MMPI-2 PATTERNS OF ADULTS WITH ATTENTION-DEFICIT HYPERACTIVITY DISORDER

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

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Recent literature suggests that not only does Attention-deficit Hyperactivity Disorder (ADHD/ADD) persist into adulthood, but it can also be accompanied by personality characteristics which cause emotional difficulties. In fact, adults diagnosed with ADHD can present with a profusion of difficulties. Several constructs appear to accumulate dynamically throughout development to place the adult with ADHD at risk for multiple emotional problems. These interwoven influences include familial characteristics, childhood emotional and academic difficulties, and inadequate coping skills to respond to adulthood pressures. This document, first, describes a developmental model for conceptualizing negative trajectories leading to nonadaptive coping and psychopathology and identifies personality factors of adults diagnosed with ADHD. This model provides clinicians and researchers with a better understanding of the complexity and challenges of adulthood ADHD in order to aid in diagnosis, treatment, and prevention.

The purpose of this study is to examine personality factors common to adults diagnosed with ADHD and compares these characteristics with a group of adults diagnosed with a depressive disorder. Adults responding to a community advertisement who provided documentation of the diagnosis of Attention-deficit Hyperactivity Disorder
were administered the MMPI-2. This ADHD group was compared with MMPI-2 profiles of a group of adults diagnosed with Major Depressive Disorder or Dysthymic Disorder. A cluster analysis procedure was performed and results are discussed.
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CHAPTER 1

INTRODUCTION

Attention-deficit/Hyperactivity in Adulthood

Attention-deficit/hyperactivity disorder (ADHD), once referred to as minimal brain dysfunction, has been described as a childhood disorder characterized by developmentally inappropriate inattention, impulsivity, and/or hyperactivity (American Psychological Association [APA], 1994). Previous thought held that children outgrow the symptoms of ADHD by the time of puberty; however, mounting evidence suggests that symptoms often continue into adulthood (Biederman, Faraone, Spencer, Wilens, Norman, Lapey, Mick, Lehman, & Doyle, 1993; Gauthier, 1984; Gomez, Janowsky, Zeitan, Huey, & Clopton, 1981; Shelly & Riester, 1972; Wood & Hechtman, 1986; Wood, Reimherr, Wender, & Johnson, 1976). Several reasons may explain why it was believed that ADHD was outgrown at puberty. First, overactivity decreases significantly throughout childhood. Another reason is that traditional treatment of stimulant medication does not always have the effect that it does in childhood (Denckla, 1991). Probably most significant is that children diagnosed with ADHD are often lost to follow-up by psychologists, pediatricians, child psychiatrists, or child-oriented clinics; and, thus their difficulties cannot be monitored. Etiological statistics indicate that 3-5% of all children have ADHD, and 1/3 to 1/2 of all children with ADHD continue to show signs and symptoms of the disorder into adulthood (Denckla, 1991; Shekim, Asarnow, Hess, &
Zaucha, 1990). Therefore, 1-2% of all adults may have persisting ADHD symptoms (Shekim et al., 1990).

**Diagnostic Criteria**

Not unlike the history of childhood ADHD, diagnostic manuals have had difficulty solidifying a name and descriptive criteria for adulthood ADHD. Amado and Lustman (1982) cited *Diagnostic and Statistical Manual of Mental Disorders-Third Edition* (DSM-III) when describing ADD-Residual Type (ADD-RT) for adults as when "signs of hyperactivity are no longer present without periods of remission, as evidenced by signs of both attentional deficits and impulsivity...[which] result in some impairment in social and occupational functioning." More specifically, *DSM-III* (1980) criteria included the following: a) a history of ADD in childhood, b) attention and motor abnormalities (such as restlessness or fidgetiness), and c) 2 of the following 5 traits- poor impulse control, mood lability, short or excessive temper and/or irritability, poor organization with poor task completion, and low stress tolerance with over-reactivity. This symptomatology is also found in the *Diagnostic and Statistical Manual of Mental Disorders-Third Edition, Revised* (DSM-III-R, 1987) and described as Undifferentiated Attention-deficit disorder. If an adult meets the hyperactive criteria, he/she could be diagnosed with ADHD. *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV, 1994) continues to list ADHD under Disorders of Infancy, Childhood, and Adolescence and specifies Combined Type, Predominantly Inattentive Type, and Predominantly Hyperactivity-Impulsive Type (see Appendix A).
Also widely used are the Utah criteria developed by Paul Wender in order to diagnose ADD-RT (Ward, Wender, & Reimherr, 1993; Wender, 1971; Wender, 1985). The criteria are listed in Appendix B. To meet the Utah criteria, a childhood history of ADHD including both attentional deficits and motor hyperactivity and an adult history of persistent attentional problems and motor hyperactivity as well as other related symptoms are required. In addition, in order to make a diagnosis under the Utah criteria, the following must be ruled out: antisocial personality disorder, major affective disorder, schizophrenia, schizoaffective disorder, and characteristics of schizotypal and borderline personality disorders. However, as Chapter 2 will present, the stringency of the Utah criteria has been questioned due to the findings of the aforementioned disorders comorbid with ADHD.

Assessment

Assessing ADHD in adulthood including information related to childhood onset utilizing either DSM or Utah criteria can be conducted using a variety of methods. Neuropsychological instruments such as the continuous performance task (CPT) the Gordon Diagnostic System (GDS; Gordon, 1983) or the Matching Familiar Figures Test (MFFT; Kagan, 1966) have been cited as useful laboratory measures of sustained attention, impulsivity, and activity level (Barkley, 1991a; Campbell, Douglas, & Morganstern, 1971; Douglas, 1983). The validity, however, for diagnosis of ADHD based on neuropsychological tests has been questioned (Barkley, 1991b; DuPaul, Anastopoulos, Shelton, Guevremont, and Metevia, 1992; Trommer, Hoeppner, Lorber, & Armstrong, 1988).
Another method of assessment involves the "paradoxical" calming effect to identify hyperactive adults by their response to psychostimulants (Amado & Lustman, 1982). Although not proven as effective as in childhood, stimulants continue to be widely used for treatment of adult ADHD. Sixty to eighty percent of those adults diagnosed with ADHD respond positively to stimulant medication (Wood & Hechtman, 1986).

Typically, symptom checklists addressing childhood difficulties and present concerns are used. Childhood behavior rating scales such as the Child Behavior Checklist (CBCL; Achenbach, 1991) or the ADHD Rating Scale (DuPaul, 1991) can be given to parents to fill out retrospectively. Barkley (1995) has developed a checklist for adults based on DSM-IV symptom criteria for ADHD.

