ADULT ATTENTION DEFICIT HYPERACTIVITY DISORDER

PERSONALITY CHARACTERISTICS

AND COMORBIDITY

DISSERTATION

Presented to the Graduate Council of the

University of North Texas in Partial

Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

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Denton, Texas

August, 1998
Austin, Karla Michele, Adult attention deficit hyperactivity disorder: Personality characteristics and comorbidity. Doctor of Philosophy (Counseling Psychology), August, 1998, 86 pp., 12 tables, references, 60 titles.

Attention-deficit/hyperactivity disorder (ADHD) is surrounded by confusion and controversy regarding its definition, course, etiology and treatment. Among adults, ADHD is rarely considered a diagnostic reality of primary importance and is often overlooked. This study provides descriptive validity for adult ADHD in distinguishing it from controls, and identifying both a pure condition and one wrought with comorbidity.

Subjects included 48 adults with ADHD, 36 adults with an axis I disorder other than ADHD or psychosis, and 58 non-referred adults from the community with no known axis I disorder. Males and females were included between the ages of 19 and 49. Respondents were selected from clinic populations and the community. Measures used included a questionnaire, the ADHD Behavior Checklist for Adults (ADHD BCA), the State Trait Anxiety Inventory (STAI), the Beck Depression Inventory (BDI) and the Millon Clinical Multiaxial Inventory- III (MCMI-III).

Results show significant differences between the ADHD group and the Non-referred comparison group on measures of anxiety, depression, chemical dependency and personality disorders. Significant differences were noted between the ADHD group and the Axis I group regarding chemical dependency. The ADHD group demonstrated increased anxiety, mild to moderate depression, and an increase in indicators of personality
disorders. Measures of chemical dependency did not indicate a problem level among any
group. In addition, 29.2% of the ADHD group demonstrated no comorbidity. More
research is needed in the area of adult ADHD and comorbidity. Future research might
include examining self-esteem, locus of control, intelligence, creativity, and parenting
styles among adults with ADHD.
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CHAPTER I

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is surrounded by confusion and controversy regarding its definition, course, etiology, and treatment. While a popular consideration for diagnosis among children, the concept of ADHD relating to adults is quite foreign both in the literature and in the minds of clinicians. It is this confusion, controversy, and paucity of attention toward adult ADHD that provide the inspiration for this study.

Hyperactivity and inattention are common behavioral problems in children and account for one half of the pediatric referrals to family physicians, pediatricians, pediatric neurologists, and child psychiatrists in North America. Hyperactivity is likewise the best known and most researched of childhood behavioral disorders (Cohen, Becker, & Campbell, 1990). It is estimated that ADHD affects at least 3-5% of school aged children (American Psychiatric Association, 1994; Biederman, Faraone et al., 1995) and is considered a public health problem due to its impact on social, emotional, and cognitive functioning. Its impact on society includes tremendous financial cost, stress to families, disruption in the schools, and the potential for criminality and substance abuse (Biederman, Faraone et al., 1995; Biederman, Newcorn, & Sprich, 1991).
The DSM-IV (American Psychiatric Association, 1994) lists the essential feature of ADHD as a "pervasive pattern of inattention and/or hyperactivity-impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development" (p. 78). Some symptoms of the ADHD must be present before age seven, and impairment from the symptoms must exist in at least two settings such as school and home. Subtypes within the diagnosis allow for specificity of ADHD, Combined Type, ADHD, Predominantly Inattentive Type, and ADHD, Predominantly Hyperactive-Impulsive Type. The specific diagnostic criteria are listed in Appendix A.

Until recently, symptoms of ADHD were thought to diminish with age and substantially disappear by adolescence (Calandra, 1995). Follow-up studies have shown, however, that between 30% and 60% of children with ADHD have symptoms that continue well into adulthood (Gittelman, Mannuzza, Shenker, & Bonagura, 1985; Spencer, Biederman, Wilens, & Faraone, 1994; Weiss, Hechtman, Milroy, & Perlman, 1985). Why ADHD remits in some, but not others, is unknown. The exact number of adults with ADHD who are impaired in daily functioning is unknown as well, yet its high prevalence in childhood combined with follow-up results suggests adult ADHD is likely a relatively common disorder that is underidentified by clinicians (Barkley, 1990; Spencer, Biederman, Wilens, & Faraone, 1994).

The transition into adulthood is challenging for individuals with ADHD, particularly when it has been unrecognized. Scars from childhood ADHD such as low self-esteem and social problems only add to the misfortune of ADHD in adults. The accumulated failures relating to school, relationships, or employment tend to generate
their own constellation of symptoms (Ratey, Greenberg, Bemporad, & Lindem, 1992). Symptoms in adults are often identical to those in the childhood version, yet problems may extend to the workplace, highway, and marriage (Bellak, 1992). Later in an individual's life, primary symptoms may include increased confusion and memory impairment, with progressive difficulty concerning task completion and organization (Elliott, 1995). Such problems are often the motivation for symptomatic individuals to seek treatment from clinicians. It is frequently depression, anxiety, low self-esteem, chemical dependency, or difficulty in social relationships that are presented to the clinician, and therefore considered for primary diagnosis and treatment. Such comorbid symptoms and diagnoses are not uncommon among adults with ADHD, and thus must be considered when evaluating the ramifications of such a debilitating condition (Shekim, Asarnow, Hess, Zaucha, & Wheeler, 1990, Shaffer, 1994, Hallowell & Ratey, 1994).

Review of the Literature

History of Attention Deficit Hyperactivity Disorder

While identified by several different names over the years, ADHD was first identified as a medical condition in 1902 by British pediatrician George Frederick Still. In a series of lectures, Still reported his observations of children engaged in unacceptable behavior. He determined that the behavior problems in these children were due to injury at birth or were biological rather than a result of their environment. Still referred to this ailment as "minimal brain dysfunction." In the 1930s, the term "Minimal Brain Damage Syndrome" was created to account for a group of mentally retarded children with histories of central nervous system damage who were impulsive, distractible, hyperactive, and
perseverative. In 1937, positive responses to amphetamines with children who had similar personality characteristics were accounted for by Bradley. The 1950s and 1960s boasted other names for the disorder including "Hyperactive Child Syndrome", "Hyperactivity", "Hyperkinetic Child Syndrome", and "Hyperkinesis" indicating an emphasis on excessive motor activity as the primary component of this disorder (Calandra, 1995; Hallowell & Ratey, 1994; Biederman, 1991).

In 1980, the Diagnostic and Statistical Manual of Mental Disorders-III renamed this condition “Attention Deficit Disorder (ADD)”, emphasizing impulsivity and inattentiveness rather than hyperactivity as basic indicators. Three subtypes were proposed by the DSM-III and included "ADD with Hyperactivity", "ADD without Hyperactivity", and "ADD Residual Type" (American Psychiatric Association, 1980). Changes were made through the next decade in diagnosis due to controversy concerning the necessity or irrelevance of hyperactivity for the validity of the diagnosis. The DSM-III-R collapsed these categories into one: "Attention-Deficit/Hyperactivity Disorder (ADHD)" (American Psychiatric Association, 1987). The DSM-IV currently identifies this pattern of behavior as “Attention-Deficit/Hyperactivity Disorder” and is specified as “Predominantly Inattentive Type,” “Predominantly Hyperactive-Impulsive Type,” or as “Combined Type” (American Psychiatric Association, 1994, p. 85).

Although adult ADHD (AADHD) is only briefly mentioned in the DSM-IV, researchers and clinicians are beginning to recognize that this condition, beginning in childhood, continues throughout life for many individuals (Calandra, 1995). While many may view adult ADHD as a phenomenon of the 1990's, research on this disorder in adults
dates back much earlier than this decade. Medication-oriented case studies appear as early as 1947 in England and the 1970's in the United States. The first conference on Minimal Brain Dysfunction (MBD) was held in Arizona in 1978 and by 1980, the DSM-III created an adult-specific subtype of the disorder, Attention Deficit Disorder, Residual Type (American Psychiatric Association, 1980). In 1989, the first clinic for ADD adults opened in Michigan, and support groups existed in several states by mid 1990 (Jaffe, 1995).

**Diagnosis of Adult Attention-Deficit/Hyperactivity Disorder**

In 1981, Paul Wender developed the Utah Criteria for diagnosing ADD in adults, which consisted of criteria more strict than those of the DSM-III (Jaffe, 1995). By the mid 1980's, longitudinal studies of both adolescents and adults with ADHD were published showing 30% to 50% of symptomatic children have evidence of at least some aspect of the ADHD syndrome into adulthood (Gittelman, Mannuzza, Shenker, & Bonagura, 1985; Weiss, Hechtman, Milroy, & Perlman, 1985). Very little information is available to indicate whether or not ADHD symptoms are found in adults who have never received a diagnosis of ADHD in childhood (Ratey, Greenberg, Bemporad, & Lindem, 1992). To date, this hardship for many is not recognized in the official nomenclature and is underrepresented in the empirical literature (Biederman, Faraone, Spencer et al., 1993; Shaffer, 1994).

Shaffer (1994) describes three problems in diagnosing adults with ADHD. First, diagnosing adults requires an examination of childhood, academic, and behavioral history. This is often an impossible task as recall by parents or the adult being diagnosed is lacking in reliability and may be influenced by multiple factors. Due to the changes in diagnostic
criteria and even in the name of the disorder, many adults struggle to recall and understand childhood memories set in an environment where ADHD was unknown among most parents and professionals alike.

The second problem with diagnosis of adults involves the frequency of comorbidity with other disorders (Shaffer, 1994). This brings into question which disorder is primary or in fact the root problem if one exists. The DSM-IV stipulates that ADHD is not diagnosed if the symptoms are better accounted for by another mental disorder. Disorders that must be ruled out include mood disorders, anxiety disorders, dissociative disorder, personality disorders, and substance-related disorders or general personality change due to a medical condition (American Psychiatric Association, 1994). Determining which disorder better accounts for symptoms when comorbidity exists is a difficult diagnostic decision.

The third problem in diagnosing ADHD is the fact that some of its clinical features mimic those of other disorders (Shaffer, 1994). The manic episodes of a Bipolar Disorder include elevated moods including highly active behavior, psychomotor agitation, easy distractibility, impulsivity, and an apparent disregard for personal safety. "Although the person's mood may initially have an infectious quality for the uninvolved observer, it is recognized as excessive by those who know the person well" (American Psychiatric Association, 1994, p. 328). Likewise, Borderline Personality Disorder "is a pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity ..." (American Psychiatric Association, 1994, p. 650). Again, this description greatly resembles that of some individuals with ADHD. The Utah ADHD criteria
developed by Wender minimize this problem with a set of rule-outs that preclude the
diagnosis of ADHD when a mood disorder, psychosis, or borderline personality disorder
are present (Wender, Reimherr, & Wood, 1981).

warns of the danger in failing to diagnose adults with ADHD. Overdiagnosis may result in
an acceptance of adult ADHD as the popular thing to be, or to medicate, if you are a
physician. Likewise, the tendency to place excessive blame on the condition of ADHD
could cause missed diagnoses of other conditions, or apathy and resignation to common
effects from it.

Failure to diagnose ADHD may cause unnecessary distress and disability since
effective therapeutic agents for the disorder are available (Wender, Reimherr, & Wood,
1981). Others suggest that in research settings, studies of substance abuse, anxiety and
depressive disorders would likely benefit from assessing ADHD (Biederman et al., 1993).
ADHD has been referred to as an "orphan" diagnosis since child clinicians aren't likely to
follow their clientele into adulthood, and ADHD is not often considered in adult
psychiatric settings (Biederman, Faraone, et al., 1995).

Another diagnostic difficulty deserving consideration is how well the diagnostic
thresholds set for the two symptom lists apply to age groups outside of those used in the
field trial (Barkley, 1995). With respect to the DSM-IV criteria for ADHD, it is suggested
that the number of positively endorsed items needed for adults to qualify may be different
from the number of items required for the diagnosis of children or adolescents with the
same disorder (DeMuth, 1996). Concerns over this issue arise from research indicating a
decline in the items from these lists associated with age, and the lack of normative data for adults (Murphey & Barkley, 1995).

Garfinkel and Amrami (1992) suggest that as individuals with ADHD mature, there may be a tendency for hyperactive behaviors to decrease while impulsivity and attention deficits persist. Support for this position came from a recent longitudinal study which examined children and adolescents to evaluate differential change in the symptom dimensions of inattention and hyperactivity-impulsivity. Results suggested inattention declines over time irrespective of age, but only between the first and second year. Findings also indicated that hyperactivity-impulsivity declined with increasing age, particularly in late childhood and early adolescence. The authors reported 77.4% of the boys who met the criteria for ADHD at age 7-12 continued to meet the criteria at age 10-15, adding support to the assertion that ADHD can be considered a chronic and persistent disorder (Hart, Lahey, Loeber, Applegate, & Frick, 1995).

