in your study. Also, the University attorneys have asked us to remind investigators to put a copy of the consent form in the subject's medical record. Investigators should keep the original, executed copy of the consent form and file it with their records of the protocol.

The HHS regulations require you to submit annual and terminal progress reports to our Institutional Review Board and to receive continuing review of your activity annually by this Board. You are also required to report to this Board any death or serious reactions resulting from your study. Failure to submit the above reports may result in severe sanctions being placed on the Southwestern Medical Center. Furthermore, if you require a modification to this protocol contact me in order that appropriate review and approval can be made prior to implementing the change.

5323 Harry Hines Boulevard. B8-1 Dallas, Texas 75235-9016 214/688-3060

You are reminded that all grant applications and any solicitation of funds must be processed through the Office of Grants Management. Funds received as a result of an application having been submitted directly to a granting agency by a faculty member will not be accepted by the institution. If you have any questions related to this protocol or to the Institutional Review Board please contact me at extension 82258 or Romelle Hase at extension 83060.

Sincerely,

Perrie M. Adams, Ph.D.
Associate Dean for Research
Chairman
Institutional Review Board

PMA/rh
Enclosure

THE UT HEALTH SCIENCE CENTER AT DALLAS
INSTITUTIONAL REVIEW BOARD
USE OF HUMAN SUBJECTS - INITIAL REVIEW

TITLE OF PROPOSAL OR ACTIVITY:
Attention-Deficit Hyperactivity Disorder and Undifferentiated Attention-Deficit Disorder: Differences in Cognitive and Affective Characteristics and Response to Stimulant Medication

LOCATION OF ACTIVITY:
INSTITUTION: School Problems Clinic, University Affiliated Center/DISD Bldg: ED Walker Special Education Center Room:
Neuropsychiatry Clinic, Childrens Medical Center

Funding Agency:
Name: N/A
Funding Agency Assignment Number: (If known)

ACTIVITY DIRECTOR ASSURANCE

I agree to use procedures with respect to safeguarding human subjects involved in this research that conforms to the UTHSCD policy and DHHS and FDA regulations. Except when necessary to eliminate apparent immediate hazard to the human subject, if significant changes in the investigative procedures involving human subjects are called for during the research program covered by this application, I shall seek prior approval for such changes from the Institutional Review Board (IRB), and I shall agree to follow the advice of the IRB. I further agree to report immediately to the IRB any unanticipated complications or untoward incidents with respect to human subjects.

ACTIVITY DIRECTOR AND EACH RESPONSIBLE INVESTIGATOR (List Principal Investigator First)

	Last Name	First Name	M.I.	Highest Degree Earned	Title	Social Security No.
1.	Swanson	Mark		M.D.	Assistant Professor	523-68-6394
	Signature		Date	Department	Division	Phone
				Pediatrics		904-2217
	Last Name	First Name	M.I.	Highest Degree Earned	Title	Social Security No.
2.	Campbell	Richard		M.S.	Pre-doctoral Fellow	585-86-0099
	Signature		Date	Department	Division	Phone
			10/23/89	Psychiatry	Psychology	920-2055
	Last Name	First Name	M.I.	Highest Degree Earned	Title	Social Security No.
3.	Emslie	Graham		M.D.	Associate Professor	096-60-3122
	Signature		Date	Department	Division	Phone
			10/23/89	Psychiatry		920-2054
	Last Name	First Name	M.I.	Highest Degree Earned	Title	Social Security No.
4.						
	Signature		Date	Department	Division	Phone

ACTIVITY DIRECTOR (check one) Faculty X Staff ____ Student ____ Fellow ____ Other ____

If activity director is other than faculty, name faculty sponsor: ____

Signature of Sponsor: ____ Date: ____ Dept: ____ Phone ____

DEPARTMENTAL CHAIRMAN ASSURANCE

I understand that responsibility for assessing the quality of research must be shared by both the department and the IRB. My signature as Department Chairman certifies that the proposed research has been reviewed for the proper use of human subjects. This review encompassed experimental design, scientific merit and accuracy of the proposed research.