**Developmental Causal Model of Risk**

ADHD usually takes on one of three patterns of behavior in adulthood. First is the former ADHD child who has learned to adapt and in adulthood functions similarly to matched controls. Second is the former ADHD child who continues to have significant attentional, social, emotional, and impulse control problems which give rise to problems with work, interpersonal relationships, poor self-esteem, impulsivity, irritability, anxiety, and emotional lability. The third pattern consists of the adult having significant psychiatric or antisocial pathology. They may be seriously depressed, suicidal, involved in drug/alcohol abuse, or participate in significant antisocial behavior (Hechtman, 1989).

As previously mentioned, the proportion of former ADHD children who are in the first category appears to be about half. Similarly, Barkley (1991a) reported that 50% of
children with ADHD have no psychiatric disturbance in adulthood. Predictors of a positive adult outcome have included good intelligence, absence of aggressiveness, and favorable family environment (Gittelman, Mannuzza, Shenker, & Bonagura, 1985; Weiss & Hechtman, 1986). Not as fortunate, however, are the 50-65% of adults who continued to have symptoms causing decreases in functioning (Weiss & Hechtman, 1986). Studies have revealed that educational outcome and socioeconomic status of the adults who had ADHD as children were below that of their own siblings. Twenty-five to forty-five percent expressed some antisocial behavior, with 25% qualifying for a diagnosis of Antisocial Personality Disorder. Twelve percent abused substances, with alcohol as the most likely substance.

Males and females appear to have an equal number of difficulties (Biederman et al., 1994). After assessing 128 referred adult ADHD cases, the male and female adults with ADHD were similar to one another but more disturbed and impaired than non-ADHD adult control subjects. When women with ADHD were compared with normal control females, the women with ADHD had higher rates of major depression, anxiety disorders, conduct disorder, more school failure, and cognitive impairment.

Based on empirical studies following children with ADHD into adulthood, there exists a number of negative trajectories leading to maladaptive personality qualities and an increased susceptibility to psychopathology. This is due to influential variables that accumulate dynamically throughout development to place the adult with ADHD at risk for multiple emotional problems. These interwoven influences include familial
characteristics, emotional and academic difficulties in childhood, and the lack of coping skills to respond to the pressures of adulthood.

**Familial Influence-Genetic/Environmental**

A growing number of studies have indicated a familial influence, with estimates of 30-50% for heritability of ADHD symptomatology and 10% of the ADHD traits' variance held accountable by environmental factors (Barkley, 1991a; Biederman et al., 1992; Biederman, Faraone, Knee, & Tsuang, 1990; Biederman et al., 1986; Faraone, Biederman, Keenan, & Tsuang, 1991). Denckla (1993) also noted that studies indicate 20-32% of siblings and parents of a child identified as having ADHD will share the ADHD characteristics as evidenced in part by the child-to-parent chain of clinical referral. Twin studies also support a genetic component of ADHD, with identical twins concordant for hyperactivity and inattention significantly more frequent than fraternal twins (Denckla, 1993). Not only does ADHD symptomatology show a familial component, other psychiatric illnesses comorbid with ADHD may also place children at risk for attentional problems, ADHD, and other mental illness. Carlson and Weintraub (1993) examined children of parents with bipolar disorder, children of parents with other psychiatric disorders, and children of normal parents first at 7-16 years of age and then at follow-up when the subjects were over the age of 18. The "other psychiatric" group served as a control for the nonspecific effects of serious parental mental illness. It was found that the presence of behavioral and attentional problems exhibited in childhood was significantly related to psychopathology at the follow-up for all three groups. More specifically, nonaffective symptomatology, substance abuse and impaired social and
occupational competence were significant for all three groups. Affective symptomatology in young adulthood, however, was significantly related to having attentional and behavioral problems in childhood only for the children of parents diagnosed with bipolar disorder. In addition, several studies have found evidence of familial alcoholism linked with ADHD (Cantwell, 1972; Tartar, 1981; Wender, Reihmerr, & Wood, 1981). Therefore, familial influence acts as a vicious cycle both genetically and environmentally resulting in ADHD as well as other comorbid mental illnesses which, in turn, can potentially affect the next generation.

Childhood Comorbidity

Due to the nature of childhood ADHD, potential academic failure, inept social skills, and reciprocally poor parent-child interactions can produce negative secondary effects such as decreased self-efficacy and self-esteem (Brooks, 1994; Grizenko, Papineau, & Sayegh, 1993). Therefore, when growing up with any attentional, emotional, or cognitive difficulty, the disability often becomes the central feature of self-concept development (Kaplan & Shachter, 1991). In a prospective, controlled study of young adults who were hyperactive as children, Hechtman, Weiss, and Perlman (1980) found that these individuals reported lower self-esteem when compared to normal controls. Another study evaluated adults referred for outpatient psychotherapy who had childhood and current symptoms of ADHD but whose ADHD had not been previously recognized (Ratey, Greenberg, Bemporad, & Lindem, 1992). These subjects reported low self-esteem, self-loathing, and a sense of underachievement. Slomkowski, Klein, and Mannuzza (1995) examined the relevance of self-esteem in the outcome of hyperactive
children after controlling for current mental disorders. The hyperactive cohort reported lower self-esteem in adolescence and was judged to have lower levels of overall adjustment in adolescence; they also had lower educational achievement and occupational rank in adulthood, as compared to controls.

Because most of a child's day is spent in school either learning or socializing, cognitive difficulties and/or social skill deficits directly influence a child's self-esteem. Academic underachievement often characterizes children with ADHD (Brooks, 1994; Frick, Kamphaus, Lahey, Loeber, 1991; Grizenko et al., 1993; Hinshaw, 1992). Because delinquency and aggressive behavior are strongly associated with school failure, academic underachievement presents a compounded concern (Hinshaw, 1992).

Relatedly, Weiss and Hechtman (1986) found 20-25% of children with ADHD have a comorbid specific learning disability (LD). The combination of ADHD and LD can result in not only academic difficulties but serious problems with peer rejection, peer popularity, and social behavior even more than ADHD or LD alone; and the ADHD group evidenced more difficulties than the control group (Flicek, 1992).