Preliminary normative data from Murphy and Barkley suggest that when assessing adult populations for ADHD, the current DSM-IV thresholds requiring six of nine symptoms for both inattentive and hyperactive/impulsive items may be too high. They suggest a lower threshold of four out of nine items positively endorsed as sufficient criteria for diagnosis for those aged 30-49 for either type, inattentive or hyperactive/impulsive, and five out of nine criteria necessary for those in their twenties regarding the hyperactive/impulsive subtype. They have created their own assessment for adult ADHD called the ADHD Behavior Checklist for Adults using these criteria (Murphy & Barkley, 1995).
Barkley further discusses the appropriateness of the item set for different developmental periods and suggests adjusting the types of items developmentally appropriate for different periods. He suggests items for disinhibition be created and tested for use in more accurate diagnosis of older adolescents and adults (1995). This problem of diagnosis is a great one for clinicians and researchers alike. Empirically determined cutoff scores relative to normal adults will be necessary if the diagnosis of adult ADHD is to be advanced (Murphy & Barkley, 1995).

There is general agreement that a pattern of behavior exists in which an adult exhibits a short attention span, restlessness, and impulsivity. Many theorists are making attempts at accurate criteria for the diagnosis of ADHD among adults. Hallowell and Ratey (1994) suggest criteria in their classification of adult ADHD (Appendix B) including a list of 20 items out of which 12 must be present. Hyperactivity is not required in their diagnosis, and like the DSM-IV, allow for ADHD, Predominantly Inattentive Type. They also require, in their criteria, the presence of childhood symptoms of ADHD and the ruling out of other psychiatric or medical conditions.

Persons with adult ADHD may appear quite different from one another, contributing to the confusion in diagnosis. While some individuals with ADHD may appear impulsive, with a high energy level and a need for much environmental stimulation, others may seem lazy, messy, dreamy, poorly organized, poorly motivated or directed, yet still impulsive. Elliott suggests renaming the disorder Thought Processing Difference (TPD) and considering it a variation of normal brain structure whose differences sometime do not fit well into our society’s structure regarding education and workplaces (1995).
Descriptors of Adult Attention-Deficit/Hyperactivity Disorder

Hechtman (1989) describes ADHD in adulthood as fitting into three rough categories. The first category includes adults with ADHD who function within a normal range as compared to matched controls. The second group includes ADHD adults having significant problems with concentration, emotional, social, and impulsive problems. Hechtman suggests most young adult ADHD subjects fall into this category and have difficulties with work, self-esteem, anxiety, impulsivity, irritability, emotional lability, and interpersonal relationships. The third category is comprised of those adult ADHD subjects who have significant psychiatric or antisocial pathology. Correlary factors for these individuals may include major depression, suicidality, chemical dependency, or even severe antisocial behavior such as theft, assault, or drug dealing which may lead them to incarceration.

Elliott (1995) warns against thinking of persons with ADHD as diseased, mentally defective, brain damaged, or psychologically unbalanced. He reports that ADHD individuals have higher than average intelligence, a superior ability to think creatively, a heightened sensory awareness, the ability to react quickly to threat or change in the environment, and a good sense of flexibility. Hallowell and Ratey (1994) report elements of ADHD that favor creativity such as having a greater tolerance for chaos, the ability to intensely focus or hyperfocus at times, impulsivity, and the "hyperactivity" of the mind. "The trick for the person with ADD is to harness these processes productively" (p. 178). "While their lives may be full of struggle, their contributions to the joy and humor, as well as the productivity, of this world are great" (p. 268).
Attempts to discover factors associated with a more positive or more negative outcome in ADHD have been unsuccessful in identifying any specific variable. Generally, findings have suggested outcome to be associated with the additive interaction of personality characteristics, social, and familial parameters. The variables that stand out as being particularly important on adult outcome include IQ, socioeconomic level, degree of the continuation of ADHD symptoms, and mental health of family members (Hechtman, Weiss, Perlman, & Amsel, 1984; Gittelman, Mannuzza, Shenker, & Bongura, 1985).

Only a small number of studies have examined clinically referred adults with ADHD. As compared to matched controls, AADHD subjects had fewer years of education, lower rates of employment, and higher rates of marital divorce and separation. A greater percentage of AADHD individuals were male and of a lower socioeconomic status. AADHD subjects had higher rates of Antisocial Disorder, substance use, and anxiety disorders. They reported significantly higher rates of failed grades, tutoring, special classes, and reading disabilities from their childhood. Overall, the pattern of psychopathology, cognition, and functioning among adults with ADHD greatly resembled the findings for children with ADHD (Biederman, Faraone, Spencer, Wilens, Norman, Lapey, Mick, Lehman, & Doyle, 1993).

Etiology of ADHD

There are many theories, yet few answers to the question of origin for ADHD. Some researchers have found support for the idea of hereditary disposition for the disorder. Findings to support this theory include a significant number of parents with ADHD having children with the disorder. Goodman and Stevenson (1989) found a 51%
concordance rate for hyperactivity in 39 monozygotic twins, compared with a 33% rate in dizygotic twins. Likewise, it has been demonstrated that adults whose siblings have the disorder have a higher incidence than average of ADHD, further supporting the hypothesis for the familial link to ADHD (Biederman et al., 1993; Frick, Lahey, Christ, & Green, 1991).

Another study found a positive association between adversity indicators and the risk for ADHD in children (Biederman, Milberger, et al., 1995). Hallowell and Ratey (1994) discuss a landmark study by Dr. Alan Zametkin in 1990 out of the National Institute of Mental Health. His study showed a difference at the cellular level in energy consumption involving parts of the brain governing attention, emotion, and impulse control in subjects with ADHD.

Others theorize that patterns of family interaction may contribute to the onset, maintenance, and severity of ADHD (Jensen, Koretz, Locke, Schneider, Radke-Yarrow, Richters, & Rumsey, 1993). Most would agree that likely it is multiple etiologies, and associated factors as opposed to direct ones, that lead to a final pathway that best explain the existence of ADHD (Calandra, 1995; Jensen, Koretz, et al., 1993).

**Comorbidity**

Comorbidity implies two or more disease processes in operation when more than one diagnosis is present. In recent years, there has been an increase in research evidencing high levels of comorbidity of attention-deficit/hyperactivity disorder with a number of other disorders, including mood and anxiety disorders, as well as chemical dependency. Though comorbidity among psychiatric disorders has been long researched in the field of
psychiatry, only recently has ADHD been considered in light of other comorbid psychiatric disorders (Biederman, Newcorn, & Sprich, 1991).

Controversy and several competing hypotheses surround the issue of comorbidity as it pertains to ADHD. Angold and Costello (1993) propose the necessity of examining other possible meanings for the presence of comorbidity due to irresolute nosological foundations. Methodological interpretations that cannot be ruled out at present are listed:

1. There is no etiological or pathogenic connection between depression, anxiety, and disruptive behavior disorders, but the individual conditions share some symptoms in common, so that the presence of one disorder reduces the number of symptoms required for the second disorder to reach the threshold for diagnosis.

2. There is no etiological or pathogenic connection between depression, anxiety, and disruptive behavior disorders, but the use of multiple informants describing the same phenomena in different terms leads to the spurious appearance of multiple disorders. (pp. 1786-1787)

Several possible substantive explanations for consideration include:

1. All childhood psychiatric disorders result from the same pathogenic processes.

2. Depressive and anxiety symptoms represent alternative outcomes of the same pathogenic process, but this process is different from that which results in some other disorders (such as conduct disorder).

3. Depressive and anxiety symptoms result nonspecifically from a variety of
pathogenic mechanisms, which are reflected in other symptoms (such as conduct disorder).

4. Depression directly causes disruptive behavior disorders (or vice versa).

5. The presence of some third factor modulates the relationship of depression with other disorders. (Angold & Costello, 1993, pp. 1787-1788)

Investigation of these issues should help to clarify the etiology, course, and outcome of attention-deficit/hyperactivity disorder.

Multiple diagnoses among ADHD adults is not only possible, but probable among at least 50% of those with the disorder (Zametkin, 1996). High rates of dysthymia, anxiety disorders, antisocial personality disorders, learning disabilities, and alcohol dependence and/or abuse are found among adults with ADHD (Spencer, Biederman, Wilens, & Faraone, 1994). Biederman, Newcorn, and Sprich (1991) found high rates of antisocial, major depressive, and anxiety disorders among adults with ADHD. Likewise, grown-up children with persistent ADHD symptoms continuing into adulthood demonstrate increased psychiatric comorbidity, school and work failures, relationship difficulties, and functional impairment as compared to controls (Biederman, et al., 1993; Spencer, Biederman, Wilens, & Faraone, 1994). Comorbidity presents a problem in determining which of the co-occurring conditions is the primary cause of social or functional impairment and which is the most relevant focus for treatment (Shaffer, 1994).

Some believe sufficient research exists to support the existence of at least three subtypes of ADHD: ADHD plus conduct disorder, ADHD plus major depression, and ADHD plus anxiety disorders. The existence of subtypes would necessitate an understanding of
potential differing risk factors, clinical course, and pharmacological responses (Biederman, 1991).

Many of the symptoms and behaviors of ADHD in adults are similar to those seen with mood disorders. While ADHD is usually defined in terms of other symptoms such as inattention and impulsivity, it is not uncommon to find the coexistence of depression among this group of individuals. Several studies have documented high rates of major depressive disorders among children, adolescents, and adults with ADHD. In Biederman's (1991) review of the literature he notes, "ADHD and mood disorders have been found to co-occur in 20% to 30% of cases in both epidemiologic and clinical studies of children and adolescents" (p.14) (American Psychiatric Association, 1994; Hallowell & Ratey, 1994).

The DSM-IV notes that ADHD and Major Depressive Disorder both have problems related to agitation, concentration, and often sleep. Significant symptom overlap has also been identified between depression and ADHD regarding possible engagement in self-endangering behaviors, social withdrawal, guilt, weeping, and dysphoria common to both disorders. Distinguishing between depression and ADHD requires careful observation of quality (including amplitude and duration), age of onset, family history, and the episodic duration of mood shifts. Mesquita and Gilliam recommend dysphoria, anhedonia, and angry or irritable mood as the "flag" symptoms to indicate depression as opposed to ADHD (American Psychiatric Association, 1994; Biederman, et al., 1993; Biederman, Newcorn, & Sprich, 1991; Calandra, 1995; Glasser, 1995; Hallowell & Ratey, 1994; Jensen, Shervette, Xenakis, & Richters, 1993; Mesquita & Gilliam, 1994; Wender, 1995).
In a review of the literature, Biederman, Newcorn, and Sprich (1991) discuss findings supporting the hypothesis that ADHD and major depressive disorder share common familial vulnerabilities. They suggest ADHD and major depressive disorder represent disparate expressions of the same etiologic components responsible for the manifestation of ADHD. The fact that ADHD does not always have comorbid depression or vice versa is unexplained.

The ADHD's depression likely arises out of a sense of frustration and failure from dealing with the demands and disappointments of everyday life. It is more of a "down", feelings of discouragement, or boredom. For these individuals, the primary disorder, inability to attend, may lead to the secondary problem of depression, or the appearance thereof. Restlessness and distractibility may lead to poor academic achievement or job performance which in turn leads to frustration and low self-esteem, resulting in depression (Calandra, 1995; Hallowell & Ratey, 1994; Wender, 1995).

From the social standpoint, ADHD may lead to problems in social skills and relationships with peers, which in turn contributes to low self-esteem, and ultimately depression. The ADHD's depression will likely persist if the individual continues in a reactive coping response to the trouble with concentration, memory, and agitation. A healthy dose of reality may cause the ADHD individual to reach out for more effective coping styles or further attempts to structure the internal sense of chaos. In contrast, in major depression there is often the presence of anhedonia, apathy, and difficulty with experiencing pleasure. Symptoms of guilt, suicidal ideation, and physiological problems
with weight, appetite, energy, sex drive, and problems with sleep are more likely in this clinical state of depression (Calandra, 1995; Hallowell & Ratey, 1994; Wender, 1995).

Considering onset, the adult with ADHD will likely remember affective symptoms that predate adolescence and may go back as far as they can remember. The magnitude of these symptoms is likely variable through time, though the memory of symptoms does not disappear. Persons with major depression, however, more often report episodic intervals of depressive symptoms with depression-free intervals in between. Their memory of depressive symptoms is not likely to extend to childhood, though it can (Wender, 1995).

Despite considerable differences in childhood histories, date of onset, and symptomology usually, adult ADHD and depression can coexist. The ADHD may lead to the depression, or the two may coexist, both arising independently from the same physiological abnormality. Mesquita and Gilliam (1994) suggest “when symptoms of ADHD and depression coexist, multiple diagnoses and treatment addressing both disorders may be required rather than simply relegating one disorder as symptomatic of the other” (p. 165). Differential diagnosis between the two, as required by the DSM-IV, becomes particularly difficult when depression and ADHD do coexist. Treatment of the ADHD may allow for a lifting of the sadness that often accompanies the disorder (Hallowell & Ratey, 1994; Wender, 1995).