Signature of Department Chairman /Date

	YEAR	MO	DAY	LEAVE BLANK	
DATE SUBMITTED	____	____	____	IRB NUMBER	____
ACTION DATE	____	____	____	ACTION NO.	____
NEXT IRB REVIEW DATE	____	____		CATEGORY OF REVIEW	____

UTHSCD - IRB Use Form #2 (revised 9/84)

USE OF HUMAN SUBJECTS CHECKLIST

The purpose of this checklist is to indicate those aspects of your application which require particular consideration to assure protection of human research subjects. Please complete the checklist and return it with your application. Using the outline provided, attach a summary of your project and include the consent form that you intend to use.

CHECK OFF RESPONSE AND COMPLETE THE BLANKS FOR EACH OF THE FOLLOWING WHICH, IN YOUR OPINION, BEST DESCRIBES THE RESEARCH.

1. RISK CATEGORY: No Risk ____ Minimal Risk X More Than Minimal Risk ____

2. BENEFIT CATEGORY: Benefit to Subjects: Yes X or No ____ Benefit to Others: Yes X or No ____

3. REQUESTED CATEGORY OF IRB REVIEW: Exempt ____ Expedited X Regular ____ Emergency ____

4. Does this research involve the use of drugs and/or devices? Yes X or No ____
If emergency review is requested, explain in a cover letter the nature of the emergency.

5. Condition or disease to be studied: _____

6. SUBJECT POPULATION: INDICATE WHETHER THE FOLLOWING ARE INVOLVED:

   a. ____ NORMAL SUBJECTS (non-patient volunteers)
   b. X MINORS (less than age 18)
   c. ____ FETUSES: NONVIABLE ____ VIABLE ____
   d. ____ PREGNANT SUBJECTS
   e. ____ PRISONERS
   f. ____ MENTALLY RETARDED
   g. ____ MENTALLY IMPAIRED
   h. ____ AGED (over 65)
   i. X STUDENTS
   j. ____ MINORITIES - Specify
   k. ____ INPATIENTS - as experimental subjects
   l. ____ - as control subjects
   m. X OUTPATIENTS - as experimental subjects
   n. X - as control subjects
   o. ____ NON-ENGLISH SPEAKING SUBJECTS - Native language: _____

FOR EACH YES MENTIONED ABOVE INCLUDE JUSTIFICATION FOR THE USE OF THIS SUBJECT (eIV of the project summary).

7. ADDITIONAL INFORMATION:

   a. Sex of subjects: Male ____ Female ____ Both X
   b. Age range: 8-16
   c. Estimated number of participants involved: Experimental Subjects 20 Control Subjects 20
   d. Estimated duration of study: 6 months
   e. Duration of each subject's participation: 3 months
   f. Will subjects be paid to participate? Yes ____ No X
   g. State type and amount of incentive to be offered: _____
   h. Will incentive be prorated for subjects who withdraw from participation? Yes ____ No ____

UT Southwestern OGM/IRB Form #2
Revised 06/83

ADDITIONAL INFORMATION (continued)

i. Estimated additional costs to subjects that may result from participation: $_____

j. The amount, if any, charged for an investigational drug/device $ 45. If subjects will be charged, state why sale does not constitute commercialization. Subjects would be taking medication even if not in study.

k. Is there a conflict of interest between the investigator and the sponsor of the drug/device or procedures to be studies, e.g., ownership in company? Yes ____ No X

l. Will placebos be used? Yes ____ No X

m. Will subjects be randomized? Yes ____ No X

n. Will anyone other than the investigator(s) obtain informed consent? Yes ____ No X
If "YES", list: Name _____ Title _____

o. Will the investigator(s) be directly involved in diagnostic and treatment procedures for subjects?
Yes X No ____

p. Does this research proposal involve only the collection or study of existing data, documents, records, pathological specimens or diagnostic specimens? Yes ____ No X

q. If the answer to the above question is "YES", are the sources publicly available, or will the information be recorded by the investigator(s) in such a manner that subjects cannot be identified directly or through identities linked to the subjects? Yes ____ No ____. If so, this study may qualify as exempt research or for an expedited review procedure.

8. USE OF RADIOACTIVITY IN HUMAN SUBJECTS:

Is any form of radiation used in this study? Yes ____ No X

a. If "YES", indicate type used: X-rays ____ Isotopes ____ Pharmaceuticals ____

b. Are studies done in vivo ____ or in vitro ____?

c. Are studies done for diagnostic ____ therapeutic ____ or experimental ____ purposes?

d. Has the Radiation Safety Committee approval been received for this project? Yes ____ No ____

e. If "YES", give date of approval: _____.

