DEVELOPMENT AND VALIDATION OF THE CHECKLIST
FOR DIFFERENTIAL DIAGNOSIS OF
ATTENTIONAL PROBLEMS

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

Cindy J. Taylor, B.A., M.A.
Denton, Texas
May, 1999
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The current study discussed the development and validation of the Checklist for Differential Diagnosis of Attentional Problems (CDDAP), a tool for use with adults seeking diagnosis and treatment of an Attention Deficit Hyperactivity Disorder. Normative data are provided on three subject groups (ADHD adults, controls, and adults with other psychiatric disorders). Convergent validity was established with the SCL-90, and criterion validity established through comparing scaled scores with final diagnoses. Overall, this measure was accurate at differentiating adults with ADHD from controls and adults with other psychiatric disorders. Results indicated that the CDDAP was also able to identify other psychiatric disorders with 71 to 92% accuracy, depending on the disorder.
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Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common childhood disorders, affecting from three to ten percent of children. Since 1972, when ADHD was first recognized in adults as Adult Brain Dysfunction (Mann & Greenspan, 1972), its acceptance as a valid diagnosis for adults has increased. Longitudinal, retrospective, and family studies indicate that this disorder often continues well into adolescence and adulthood for a large proportion of affected individuals (Manuzza, Klien, Bonagura, Konig, & Shenker, R., 1988; Morrison & Stewart, 1971; Weiss, Hechtman, Milroy & Perlman, 1985).

Recent media coverage on the topic of ADHD in adults has considerably increased the number of self-referred individuals for diagnosis and treatment of ADHD. Dealing with these self-referred adults can be problematic for several reasons. These clients are well educated and informed about the symptoms of ADHD, have completed numerous checklists published in books, and many are convinced that they have the disorder prior to coming for the evaluation. What many of these individuals are seeking is a confirmation of their own suspicions rather than diagnosis and treatment of their condition.

At times, clinicians have difficulty helping clients understand their condition and the need for treatment. With the self-referred ADHD population, the clinician can be placed in the position of convincing individuals that they do not have a mental disorder, or
that they do not have the disorder they believe they have. Part of the problem lies in the
fact that although these clients are very informed about ADHD, they are not as well
informed about other disorders whose symptoms are similar to ADHD, and some have
difficulty understanding the reason they are not diagnosed with ADHD when they appear
to meet diagnostic criteria. Some of these clients have also seen or heard testimonials
from others about the wonders of stimulant medication in the treatment of ADHD, and
most of them seek services with the expectation of being placed on stimulant medication.
It is not uncommon to find clients that have already tried Ritalin--some even at the
instigation of a family physician, others by taking from their children's supply--as a trial to
determine for themselves if they have ADHD.

For many individuals who do not have knowledge of the treatability of other
conditions, the investment in having ADHD is great because of the hope for successful
treatment. Indeed, for the individual who truly has a history of ADHD and continues to
experience symptoms of the disorder, diagnosis and treatment can have a significant
positive effect on the quality of his or her life. A positive aspect of this current dilemma is
that many people who would never have sought therapeutic or psychiatric treatment are
now seeking services, and thus have the opportunity to avail themselves of treatment
interventions that can similarly provide welcome effects in their lives, regardless of the
diagnosis.

The focus of the current review is a discussion of the validity and varying
diagnostic criteria for adult ADHD, the differential and dual diagnoses of adults with
ADHD, and models of attentional assessment which may be useful with this population,
the limitations of these models if used alone, and lastly, a review of the uses of Ritalin
because of its prominence in clients' expectations, physicians' tendency to prescribe it, and
the frequent use of it as a diagnostic tool instead of requiring a comprehensive
psychological assessment.