Social skill deficits and poor peer relationships in childhood typically result in adults with poor social adjustment and mental health problems. Children with ADHD, because of their impulsivity and inattention have difficulty taking turns, following the rules of games, and keeping their hands to themselves. These behaviors tend to strain peer relations. Guevremont and Dumas (1994) described the social difficulties of children with ADHD as including a high rate of intrusive behavior, deficits in conversation and reciprocity, social-cognitive biases, and poor emotional regulation. In a
study comparing social behaviors and peer status of boys with ADHD and controls, significant differences were found between the groups, with the ADHD group overwhelmingly rejected by peers (Erhardt & Hinshaw, 1994).

Additionally, poor parent-child relations contribute to a dysfunctional family environment characterized by parental stress and distressed children. Baker (1994) stated that both mothers and fathers of children with ADHD experienced significant parenting stress, although mothers seemed more likely to perceive characteristics of the child as more stressful. Overall, child behavior, socioeconomic status, and years married contributed more to parenting stress than did the gender of the parent. The interactions between parents and children, however, are reciprocal. When parents and their children with ADHD interact, both exhibit behaviors that strongly influence each other and typically involve negative reinforcement and argumentative escalation (Danforth, Barkley, & Stokes, 1991).

Moral development is affected as well. When examining the values and belief systems of those diagnosed with ADHD, Weiss and Hechtman (1986) found that fewer young adults with ADHD than controls had strong beliefs, suggesting an immaturity of ego ideals. They also suggested that those adults with ADHD may have more immature superegos than controls coinciding with significantly more antisocial behavior and physical aggression. Speculating that the immaturity of the superego and the ego ideal may have resulted from difficulties with establishing early significant relationships caused by their disability, Weiss and Hechtman (1986) stated that these psychic structures
influence later self-concept, interpersonal relationships, and environmental accommodations.

Therefore, ADHD can adversely affect the development of social skills and self-esteem, which, in turn, can adversely affect relationships and the development of a healthy self-concept, paving the way for significant emotional difficulties. In fact, increasing evidence suggests that not only adults, but also children with ADHD are often at risk for the development of comorbid conditions, such as oppositional defiant disorder, conduct disorder, as well as affective and anxiety disorders (Biederman, Newcorn, & Sprich, 1991; Brumback, Dietz-Schmidt, & Weinberg, 1977). In a review of epidemiological studies, the rate of comorbidity in childhood ADHD was found to be 30-50% for CD, 35-60% for ODD, 20-30% for anxiety disorders, and 30% for affective disorders (Weiss & Hechtman, 1986).

Adulthood Pressures

If ADHD was present and not treated in childhood, an adult may have increased dysthymia when compared to those who received treatment. Shekim et al. (1990) explained this as the child experiencing a chronic sense of failure and low self-esteem that may have led to secondary dysphoria and depression. Thus, an adult with ADHD can develop a dysfunctional personality style which may interfere with normal adult pursuits. People who had mild or moderate deficits in childhood may have been able to compensate by means of characterologic strengths, but they may encounter psychiatric difficulty when experiencing the additional stressors of adult life (Kaplan & Shachter, 1991). The accumulated adverse difficulties experienced by the child with ADHD
encounters a new set of challenges in adulthood, but likely without adaptive coping skills such as strong self-esteem and effective social skills. The result can be vocational and relationship difficulties which hinder quality of life and predispose the adult for psychopathology. Weiss and Hechtman (1986) found in a follow-up of children with ADHD that only 5% completed a postsecondary degree; employers tended to rate them as less able to work independently, less persistent in task completion, and less likely to get along well with supervisors. Instability also seems to be a hallmark as evidenced by adults with ADHD symptomatology since they change jobs and move more frequently than controls. Denckla (1991) also found that adults with ADHD reported less stability as evidenced by more frequent job changes and more frequent changes of important intimate relationships.

Therefore, throughout the developmental process, persons with ADHD can potentially accumulate difficulties synonymous to a snowball rolling down a hill. Those with severe coping deficits which have not been treated effectively, early enough, or at all may present in adulthood with substance abuse issues, antisocial behavior, and other severe psychopathology.

Adult Comorbidity

Adult ADHD has been linked to other disorders including anxiety disorders, alcoholism, antisocial personality disorder, as well as borderline personality disorder (Amado & Lustman, 1982; Biederman et al., 1993; Gomez et al., 1981; Goodwin, Schulsinger, Hermansen, Guze, & Winokur, 1975; Greenfield, Hechtman, & Weiss, 1988; Shekim et al., 1990; Weiss, 1985; Weiss & Hechtman, 1986). Shekim et al.
(1990) looked at the clinical profile of a group of adults who met the DSM-III-R criteria for ADHD. Only 14% of the 56 patients had the diagnosis of a residual form of ADHD alone. The five most prevalent additional diagnoses of adults with ADHD were generalized anxiety disorder, drug and/or alcohol abuse, dysthymic disorder, and cyclothymic disorder. When looking specifically at alcohol abuse, primary alcoholics (severe drinkers) respectively reported more symptoms of childhood ADHD than less severe drinkers (Amado & Lustman, 1982). They recalled traits of impulsivity, restlessness, and aggression as children.

In another study, adults with moderate or severe continuing symptoms of ADHD were found to have a significantly greater association with alcohol use and abuse, antisocial behavior, and emotional problems when compared to adults with none or only mild continuing symptoms (Greenfield et al., 1988). In fact, adults without continuing ADHD symptoms did not differ from normal controls with regard to antisocial behavior. In a 15-year follow-up study of hyperactive children and matched controls, the findings were not always aligned with previous research. They found that 23% of the hyperactive group had an Antisocial Personality Disorder, and that schizophrenia and alcoholism or alcohol abuse were not found more commonly in the hyperactive group (Weiss, Hechtman, Milroy, & Perlman, 1985). The hyperactive group did, however, exhibit more overall psychopathology and functioned generally less well than did the normal controls. Methodological factors such as assessment issues could account for the discrepancies regarding alcohol abuse.
When examining probationers in a court-referred drug abuse treatment setting, Baker, Knight, and Simpson (1995) found that 31% had symptoms indicative of ADHD, suggesting ADHD as an undetected and untreated cause of the antisocial behavior. Additionally, the authors found 10 significant correlates with ADHD-related behaviors which aligned with the developmental causal model; namely, the absence of full-time employment, the total number of lifetime arrests, trouble controlling violent behavior, lack of emotional support from mother, conflict with mother, mother’s deviant behavior, lack of emotional support from father, father’s deviant behavior, use of cocaine 6 months prior to treatment admission, and reasons for drug use (i.e., to feel better).