The differential diagnosis between ADHD and Bipolar Disorder is particularly difficult due to the overlapping symptoms. As with ADHD and Major Depression, both ADHD and Bipolar Disorder involve problems with concentration, agitation, and often sleep. Manic episodes and ADHD have in common increased talkativeness, distractibility,
and agitation (or motoric hyperactivity). The DSM-IV further notes that ADHD and a manic episode are both characterized by excessive activity, impulsive behavior, poor judgment, and denial of problems. It recommends for discernment of the two, "ADHD is distinguished from a manic episode by its characteristic early onset (i.e., before age 7 years), chronic rather than episodic course, lack of relatively clear onsets and offsets, and the absence of abnormally expansive or elevated mood or psychotic features" (American Psychiatric Association, 1994, p. 332).

Glasser (1995) suggests differential diagnosis between Bipolar Disorder and ADHD is easier said (by the DSM-IV) than done by the clinicians and researchers in the field. Reasons for this difficulty include the fact that ADHD is commonly diagnosed in childhood, while Bipolar Disorder has rarely been recognized in children. Likewise, ADHD is rarely identified in adults, while Bipolar Disorder is better understood and more often diagnosed. Glasser suggests that Bipolar Disorder is likely underdiagnosed in children while ADHD is commonly overlooked in adults. Hallowell and Ratey (1994) suggest distinguishing mania from the high energy level of ADHD by the level of intensity. They further stipulate, "An average person could simulate the energized state of ADD, but could not voluntarily reproduce the energy level of mania" (170). Glasser further emphasizes the importance of taking a thorough family history as a part of the diagnostic procedure to maintain alertness for comorbidity (1995).

For many who live with attention-deficit/hyperactivity disorder, the presence of anxiety is well known. This anxiety may be divided into two parts, one being logical and assumed, and the other irrational and dormant. Hallowell and Ratey suggest the "logical"
anxiety as that which comes from being chronically late, impulsive, daydreamy, and
irresponsible. The "hidden" anxiety, they suggest, is the anxiety or worry that the
individual actively seeks out. It is this fixation on worry that denotes a subtype of ADHD
with anxiety, according to these authors (1994).

Biederman reports a comorbid association of approximately 30% between ADHD
and anxiety disorders among children from both epidemiologic and clinical samples
(1991). Similar results have been found among adult populations. (Shekim, Asarnow,
and anxiety disorders may represent a subtype of ADD (1991). Regarding the etiology of
ADHD with comorbid anxiety, Biederman, Newcorn, and Sprich (1991) suggest that
attention-deficit/hyperactivity disorder and anxiety disorders transmit independently among
families. This finding is unlike those regarding ADHD with depression where common
family vulnerabilities were noted.

Substance abuse is one of the most difficult comorbid disorders to see through
when ADHD exists as well. The alcohol or drug addiction is often so encompassing, that
treatment quickly hones in on dependency issues and fails to look for possible underlying
ADHD. This is a problem regarding treatment and outcome with those chemically
addicted due to the fact that ADHD can be treated. For addicts who have comorbid
ADHD, it is essential for ADHD to be treated as well as the addiction in order to reduce
the likelihood of recurring abuse of the original drug (Hallowell & Ratey, 1994).
Zametkin suggests, when dealing with an ADHD adult with any comorbidity, using as a
rule of thumb to first treat all active addictions (Zametkin, 1996).
The self-medication hypothesis advanced by Edward Khantzian (1985) suggests that people use drugs or alcohol to self medicate whatever ails them emotionally. Many individuals self-medicate their anxiety and mood lability with alcohol, while others use amphetamines and cocaine as calming agents. Among adults with ADHD, chemical dependency could arise out of a need to treat the effects of depression, anxiety, low self-esteem, or impulsivity and inattentiveness in general. Cocaine is the drug of choice for many ADHD sufferers likely due to its belonging to the class of stimulants along with Ritalin. Those who stumble upon its use and find it helpful in allowing them to focus may find themselves addicted. Alcohol and marijuana are sometimes used to treat dysphoria as well. Alcohol may quiet the internal noise many ADHD individuals report and reduce associated anxiety as well. Over time, its depressant effect will increase anxiety with time and chronic abuse. Marijuana may help with the noise inside and reduce anxiety as well, but have short-term effects only. Repeated use will lead to a reduction in motivation which may in turn increase anxiety (Hallowell & Ratey, 1994; Ratey, Greenberg, Bemporad, & Lindem, 1992).

Several studies report increased rates of antisocial and substance use disorders among adults with ADHD adding support to the findings on longitudinal studies of children with ADHD who have grown up (Biederman, et al., 1993; Gittelman, Mannuzza, Shenker, & Bonagura, 1985; Weiss, Hechtman, Milroy, & Perlman, 1985). Follow-up studies in adolescence and adulthood show that former ADHD patients are especially likely to suffer from antisocial personality disorder, substance use disorders, and poor educational and occupational attainments (Shaffer, 1994).
Relatively few studies have reported on the comorbidity of attention-deficit/hyperactivity disorder and personality disorders. One such study by Rey and colleagues examined the continuities between axis I disorders in adolescence and personality disorders in adulthood. They examined 145 young adults who had been diagnosed with a variety of axis I disorders during adolescence. Subjects who had disruptive disorders as adolescents showed high rates of all types of personality disorders. In particular, they found an association between ADHD and borderline personality disorder (Rey, Singh, & Andrews, 1995).

Brent and colleagues (1990) conducted the Structured Interview for the DSM-III to 23 affectively ill adolescents and their parents. They found higher rates of attention-deficit/hyperactivity disorder and bipolar disorder among those with Cluster II traits and disorders (borderline, histrionic, narcissistic). Similarly, Kaplan and Schachter discuss attention-deficit/hyperactivity disorder as one of the clinical features which may act as a precursor to bipolar disorder in children (1993).

Whether ADHD and comorbid mood disorders, personality disorders, anxiety, and chemical dependency constitute separate domains of abnormal behavior or distinct disorders has major theoretical, empirical, and clinical implications. From the research perspective, subgroups of individuals with ADHD and comorbid disorders may represent more homogeneous subgroups among individuals with ADHD. From the clinical perspective, subgroups of ADHD with comorbid disorders may respond differently to varying treatment approaches. From the public health perspective, some subgroups could
represent more of a threat in terms of their high risk for criminality and substance abuse (Biederman, Newcorn, & Sprich, 1991).

If adult ADHD is merely secondary to other disorders as some suggest, it should rarely be present without a comorbid psychiatric disorder. This was not the case in a study by Biederman and colleagues where 28% of the adults with ADHD had no psychiatric disorder yet met full DSM III-R criteria for ADHD in childhood and had the present symptoms of inattentiveness, distractibility, and impulsivity. These same adults reported significant impairment, consistent with the status of being a meaningful psychiatric disorder (Biederman, et al., 1993).

When comorbidity is present, the longitudinal presence of ADHD symptoms remains necessary in making the diagnosis of the disorder and helps to clarify understanding and treatment options in cases where other psychiatric symptoms are also present. Different therapeutic approaches, better research designs, early intervention treatment strategies, and pharmacological decisions are all support for further research as to the implications and understanding of comorbidity as it applies to ADHD (Biederman, 1991; Ratey, Greenberg, Bemporad, & Lindem, 1992).

Rationale

Attention-Deficit/Hyperactivity Disorder in adults has received more attention in the past decade due to increased awareness of the disorder in children and the realization that the disorder continues on into adulthood. Despite this recognition by most, some argue that adult ADHD does not exist in a pure form, but only when comorbidity is present. Many adults who meet the criteria for ADHD have had difficulty in relationships,
the workplace, and in tasks requiring long periods of attention and concentration. Some have suffered with comorbid anxiety, depression, personality disorders, and chemical dependency. The purpose of this study was to provide descriptive validity for ADHD in adults.

The comorbidity of ADHD with depressive symptoms, anxiety symptoms, personality disorders, and chemical dependency were addressed through the use of self-report questionnaires. Personality characteristics of adults with ADHD were evaluated and compared to matched controls. Comparative analyses were made between three groups of adults: Group 1 consisted of clinic referred individuals whose primary diagnosis was ADHD or who demonstrated significant scores on the ADHD Behavior Checklist for Adults; Group 2 consisted of clinic referred individuals who had a primary diagnosis of an axis I disorder other than psychosis or ADHD; and Group 3 consisted of individuals from the community who did not have a known axis I diagnosis or were not currently in treatment. The groups consisted of clinic and community referrals from several settings. Some came from ADHD clinics or physicians who diagnosed and treated ADHD in adults. Other subjects came from counseling centers. The procedure included a questionnaire, ADHD Behavior Checklist for Adults, State-Trait Anxiety Inventory (STAI), Beck Depression Inventory (BDI), and the Millon Clinical Multiaxial Inventory-III (MCMI-III).

This study provides descriptive validity for adults with ADHD by assessing personality differences among adults with ADHD. It helps identify anxiety, depression, chemical dependency, and Axis II disorders as comorbid variables with adult ADHD, providing support for subtypes within the ADHD diagnosis. This will aid in the definition,
nomenclature and/or treatment of ADHD among adults. This study adds to the literature for researchers and clinicians to more effectively help these people identify their condition and manage it to their advantage.
CHAPTER II

METHOD

Subjects

The subjects (N = 142) for the study were 69 men and 73 women between the ages of 19 and 49. This age range was picked according to the norms on the ADHD Behavior Checklist for Adults. Three groups were made up of both men and women and included two comparison groups. The ADHD group was comprised of 24 men and 24 women who had a primary diagnosis of ADHD and/or demonstrate a significant score on the ADHD BCA. The Axis I comparison group consisted of 17 men and 19 women with a primary diagnosis of an axis I disorder other than psychosis or ADHD. The Non-referred group was made up of 28 men and 30 women who were not in treatment or who did not have an axis I disorder. Respondents for the ADHD and Axis I groups were selected from several clinic populations. They included an ADHD clinic, a CHADD (Children and Adults with Attention Deficit Disorder) support group meeting, patients of physicians who specialized in the treatment of ADHD, clinic clientele from a community college and from local clinicians. Respondents for the Non-referred comparison group came from the community.

Adult Attention-Deficit/Hyperactivity Disorder Group

The 24 men and 24 women who had a primary diagnosis of ADHD and/or demonstrated a significant score on the ADHD BCA had a mean age of 34 and ranged in
age from 19 to 49 years. In this group, 12 (25%) individuals were single, 32 (66.7%) were married and three (6.3%) were divorced. High school graduates made up 10.4% of this group while 43.8% reported some college or technical school, 20.8% had graduated from college or technical school, 10.4% indicated some post graduate studies, and 14.6% had completed a graduate degree. Of the 48 individuals, 11 (22.9%) indicated having been retained at least one grade in primary or secondary school. The gross annual income for this group ranged from less than $20,000 to more than $80,000. Of the 48 individuals, 44 (91.7%) endorsed themselves as Caucasian, one (2.1%) indicated Hispanic origin, two (4.2%) identified themselves as American Indian and one (2.1%) endorsed an unspecified racial identity.

Six (12.5%) individuals reported having been diagnosed with ADHD or ADD as a child, and 18 (37.5%) indicated having taken medication for ADHD. Twenty-eight (58.3%) individuals indicated having a family member diagnosed with ADHD/ADD. Current medications reported for this group included six (12.5%) individuals on high blood pressure medication, 20 (41.7%) on anti-depressant medication, one (2.1%) on tranquilizers or sedatives, ten (28.8%) on ADHD medication, four (8.3%) on anti-anxiety medication, none on prescription pain killers, two (4.2) on anti-convulsants, and 11 (22.9%) on unidentified medication. Medications listed as having been taken over the past five years included seven (14.6%) individuals on high blood pressure medication, 24 (50%) on anti-depressant medication, five (10.4%) on tranquilizers or sedatives, 14 (29.2%) on ADHD medication, 13 (27.1%) on anti-anxiety medication, 15 (31.3%) on prescription pain killers, two (4.2%) on anti-convulsants, and nine (18.8%) on unidentified medication.
The Likert scale rating their ability to concentrate or focus sustained attention (1 = Very Distractable - 5 = Highly Successful), revealed a mean of 2.5. The Likert scale rating how creative they considered themselves (1 = Not at all - 5 = Very Creative), revealed a mean of 3.5. The Likert scale rating how successful they believed themselves to be (1 = Unsuccessful - 5 = Highly Successful), revealed a mean of 3.2.

Individuals in this group rated themselves regarding their ease in interpersonal relationships on a Likert scale (1 = Very Uneasy - 5 = Quite Comfortable) with a mean of 3.5. With regard to the number of permanent residences in the past ten years, those in this group accrued a mean of 3.2. Six individuals indicated having made a prior suicide attempt among the 48 group participants. Respondents in this group indicated a mean of 2.6 regarding the number of car accidents since licensed to drive. With regard to the number of speeding tickets in the past ten years, a mean of 1.7 was revealed. The Likert scale rating childhood (1 = Mostly Negative - 5 = Mostly Positive), revealed a mean of 2.8 among members of this group.