Approval of the Radiation Safety Committee is required for all studies involving radiation. Call the Radiation Safety Office at extension 82250 for further information.

All in vivo studies must be approved by the Radiation Safety Section prior to review by the IRB and the "Application for Use of Radiation in Human Research" form (see attached) must be completed and submitted with this application to the IRB.

9. COOPERATING FACILITIES:

Will subjects, equipment, personnel, supplies be used at:

Parkland____ Aston____ CMC X VAMC____ UMC____

List facility, if other: Developmental Center for Handicapped Persons, Utah State University

Has protocol been approved by cooperating facility? Yes Logan, UT 84322

For Parkland, attach copy of approval (attached OGM Form #8). IRB approval will not be finalized until approval is received.

10. USE OF DRUGS AND/OR DEVICES: COMPLETE THIS SECTION ONLY IF QUESTION #4 WAS ANSWERED "YES". IF IT DOES NOT APPLY TO YOUR RESEARCH, DO NOT INCLUDE THIS PAGE WITH THE MATERIAL SUBMITTED TO THE IRB.

Answer the question or check where appropriate if this activity involves the use of any drugs/devices regulated by the Food and Drug Administration. Please answer the questions for each drug/device used whether or not its use is considered to be investigational.

a. NAME OR DRUG/DEVICE: GENERIC ~~methylphenidate hydrochloride~~ TRADE Ritalin

CHEMICAL _____ NAME OF MANUFACTURER. CIBA

Is this an FDA approved drug? Yes X No ____

If "NO", indicate Phase Number, I ____ II ____ III ____ IV ____, and IND # _____

Is this an FDA approved device? Yes ____ No ____

If this is an investigational device, is it considered to be a SIGNIFICANT RISK DEVICE _____ or a NONSIGNIFICANT RISK DEVICE _____? Who made this determination, e.g., Sponsor, FDA, Principal Investigator, etc.? _____

If a waiver has been applied for, give expiration date: * _____

Give name of sponsor (person or company, etc., who holds IND/IDE) _____

If this is an FDA approved drug/device, is it being used for a "Non-FDA" approved purpose?
Yes ____ No X

If "YES", state purpose: _____

b. NAME OR DRUG/DEVICE: GENERIC _____ TRADE _____

CHEMICAL _____ NAME OF MANUFACTURER _____

Is this an FDA approved drug? Yes ____ No ____

If "NO", indicate Phase Number, I ____ II ____ III ____ IV ____, and IND # _____

Is this an FDA approved device? Yes ____ No ____

If this is an investigational device, is it considered to be a SIGNIFICANT RISK DEVICE _____ or a NONSIGNIFICANT RISK DEVICE _____? Who made this determination, e.g., Sponsor, FDA, Principal Investigator, etc.? _____

If a waiver has been applied for, give expiration date: * _____

Give name of sponsor (person or company, etc., who holds IND/IDE) _____

If this is an FDA approved drug/device, is it being used for a "Non-FDA" approved purpose?
Yes ____ No ____

If "YES", state purpose: _____

c. NAME OR DRUG/DEVICE: GENERIC _____ TRADE _____

CHEMICAL _____ NAME OF MANUFACTURER _____

Is this an FDA approved drug? Yes ____ No ____

If "NO", indicate Phase Number, I ____ II ____ III ____ IV ____, and IND # _____

Is this an FDA approved device? Yes ____ No ____

If this is an investigational device, is it considered to be a SIGNIFICANT RISK DEVICE _____ or a NONSIGNIFICANT RISK DEVICE _____? Who made this determination, e.g., Sponsor, FDA, Principal Investigator, etc.? _____

If a waiver has been applied for, give expiration date: * _____

Give name of sponsor (person or company, etc., who holds IND/IDE) _____

If this is an FDA approved drug/device, is it being used for a "Non-FDA" approved purpose?
Yes ____ No ____

If "YES", state purpose: _____

* A statement that the sponsor assures that clinical studies in humans will not be initiated prior to 30 days after the date of receipt of the notice by the Food and Drug Administration (FDA), and that he will continue to withhold or restrict clinical studies if requested to do so by the FDA prior to the expiration of such 30 days.