Huessey, cited in Klee, Garfinkel, and Beachesne (1986), reported that compared to the general population, former ADHD children were at twenty times the risk of institutionalization for delinquency or psychiatric disorder. In a 30-year follow-up study, 68 adults were contacted who had had a behavior disorder. Of these, 12 had become psychotic, 34 "never adjusted", 10 were described as having borderline personality disorder, and 7 had criminal records. Only 14 were reported to be doing well in all aspects assessed (Amado & Lustman, 1982). In the psychodynamic view, persons diagnosed with borderline personality disorder may have had a history of ADHD as a child in which neurological dysfunctions could have disrupted "drive level, perception, basic language structure, and cognition, which form a constitutional basis for the distortions of early object relations." (Murray, 1979). Johnson (1988) also found that adults with ADHD may show characteristics that typify the borderline personality such as impulsivity, irritability, poor frustration tolerance, aggressive outbursts and temper
tantrums, readiness to anger, drug and alcohol abuse, suicidal gestures, distractibility, mood swings, and feelings of emptiness and loneliness.

In sum, childhood ADHD can continue into adulthood through numerous developmental pathways which impact functioning. The question, then, is to discover means by which the impact of the influential variables can be identified and differentiated from other disorders in order to provide a direction for treatment. The following proposed study aims to provide a starting point to address these goals by examining the influence of the course of ADHD on personality factors and its potential uniqueness. Two groups will be offered for comparison, adults with ADHD and adults with a major affective disorder.
CHAPTER II

METHOD

Research Questions

Even with the differential course of ADHD, a consistent personality profile may
exist for adults with ADHD. The first hypothesis of this study, therefore, is that adults
diagnosed with ADHD will have a consistent personality profile as measured by the
Minnesota Multiphasic Personality Inventory-Second Edition (MMPI-2). The second
hypothesis is that this profile will not only be consistent across adults diagnosed with
ADHD, it will be unique when compared to persons diagnosed with other psychiatric
disorders. Should the profile emerge unique when compared to adults with other
psychiatric illnesses, gains would be made toward accurate differential diagnosis.
Symptoms of other disorders listed in DSM-IV often include attentional difficulties,
making differential diagnosis a trying task for clinicians. Because the symptomatology of
affective disorders often mimics ADHD but without childhood onset of attentional
difficulties and overactivity, this study will compare subjects with ADHD to subjects with
a major affective disorder.

Such a definitive profile would have implications for assessment and treatment of
ADHD in adulthood. For example, the profile could be used as a screening tool for
ADHD or to recognize the presence of possible ADHD, given an alternative presenting
problem. The consistent existence of particular personality factors associated with adult
ADHD would aid clinicians and physicians by providing insight for conceptualization and treatment planning.

**Subjects**

Fifty-four male and female adults, aged 18 years and older, representative of the demographics of the surrounding community volunteered to participate in this study. Subjects were categorized into two experimental groups, the ADHD group and the Major Affective Disorder group. The ADHD group was solicited from university and community settings. To be included in this group, subjects provided documentation from a licensed psychologist or physician confirming the diagnosis of Attention-deficit/Hyperactivity Disorder or Attention-deficit Disorder. Because of the different diagnostic criteria and labeling, it is not uncommon for adults to be diagnosed with either ADHD or ADD who have the same symptoms. Therefore, the label of ADD does not necessarily connote ADHD Predominantly Inattentive Type. Thus, both diagnoses were accepted for the study. Twenty-six people completed the study in this group over an 18 month collection period.

Subjects in the Major Affective Disorder group were adults who were clinically referred for psychological evaluation at the University of North Texas Psychology Clinic and who completed an MMPI-2 as part of their assessment battery. Those persons whose charts documented a diagnosis of either Major Depressive Disorder or Dysthymic Disorder over the 18 month collection period constituted the Major Affective Disorder Group. Twenty-eight subjects qualified for this group. Table 1 lists demographic variables for the sample.
Instruments

**ADHD Checklist for DSM-IV** (Barkley, 1995). Recently published symptom checklist utilizing **DSM-IV** criteria for diagnosing **ADHD**. Severity scores are obtained for inattention and impulsivity/hyperactivity symptoms.

**MMPI-2** (Butcher, Dahlstrom, Graham, Tellegren, & Kaemmer, 1989). The MMPI and the revised MMPI-2 are the most widely used instrument to assess personality and psychopathology. Either can be used with subjects who are 18 years old or older and who have at least an eighth grade reading level. The MMPI-2 includes a modernization of the content and language of MMPI test items, dropping objectionable items, and revising normative data using a more representative sample. Some new scales were developed; however, most of the original scales remain. For the purposes of this study, the clinical and validity scales were utilized for analysis.

The MMPI-2 has been used with a number of different populations, such as chronic pain patients (Keller & Butcher, 1990); child-abusing families (Egeland, Erickson, Butcher, & Ben-Porath, 1991); military personnel (Butcher et al., 1990); elderly (Butcher et al., 1991); college students (Butcher, Graham, Dahlstrom, & Bowman, 1990; Matz, Altepeter, & Perlman, 1992); couples in marital distress (Hjemboe & Butcher, 1991); substance abusers (Elwood, 1993; Ladd, 1994; Vaeth, Horton, and Ahadpour, 1992; Ward, 1995); and veterans with post-traumatic stress disorder (PTSD) (Frueh, Leverett, & Kinder, 1995).

**Symptom Checklist-90-Revised** (SCL-90-R; Derogatis, 1977). The SCL-90-R is a 90-item self-report measure to assess the psychological symptoms of psychiatric and
medical patients. Each item is measured on a 5-point scale of distress and yields nine clinical scales and three global indices. The SCL-90-R correlates adequately with the MMPI-2 and serves as a severity index of distress (Rojdev, Nelson, Hart, & Forcho, 1994). The Global Stress Index (GSI) was utilized in the study to provide an overall severity score.