Addictions were indicated regarding tobacco among eight (16.7%) group members as past and nine (18.8%) as ongoing. With regard to drugs, five (10.4%) indicated a past addiction and four (8.3%) an ongoing addiction. Sex addiction was claimed by ten (20.8%) as a past issue and by nine (18.8) as an ongoing problem. Alcohol addiction was endorsed by 12 (25%) regarding the past and two (4.2%) as ongoing. Food addiction was reported as past by one (2.1%) person and ongoing by ten group members. An addiction with work was claimed by eight (16.7%) as past and 14 (29.2%) as ongoing. Gambling was endorsed as an ongoing addiction by three (6.3%) group participants.
Axis I Comparison Group

The 17 men and 19 women with a primary diagnosis of an axis I disorder other than psychosis or ADHD had a mean age of 32 and ranged in age from 22 to 47 years. In this group, 11 (30.6%) individuals were single, 18 (50%) were married, six (16.7%) were divorced, and one (2.8%) was widowed. High school graduates made up 5.6% of this group while 25% reported some college or technical school, 41.7% had graduated from college or technical school, 8.3% indicated some post graduate studies, and 19.4% had completed a graduate degree. Of the 36 individuals, three (8.3%) indicated having been retained at least one grade in primary or secondary school. The gross annual income for this group was ranged from less than $20,000 to more than $80,000. Of the 36 individuals, 33 (91.7%) endorsed themselves as Caucasian, two (5.6%) endorsed themselves as African American, one (2.8%) indicated Hispanic origin, and two (4.2%) identified themselves as American Indian.

None of the individuals reported having been diagnosed with ADHD or ADD as a child or having ever taken medication for ADHD, yet nine (25%) reported having family members diagnosed with ADHD/ADD. Current medications reported for this group included four (11.1%) on high blood pressure medication, 12 (33.3%) on anti-depressant medication, two (5.6%) on tranquilizers or sedatives, five (13.9%) on anti-anxiety medication, two (5.6%) on prescription pain killers, and six (16.7%) on unidentified medication. Medications listed as having been taken over the past five years included five (13.9%) on high blood pressure medication, 18 (50%) on anti-depressant medication, two (5.6%) on tranquilizers or sedatives, six (16.7%) on anti-anxiety medication, 11 (30.6%)
on prescription pain killers, one (2.8%) on anti-convulsant medication and nine (25%) on unidentified medication.

The Likert scale rating their ability to concentrate or focus sustained attention (1 = Very Distractable - 5 = Highly Successful), revealed a mean of 3.7. The Likert scale rating how creative they considered themselves (1 = Not at all - 5 = Very Creative), revealed a mean of 3.6. The Likert scale rating how successful they believed themselves to be (1 = Unsuccessful - 5 = Highly Successful), revealed a mean of 3.4.

Individuals in this group rated themselves regarding their ease in interpersonal relationships on a Likert scale (1 = Very Uneasy - 5 = Quite Comfortable). The mean was 3.1. With regard to the number of permanent residences in the past ten years, those in this group accrued a mean of 3.5. Three individuals indicated have made a prior suicide attempt among the 36 group participants. Respondents in this group indicated a mean of 2.1 regarding the number of car accidents since licensed to drive. With regard to the number of speeding tickets in the past ten years, a mean of 1.1 was revealed. The Likert scale rating childhood (1 = Mostly Negative - 5 = Mostly Positive), revealed a mean of 3.1 among members of this group.

Addictions were indicated regarding tobacco among eight (22.2%) group participants as past and six (16.7%) as ongoing. With regard to drugs, six (16.7%) indicated a past addiction and two (5.6%) an ongoing addiction. Sex addiction was claimed by six (16.7%) as a past issue and by seven (19.4%) as an ongoing problem. Alcohol addiction was endorsed by two (5.6%) regarding the past and two (5.6%) as ongoing. Food addiction was reported as past by one (2.8%) individual and ongoing by
12 group members. An addiction with work was claimed by six (16.7%) as past and four (11.1) as ongoing. Gambling was denied as an addiction, past or present by all 36 group members.

Non-referred Comparison Group

The Non-referred comparison group of 28 men and 30 women who were not in treatment or who did not have an axis I disorder had a mean age of 34 and ranged in age from 22 to 49 years. In this group, six (10.3%) individuals were single, 50 (86.2%) were married and two (3.4%) were divorced. High school graduates made up 3.4% of this group while 15.5% reported some college or technical school, 43.1% had graduated from college or technical school, 10.3% indicated some post graduate studies, and 27.6% had completed a graduate degree. Of the 48 individuals, one (1.7%) indicated having been retained at least one grade in primary or secondary school. The gross annual income for this group ranged from less than $20,000 to more than $80,000. Among group participants, 54 (93.1%) endorsed themselves as Caucasian, two (3.4%) endorsed African American, one (1.7%) indicated Hispanic origin, and one (1.7%) endorsed an unspecified racial identity.

One (1.7%) individual reported having been diagnosed with ADHD or ADD as a child, and none of the group indicated having taken medication for ADHD. Eleven (19%) individuals indicated having a family member diagnosed with ADHD/ADD past or present. Current medications reported for this group included three (5.2%) individuals on prescription pain killers, and ten (17.2%) on unidentified medication. Medications listed as having been taken over the past five years included one (1.7%) person on high blood
pressure medication, two (3.4%) on anti-depressant medication, one (1.7%) on anti-anxiety medication, eight (13.8%) on prescription pain killers, and 13 (22.4%) on unidentified medication.

The Likert scale rating their ability to concentrate or focus sustained attention (1 = Very Distractable - 5 = Highly Successful), revealed a mean of four. The Likert scale rating how creative they considered themselves (1 = Not at all - 5 = Very Creative), revealed a mean of 3.4. The Likert scale rating how successful they believed themselves to be (1 = Unsuccessful - 5 = Highly Successful), revealed a mean of 3.8.

Individuals in this group rated themselves regarding their ease in interpersonal relationships on a Likert scale (1 = Very Uneasy - 5 = Quite Comfortable) with a mean of 3.8. With regard to the number of permanent residences in the past ten years, those in this group accrued a mean of 2.7. One (1.7%) individual indicated have made a prior suicide attempt. Respondents in this group indicated a mean of 1.8 regarding the number of car accidents since licensed to drive. With regard to the number of speeding tickets in the past ten years, a mean of .8 was revealed. The Likert scale rating childhood (1 = Mostly Negative - 5 = Mostly Positive), revealed a mean of four among members of this group.

Addictions were indicated regarding tobacco among two (3.4%) individuals as past and two (3.4%) as present. With regard to drugs, one (1.7%) person indicated a past addiction. Sex addiction was claimed by two (3.4%) as a past issue and by five (8.6%) as an ongoing problem. Alcohol addiction was denied by all group members. Food addiction was reported as past by one (1.7%) person and ongoing by eight (13.8%) group
members. An addiction with work was claimed by three (5.2%) persons as past and two (3.4%) as ongoing. Gambling was denied as an addiction by all group members.

Procedure

Subjects were asked to participate in a study about ADHD and personality traits. They were advised their participation would take about 30 minutes of their time. After initial screening, the testing was self-administered pencil and paper tests. Each subject was given a packet consisting of a cover letter, consent form, questionnaire, ADHD Behavior Checklist for Adults, State-Trait Anxiety Inventory, Beck Depression Inventory, and the Millon Clinical Multiaxial Inventory-III. Included in the packet were pre-addressed and stamped envelopes for return of consent forms separately from the measures. This ensured confidentiality and anonymity.

Instruments

Demographic information requested included: age, socioeconomic status, education, marriage history, marital status, current medications, family history of ADHD, and other questions concerning behavior, personality characteristics, and background history (see Appendix C).

The ADHD Behavior Checklist for Adults (ADHD BCA) (Murphy & Barkley, 1995) is an 18 item, pencil and paper test that contains two scales constructed from the items in the DSM-IV symptom list for ADHD. Some adjustments were made in wording to improve on appropriateness for adults and reflect first person reporting. Nine of the test items reflect Inattention while the remaining nine items reflect Hyperactive-Impulsive
behavior. Subjects rate themselves on a scale of 0-3 (0 reflects Rarely or Never, 1 represents Sometimes, 2 is Often, and 3 reports Very Often).

The test questions are answered twice by each subject. The first time questions are answered based on the adult's behavior in the past 6 months. The second time the respondent bases answers on retrospective recall of their behavior between the ages of five and 12 (Murphy and Barkley, 1996). The odd numbered items correspond to Inattention and the even numbers indicate the Hyperactive-Impulsive items.

The ADHD BCA generates six scores. Murphy and Barkley (1996) describe the scoring:

The first three scores are summations of the item scores calculated separately for the Inattention items, the Hyperactive-Impulsive items, and the Total ADHD item list. The second three were symptom counts of the number of positively endorsed items calculated separately within the Inattention list, Hyperactive-Impulsive list, and the Total ADHD item list. In creating these symptom counts, a symptom was considered present if the answer given to the item was Often or Very Often (score of 2 or 3). (p. 13)

For the test answers relating to memory of childhood, cutoff scores of 6 of 9 symptoms in both the Inattention group and the Hyperactive-Impulsive group were required for the childhood diagnosis of ADHD to be made. Cutoff scores of four of nine Inattention symptoms and five of nine Hyperactive-Impulsive symptoms identified an adult as deviant in the age range of 17-29 years. For adults in the 30-49 year old group, scores of three Inattention symptoms and four Hyperactive-Impulsive symptoms identified them as
deviant. Scores for both the test relating to childhood and the test relating to the past six months of adulthood must be above the cutoff scores listed to be identified as adults with ADHD (Murphy & Barkley, 1996).

The Millon Clinical Multiaxial Inventory-III (MCMI-III) (Millon, Millon, & Davis, 1994) is a popular instrument designed to detect probable Axis II personality disorders. The MCMI-III is a 175 item paper and pencil test devised for clinicians who evaluate individuals with emotional and interpersonal difficulties. The MCMI-III items directly correspond with the diagnostic criteria of the DSM-IV. A majority of the scales' "prototype" items directly reflect the content of the DSM-IV Axis II scales.

"Because of the simplicity of administration and the availability of rapid computer scoring and interpretive procedures, the inventory can be used on a routine basis in psychiatric outpatient clinics, community agencies, mental health centers, college counseling programs, general and mental hospitals, in court, and in private practice" (p. 5). "Numerous studies using the MCMI and the MCMI-II have supported its generalizability, dependability and accuracy of diagnostic scale cut-off scores and profile interpretations" (p. 4). Data from a number of studies with a variety of populations provide validation and suggest that the MCMI-III can be used with a reasonable level of confidence in most clinical settings (Millon, Millon, & Davis, 1994).

The State-Trait Anxiety Inventory or STAI (Spielberger, 1983) evaluates anxiety levels among individuals. The STAI is a 20 item paper and pencil instrument that assesses two aspects of anxiety: 1) state, or current levels of anxiety, and 2) trait, or how anxiety prone the individual tends to be. The T-Anxiety scale asks the subject to indicate how he
or she "generally" feels; the S-Anxiety scale asks how an individual feels "right now, that is at this moment". Items of the STAI are given a weighted score on a Likert scale from one to four, one indicating "not at all", and four indicating "very much so." A high level of anxiety is indicated by the rating of ten S-Anxiety items and eleven T-Anxiety items (Spielberger, 1983). However, four of the remaining ten S-Anxiety items and the remaining nine T-Anxiety items indicate the absence of anxiety. Scores for both the S-Anxiety and T-Anxiety may range from a minimum of 20 to a maximum of 80 and both hold a mean of 35 for the stated population.

Goldson (1984) defines anxiety as a "pervasive feeling of dread, apprehension and impending disaster...a response to an undefined or unknown threat which in many cases stems from unconscious conflicts, feelings of insecurity, or forbidden impulses within ourselves" (p. 53). Spielberger (1983) classifies anxiety through two constructs, state and trait anxiety. State anxiety is often described as a temporary unpleasant emotional condition. It refers to anxiety experienced when evoked by the appropriate stimuli and enduring as long as stimulating conditions persist. State anxiety occurs by activation or arousal of the autonomic nervous system and is evidenced by feelings of tension, apprehension, nervousness, and worry.

Trait anxiety refers to a relatively persistent tendency to perceive the world as threatening and may cause an individual to react or behave in a specified manner (Spielberger, 1983). It refers to the differences between the way individuals perceive stressful situations. Those with trait anxiety are more likely to respond to environmental stressors with elevations in the intensity of state anxiety reactions. Trait anxiety is
described as how anxiety-prone an individual tends to be over time. It may also be an indicator of the individual differences in the frequency and intensity of past anxiety states as well as a predictor of how state anxiety will be experienced in the future. The stronger the anxiety trait, the more probable that the individual will experience more intense elevations in state anxiety in the future. Whether or not people who differ in trait anxiety will show corresponding differences in state anxiety depends on the extent to which each of them perceives a specific situation as psychologically dangerous or threatening. This is "greatly influenced by each individual's past experience" (p. 1).