Validity of ADHD in Adults

The validity of the diagnostic category for ADHD in adults stems from two main
lines of research: longitudinal and retrospective. The longitudinal research, which has
been done primarily by the Montreal group (Hechtman, 1991; Weiss, et al, 1985),
followed children with ADHD through their teen years and into adulthood making
periodic reports of these individuals' development and the course of the disorder.
Essentially, Weiss and her colleagues found that ADHD did not disappear at puberty in all
of the subjects as previously assumed, nor did it continue unabated in all cases. According
to these researchers, a more accurate description of the course of ADHD is that for
approximately two-thirds of the individuals diagnosed with ADHD in childhood, at least
one of the core symptoms remained (Greenfield, Hechtman, & Weiss, 1988; Hechtman,
1989; Hechtman, 1991). This is an important consideration in the assessment of ADHD in
adults, because the subsequent treatment is likely to vary with the residual symptom. In
other words, treatment may differ for an individual whose remaining symptom is
impulsivity versus one having attentional difficulties. Similarly, treatment of individuals
with only a diagnosis of ADHD will differ from that of individuals having developed other
psychiatric disorders.
Longitudinal studies of children with ADHD have produced various results. The previously mentioned longitudinal research (Hechtman, 1991) indicated that ADHD children continue to have symptoms of restlessness, inattention, and cognitive difficulties. These symptoms often result in academic, social and emotional problems in adolescence. Adult outcome generally fell into three groups: fairly normal, persistent problems, and serious psychiatric and/or social pathology. In another longitudinal study, Mannuzza and colleagues (1993) examined adults previously diagnosed with ADHD as children and found that only approximately eight percent continued to meet the full ADHD criteria by adulthood.

Other studies have suggested a less positive outcome. Biederman (1991) found ADHD to persist into adolescence and adulthood and also suggested that having ADHD in childhood led to increased risk for the development of antisocial behaviors, substance abuse, and psychopathology in adulthood. Manuzza and colleagues (1988) found that, as adults, ADHD subjects had completed less formal schooling than controls and that although 90 percent of the subjects were gainfully employed, the jobs were of lower occupational ranking than controls. The higher incidence of antisocial disorder in this population is in question. Two studies have found a separate prognosis for those subjects with aggressive traits rather than for the majority of children with ADHD (Herrero, et al., 1994; Loney, et al., 1981). Other studies found lowered psychosocial functioning in adults with ADHD as well as cognitive differences (Biederman, et al., 1993).

Retrospective studies performed by the Utah group (Wender, Reimherr, & Wood, 1981; Wood, 1986; Wood, Reimherr, & Wender, 1976) utilized adult subjects and
retrospectively examined childhood behaviors. Initial diagnostic criteria for adults—the Utah Criteria—were established through these studies, and were much needed given the state of the existing DSM-III and DSM-III-R criteria and their focus on children. The main contribution of the Utah criteria was the inclusion of mood, or secondary symptoms common to adults. The rapidly shifting moods, low frustration tolerance, and temper outbursts seen in many individuals with ADHD were, and continue to be, absent from the DSM criteria. However, the most recent edition of the Diagnostic and Statistical Manual of Mental Disorders (APA, 1994) does include adult situations (i.e. "work") if not secondary symptomatology commonly found in adults.

Research indicates that a large percentage of individuals with ADHD also experience other psychiatric disorders. One study of ADHD in adulthood found that of 56 subjects presenting with symptoms of residual ADHD, only 7 had a diagnosis of ADHD alone (Shekim, 1990). According to Shekim’s research, 86% of the subjects with ADHD also had another psychiatric condition. One possible explanation for the extremely high comorbidity in this population could be that most adult ADHD is not severe enough to seek treatment for on its own, therefore, the clients seen in outpatient clinics for diagnosis of ADHD actually have additional psychiatric problems which exacerbate their symptoms. However, another examination of comorbidity included both referred and non-referred adults with ADHD. Although only 36 non-referred adults were included in this study, findings were very similar with fully 77% of the subjects with ADHD having another psychiatric diagnosis (Biederman, et al., 1993). Ratey (1992) evaluated 60 adults whose ADHD had gone undiagnosed. The author suggests that these subjects' ADHD had gone
unrecognized because they had presented with atypical symptoms or had perhaps found ways to compensate for their deficits. These subjects had sought previous psychiatric care and had numerous treatment attempts. Most had been treated (unsuccessfully) for mood or anxiety disorders.