PROJECT SUMMARY

I. Purpose: The intent of the present study is to examine the characteristics and treatment of children with Attention-Deficit Hyperactivity Disorder (ADHD) and Undifferentiated Attention-deficit Hyperactivity Disorder (UADD) in order to better clarify the clinical pictures of the two disorders and their treatment. Specifically, the objectives of the study are: a) to identify differences, if any, between children diagnosed as ADHD and UADD on measures of cognition and affect, and b) to determine differences, if any, between ADHD and UADD children in their response to stimulant medication.

II. Background: There is currently a lack of research regarding the distinction between the DSM-III-R categories of ADHD and UADD. Research is needed clarifying the differences in the cognitive and affective characteristics of these categories. Further, research is also needed to determine appropriate treatment interventions for UADD. There are currently no studies concerning the treatment of UADD.

III. Concise Summary of Project: Subjects will be children ages 8 to 16 diagnosed as either Attention-deficit Hyperactivity Disorder or Undifferentiated Attention-deficit Disorder according to the Diagnostic and Statistical Manual of Mental Disorders-Third Edition-Revised. Groups will be compared on a battery of cognitive and affective measures prior to treatment. Both groups will then be administered a trial of stimulant medication (Ritalin) for three months. Groups will be assessed following medication trial and compared on a battery of cognitive and affective measures to assess treatment effects.

IV. Criteria for Inclusion of Subjects: As stated above, subjects will be children diagnosed as either ADHD or UADD according to the Diagnostic and Statistical Manual of Mental Disorders-Third Edition-Revised and have received a medical recommendation for stimulant medication as treatment. There will be a minimum of 20 subjects for each group. There is no differentiation in terms of sex or ethnic background. Subjects will be drawn from the Psychopharmacology Clinic at Children's Medical Center or from the School Problems Clinic of the University Affiliated Center.

V. Criteria for Exclusion of Subjects: Potential subjects who are currently on other medications or who have previously been on stimulant medication will not be included. Also, potential subjects identified who elect to not participate in the study will not be included. Subjects who develop problematic side effects will be removed from the study.

VI. Sources of Research Materials: Study data collected will

be subject's performance on cognitive measures, responses to affective measures, and teacher and parent behavioral checklists. Data obtained will be used for research purposes as well as providing data to parents concerning their child's learning and behavioral problems.

VII. Recruitment of Subjects: Subjects will be recruited from the Psychopharmacology Clinic of Children's Medical Center and from the School Problems Clinic of the University Affiliated Center under the direction of Dr. Mark Swanson. Explanation of the research project and informed consent will be obtained and documented by use of attached informed consent form on each potential participant by the principal investigator.

VIII. Potential Risks:

Short-term side effects: Most common are: appetite suppression, insomnia, irritability, weight loss, and occassionally headaches and abdominal pain. These are usually dose related and temporary. Nervous tics are also seen occasionally and usually stop when medication is discontinued. Rarely, a serious disorder called Tourette Syndrome can be precipitated. This disorder involves irreversible, multiple tics and complusive vocalizations. If a child taking stimulant medication develops tics, the physician will discontinue medication.

Long-term Side Effects: Potential long term side effects include height and weight suppression and cardiovascular effects such as increased blood pressure and heart rate. The risk for all of these appears to be quite low. Because improvements are often quite dramatic, there is a potential for psychological dependence. Emphasis should be made that medication is an adjunct to treatment and crediting a child's major successes to the stimulant medication should be avoided. Evidence suggests that physical dependence or future drug abuse because of the medication is very unlikely.

IX. Special Precautions: See above discussion in potential risks.

X. Procedures to Maintain Confidentiality: All information collected will be treated as confidential information by those involved in the research study. No information will be communicated to other individuals or agencies unless authorized by parental permission. However, the researcher is legally and ethically required to disclose confidential information if, a) there is a clear emergency where there may be danger to the participant or others, b) child abuse or neglect is suspected or reported, or c) the researcher is subpoenaed to surrender records and/or give testimony. Records of subjects will be maintained in locked file.

XI. Potential Benefits: Potential benefits for the

participating child include testing that may provide information on the child's learning or behaivoral problems, more accurate evaluation of whether the medication is helping the child, increased attention and concentration, higher self-esteem, less depression, reduced impulsiveness, and less acting out behavior. Finally, results of study may clarify the clinical picture and treatment of ADHD and UADD.