The construction of the STAI began in 1964 with the goal of developing a single set of items that could provide objective measures of state and trait anxiety (Spielberger, 1983). In the construction and standardization of form Y, more than 5,000 subjects demonstrated a clear difference between state and trait anxiety. Additionally, testing showed that the anxiety-present and anxiety-absent factors were defined almost exclusively by S-Anxiety or T-Anxiety items.

Over 4,000 research studies using the STAI as a measure of anxiety have been done (Spielberger, 1983b; Spielberger, 1985). The evidence of construct validity of the STAI has been demonstrated with several populations. The STAI scores of military recruits in highly stressful training programs were shown to be higher than those of college and high school students of similar age in relatively nonstressful situations (Spielberger, 1983). The mean S-Anxiety scores for the recruits were also significantly higher than their T-Anxiety scores, suggesting that they were experiencing a high state of emotional turmoil at the time of testing. In contrast, the college/high school population's STAI mean S-
Anxiety scores were not significantly different than the mean T-Anxiety scores (Spielberger, 1983).

In a study of 71 undergraduates, Metzger (1976) examined the STAI's ability to accurately discriminate between the S-Anxiety and T-Anxiety scores by comparing individuals under stress conditions to those under no-stress conditions. Subjects completed the STAI after an hour examination (stress condition) and in their class on a non-test day (no-stress condition). Results indicated that the STAI was a highly reliable measure of stress and it discriminated well between high and low stress situations.

The Beck Depression Inventory (BDI) (Beck, Rush, Shaw, & Emery, 1979) is a widely accepted instrument which detects likely depression in normal populations (Steer, Beck, & Garrison, 1985) as well as with psychiatric populations (Piotrowski, Sherry, & Keller, 1985). The BDI is a 21-item self-report assessment that measures the presence and degree of depression in adolescents and adults. Each item of the BDI corresponds to a specific category of depressive symptoms or attitudes. The inventory is an easily administered pencil and paper test and has been evidenced as useful in mental health settings as a screening tool for depression. The following guidelines are given in the BDI Manual (Beck & Steer, 1987) as ranges for scoring:

- 0-9 Normal Range or Asymptomatic
- 10-18 Mild/Moderate Depression
- 19-29 Moderate/Severe Depression
- 30-63 Extremely Severe Depression
Depression as defined by Beck (1987) is a negative view of the self, the world, and the future, along with self-blame and criticism. He presented a list of 21 symptom-attitude categories. The BDI's items correspond with the following categories: mood, pessimism, sense of failure, lack of satisfaction, guilt feelings, sense of punishment, self-dislike, self-accusation, suicidal wishes, crying, irritability, social withdrawal, indecisiveness, distortion of body image, work inhibition, sleep disturbance, fatigability, loss of appetite, weight loss, somatic preoccupation, and loss of libido.

The BDI is the most widely used self-report measure of depression in English (Robinson, Shaver, & Wrightsman, 1991) and has been employed in over 1,000 different research studies (Beck, Steer, & Garbin, 1988). The internal consistency of the BDI within 15 non-psychiatric samples measured a mean alpha of 0.81 with a range from 0.73 to 0.92 (Beck, Steer, & Garbin, 1988). In his 1967 book, Beck reported an odd-even split-half reliability coefficient of .86 (with a Spearman-Brown correction of .93). This indicates that the BDI is a highly reliable measure of depression.

There are many studies that have indicated that the BDI is a useful tool in differentiating depression in psychiatric patients from normals (Akiskal, Lemmi, Yerevanian, King, & Belluomini, 1982; Byerly & Carlson, 1982; Gallagher, Nies, & Thompson, 1982). Additionally, the BDI is consistently and significantly related to a clinical rating of depression and to the biological, electrophysiological, psychosocial, and cross-cultural manifestations and correlates of depression (Robinson, Shaver, & Wrightsman, 1991). For this reason, the authors state that the BDI is often used by other "scale developers to validate new measures so almost by definition it is highly related to
other measures" (p. 202). As evidenced by the literature, much research has gone into ensuring that the BDI is a valid measure of depression.

Research Questions

This study explored four research questions. The first question was: Does the level of anxiety differ between individuals with ADHD, individuals without ADHD having another axis I disorder, and Non-referred individuals with neither ADHD nor another known axis I disorder? The second question: Does the presence of personality disorders differ between individuals with ADHD, individuals without ADHD having another axis I disorder, and Non-referred individuals with neither ADHD nor another known axis I disorder? The third question: Does the use of chemicals, past or present, differ between individuals with ADHD, individuals without ADHD having another axis I disorder, and Non-referred individuals with neither ADHD nor another known axis I disorder? The fourth question: Does the presence of depression differ between individuals with ADHD, individuals without ADHD having another axis I disorder, and Non-referred individuals with neither ADHD nor another known axis I disorder? This study hypothesized that:

1. Adults with ADHD would report higher levels of anxiety as measured by the STAI than either non ADHD adults with another axis I disorder (other than psychosis) or non ADHD adults from the community.

2. Adults with ADHD would report more personality disorders as measured by the MCMI-III than either non ADHD adults with another axis I disorder (other than psychosis) or non ADHD adults from the community.
3. Adults with ADHD would report more chemical use, past and present, as determined by self report on the questionnaire than either non ADHD adults with another axis I disorder (other than psychosis) or non ADHD adults from the community.

4. Adults with ADHD would report more depression as measured by the BDI than either non ADHD adults with another axis I disorder (other than psychosis) or non ADHD adults from the community.
CHAPTER III

RESULTS

The current study examined personality characteristics of adults with Attention Deficit/Hyperactivity Disorder (ADHD). They were compared to individuals with no ADHD from two different comparison groups. The first comparison group included individuals with an axis I primary diagnosis other than ADHD or psychosis. The second comparison group included individuals from the community not identified as having an axis I disorder. The three groups were compared with measures of depression, anxiety, chemical dependency, and personality disorders. The means and standard deviations for the BDI and STAI, are presented in Table 1 (Appendix D).

This study included multiple dependent variables. Because the correlation between dependent measures tends to elevate the type I error rate, multivariate analyses of variance (MANOVAs) are necessary. A preliminary MANOVA on the set of dependent measures takes into account their intercorrelation, thereby compensating for the type I error rate. For this study, MANOVAs were performed to take into account the correlation between the dependent measures of state and trait anxiety, and alcohol and drug dependency. Correlations between dependent measures were calculated and appear in Tables 2-4 (Appendix D). Follow-up analyses of variance (ANOVAs) and post-hoc tests were utilized to clarify group differences. In addition, when only one dependent measure was
studied, a univariate analysis of variance (ANOVA) was performed. In this study, univariate ANOVAs were performed regarding the dependent variables of state anxiety, trait anxiety, alcohol dependency, drug dependency, depression, and personality disorders. One chi-square was also utilized to test the independence of personality disorders as measured by the MCMI-III and group membership. In all, two MANOVAs, one chi-square, and five ANOVAs were performed. For the purposes of the present study, type III sums of squares were used in the SPSS GLM procedure (version 8.0). Finally, Crosstabs and Frequencies were run to aid in the description of group demographics.

Results are indicated in Tables 5 and 6 (Appendix D).

The first one way MANOVA was performed on two dependent variables: State Anxiety and Trait Anxiety. The independent variable was diagnosis as indicated by group membership of either ADHD or non-ADHD. The groups were delineated by the presence of adult ADHD as indicated by Barkley's ADHD Behavior Checklist for Adults (ADHD-BCA). Comparison groups were divided by the presence of an axis I disorder other than ADHD or psychosis, creating one comparison group with no axis I diagnosis. There was a total N of 142 with no cases missing. There were no univariate or multivariate within cell outliers at p < .001.

With the use of Wilks' Lambda Criterion, the combined dependent variables were significantly affected by presence of adult ADHD as measured by the ADHD BCA. The results were statistically significant, $F(4, 276) = 18.978$, $p = .0001$. The partial eta squared was .216 with the power (one minus Type II error) equal to 1.00. This reflects a large degree of association between the combined dependent variables and adult ADHD,
and explains about 22% of the variance. To investigate the impact of the main effect on each dependent variable, ANOVAs were performed on each dependent variable with the corresponding post hoc tests (Tukey-HSD). Results indicate a significance concerning both State and Trait Anxiety between the ADHD group and Non-referred group, and between the Axis I group and the Non-referred group. These results are presented in Tables 7 and 8. Correlation coefficients were run on the dependent variables, State Anxiety and Trait Anxiety. The Pearson Correlation between State and Trait Anxiety among the ADHD group was .736, among the Axis I group, .594, and among the Non-referred group, .719, all with a p value > .0001. Results are shown in Tables 2-4 (Appendix D).

A second one way MANOVA was performed on two dependent variables: Alcohol Dependence and Drug Dependence. The independent variable was diagnosis as indicated by group membership of either ADHD or non-ADHD. The groups were delineated by the presence of adult ADHD as indicated by Barkley’s ADHD BCA. Comparison groups were divided by the presence of an axis I disorder other than ADHD or psychosis, creating one comparison group with no axis I diagnosis. There was a total N of 142 with no cases missing. There were no univariate or multivariate within cell outliers at p < .02.

With the use of Wilks’ Lambda Criterion, the combined dependent variables were significantly affected by presence of adult ADHD disorder as measured by the ADHD BCA. The results were statistically significant F (4, 276) = 19.366, p = .0001. The partial eta squared was .219 with the power (one minus Type II error) equal to 1.00. This reflects a large degree of association between the combined dependent variables and adult
ADHD accounting for about 22% of the variation. To investigate the impact of the main effect on each dependent variable, ANOVAs were performed on each dependent variable with the corresponding post hoc tests (Tukey-HSD). Significance was indicated between the ADHD group and both comparison groups on the two ANOVAs concerning Alcohol Dependence and Drug Dependence. These results are presented in Tables 9 and 10.

Correlation coefficients were run on each of the dependent variables and are presented in Tables 2-4 (Appendix D). The Pearson Correlation between Alcohol Dependency and Drug Dependency among the ADHD group was .495 with a p value of .000. The Pearson Correlation for the Axis I group was .508 with a p value of .002. The Pearson Correlation for the Non-referred group was .334 with a p value of .010.

A one-way ANOVA was performed on the dependent measure of Depression as measured by the BDI. The independent variable was diagnosis as indicated by group membership of either ADHD or non-ADHD. The groups were delineated by the presence of adult ADHD as indicated by Barkley's ADHD BCA. Comparison groups were divided by the presence of an axis I disorder other than ADHD or psychosis, creating one comparison group with no axis I diagnosis. There was a total N of 142 with no cases missing. There were no univariate or multivariate within cell outliers at p<.001. The results were statistically significant, F (2, 139) = 27.906, p = .0001. The partial eta squared was .286 with the power (one minus Type II error) equal to 1.00. This reflects a large degree of association between the depression, as measured by the BDI, and adult ADHD, accounting for about 29% of the variation. Statistical significance was indicated
between the ADHD group and the Non-referred group, and between the Axis I group and the Non-referred group. These results are presented in Table 11 (Appendix D).

The Chi-Square was run to test the independence of personality disorders as measured by the MCMI-III and group membership. This analysis demonstrated that group membership was associated with identification of an individual with personality disorders. Chi-Square is equal to 7.284 and \( p \) is equal to .026. The Chi-Square demonstrated that subjects with ADHD were more than likely to have a personality disorder than subjects in the Axis I or Non-referred groups. Table 6 (Appendix D) shows the summary of personality disorders by group.

Finally, crosstabs were run to determine any individuals in the ADHD group who did not have significant scores on the BDI, STAI, or MCMI. The cutoff scores used for this analysis were <19 on the BDI; <45 on the STAI; and <85 on all personality disorder scales on the MCMI. Results revealed 29.2% (14) of the ADHD group met the criteria, demonstrating a group of individuals with pure ADHD and no comorbidity among the studied variables. Results are presented and broken down by gender in Table 12 (Appendix D).
The current study examined personality characteristics of adults with Attention-Deficit/Hyperactivity Disorder (ADD/HD). They were compared to non ADHD adults in two comparison groups. The first comparison group included individuals with an Axis I primary diagnosis other than ADD/HD or psychosis. The second group consisted of Non-referred individuals from the community with no known Axis I disorder. The three groups were compared with measures of depression, anxiety, personality disorders and chemical dependency.