**Diagnostic Criteria**

As the validity of ADHD in adults has been established over time, diagnostic criteria have also undergone changes. These changes reflect changes in the definition of the syndrome in its residual state, including the extent and nature of symptoms, and their adult manifestations.

The Utah criteria are widely used to diagnose ADHD in adults, particularly in research settings. In addition to having childhood ADHD, the individuals must exhibit the first two criteria (hyperactivity and inattention), and at least two others from the remaining list (Wood, 1986).

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
Barkley (1990) cautions that the Utah Criteria should be used only as a guideline due to their lack of empirical validation, and to the fact that recommended cutoffs are not based on any field tests or normative data.

According to the DSM-III, there were three types of attention deficit disorder: with hyperactivity (ADD-H), without (ADD), and Residual Type (ADD,RT). Under these criteria, "signs of hyperactivity are no longer present, but other signs of the illness have persisted to the 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" (APA, 1980).

Because follow-up studies indicated that hyperactivity, in many cases, continues to be present, some clinicians adopted the DSM-III-R method which does not group symptomatology under the three major headings of impulsivity, hyperactivity, and inattention, but rather required a specified number of overall symptoms indicative of ADHD. According to the DSM-III-R, diagnostic choices no longer included a residual type, only ADHD or Undifferentiated ADD. The latter diagnosis is similar to the DSM-III's ADD,RT and ADD, without hyperactivity, but includes attentional difficulties only. The revised DSM-III-R symptom list for childhood ADHD is listed in Table 1 for comparison.

Revised criteria have also been suggested for certain populations, such as alcoholics. Prior to the revision of the DSM-III, Horton and his colleagues (1987) suggested that diagnosis of ADD,RT in alcoholics should be done on the basis of absolute number of symptoms rather than the DSM-III symptom constellation. In a replication
study, Horton used the new DSM-III-R criteria with alcoholics and suggested a cutoff score of seven (1990).

The disagreement among the various criteria revolves around uncertainty regarding which symptoms actually continue into adulthood. According to the Utah criteria, hyperactivity and inattention persist, whereas the DSM-III required the presence of inattention and impulsivity, claiming that hyperactivity abated in adolescence. The DSM-III-R provides the least stringent criteria requiring only the presence of inattention. One point of agreement in the literature was that the diagnostic criteria for ADHD in its residual state was in need of empirical validation.

Another issue is the distinction between primary, or core, symptoms of ADHD and secondary. Primary symptoms include inattention, impulsivity, and hyperactivity. Secondary symptoms include affective lability, hot temper/explosive outbursts, stress intolerance, and the inability to complete tasks. The Utah criteria's inclusion of impulsivity, a primary symptom, within the secondary symptom grouping is curious, as is the mutual exclusion of ADHD and mood and/or certain personality disorders.

In summary, the Utah criteria requires the presence of hyperactivity and inattention plus two of the secondary symptoms. The DSM-III required inattention and impulsivity for the residual diagnosis, and DSM-III-R required 8/14 symptoms present for ADHD, or inattention only for Undifferentiated ADD, both of which can be seen in a residual state.

The new DSM-IV criteria, listed in Table 2, are similar to the DSM-III criteria in that the symptoms are grouped into the familiar headings of attention and hyperactivity.
Nine symptoms are listed under inattention, and nine under hyperactive-impulsive for a total of eighteen symptoms. An additional diagnosis under the new criteria is ADHD, NOS for individuals who do not meet criteria for either type of ADHD, but have symptoms of inattention or hyperactivity-impulsivity. Additional qualifiers also exist for diagnosing ADHD which is in partial remission.