XII. Risk/Benefit Assessment: Given that the low likelihood of developing serious side effects from stimulant medication, the risks are minimal. However, there is the potential for significant benefit to the subject. Therefore, it seems quite reasonable that the subjects could participate without experiencing difficulty and may provide positive experiences for subjects who are otherwise having adjustment difficulties at school and/or home.

THE UNIVERSITY OF TEXAS SOUTHWESTERN MEDICAL CENTER AT DALLAS
SUBJECT CONSENT TO PARTICIPATE IN RESEARCH

TITLE OF STUDY:

Attention-Deficit Hyperactivity Disorder and Undifferentiated Attention-Deficit Disorder: Differences in Cognitive and Affective Characteristics and Response to Stimulant Medication

SPONSOR:

Mark Swanson, M.D.

INVESTIGATORS:	OFFICE PHONE #	NIGHT & WEEKEND
1. Richard Campbell, M.S.	920-2055	640-7441 #12715
2. Mark Swanson, M.D.	904-2217	553-1789
3. Graham Emslie, M.D.	920-2054	640-7441 #14466
4.		

You are being asked to participate in a research study. Persons who participate in research are entitled to certain rights. These rights include but are not limited to the subject's right to:

1. Be informed of the nature and purpose of the research;

2. Be given an explanation of the procedures to be followed in the research, and any drug or device to be utilized;

3. Be given a description of any attendant discomforts and risks reasonable to be expected;

4. Be given a disclosure of any benefits to the subject reasonable to be expected, if applicable;

5. Be given a disclosure of any appropriate alternatives, drugs, or devices that might be advantageous to the subject, their relative risks and benefits;

6. Be informed of the alternatives of medical treatment, if any, available to the subject during or after the experiment if complications arise;

7. Be given an opportunity to ask any questions concerning the research and the procedures involved;

8. Be instructed that consent to participate in the research may be withdrawn at any time, and the subject may discontinue participation without prejudice;

9. Be given a copy of the signed and dated consent form;

10. And be given the opportunity to decide to consent or not to consent to participate in research without the intervention of any element of force, fraud, deceit, duress, coercion, or undue influence on the subject's decision.

IRB File # 0190 03200
Date Approved JAN 9 1990

You have the right to privacy. All information that is obtained in connection with this study that can be identified with you will remain confidential within the limits of State Law. Information gained from this study that can be identified with you will be released only to the investigators, and if appropriate, to your physician and the sponsors of the study. For studies regulated by the Food and Drug Administration (FDA), there is a possibility that the FDA may inspect your records. The results of this study may be published in scientific journals without identifying you by name.

In addition, the records of your participation in this study may be reviewed by members and staff of the Institutional Review Board, and you may be contacted by a representative of the Board for information about your experience with this study. If you wish, you may refuse to answer any questions the Board may ask of you. We also would like for you to understand that your record may be selected at random (as by drawing straws) for examination by the Board to insure that this research project is being conducted properly.

We will make every effort at preventing physical injury that could result from this research. Compensation for physical injuries incurred as a result of participating in the research is not available. The investigators are prepared to advise you about medical treatment in case of adverse effects of these procedures, which you should report to them promptly. Phone numbers where the investigators may be reached are listed in the heading of this form.

If you have any questions about the research or about your rights as a subject, we want you to ask us. If you have questions later, or if you wish to report a research-related injury (in addition to notifying the investigator), you may call the Chairman of the Institutional Review Board during office hours at (214) 688-2258.

Participation in this research study is entirely voluntary. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. If you decide to participate, you are free to withdraw your consent and discontinue participation at any time without affecting your status (as a patient, student, employee, etc.), or the medical care that you will receive.

Any significant new findings developed during the course of the research which may relate to your willingness to continue participation in this study will be provided to you.

YOU WILL BE GIVEN A COPY OF THIS CONSENT FORM TO KEEP

ATTENTION-DEFICIT HYPERACTIVITY DISORDER AND UNDIFFERENTIATED ATTENTION-DEFICIT DISORDER: COGNITIVE AND AFFECTIVE DIFFERENCES AND THEIR RESPONSE TO STIMULANT MEDICATION

PURPOSE: We are conducting a research study designed to help in the assessment of two types of attention-deficit disorders and to study stimulant medication effects for each type. The study will help us better understand the disorders and their treatment.