The first hypothesis examined the level of state and trait anxiety between adults with ADD/HD and adults without ADD/HD. The results of the current study showed the ADD/HD group scored significantly higher on both state and trait anxiety than the Non-referred group. The ADD/HD group demonstrated a score more than one standard deviation above the mean, while the Non-referred group scored at or below the mean on both state and trait anxiety. The Axis I group demonstrated higher scores on both state and trait anxiety than the Non-referred comparison group as well. Though not a full standard deviation above the mean on state anxiety, they scored more than one standard deviation above the mean on trait anxiety. There were no statistical differences between the ADD/HD group and the Axis I group on these measures.
This supports findings by Biederman and colleagues (1993) and by Shekim and colleagues (1990), who found increased anxiety among adults with ADHD in their studies. It also indicates similarity between the Axis I group and the ADHD group regarding their ability to cope with environmental stressors and deal with internal anxiety states. The elevated indicators of state and trait anxiety among the ADHD group may support the theories of Hallowell and Ratey (1994) who suggest a potential subtype of ADHD with anxiety. Since 29.2% of the ADHD group demonstrated no comorbidity, the increased mean for anxiety among the ADHD group may be representative of higher anxiety among a subset of the ADHD group.

Implications of these findings are an association between anxiety and adult ADHD. Questions remain regarding the reason for this association. Certainly, a lifetime of living with ADHD in a world not supportive of such thinking and behaving, might add to one’s level of anxiety. Likewise, if anxiety were the root, symptoms consistent with the symptom picture of ADHD could result.

Comorbidity between ADHD and anxiety appears to exist, though many in the business of diagnosis and treatment are likely to focus on only one condition. Due to the general lack of information and knowledge regarding ADHD among adults, the anxiety is likely to be the focus. Similarly, the DSM-IV supports anxiety as the primary diagnosis and rules out ADHD when such comorbidity presents. Where psychopharmacological treatment is similar, perhaps the issue is moot. Where it may differ, or where impact on self-esteem, parenting issues, and vocational choice are a consideration, the issue of
diagnosis and comorbidity among ADHD and anxiety may be one worth debating and further study.

The second hypothesis examined differences in personality disorders between adults with ADHD and comparisons. Results indicate a statistically significant difference between the ADHD group and the Non-referred group. Among the 48 individuals in the ADHD group, 63 personality disorder patterns were identified with scores of ≥85, including 13 of the 14 Personality Patterns and Personality Pathology scales on the MCMI-III. The personality pattern not indicated by any of the ADHD group was the Antisocial personality pattern. This differs from other studies by Biederman (1991), Biederman (1993), and Spencer (1994), who all found increased rates of antisocial personality disorder among ADHD disordered adults. It supports Rey's (1995) findings of increased incidence of borderline personality disorder as eight incidences of Borderline Personality Pattern were significant among the ADHD group while no incidences were noted among the Axis I group or Non-referred group.

Other Personality Patterns occurring among the ADHD group at a higher rate than the Axis I group included Avoidant, Depressive, Aggressive/Sadistic, Compulsive, Passive-Aggressive, Schizotypal, and Paranoid. The ADHD group had more incidences of all Personality Patterns than the Non-referred group except among the Histrionic and Compulsive scales. The greatest incidence of an indicated personality disorder among the ADHD group was among the Depressive Personality Pattern, where 15 incidences were noted. Results are demonstrated in Table 6 (Appendix D).
To the degree that personality is a function of environment, ADHD, beginning early in childhood, may very well have an impact on the development of personality disorders. Difficulties in school, with behavior management in general, at home with siblings and caregivers, and the toll on self esteem resulting from problems with self control and the responses of others may create the existence of a personality disorder. This seems particularly relevant with regard to a depressive personality pattern or one that is self-defeating. Results of this study support increases of these personality patterns in both of those areas as well as in several others. This would suggest early treatment of ADHD during childhood may be far more important than many believe.

Increased incidence of personality disorders among ADHD adults may be a causative factor concerning anxiety and depression. A personality disorder is defined as "an enduring pattern of inner experience and behavior that deviates markedly from the expectations of the individual's culture..." (American Psychiatric Association, 1994, p. 629). The pattern of behavior described in a personality disorder indicates the likelihood of poor relationships with peers and family. Thus, feelings of hopelessness, low self-esteem, and anxiety may be increased.

The third hypothesis looked at chemical dependency among the ADHD group as compared to the comparison groups. Results show the ADHD group to have significantly higher levels of alcohol and drug use than both the Axis I group and the Non-referred group. However, their level of use does not constitute a dependency. In fact, 81.3% of the ADHD group reports never having had a drug addiction and 70.8% report never having been addicted to alcohol. These results neither support, nor disconfirm findings by
Biederman (1993) and Spencer (1994) who found increased rates of substance use disorders among ADHD adults as compared to matched controls. Instead, addictions to work, sex and tobacco were more often claimed among the ADHD group, with a work addiction the most frequent ongoing addiction recognized by 29.2% of the group. The higher report of addiction to work may be indicative of compensation for disorganization and difficulty with concentration and attention.

Khantzian's (1985) self-medication hypothesis seems a plausible explanation for the slight increase of chemical use reported in this study among the ADHD group as compared to comparisons. It may explain the 18.8% of reported addiction to tobacco reported in the ADHD group as compared to 3.4% among the Non-referred group. Some explanation for the overall low report of street drugs and chemicals may come from the increased availability to prescription medication in use for treating adults with ADHD. Current medication among the ADHD group included 28.8% on ADHD medication, 41.7% on anti-depressants, and 8.3% on anti-anxiety medication. Medication management for adult ADHD includes stimulants and anti-depressants as first line treatment for the condition. Whether the medication regimen prescribed for the ADHD group was intended to treat the ADHD or other conditions such as depression, its effects on the neurotransmitters believed to be involved in ADHD are likely successful to some degree. Such management may alleviate the need for self-medication through street drugs. Tobacco and caffeine are stimulants and may be used to self-medicate the anxiety often accompanying ADHD as well.
The final hypothesis studied differences in depression among the ADHD group and comparisons. Results indicate significant differences between the ADHD group and the Non-referred group. Significant differences were also noted between the Axis I group and the Non-referred group. No statistically significant difference was noted between the ADHD group and the Axis I group. The ADHD group reported a mean score indicating mild to moderate depression as did the Axis I group. Such scores may or may not indicate levels of depression indicated by the DSM-IV. The Non-referred group reported a mean score indicating none or minimal levels of depression. These results lend support to findings by Biederman (1991) who estimated, based on the research by others as well as his own, the co-occurrence of ADHD and mood disorders to be among 20%-30% of children and adolescents. It also suggests support for theories from Biederman (1991) and Hallowell and Ratey (1994) that a subtype for ADHD with mood disorders may exist. Results of the current study do not, however, support the notion of severe depression among adults with ADHD.

Mild to moderate depression coupled with increased anxiety evidenced in this sample of adults with attention-deficit/hyperactivity disorder may help to explain the experience of an individual dealing with ADHD. A lack of adequate coping skills may exacerbate feelings of hopelessness and despair leading to a disorganized lifestyle. This comorbid condition creates a perpetual cycle that may include a sense of underachievement, difficulty organizing, chronic procrastination, trouble with follow-through, easy distractibility, forgetfulness, and low tolerance for frustration.
Though no significant differences were noted between the ADHD group and the Axis I group, differences were noted among the descriptives of demographic variables. One difference concerned being held back at least one year between kindergarten and the twelfth grade. Of the ADHD group, 22.9% reported having been retained in school while only 8.3% of the Axis I group and 1.7% of the Non-referred group reported being retained. Another difference concerned self-reported ability to concentrate or focus sustained attention. On a Likert scale of 1-5 where 1 = very distractible and 5 = highly focused, the ADHD group mean was 2.5. Means for the Axis I group and Non-referred group were 3.7 and 4.0 respectively. A slightly higher incidence of car accidents and speeding tickets were reported among the ADHD group as compared to the comparison groups. A Likert scale assessing childhood, where 1 = mostly negative, and 5 = mostly positive, revealed means for the ADHD group of 2.8, the Axis I group of 3.1, and the Non-referred group of 4.0. Past alcohol addictions and ongoing work addictions were more frequently reported among the ADHD group than either comparison group.

One of the questions in this study concerned the debate over the existence of adult ADHD without comorbidity. Results of this study indicate 29.2% of the ADHD group demonstrated no indications of anxiety, depression or personality disorders. Among the other 70.8% of the group, disorders were indicated, yet levels of anxiety and depression were indicated as mild to moderate. These findings support Biederman’s (1993) study which found 28% of the adults with ADHD had no psychiatric disorder. Results also confirm the existence of adult ADHD as indicated by Barkley’s ADHD BCA as a pure
condition rather than only a misrepresentation of other disorders such as depression or anxiety.

Implications regarding diagnosis and treatment may include a more positive attitude toward signs of ADHD. Further support may be provided for theories purported by Elliott (1995) and Hallowell and Ratey (1994) including renaming ADHD as a “difference” as opposed to a disorder, and focusing on positive aspects of such a difference. Positives may arise from a low anxiety state accompanying ADHD such as increased tolerance for chaos or heightened sensory awareness. Questions remain as to the reasons for differences among adults with ADHD and comorbid psychiatric disorders, and adults with ADHD and no comorbidity who report positive effects of their different design.

Limitations

Although this study yielded interesting results, it is not without limitations. First, approximately 92% of this sample was Caucasian; the findings need to be borne out in a more ethnically diverse sample. Second, this study was restricted to individuals between the ages of 19-49 years. A study needs to be conducted adding older adults to see if it might yield similar results and explore differences in ADHD through the lifespan. Third, because some individuals in the ADHD group and in the axis I group were on medication at the time the assessments were taken, it is possible that tainted assessment scores were obtained. A more careful analysis of individuals not on medication would help to delineate such differences and eliminate the confounding variable.
Fourth, caution should be used with generalizations, because although the researched variables bore significant differences, they may not be significant for all adults with ADHD but may be effected by other variables such as comorbidity, therapy, occupation, and family status. Fifth, the individuals in the ADHD group were determined according to their score on the ADHD Behavior Checklist for Adults or by diagnosis from a physician or therapist. A more consistent picture would be available if all members of the group were determined through diagnosis from a treatment provider. Unfortunately, this criteria may be difficult to accomplish due to insurance specifications and the pre-existing condition associated with ADHD in adults. Further, the ADHD Behavior Checklist for Adults is normed according to hypotheses put forth by Barkley and may not be respected by other treatment professionals. Finally, data were gathered through the use of self-report measures that were not administered in random order. The order of how the tests were taken could possibly affect the subject’s answers on subsequent measures. Giving tests in random order might control that factor.

Beyond demographic limitations and assessment variables, this research cannot indicate whether the studied characteristics result from the experience of ADHD, whether the characteristics of anxiety, depression and personality disorders existed prior to the ADHD, or whether they exist independent of ADHD. Understanding the differences among individuals regarding the impact of ADHD throughout their life would be interesting and important as it would have implications regarding treatment and the organization of society in general, such as with schools and in homes. No conclusions about causation can be drawn from this study.
Future Research

These limitations suggest the need for future researchers to investigate comorbidity as it relates to adults with Attention Deficit Hyperactivity Disorder. The current study examined four areas of diagnostic significance in adults with ADHD as compared to other individuals with a different axis I diagnosis and Non-referred individuals not identified as having any axis I diagnosis. The characteristics this study examined indicate a pattern of increased depression and anxiety, and a greater likelihood for several personality disorders among adults with ADHD. Unfortunately, some variables of ADHD are also variables of other personality patterns such as depression and anxiety. Future research in this area may include examining these characteristics, and others, using a much larger sample.