**Procedure**

Subjects for the ADHD group were recruited via advertisement in local newspapers, at the campus Office of Disability, and at the offices of local clinicians. Subjects were asked to complete a demographics questionnaire, ADHD Checklist for the **DSM-IV**, the MMPI-2, and the SCL-90-R. Demographic information and MMPI-2 scores were recorded from files of assessment clients at the UNT Psychology Clinic.
CHAPTER III

RESULTS

To address both hypotheses one and two, analyses were performed to examine patterns of MMPI-2 profiles and to identify predictors of group placement. Based on other recent studies utilizing the MMPI-2 with ADHD or LD populations, a mean profile for the ADHD group was first established (Downey, Stelson, Pomerleau, & Giordani, 1997; Gregg, Hoy, King, Moreland, & Jagota, 1992). The means and standard deviations for each group are provided in Table 2. Clinically significant elevations were found for Scales 7 (Psychasthenia) and 8 (Schizophrenia) in the ADHD group and Scales 2 (Depression), 6 (Paranoia), 7 (Psychasthenia), and 8 (Schizophrenia) for the affective disorder group. Statistically significant differences were found for Depression, Paranoia, and Social Isolation with the affective group endorsing more psychopathology than the ADHD group on each of the three clinical scales.

Because of the large standard deviations found on most scales, a unique profile did not distinctively emerge; thus, a cluster analysis was performed to provide a more clinically meaningful look at the data. The procedures used in the cluster analysis followed the recommendations of Aldenderfer and Blashfield (1984). Recent literature has utilized this statistical procedure successfully in studies examining MMPI-2/MMPI profiles (Follette, Naugle, & Follette, 1997; Kinder, Curtiss, & Kalichman, 1991; Ridenour, Miller, Joy, & Dean, 1997; Riley, Robinson, Geisser, & Wittmer, 1993).
A cluster analysis was performed using subscale T-score means as the dependent variables. The 54 subjects were considered in this analysis and each T-score served as a cluster variable. Thus, a total of 12 variables (i.e. validity and clinical scales of the MMPI-2 with the exception of the Mf scale) served as dependent variables and were entered into Ward’s (1963) hierarchical algorithm, using squared Euclidean distance as the similarity measure. The Mf (masculinity/femininity scale) was not used in the cluster analysis due to the reversed scoring for female subjects compared to males as well as the interpretive differences based on gender.

Inspection of the agglomeration coefficient (Table 3) shows that the percentage change makes its largest increase when moving from the three-to the two-cluster solution after relatively small increases. This indicates that the three-cluster solution is the more appropriate one. In addition, the three cluster solution yields three distinct, clinically-meaningful profiles. The mean values of the validity and clinical scale scores for each of the three clusters are listed in Table 4 and are plotted on Figure 2.

Cluster 1

The first cluster reflects severe overall disturbance with clinical elevations on many scales, the highest of which were Schizophrenia (87.4), Depression (83.5), and Paranoia (82.9) with significant elevations also on Hysteria, Hypochondriasis, Psychopathic Deviate, Paranoia, and Social Isolation. The validity scales indicate an exaggerated response set indicative of significant distress. This profile is characterized as an 8-2-6 code type. There were 16 subjects (30%) in this cluster.
Cluster 2

The second cluster shows mild clinical elevations on the Depression (68.3) and Psychasthenia (69.0) scales. This cluster is given the 2-7 code type with all other scales below the 65 point cutoff. The validity scores for this cluster were unremarkable. There were 22 subjects (40%) within this cluster.

Cluster 3

The third cluster has no scale elevations within the clinical range. The highest scale was Psychopathic Deviate (54.1) followed by Mania (53.3) and Hysteria (52.3). This cluster is described as the “Within-Normal-Limit” profile (WNL) and was comprised of 16 subjects (30%).

Within cluster membership, analyses were performed to determine the differences between those diagnosed with an attentional disorder and those diagnosed with an affective disorder. Other potential predictor variables were described as well. Table 4 and Table 5 compare the cluster groups on various diagnostic and demographic variables. No significant differences were found. The ADHD group and the affective disorders group were evenly distributed across the clusters therefore disproving the hypotheses that the ADHD group has a common profile and that this profile significantly differs from the profile of persons with an affective disorder. Significant differences between subjects diagnosed with ADHD-combined, ADHD-inattentive, Major Depression, and Dysthymia were not found (Table 6, Part 2).

Tables 7 and 8 show analyses examining demographic and symptom checklist variables of the ADHD group by cluster. Significant differences were found for the
Global Stress Index (GSI) from the SCL-90 and the presence of a co-morbid diagnosis.

No other significant differences were found on demographic information or the ADHD Rating Scale. Thus, severity of ADHD symptoms in adulthood or childhood, as measured by an instrument derived from DSM-IV diagnostic criteria, did not predict cluster membership.
CHAPTER IV

DISCUSSION

Although limited by the small sample size, this study appears to be the first of its kind to examine personality characteristics of adults with ADHD/ADD as compared with that of adults diagnosed with affective disorders. A few studies have examined alcoholism and ADHD/ADD symptoms on the MMPI (Horton et al., 1989; Tartar, McBride, Buonpare, & Schneider, 1977; Vaeth, Horton, & Ahadpour, 1992; Vaeth et al., 1988). The MMPI has been revised and restandardization to a broader national sample as well as added items which increased the face validity of the MMPI-2 as compared to the MMPI without affecting the psychometric properties (Ben-Porath & Butcher, 1988). The MMPI-2, thus, has replaced the MMPI as a standard instrument widely used for clinical assessment and personality research.

The hypotheses of a unique personality profile which distinguished adults with ADHD from adults with depression were not upheld. Alternatively, the subjects in the sample were highly variable whether in the ADHD group or the affective disorder group. The similarities among the total sample are found on the demographic variables. The sample is of similar age (approximately mid-twenties to early thirties), ethnicity (predominately Caucasian), education (predominately high school graduates with some college), and income (less than $10,000). One unique aspect of this study is that more female subjects participated than men in both the ADHD group and the affective disorder
Although we anticipate more females diagnosed with depressive disorders, more males are typically diagnosed with ADHD (APA, 1994). Gender is equally distributed across the clusters indicating that gender is not, in this sample, a mediating factor to emotional distress. Nonetheless, more research is needed on the seemingly growing group of females diagnosed with ADHD/ADD in adulthood as Biederman and colleagues (1994) have initiated.

In exploring the uniqueness of a personality profile for adults with ADHD/ADD, analyses performed first provide a mean MMPI-2 profile of the ADHD. The ADHD group profiles were compared to the adult norms established by Butcher, Dahlstrom, Graham, Tellegen, and Kaemmer (1989). The mean of the sample yielded elevations on the Psychasthenia (7) and Schizophrenia (8) scales. The 7-8 codetype is characterized by significant emotional turmoil, admission of psychological difficulties, and experience of chronic feelings of inadequacy (Graham, 1993). The configuration of the validity scales of the mean profile suggest endorsement of items relevant to a particular problem area and somewhat adequate functioning in most areas of life (Graham, 1993).