WHAT YOU WILL BE ASKED TO DO IF YOU PARTICIPATE IN THIS STUDY: Each child included in the study has already had a diagnosis of Attention-deficit Hyperactivity Disorder(ADHD) or Undifferentiated Attention-deficit Disorder(UADD), and the decision has been made to institute stimulant medication as part of the treatment program for your child. We are requesting your permission to use the data obtained during the evaluation and treatment of your child in order to obtain more information about children with Attention-deficit Disorder as a whole. Data includes scores from cognitive testing, child affective self-report measures, and parent and teacher behavioral rating scales before institution of stimulant medication and 3 months later.

EXPERIMENTAL PROCEDURES: As stated above, each child in the study has received a diagnosis of ADHD or UADD and the decision has been made to institute stimulant medication as part of the treatment program for your child. The medication used is methylphenidate hydrochloride or Ritalin which has been the traditional medication of first-choice for treatment of children with attentional problems. Each child will receive a battery of cognitive and affective measures before treatment and later after the child has received the medication for 3 months. While the cost of the medication will be your responsibility, there will be no charge for the testing conducted.

POSSIBLE RISKS AND DISCOMFORTS: The risks of participating in this study are minimal. Participation is strictly voluntary, and you or your child may withdraw at any time without affecting your child's treatment program. Most common short-term side effects from Ritalin are: appetite suppression, insomnia, irritability, weight loss, and occasionally headaches and abdominal pain. These are usually dose related and temporary. Nervous tics are also seen occasionally and usually stop when medication is discontinued. Rarely, a serious disorder called Tourette Syndrome can be precipitated. This disorder involves irreversible, multiple tics and compulsive vocalizations. If a child taking stimulant medication develops tics, the medication will be discontinued and his/her physician should be contacted. Also, this medication can produce signs of psychosis at high doses. Potential long-term side effects are: height and weight suppression and cardiovascular effects such as increased blood pressure and heart rate. The risk for all of these appears to be quite low. Concern is often raised about potential physical dependence or future drug abuse. Evidence suggests that this is very unlikely. Because improvements are often quite dramatic,

there is a potential for psychological dependence. Emphasis should be made that medication is an adjunct to treatment and crediting a child's major successes to the stimulant medication should be avoided.

POSSIBLE BENEFITS: Potential benefits for you and your child include testing that may provide information on your child's learning or behavioral problems, more accurate evaluation of whether the medication is helping the child, increased attention and concentration, higher self-esteem, less depression, reduced impulsiveness, and less acting out behavior. Finally, results of the study may clarify the clinical picture and treatment of attention-deficit disorders.

ALTERNATIVES TO PARTICIPATION: There are other treatment possibilities to attention-deficit disorders. In terms of medications, sometimes Cylert or Dexedrine is used in the treatment of attention-deficit disorders. There are also psychosocial approacnes such as behavior modification techniques, cognitive training, and parent training. Ideally, a combination of approaches is desired.

YOU ARE MAKING A DECISION WHETHER OR NOT TO PARTICIPATE IN THIS STUDY. YOU SHOULD NOT SIGN UNTIL YOU UNDERSTAND ALL THE INFORMATION PRESENTED IN THE PREVIOUS PAGES AND UNTIL ALL YOUR QUESTIONS ABOUT THE RESEARCH HAVE BEEN ANSWERED TO YOUR SATISFACTION. YOUR SIGNATURE INDICATES THAT YOU HAVE DECIDED TO PARTICIPATE HAVING READ (OR BEEN READ) THE INFORMATION PROVIDED ABOVE.

_____ _____
Name of Subject Age

_____ _____
Signature of Legally Responsible Representative Date

_____
Relationship to Subject

_____
Signature of Witness/Investigator

Please provide the following information so that you may be contacted if there are significant new findings are developed during the course of the research which may affect your willingness to participate in the study.

Name: _____
Address and Phone Number: _____
_____

Appendix D
Children's Depression Inventory

CD INVENTORY

NAME:_____

DATE:_____ CASENO.: [ ][ ] [ ][ ][ ]

INVENTORY NO.: [ ][ ]

FORM NO.: [0][8]

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. AFTER YOU PICK A SENTENCE FROM THE FIRST GROUP, GO ON TO THE NEXT GROUP.

THERE IS NO RIGHT ANSWER OR WRONG ANSWER, JUST PICK THE SENTENCE THAT BEST DESCRIBES THE WAY YOU HAVE BEEN RECENTLY. PUT A MARK LIKE THIS -X- NEXT TO YOUR ANSWER, PUT THE MARK IN THE BOX NEXT TO THE SENTENCE THAT YOU PICK.