It would also be interesting to study self-esteem, locus of control, creativity, intelligence, coping skills, and parenting styles as they relate to individuals with ADHD. Due to the lifelong condition of ADHD for adults with ADHD, factors surrounding their educational environment and opportunities as well as the parenting styles of their caregivers may have a great impact on the development of comorbidity later in life. Likewise, the genetic factors involved with ADHD may increase the likelihood of an adult with ADHD having been reared by another adult with ADHD. Characteristics involved with ADHD such as impulsivity, lack of patience and the potential for comorbid disorders among parents with ADHD may have an impact on the emotional state of those they parent as well. Consequently, studies involving the family of origin of adults with ADHD would likely yield interesting results.
In addition, medication management may be greatly affected by understanding the relationship between ADHD and comorbid conditions. Similarly, treatment of chemical dependency may be affected if further research determines the relationship between substance abuse and ADHD to be greater than the design of the current study allowed. Further research may help identify specific issues to help determine what avenues can be taken in the definition, treatment, and prevention of comorbidity with ADHD. It may also help to shed a more positive light on a condition being dealt with in homes, schools and workplaces throughout our society.
APPENDIX A

DIAGNOSTIC CRITERIA FOR ATTENTION-DEFICIT/HYPERACTIVITY DISORDER
DIAGNOSTIC CRITERIA FOR ATTENTION-DEFICIT /
HYPERACTIVITY DISORDER

A. Either (1) or (2):

(1) six (or more) of the following symptoms of inattention have persisted for
at least 6 months to a degree that is maladaptive and inconsistent with
developmental level:

Inattention

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

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

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

(d) often does not follow through on instructions and fails to finish
schoolwork, chores, or duties in the workplace (not due to
oppositional behavior or failure to understand instructions)

(e) often has difficulty organizing tasks and activities

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

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

(h) is often easily distracted by extraneous stimuli

(i) is often forgetful in daily activities

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

Hyperactivity

(a) often fidgets with hands or feet or squirms in seat
(b) often leaves seat in classroom or in other situations in which remaining seated is expected
(c) often runs about or climbs excessively in situation in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
(d) often has difficulty playing or engaging in leisure activities quietly
(e) is often "on the go" or often acts as if "driven by a motor"
(f) often talks excessively

Impulsivity

(g) often blurts out answers before questions have been completed
(h) often has difficulty awaiting turn
(i) often interrupts or intrudes on others (e.g., butts into conversations or games)

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

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

D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.
E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder). (pp. 83-85)
APPENDIX B

SUGGESTED DIAGNOSTIC CRITERIA FOR
ATTENTION DEFICIT DISORDER IN ADULTS
SUGGESTED DIAGNOSTIC CRITERIA FOR
ATTENTION DEFICIT DISORDER IN ADULTS

A. A chronic disturbance in which at least twelve of the following are present:

1) a sense of underachievement, of not meeting one's goals regardless of how much one has accomplished;

2) difficulty getting organized;

3) chronic procrastination or trouble getting started;

4) many projects going simultaneously, trouble with follow-through;

5) tendency to say what comes to mind without necessarily considering the timing or appropriateness of the remark;

6) an ongoing search for high stimulation;

7) a tendency to be easily bored;

8) easy distractibility, trouble focusing attention, tendency to tune out or drift away in the middle of a page or conversation, often coupled with an ability to hyperfocus at times;

9) often creative, intuitive, highly intelligent;

10) trouble going through established channels, following proper procedure;

11) impatient, low tolerance for frustration;

12) impulsive, either verbally or in action, as in impulsive spending of money, changing plans, enacting new schemes or career plans;
13) tendency to worry needlessly, endlessly; a tendency to scan the horizon looking for something to worry about, alternating with inattention to or disregard for actual dangers;

14) sense of impending doom, insecurity, alternating with high risk-taking;

15) mood swings and depression, especially when disengaged from a person or a project;

16) restlessness;

17) tendency toward addictive behavior;

18) chronic problems with self-esteem;

19) inaccurate self-observation;

20) family history of ADD or manic-depressive illness or depression or substance abuse or other disorders of impulse control or mood.

B. Childhood history of ADD. (It may not have been formally diagnosed, but in reviewing the history, one sees that the signs and symptoms were there.)

C. Situation not explained by other medical or psychiatric condition. (Hallowell & Ratey, 1994, pp. 201-202)
APPENDIX C

QUESTIONNAIRE
QUESTIONNAIRE

Please indicate the response that is correct for you. Please answer every question.

1. Age: ____________

2. Gender: (circle one) Male    Female

3. Marital status now: _____ Single _____ Married _____ Divorced _____ Widowed

4. Number of times married (present marriage included): _____

5. If married, length of the present marriage: __________

6. Please indicate the highest level of education completed (check one):
   Jr. High School
   High school graduate or GED equivalent
   Some college or technical school
   College or technical school graduate
   Some post graduate studies
   Completed a graduate degree

7. Were you ever held back a grade in primary or secondary school (K-12): YES/NO
   If yes, what grade(s): ________________________________

8. Gross Annual Income (check one)
   Less than $20,000
   $20,001 - $40,000
   $40,001 - $60,000
   $60,001 - $80,000
   More than 80,000

9. Race (check one):
   Caucasian
   African American
   Hispanic
   American Indian
   Asian
   Other (specify) _______________________

10. Religious affiliation (check one):
    Protestant
     Catholic
     Jewish
     Mormon
     None
     Other (specify) __________
11. Were you ever diagnosed with attention deficit disorder or attention deficit hyperactivity disorder as a child? YES NO

If yes, were you on medication? YES NO
Which medication?

12. Check any medications you are currently taking: (If unsure, write name of medication on "Other".)

None
High blood pressure
Anti-depressant
Tranquilizers/Sedatives
ADHD medication
Anti-anxiety
Prescription pain killers
Anti-convulsant
Other(s) (please indicate)

13. Check any medications you have taken in the past five years: (If unsure, write name of medication on "Other".)

None
High blood pressure
Anti-depressant
Tranquilizers/Sedatives
ADHD medication
Anti-anxiety
Prescription pain killers
Anti-convulsant
Other(s) (please indicate)

14. Check any substances you are currently using: (within past month)
Circle the number that corresponds to your level of use:

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<thead>
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<th>rarely used</th>
<th>frequently used</th>
</tr>
</thead>
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<td></td>
</tr>
<tr>
<td>Crack</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Crack</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>Alcohol</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Heroin</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Tobacco</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Marijuana</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>Barbiturates</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>PCP</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>
15. Check the following substances that you have ever used? Circle the number indicating your level of use at that time.

<table>
<thead>
<tr>
<th>Substance</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tr>
<td>Crack</td>
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<tr>
<td>Crank</td>
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<td>4</td>
<td>5</td>
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<tr>
<td>Alcohol</td>
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<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Heroin</td>
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<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
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<tr>
<td>Marijuana</td>
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</tr>
<tr>
<td>PCP</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

16. Have you ever received treatment from a physician, psychiatrist, psychologist or counselor regarding attention deficit hyperactivity disorder? YES NO

If yes, as a CHILD or ADULT? (Circle)

17. Are you currently receiving treatment by a psychiatrist, psychologist, or counselor? YES NO

If yes, what issues are you addressing: ________________________________

18. Has anyone in your family ever been diagnosed with attention-deficit disorder or attention-deficit/hyperactivity disorder (father, mother, siblings, children, uncles or aunts, etc.) YES NO

If yes, what relationship are they to you: ________________________________

19. On a scale of one to five, how would you rate your overall ability to concentrate or focus sustained attention?

1    2    3    4    5
very distractible highly focused

20. On a scale of one to five, how creative do you consider yourself?

1    2    3    4    5
not at all very creative

21. On a scale of one to five, how successful do you consider yourself?

1    2    3    4    5
unsuccessful highly successful
22. On a scale of one to five, how would you rate yourself on ease in interpersonal relationships?

1  2  3  4  5
very uneasy  quite comfortable

23. How many permanent residences have you had in the past ten years?

1  2  3  4  5  6 or more

24. Have you ever attempted suicide? YES  NO
If yes, how many times? __________________

25. How many car accidents have you had since you were licensed to drive?

1  2  3  4  5  6 or more

26. How many speeding tickets have you had in the past ten years?

0  1-2  3-4  5-6  7-8  9 or more

27. On a scale of one to five, how positive would you rate your childhood?

1  2  3  4  5
mostly negative  mostly positive

28. Check any of the following addictions that apply to you (past or present)

<table>
<thead>
<tr>
<th></th>
<th>PAST</th>
<th>PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Drugs</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Sex</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Alcohol</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Food</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Work</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Gambling</td>
<td>_____</td>
<td>_____</td>
</tr>
</tbody>
</table>
APPENDIX D

TABLES
Table 1

Means and Standard Deviations for the BDI, STAI, and the MCM1

<table>
<thead>
<tr>
<th>Scale</th>
<th>Group 1 (ADHD) (N = 48)</th>
<th>Group 2 (Axis I) (N = 36)</th>
<th>Group 3 (Non-referred) (N = 58)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>BDI</td>
<td>17.67</td>
<td>11.70</td>
<td>15.67</td>
</tr>
<tr>
<td>STAI-State</td>
<td>46.08</td>
<td>13.64</td>
<td>41.00</td>
</tr>
<tr>
<td>STAI-Trait</td>
<td>48.83</td>
<td>11.60</td>
<td>48.94</td>
</tr>
</tbody>
</table>

Note. BDI = Beck Depression Inventory (scoring guidelines indicate 0-9 = normal range or asymptomatic, 10-18 = mild/moderate depression, 19-29 = moderate/severe depression, 30-63 = extreme severe depression); STAI-State = State Trait Anxiety Inventory- State Anxiety; STAI-Trait = State Trait Anxiety Inventory- Trait Anxiety (STAI mean = 35).

Table 2

Correlation Coefficients of Dependent Variables for Adult ADHD Group

<table>
<thead>
<tr>
<th>STAI (State)</th>
<th>STAI (Trait)</th>
<th>AD</th>
<th>DD</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAI (State)</td>
<td>.741</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(48)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>p = .000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAI (Trait)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AD</td>
<td></td>
<td>.495</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(48)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>p = .000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. STAI (State) = State Trait Anxiety Inventory- State Anxiety; STAI (Trait) = State Trait Anxiety Inventory- Trait Anxiety; AD = Millon Clinical Multiaxial Inventory-III Alcohol Dependency Scale; DD = Millon Clinical Multiaxial Inventory-III Drug Dependency Scale.
Table 3

**Correlation Coefficients of Dependent Variables for Axis I Group**

<table>
<thead>
<tr>
<th></th>
<th>STAI (State)</th>
<th>STAI (Trait)</th>
<th>AD</th>
<th>DD</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAI (State)</td>
<td>.594</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(36)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( p = .000 )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAI (Trait)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AD</td>
<td>.508</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(36)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( p = .002 )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* STAI (State) = State Trait Anxiety Inventory- State Anxiety; STAI (Trait) = State Trait Anxiety Inventory- Trait Anxiety; AD = Millon Clinical Multiaxial Inventory-III Alcohol Dependency Scale; CD = Millon Clinical Multiaxial Inventory-III Drug Dependency Scale.

Table 4

**Correlation Coefficients of Dependent Variables for Non-referred Comparison Group**

<table>
<thead>
<tr>
<th></th>
<th>STAI (State)</th>
<th>STAI (Trait)</th>
<th>AD</th>
<th>DD</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAI (State)</td>
<td>.719</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(58)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( p = .000 )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAI (Trait)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AD</td>
<td>.334</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(58)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( p = .010 )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* STAI (State) = State Trait Anxiety Inventory- State Anxiety; STAI (Trait) = State Trait Anxiety Inventory- Trait Anxiety; AD = Millon Clinical Multiaxial Inventory-III Alcohol Dependency Scale; CD = Millon Clinical Multiaxial Inventory-III Drug Dependency Scale.
Table 5

Summary of Participant's Demographics by Group

<table>
<thead>
<tr>
<th></th>
<th>Group 1 ADHD (N = 48)</th>
<th>Group 2 Axis I Com (N = 36)</th>
<th>Group 3 Non-referred Comp (N = 58)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age</td>
<td>34</td>
<td>32</td>
<td>34</td>
</tr>
<tr>
<td>Male</td>
<td>24</td>
<td>17</td>
<td>28</td>
</tr>
<tr>
<td>Female</td>
<td>24</td>
<td>19</td>
<td>30</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>25.0% (12)</td>
<td>30.6% (11)</td>
<td>10.3% (6)</td>
</tr>
<tr>
<td>Married</td>
<td>66.7% (32)</td>
<td>50.0% (18)</td>
<td>86.2% (30)</td>
</tr>
<tr>
<td>Divorced</td>
<td>6.3% (3)</td>
<td>16.7% (6)</td>
<td>3.4% (2)</td>
</tr>
<tr>
<td>Widowed</td>
<td>2.8% (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highest Level Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School or GED equivalent</td>
<td>10.4% (5)</td>
<td>5.6% (2)</td>
<td>3.4% (2)</td>
</tr>
<tr>
<td>Some college or technical school</td>
<td>43.8% (21)</td>
<td>25.0% (9)</td>
<td>15.3% (9)</td>
</tr>
<tr>
<td>College or technical school graduate</td>
<td>20.8% (10)</td>
<td>41.7% (15)</td>
<td>43.1% (25)</td>
</tr>
<tr>
<td>Some post graduate studies</td>
<td>10.4% (5)</td>
<td>8.3% (3)</td>
<td>10.3% (6)</td>
</tr>
<tr>
<td>Completed a graduate degree</td>
<td>14.6% (7)</td>
<td>19.4% (7)</td>
<td>27.6% (16)</td>
</tr>
<tr>
<td>Held Back in school (K-12)</td>
<td>22.9% (11)</td>
<td>8.3% (3)</td>
<td>1.7% (1)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>91.7% (44)</td>
<td>91.7% (33)</td>
<td>93.1% (54)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>2.1% (1)</td>
<td>5.6% (2)</td>
<td>3.4% (2)</td>
</tr>
<tr>
<td>American Indian</td>
<td>4.2% (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2.1% (1)</td>
<td></td>
<td>1.7% (1)</td>
</tr>
<tr>
<td>Diagnosed With ADHD or ADD as a child</td>
<td>12.5% (6)</td>
<td></td>
<td>1.7% (1)</td>
</tr>
<tr>
<td>Ever taken medication for ADHD/ADD</td>
<td>37.5% (18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Medications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>33.3% (16)</td>
<td>44.4% (16)</td>
<td>79.3% (46)</td>
</tr>
<tr>
<td>High Blood Pressure</td>
<td>12.5% (6)</td>
<td>11.1% (4)</td>
<td></td>
</tr>
<tr>
<td>Anti-depressant</td>
<td>41.7% (20)</td>
<td>33.3% (12)</td>
<td></td>
</tr>
<tr>
<td>Tranquilizers/Sedatives</td>
<td>2.1% (1)</td>
<td>5.6% (2)</td>
<td></td>
</tr>
<tr>
<td>ADHD medication</td>
<td>28.8% (10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-anxiety</td>
<td>8.3% (4)</td>
<td>13.9% (5)</td>
<td></td>
</tr>
<tr>
<td>Prescription pain killers</td>
<td>5.6% (2)</td>
<td>5.2% (3)</td>
<td></td>
</tr>
<tr>
<td>Anti-convulsant</td>
<td>4.2% (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>22.9% (11)</td>
<td>16.7% (6)</td>
<td>17.2% (10)</td>
</tr>
<tr>
<td>Medications from past five years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>28.8% (10)</td>
<td>16.7% (6)</td>
<td>60.3% (35)</td>
</tr>
<tr>
<td>High Blood Pressure</td>
<td>14.6% (7)</td>
<td>13.9% (5)</td>
<td>1.7% (1)</td>
</tr>
<tr>
<td>Anti-depressant</td>
<td>50.0% (24)</td>
<td>50.0% (18)</td>
<td>3.4% (2)</td>
</tr>
<tr>
<td>Tranquilizers/Sedatives</td>
<td>10.4% (5)</td>
<td>5.6% (2)</td>
<td></td>
</tr>
<tr>
<td>ADHD medication</td>
<td>29.2% (14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-anxiety</td>
<td>27.1% (13)</td>
<td>16.7% (6)</td>
<td>1.7% (1)</td>
</tr>
<tr>
<td>Prescription pain killers</td>
<td>31.3% (15)</td>
<td>30.6% (11)</td>
<td>13.8% (8)</td>
</tr>
<tr>
<td>Anti-convulsant</td>
<td>4.2% (2)</td>
<td>2.8% (1)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>18.8% (9)</td>
<td>25.0% (9)</td>
<td>22.4% (13)</td>
</tr>
</tbody>
</table>