In order to obtain a more descriptive picture of the data than given by the means, a cluster analysis was performed for use in comparing the ADHD group with the affective disorder group. MMPI-2 scores revealed three distinct, clinically meaningful clusters of subjects. Two of the three profile clusters were elevated on one or more of the MMPI-2 clinical scales. Each cluster represented with different, although not mutually exclusive, symptoms of emotional distress. The statistical procedure also identified a group of
individuals who, on the basis of the MMPI-2, demonstrate little psychological distress despite their disorder.

Looking more closely at the cluster groups, 30% of the subjects were in cluster 1. They were on average in their mid-twenties and fairly equally mixed males and females. The subjects in this cluster were identified as having an “exaggerated” response style and the codetype 8-2-6. The 7 scale (Psychasthenia) was elevated close to the others as well. According to Graham (1993), this profile is suggestive of persons who are agitated, tense, confused, and are experiencing marked emotional turmoil. They may lack self-confidence, appear depressed, and display poor judgment. It stands to reason that the ADHD group within this cluster would have significantly more global distress as measured by the SCL-90 than the other clusters. Although not significant, more affective disorder subjects were in this cluster. Also, more subjects with major depression were present in this cluster than dysthymia. ADHD-combined and ADHD-inattentive were equally represented as were persons from the ADHD group with and without comorbid diagnoses.

Additionally, scale elevations on Cluster 1 appear to represent more stable characteristics as opposed to acute symptoms. This pattern suggests a chronicity of difficulties and is likely to indicate the presence of a personality disorder.

Cluster 2 is characterized by the codetype 2-7 and experience difficulties similar to cluster 1 but with less intensity. The validity scales are within normal limits. Persons with this profile tend to be anxious, tense, and may overreact to minor stressors. They may display somatic complaints and vegetative symptoms of depression. Graham (1993)
also indicated that this configuration is suggestive of persons who are somewhat 
dependent, rigid, and intropunitive. This cluster has the most members (40%), has more 
females than males, is slightly older, and is equally represented across all diagnoses. 

None of the ADHD members of this cluster have a comorbid diagnosis.

Members of cluster 3, the remaining 30%, endorsed valid profiles which were 
within normal limits. Surprisingly, more ADHD subjects were represented in this group 
than affective disorder subjects. This may be in part due to the education level of the 
subjects, as education has been shown to be a mediating factor for psychopathology; yet, 
learning disabilities are the most common comorbid diagnoses of the ADHD members of 
the cluster. This may then represent an intelligence level of the subjects which enable 
them to develop compensatory academic, problem-solving, and social skills. Although it 
is not unusual to find a “within normal limits” profile even within a clinical population, 
the average GSI for the ADHD group in this cluster is within normal limits, therefore, 
more likely suggesting no abnormal levels of distress. Nonetheless, no differences 
between ADHD-combined and ADHD-inattentive or the two affective diagnoses were 
evident.

In sum, the hypotheses of the study were not proved, and the variability of adults 
diagnosed with ADHD/ADD was underscored. The DSM-IV has included subtypes to 
delineate the variability of the disorder as a whole, and recent literature has focused upon 
this variability. From compilation of recent studies, National Institute of Mental Health 
(NIMH), in public education available on the Internet, refers to ADHD as an umbrella 
diagnosis consisting of several disorders. Hunt (1997) describes several subtypes of
ADHD which each have different patterns of dysfunction, behavior, and neurochemistry. Perhaps up-coming research will shed light on solidifying these categorization issues.

The ADHD sample in this study, although small, is consistent with that of Downey and her colleagues (1997) in the most comprehensive study to date of psychological assessment of adult ADHD. Similar results were found such as high rates of comorbidity and elevations on MMPI-2 scales on F, 2, 7, and 8. The Downey study also found elevations on 4 (psychopathic deviate) as did the alcoholism studies mentioned above. The psychopathy elevation may likely result from 33.3% of the Downey study sample had histories of alcohol abuse/dependence, 20.5% had histories of drug abuse/dependence, and 12.8% were diagnosed with antisocial personality disorder. As the present study required voluntary participation for minimal compensation, it is likely that persons with antisocial personality were not represented in the sample. Additionally, substance abuse histories were not obtained but could have been under represented in the present sample as well, thus accounting for the scale 4 elevation only in cluster 1.

Downey et al. made a disclaimer applicable to the present study: “This investigation seeks to add useful information to the limited body of knowledge regarding the persistence of ADHD into adulthood.” The limitations of the present study are numerous. The most obvious limitation is the difficulty in obtaining homogenous subjects for study for improved methodology; however, homogeneity may then reduce generalizability because of the heterogeneity apparently typical of the population. The developmental nature of the disorder suggested by the Developmental Causal Model of Risk presented in this study indicate the multidimensional trajectories which can affect
adult outcome and create heterogeneity. Nevertheless, the small sample size is problematic. Cluster analysis appears to provide optimum information with a variable sample. Future studies should attend to other variables which may predict cluster group placement.

Clinical implications for this study suggest that clinicians should not treat all clients with ADHD in the same manner (Ratey, Hallowell, & Miller, 1997). Because of attention paid to comorbidity and negative developmental trajectories, clinicians may tend to view clients in their caseload diagnosed with ADHD as difficult to work with and treat; however, this study suggested that the affective disorder group was more likely to endorse high levels of psychopathology than the ADHD group. Adults with ADHD and a comorbid diagnosis may, however, be more likely to present for psychological services than those adults without a comorbid diagnosis who may have developed successful coping. Multiple scale elevations on the MMPI-2 and a thorough developmental history during a diagnostic assessment may help focus the clinician on the multidimensionality of the conceptualization. Nonetheless, clinicians are encouraged to keep an open-mind regarding ADHD in adulthood.
APPENDIX A

DSM-IV CRITERIA FOR ADHD
DSM-IV Criteria for ADHD

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 6 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 situation in which remaining seated is expected

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

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

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

(f) often talks excessively

Impulsivity

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

(h) often has difficulty awaiting turn

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

B. Symptom onset before age 7 years.

C. Clinically significant impairment and symptoms present in two or more settings.
APPENDIX B

UTAH CRITERIA FOR ADD-RT
Utah Criteria for ADD-RT

A. Childhood history

1. Fidgety, restless, always on the go, talking excessively
2. Attention deficits
3. Behavior problems in school
4. Impulsivity
5. Overexcitability
6. Temper outbursts