HERE IS AN EXAMPLE OF HOW THIS FORM WORKS. TRY IT. PUT A MARK NEXT TO THE SENTENCE THAT DESCRIBES YOU BEST.

EXAMPLE:

[ ] I READ BOOKS ALL THE TIME

[ ] I READ BOOKS ONCE IN A WHILE

[ ] I NEVER READ BOOKS

Rev. 3/75; 2/76; 5/77; 7/77
Format Change, 8/79

REMEMBER, PICK OUT THE SENTENCES THAT DESCRIBE YOUR FEELINGS AND IDEAS IN THE PAST TWO WEEKS.

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

9. |____| I DO NOT THINK ABOUT KILLING MYSELF
   |____| I THINK ABOUT KILLING MYSELF BUT I WOULD NOT DO IT
   |____| I WANT TO KILL MYSELF

10. |____| I FEEL LIKE CRYING EVERYDAY
    |____| 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 SCHOOLWORK
    |____| I HAVE TO PUSH MYSELF MANY TIMES TO DO MY SCHOOLWORK
    |____| DOING SCHOOLWORK 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. |____|y 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
    |____|y 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

SUM:_____

ADMINISTRATION: O. INDIVIDUAL_____
I. GROUP_____

University of Pittsburgh
WESTERN PSYCHIATRIC INSTITUTE AND CLINIC

August 29, 1989

Dr. Richard Campbell
5801 Spring Valley #409W
Dallas, TX 75240

Dear Dr. Campbell:

Thank you for your recent letter in which you requested information regarding the Children's Depression Inventory (CDI).

As per your request, enclosed is an article in which the CDI, its development, and psychometric properties are described. Also, enclosed are two copies of the CDI, instructions for its administration, a scoring template, and a reference list. Please note that the CDI is copyrighted. This letter gives you permission to reproduce it only for your purposes, as stated in your letter. In the case that other professionals are interested in obtaining the instrument, please ask them to write to me directly.

I would appreciate your keeping me posted on the progress of your work by forwarding any pertinent reprints or manuscripts. I hope that you'll find the above information useful. If you have any questions, please feel free to get in touch with me again.

Finally, in order to cover the costs of the enclosed material, kindly forward a check or money order for the amount of $2.75 (two dollars and seventy-five cents) payable to: Childhood Depression Research Program, WPIC; please send the check to my attention.

Sincerely yours,

Maria Kovacs, Ph.D.
Associate Professor of
Psychiatry

MK/bb

Enclosures: CDI (2), instructions for administration, scoring template, Psychopharmacology Bullatin Article, CDI references

3811 O'HARA STREET. PITTSBURGH. PA 15213-2593

Appendix E
Conners Parent Rating Scale-Revised

PARENT'S QUESTIONNAIRE

Name of Child_____ Date_____

Please answer all questions. Beside each item below indicate the degree of the problem by a check mark (✓)	Not at all	Just a little	Pretty much	Very much
1. Picks at things (nails, fingers, hair, clothing).				
2. Sassy to grown-ups.				
3. Problems with making or keeping friends.				
4. Excitable, impulsive.				
5. Wants to run things.				
6. Sucks or chews (thumb; clothing; blankets).				
7. Cries easily or often.				
8. Carries a chip on his shoulder.				
9. Daydreams.				
10. Difficulty in learning.				
11. Restless in the "squirmy" sense.				
12. Fearful of new situations; new people or places; going to school).				
13. Restless, always up and on the go.				
14. Destructive.				
15. Tells lies or stories that aren't true.				
16. Shy.				
17. Gets into more trouble than others same age.				
18. Speaks differently from others same age (baby talk; stuttering; hard to understand).				
19. Denies mistakes or blames others.				
20. Quarrelsome.				
21. Pouts and sulks.				
22. Steals.				
23. Disobedient or obeys but resentfully.				
24. Worries more than others (about being alone; illness or death).				
25. Fails to finish things.				
26. Feelings easily hurt.				
27. Bullies others.				
28. Unable to stop a repetitive activity.				
29. Cruel.				
30. Childish or immature (wants help he shouldn't need; clings; needs constant reassurance).				