(Table Continues)
<table>
<thead>
<tr>
<th>Family member diagnosed with ADD/ADHD</th>
<th>Group 1 ADHD (N = 48)</th>
<th>Group 2 Axis I Com (N = 36)</th>
<th>Group 3 Non-referred Comp (N = 58)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean ability to concentrate or focus sustained attention</td>
<td>2.5 (28)</td>
<td>3.7 (9)</td>
<td>4 (11)</td>
</tr>
<tr>
<td>Mean rating of creativity</td>
<td>3.5 (28)</td>
<td>3.6 (9)</td>
<td>3.4 (11)</td>
</tr>
<tr>
<td>Mean rating of personal success</td>
<td>3.2 (28)</td>
<td>3.4 (9)</td>
<td>3.8 (11)</td>
</tr>
<tr>
<td>Mean rating of ease in interpersonal relationships</td>
<td>3.5 (28)</td>
<td>3.1 (9)</td>
<td>3.8 (11)</td>
</tr>
<tr>
<td>Mean # of permanent residences in past 10 years</td>
<td>3.2 (28)</td>
<td>3.5 (9)</td>
<td>2.7 (11)</td>
</tr>
<tr>
<td>Prior suicide attempt</td>
<td>12.5% (6)</td>
<td>8.3% (3)</td>
<td>1.7% (1)</td>
</tr>
<tr>
<td>Mean # of car accidents</td>
<td>2.6 (28)</td>
<td>2.1 (9)</td>
<td>1.8 (11)</td>
</tr>
<tr>
<td>Mean # of speeding tickets</td>
<td>1.7 (28)</td>
<td>1.1 (9)</td>
<td>.8 (11)</td>
</tr>
<tr>
<td>Mean rating of childhood (1-5)</td>
<td>2.8 (28)</td>
<td>3.1 (9)</td>
<td>4.0 (11)</td>
</tr>
<tr>
<td>Addictions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobacco - NEVER</td>
<td>64.6% (31)</td>
<td>61.1% (22)</td>
<td>93.1% (54)</td>
</tr>
<tr>
<td>PAST</td>
<td>16.7% (8)</td>
<td>22.2% (8)</td>
<td>3.4% (2)</td>
</tr>
<tr>
<td>ONGOING</td>
<td>18.8% (9)</td>
<td>16.7% (6)</td>
<td>3.4% (2)</td>
</tr>
<tr>
<td>Drugs - NEVER</td>
<td>81.3% (39)</td>
<td>77.8% (29)</td>
<td>98.3% (57)</td>
</tr>
<tr>
<td>PAST</td>
<td>10.4% (5)</td>
<td>16.7% (6)</td>
<td>1.7% (1)</td>
</tr>
<tr>
<td>ONGOING</td>
<td>8.3% (4)</td>
<td>5.6% (2)</td>
<td>---</td>
</tr>
<tr>
<td>Sex - NEVER</td>
<td>60.4% (29)</td>
<td>63.9% (23)</td>
<td>87.9% (51)</td>
</tr>
<tr>
<td>PAST</td>
<td>20.8% (10)</td>
<td>16.7% (6)</td>
<td>3.4% (2)</td>
</tr>
<tr>
<td>ONGOING</td>
<td>18.8% (9)</td>
<td>19.4% (7)</td>
<td>8.6% (5)</td>
</tr>
<tr>
<td>Alcohol - NEVER</td>
<td>70.8% (34)</td>
<td>94.4% (34)</td>
<td>100% (58)</td>
</tr>
<tr>
<td>PAST</td>
<td>25.0% (12)</td>
<td>5.6% (2)</td>
<td>---</td>
</tr>
<tr>
<td>ONGOING</td>
<td>4.2% (2)</td>
<td>5.6% (2)</td>
<td>---</td>
</tr>
<tr>
<td>Food - NEVER</td>
<td>77.1% (37)</td>
<td>63.9% (23)</td>
<td>84.5% (49)</td>
</tr>
<tr>
<td>PAST</td>
<td>2.1% (1)</td>
<td>2.8% (1)</td>
<td>1.7% (1)</td>
</tr>
<tr>
<td>ONGOING</td>
<td>28.8% (10)</td>
<td>33.3% (12)</td>
<td>13.8% (8)</td>
</tr>
<tr>
<td>Work - NEVER</td>
<td>54.2% (26)</td>
<td>72.2% (26)</td>
<td>91.4% (53)</td>
</tr>
<tr>
<td>PAST</td>
<td>16.7% (8)</td>
<td>16.7% (6)</td>
<td>5.2% (3)</td>
</tr>
<tr>
<td>ONGOING</td>
<td>29.2% (14)</td>
<td>11.1% (4)</td>
<td>3.4% (2)</td>
</tr>
<tr>
<td>Gambling - NEVER</td>
<td>93.8% (45)</td>
<td>100% (36)</td>
<td>100% (58)</td>
</tr>
<tr>
<td>PAST</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>ONGOING</td>
<td>6.3% (3)</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
### Table 6

**Summary of the Personality Pattern and Personality Pathology Scales on the MCMI-III Between Groups When Scores Are 85 or Above**

<table>
<thead>
<tr>
<th>Personality Pattern</th>
<th>Group 1 (ADHD) (N = 48)</th>
<th>Group 2 (Axis I) (N = 36)</th>
<th>Group 3 (Non-referred) (N = 58)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizoid</td>
<td>2.1% (1)</td>
<td>2.8% (1)</td>
<td>-----</td>
</tr>
<tr>
<td>Avoidant</td>
<td>10.4% (5)</td>
<td>8.3% (3)</td>
<td>1.7% (1)</td>
</tr>
<tr>
<td>Depressive</td>
<td>31.3% (15)</td>
<td>22.2% (8)</td>
<td>-----</td>
</tr>
<tr>
<td>Dependent</td>
<td>14.6% (7)</td>
<td>16.7% (6)</td>
<td>3.4% (2)</td>
</tr>
<tr>
<td>Histrionic</td>
<td>6.3% (3)</td>
<td>11.1% (4)</td>
<td>17.2% (10)</td>
</tr>
<tr>
<td>Narcissistic</td>
<td>6.3% (3)</td>
<td>8.3% (3)</td>
<td>-----</td>
</tr>
<tr>
<td>Antisocial</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Aggressive (Sadistic)</td>
<td>4.2% (2)</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Compulsive</td>
<td>2.1% (1)</td>
<td>-----</td>
<td>15.5% (9)</td>
</tr>
<tr>
<td>Passive-Aggressive</td>
<td>14.6% (7)</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Self-Defeating</td>
<td>16.7% (8)</td>
<td>16.7% (6)</td>
<td>-----</td>
</tr>
<tr>
<td>Schizotypal</td>
<td>2.1% (1)</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Borderline</td>
<td>16.7% (8)</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Paranoid</td>
<td>4.2% (2)</td>
<td>-----</td>
<td>-----</td>
</tr>
</tbody>
</table>
Table 7

**Analysis of Variance of the STAI (State Anxiety) Between Groups**

<table>
<thead>
<tr>
<th>Mean</th>
<th>GROUP</th>
<th>ADHD</th>
<th>Axis I</th>
<th>Non-referred</th>
</tr>
</thead>
<tbody>
<tr>
<td>46.08</td>
<td>ADHD</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>41.00</td>
<td>Axis I</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>34.16</td>
<td>Non-referred</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* STAI = State Trait Anxiety Inventory (STAI mean = 35).

*p*<.05

Table 8

**Analysis of Variance of the STAI (Trait Anxiety) Between Groups**

<table>
<thead>
<tr>
<th>Mean</th>
<th>GROUP</th>
<th>ADHD</th>
<th>Axis I</th>
<th>Non-referred</th>
</tr>
</thead>
<tbody>
<tr>
<td>48.83</td>
<td>ADHD</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>48.94</td>
<td>Axis I</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>33.93</td>
<td>Non-referred</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* STAI = State Trait Anxiety Inventory (STAI mean = 35).

*p*<.0001
### Table 9

**Analysis of Variance of Alcohol Dependence Scale on the MCMI-III Between Groups**

<table>
<thead>
<tr>
<th>Mean</th>
<th>GROUP</th>
<th>ADHD</th>
<th>Axis I</th>
<th>Non-referred</th>
</tr>
</thead>
<tbody>
<tr>
<td>57.29</td>
<td>ADHD</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>44.17</td>
<td>Axis I</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30.38</td>
<td>Non-referred</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*MCMI = Millon Clinical Multiaxial Inventory-III; pathology indicated at ≥ 85.
*p < .05

### Table 10

**Analysis of Variance of Drug Dependence Scale on the MCMI-III Between Groups**

<table>
<thead>
<tr>
<th>Mean</th>
<th>GROUP</th>
<th>ADHD</th>
<th>Axis I</th>
<th>Non-referred</th>
</tr>
</thead>
<tbody>
<tr>
<td>56.23</td>
<td>ADHD</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>45.72</td>
<td>Axis I</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>22.86</td>
<td>Non-referred</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*MCMI = Millon Clinical Multiaxial Inventory-III; pathology indicated at ≥ 85.
*p < .04
Table 11

Analysis of Variance of the BDI Between Groups

<table>
<thead>
<tr>
<th>Mean</th>
<th>GROUP</th>
<th>ADHD</th>
<th>Axis I</th>
<th>Non-referred</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.67</td>
<td>ADHD</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>15.67</td>
<td>Axis I</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>5.67</td>
<td>Non-referred</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. BDI = Beck Depression Inventory (scoring guidelines indicate 0-9 = normal range or asymptomatic, 10-18 = mild/moderate depression, 19-29 = moderate/severe depression, 30-63 = extreme severe depression).

* p< .0001
Table 12

Summary of ADHD Group Individuals With No Significant Scores on the STAI, BDI, or MCMI-III Personality Disorder Scales by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>ADHD-Path</th>
<th>ADHD-No Path</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>18</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>Females</td>
<td>16</td>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>34 (70.8%)</td>
<td>14 (29.2%)</td>
<td>48 (100%)</td>
</tr>
</tbody>
</table>

Note: STAI = State Trait Anxiety Inventory (State and Trait Scores); BDI = Beck Depression Inventory; MCMI-III = Millon Clinical Multiphasic Inventory-III; ADHD = Attention-Deficit/Hyperactivity Disorder; Path = Pathology as demonstrated by the STAI, BDI, or MCMI-III.
REFERENCES


deficit hyperactivity disorder: A test of Rutter’s indicators of adversity. *Archives of General Psychiatry, 52*, 464-470.