B. Presence of ADD in adulthood

1. Persistent motor hyperactivity
2. Attention deficits
3. Affective lability
4. Inability to complete tasks
5. Hot temper, explosive short-lived outbursts
6. Impulsivity
7. Stress intolerance
APPENDIX C

DEVELOPMENTAL CAUSAL MODEL OF RISK DIAGRAM
Childhood Co-Morbidity

- Self Esteem
- Self Concept
- Family Problems
- Social Skill Deficits

The At-Risk Adult

Familial Influences
- Genetic
- Environmental

Adulthood Pressures
- Vocational Problems
- Relationship Difficulties
APPENDIX D

TABLES
Table 1

Demographic variables of sample

<table>
<thead>
<tr>
<th></th>
<th>ADHD Group n = 26</th>
<th>Affective Group n = 28</th>
<th>Value</th>
<th>Signif. level</th>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>22</td>
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<tr>
<td>Did not report</td>
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</table>
Table 2

**MMPI-2 K-corrected T-score means and standard deviations by group**

| MMPI-2 Scale | ADHD Group  
|---------------|-------------|--------------------------------|----------------|----------------|
|               | n = 26      | Affective Group  
|               |             | n = 28                      | F-Value        | Signif. Level |
| L             | 50.0 (11.1) | 48.5 (8.7)                  | 2.317          | n.s.          |
| F             | 64.0 (22.8) | 68.2 (18.7)                 | .490           | n.s.          |
| K             | 45.2 (11.1) | 40.7 (8.7)                  | 1.248          | n.s.          |
| Hs            | 56.9 (11.3) | 63.1 (12.8)                 | .311           | n.s.          |
| D             | 60.5 (15.4) | 73.1 (16.4)                 | .368           | p<.01         |
| Hy            | 59.2 (12.6) | 62.4 (14.4)                 | .498           | n.s.          |
| Pd            | 61.4 (12.5) | 65.5 (14.4)                 | 1.339          | n.s.          |
| Mf            | 53.1 (11.3) | 54.2 (13.7)                 | 1.410          | n.s.          |
| Pa            | 59.9 (14.7) | 68.1 (15.3)                 | .654           | p<.05         |
| Pt            | 67.4 (13.0) | 68.8 (14.8)                 | .141           | n.s.          |
| Sc            | 66.5 (17.0) | 68.1 (17.1)                 | .084           | n.s.          |
| Ma            | 59.6 (13.2) | 53.5 (11.8)                 | .249           | n.s.          |
| Si            | 50.8 (11.4) | 61.6 (12.0)                 | .006           | p=.001        |
Table 3

Agglomeration coefficients for cluster analysis

<table>
<thead>
<tr>
<th>Number of clusters</th>
<th>Agglomeration coefficient</th>
<th>Change in coefficient to next level.</th>
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<tbody>
<tr>
<td>7</td>
<td>40289.273</td>
<td>9%</td>
</tr>
<tr>
<td>6</td>
<td>44068.379</td>
<td>11%</td>
</tr>
<tr>
<td>5</td>
<td>49129.754</td>
<td>12%</td>
</tr>
<tr>
<td>4</td>
<td>54923.543</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>60946.648</td>
<td>20%</td>
</tr>
<tr>
<td>2</td>
<td>73491.922</td>
<td>78%</td>
</tr>
<tr>
<td>1</td>
<td>131219.594</td>
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</tr>
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Table 4

Means and standard deviations of MMPI-2 K-corrected T-scores for each cluster

<table>
<thead>
<tr>
<th></th>
<th>Cluster 1</th>
<th>Clustering 2</th>
<th>Cluster 3</th>
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<tbody>
<tr>
<td></td>
<td>n = 16</td>
<td>n = 22</td>
<td>n = 16</td>
</tr>
<tr>
<td>L</td>
<td>46.6 ( 7.4)</td>
<td>51.4 (10.2)</td>
<td>48.9 (11.4)</td>
</tr>
<tr>
<td>F</td>
<td>93.2 (12.3)</td>
<td>59.5 ( 9.0)</td>
<td>48.3 ( 7.7)</td>
</tr>
<tr>
<td>K</td>
<td>35.7 ( 5.3)</td>
<td>44.5 (10.4)</td>
<td>47.7 ( 9.7)</td>
</tr>
<tr>
<td>Hs</td>
<td>69.7 (11.8)</td>
<td>60.1 (10.6)</td>
<td>50.6 ( 7.2)</td>
</tr>
<tr>
<td>D</td>
<td>83.5 (11.8)</td>
<td>68.3 (11.6)</td>
<td>48.9 ( 7.0)</td>
</tr>
<tr>
<td>Hy</td>
<td>68.5 (17.1)</td>
<td>60.8 (10.7)</td>
<td>53.3 ( 8.4)</td>
</tr>
<tr>
<td>Pd</td>
<td>77.8 (10.2)</td>
<td>60.0 ( 9.8)</td>
<td>54.1 ( 8.9)</td>
</tr>
<tr>
<td>Mf-Female</td>
<td>54.9 (13.2)</td>
<td>54.1 (17.5)</td>
<td>51.0 ( 7.8)</td>
</tr>
<tr>
<td>Mf-Male</td>
<td>58.9 ( 9.8)</td>
<td>52.6 (11.8)</td>
<td>50.5 (11.0)</td>
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<tr>
<td>Pa</td>
<td>82.9 (12.3)</td>
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<td>52.0 ( 8.6)</td>
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<tr>
<td>Pt</td>
<td>82.4 ( 7.5)</td>
<td>69.0 ( 5.1)</td>
<td>52.5 (10.3)</td>
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<tr>
<td>Sc</td>
<td>87.4 (13.6)</td>
<td>64.2 ( 6.0)</td>
<td>51.6 ( 8.1)</td>
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<td>Ma</td>
<td>62.6 (10.9)</td>
<td>54.3 (14.7)</td>
<td>53.3 ( 9.8)</td>
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<tr>
<td>Si</td>
<td>67.8 ( 9.1)</td>
<td>57.1 ( 9.9)</td>
<td>44.1 ( 7.9)</td>
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</tbody>
</table>

L, lie; F, infrequency; K, correction; Hs, hypochondriasis; D, depression; Hy, hysteria; Pd, psychopathic deviate; Mf, masculinity/femininity; Pa, paranoia; Pt, psychasthenia; Sc, schizophrenia; Ma, hypomania; Si, social introversion.
Table 5