	Not at all	Just a little	Pretty much	Very much
31. Distractibility or attention span a problem.				
32. Headaches.				
33. Mood changes quickly and drastically.				
34. Doesn't like or doesn't follow rules or restrictions.				
35. Fights constantly.				
36. Doesn't get along well with brothers or sisters.				
37. Easily frustrated in efforts.				
38. Disturbs other children.				
39. Basically an unhappy child.				
40. Problems with eating (poor appetite; up between bites).				
41. Stomach aches.				
42. Problems with sleep (can't fall asleep; up too early; up in the night).				
43. Other aches and pains.				
44. Vomiting or nausea.				
45. Feels cheated in family circle.				
46. Boasts and brags.				
47. Lets self be pushed around.				
48. Bowel problems (frequently loose; irregular habits; constipation).				

Appendix F
Conner's Teacher Rating Scale

TEACHER'S QUESTIONNAIRE

Name of Child_____ Grade_____

Date of Evaluation_____

Please answer all questions. Beside each item, indicate the degree of the problem by a check mark (✓)	Not at all	Just a little	Pretty much	Very much
1. Restless in the "squirmy" sense.				
2. Makes inappropriate noises when he shouldn't.				
3. Demands must be met immediately.				
4. Acts "smart" (impudent or sassy).				
5. Temper outbursts and unpredictable behavior.				
6. Overly sensitive to criticism.				
7. Distractibility or attention span a problem.				
8. Disturbs other children.				
9. Daydreams.				
10. Pouts and sulks.				
11. Mood changes quickly and drastically.				
12. Quarrelsome.				
13. Submissive attitude toward authority.				
14. Restless, always "up and on the go."				
15. Excitable, impulsive.				
16. Excessive demands for teacher's attention.				
17. Appears to be unaccepted by group.				
18. Appears to be easily led by other children.				
19. No sense of fair play.				
20. Appears to lack leadership.				
21. Fails to finish things that he starts.				
22. Childish and immature.				
23. Denies mistakes or blames others.				
24. Does not get along well with other children.				
25. Uncooperative with classmates.				
26. Easily frustrated in efforts.				
27. Uncooperative with teacher.				
28. Difficulty in learning.				

VITA

Richard Alan Campbell

Candidate for the Degree of

Doctor of Philosophy

Personal Data: Born in Detroit, Michigan, September 13, 1958, son of Richard C. and Florence Campbell.

Education and Honors:	Utah State University, Logan, Utah	Ph.D.(1991) Clinical Psychology; Dissertation: AD-HD and UADD: Differences in Cognitive and Affective Characteristics and Responses to Stimulant Medication
	Utah State University, Logan, Utah	M.S.(1984) Counseling/School Psychology; Phi Kappa Phi
	University of New Mexico, Albuquerque, New Mexico	B.A.(1980) Secondary Education;Dean's List, University Honor Roll

Professional Experience:	1989-present	Clinical Faculty: University of Texas Southwestern Medical Center at Dallas; Children's Medical Center at Dallas.
	1987-88	Psychology Intern: Bear River Mental Health Services, Inc., Logan, UT.
	1986-87	Psychology Specialist: Clinical Services Unit, Developmental Center for Handicapped Persons, Logan, UT.
	1986	Instructor: Utah State University, Logan, UT.
	1984-86	School Psychologist: Preston School District, Preston, ID.
	1983-84	Mental Health Coordinator/Staff Psychologist: Bear River Head-Start, Logan, UT.
	1979-81	Teacher: Lydia Patterson Institute, El Paso, TX.

Publications and Presentations:

Stewart, S. M., Silver, C. H., Nici, J., Waller, D., Campbell, R., Uauy, R., and Andrews, W. S. (in press). Neuropsychological function in young children. Journal of Pediatric Psychology.

Campbell, R. A., Hussian, R. A., Zimmerman, J. G. (1989). Difficulties in the implementation of behavioral treatments with institutionalized geriatric patients. Presentation at Texas Association for Behavior Analysis, Annual Meeting, Dallas, TX.

Hussian, R. A., Zimmerman, J. G., and Campbell, R. A. (1989). Reinstating appropriate stimulus control in demented patients. Presentation at Texas Association for Behavior Analysis, Annual Meeting, Dallas, TX.

Campbell, R. (1984). An Evaluation of the Edith Bowen Gifted/Talented Program. Unpublished thesis, Utah State University.