Comparison of cluster subgroups on possible predictor variables

<table>
<thead>
<tr>
<th></th>
<th>Cluster 1 ( n = 16 )</th>
<th>Cluster 2 ( n = 22 )</th>
<th>Cluster 3 ( n = 16 )</th>
<th>Value</th>
<th>Signif. level</th>
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<tr>
<td>Age</td>
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<td>( F=2.297 )</td>
<td>n.s.</td>
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<tr>
<td>Gender</td>
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<td></td>
</tr>
<tr>
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<td>14</td>
<td>12</td>
<td>( X^2=.151 )</td>
<td>n.s.</td>
</tr>
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<td>4</td>
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<tr>
<td>Ethnicity</td>
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<td></td>
</tr>
<tr>
<td>Caucasian</td>
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<td>19</td>
<td>16</td>
<td>( X^2=6.231 )</td>
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<td>Education</td>
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<tr>
<td>High School</td>
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<td>8</td>
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<td>Income</td>
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<tr>
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<td>16</td>
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<td>( X^2=.905 )</td>
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<td>Did not report</td>
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<td>1</td>
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Table 6

Comparison of cluster subgroups on diagnostic variables

Part 1

<table>
<thead>
<tr>
<th></th>
<th>Cluster 1 n = 16</th>
<th>Cluster 2 n = 22</th>
<th>Cluster 3 n = 16</th>
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<th>Signif. level</th>
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<td>10</td>
<td>10</td>
<td>.348</td>
<td>n.s.</td>
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<td>Affective Disorder</td>
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<td>12</td>
<td>6</td>
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</tbody>
</table>

Part 2

<table>
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<th></th>
<th>Cluster 1 n = 16</th>
<th>Cluster 2 n = 22</th>
<th>Cluster 3 n = 16</th>
<th>X² Value</th>
<th>Signif. level</th>
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<tbody>
<tr>
<td>Attention</td>
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<td>ADHD-combined</td>
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<td>4.174</td>
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<td>Affective</td>
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<td>Dysthymia</td>
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Table 7

ANOVA's of ADHD group by cluster subgroup

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<td>A-hyp sev.</td>
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</tr>
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<td>12.1 (5.2)</td>
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<tr>
<td>A-total #</td>
<td>10.5 (2.9)</td>
<td>8.6 (4.8)</td>
<td>8.1 (5.3)</td>
<td>0.519</td>
<td>n. s.</td>
</tr>
<tr>
<td>A-total sev.</td>
<td>32.8 (5.9)</td>
<td>27.6 (12.8)</td>
<td>23.5 (8.8)</td>
<td>1.616</td>
<td>n. s.</td>
</tr>
<tr>
<td>C-hyp #</td>
<td>7.2 (1.2)</td>
<td>4.5 (2.7)</td>
<td>6.2 (2.5)</td>
<td>2.689</td>
<td>n. s.</td>
</tr>
<tr>
<td>C-hyp sev.</td>
<td>20.2 (3.2)</td>
<td>14.1 (7.5)</td>
<td>17.2 (5.2)</td>
<td>2.061</td>
<td>n. s.</td>
</tr>
<tr>
<td>C-inatt #</td>
<td>6.3 (3.2)</td>
<td>6.0 (3.1)</td>
<td>5.5 (3.1)</td>
<td>0.145</td>
<td>n. s.</td>
</tr>
<tr>
<td>C-inatt sev.</td>
<td>18.5 (7.0)</td>
<td>17.7 (6.8)</td>
<td>16.1 (6.2)</td>
<td>0.282</td>
<td>n. s.</td>
</tr>
<tr>
<td>C-total #</td>
<td>13.5 (4.1)</td>
<td>10.5 (5.3)</td>
<td>11.7 (5.2)</td>
<td>0.672</td>
<td>n. s.</td>
</tr>
<tr>
<td>C-total sev.</td>
<td>38.7 (10.1)</td>
<td>31.8 (12.9)</td>
<td>33.3 (10.3)</td>
<td>0.711</td>
<td>n. s.</td>
</tr>
</tbody>
</table>

SCL-90 GSI=Global Stress Index; Adult ADHD Scale A-hyp # = number of current hyperactive/impulsive symptoms; A-hyp sev = severity of current hyperactive/impulsive symptoms; A-inatt # = number of current inattention symptoms; A-inatt sev = severity of current inattention symptoms; A-total # = number of total current symptoms; A-total sev = severity of total symptoms; C-hyp # = number of childhood hyperactive/impulsive symptoms; C-hyp sev = severity of childhood hyperactive/impulsive symptoms; C-inatt # = number of childhood inattention symptoms; C-inatt sev = severity of childhood inattention symptoms; C-total # = number of total childhood symptoms; C-total sev = total severity of childhood symptoms.
Table 8

Pearson's Chi-Square Tests of ADHD group by cluster subgroups

<table>
<thead>
<tr>
<th></th>
<th>Cluster 1 n = 6</th>
<th>Cluster 2 n = 10</th>
<th>Cluster 3 n = 10</th>
<th>X² Value</th>
<th>Signif. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>0.189</td>
<td>n. s.</td>
</tr>
<tr>
<td>Male</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Caucasian</td>
<td>4</td>
<td>8</td>
<td>10</td>
<td>3.467</td>
<td>n. s.</td>
</tr>
<tr>
<td>Minority</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2.957</td>
<td>n. s.</td>
</tr>
<tr>
<td>Some College</td>
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<td>5</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Degree</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 10K</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>0.605</td>
<td>n. s.</td>
</tr>
<tr>
<td>Over 10K</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did not report</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comorbidity</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>2</td>
<td>8</td>
<td>3</td>
<td>5.867</td>
<td>n.s.</td>
</tr>
<tr>
<td>Comorbid Diagnosis</td>
<td>4</td>
<td>2</td>
<td>7</td>
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</tr>
<tr>
<td>Medication</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Yes</td>
<td>5</td>
<td>8</td>
<td>7</td>
<td>0.462</td>
<td>n. s.</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 1

MMPI-2 T-scores by cluster group

L, lie; F, infrequency; K, correction; Hs, hypochondriasis; D, depression; Hy, hysteria; Pd, psychopathic deviate; Mf, masculinity/femininity; Pa, paranoia; Pt, psychasthenia; Sc, schizophrenia; Ma, hypomania; Si, social introversion.
REFERENCES