Some difficulties in making an accurate diagnosis of ADHD in adults still exist with the DSM-IV criteria. One problem in actual practice is criterion E which states, in part, that "symptoms ... are not better accounted for by another mental disorder (e.g. Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder)." The problem lies in the fact that many disorders subsume enough of the symptoms of ADHD to meet diagnostic criteria. An individual who is depressed, for example, would experience most of the symptoms listed under Inattention. The other side of the coin is the individual who actually does have ADHD and is depressed over numerous academic, employment, and relationship failures caused by attentional difficulties. The diagnosis and subsequent treatment of depression, may in this case, be of minimal long term help. Differential and dual diagnoses will be discussed in the next section.

Because all of the criteria specify childhood onset of symptoms, the clinician diagnosing ADHD in adulthood is actually making two simultaneous diagnoses: the present adult diagnosis, and a retrospective diagnosis of ADHD in childhood. Although this determination is difficult, many individuals have a prior history of treatment with psychostimulant medication making some cases fairly clear. Other youngsters, however, had ADHD, Predominantly Inattentive Type, and were probably considered "slow" or
"lazy" more often than attentionally deficient. Diagnosis is more problematic and less definitive in these instances.

The previously mentioned variations and changes in diagnostic criteria also create a research problem in that the childhood literature is confounded by the mixing of groups like "ADD with and without aggressive features", for example, which is probably closer to Oppositional Defiant Disorder or Conduct Disorder and has different outcomes in adulthood. Finding a homogeneous group of ADHD adults is problematic in actual practice because of the high frequency of various comorbid diagnoses. Another problem is that the manifestations of the disorder in adulthood are different than those in childhood and should probably not be assessed in the same way.

Dual and Differential Diagnosis of ADHD in Adults

As previously stated, many disorders in the current classification system subsume enough of the symptoms of ADHD to meet diagnostic criteria. For this reason, differential diagnosis can be problematic. Additionally, ADHD adults often present with a variety of symptoms, and some have developed other psychiatric disorders during their lifetime, which makes dual diagnoses commonplace in this population. The following section examines some of the disorders which can mimic ADHD symptoms, and therefore, need to be ruled out.

Schizophrenic Spectrum Disorders

Some of the thought disorders in their milder forms, including their prodromal and residual stages, are similar in some ways to ADHD. Similarities include difficulties with speech, thinking, and perception. Based upon a limited number of subjects, ADHD
individuals tend to make many irrelevant remarks during tests, and on instruments such as the Rorschach, special scores should be interpreted with caution. Another similarity is with use of the MMPI-2. Due to the loading of questions related to failing to remain on task, difficulties concentrating, etc., the Schizophrenia scale, and at times the Depression scale will often be elevated on this instrument. The main difference is that there are no hallucinations or delusions reported in individuals with ADHD. Objectively measured attentional deficits have been found among both medicated and nonmedicated schizophrenic subjects (Harvey, et al., 1990) and it is also important to note that research indicates that first degree biologic relatives of schizophrenics experience attentional problems (Holzman & Matthysse, 1990).

Schizotypal personalities experience anxiety in social situations, odd behavior, few friends, odd speech, and mildly inappropriate affect. Some ADHD people are fairly immature and can get "silly" at times. Their behavior and affect may also be inappropriate for their age, but they are typically very responsive, social, likable and quick to reciprocate facial expression. In the same cluster, Obiols (1992) compared the performance of schizotypic, schizophrenic, and controls on the continuous performance test. Results indicate that the more behaviorally affected subjects showed the greater deficit. In other words, the control subjects performed best and the schizophrenic patients worst. In another study, schizotypic subjects showed a subtle sustained attention deficit on a Continuous Performance Test-Identical Pairs (Lenzenweger, et al., 1991). Carter (1993) administered the Stroop Color and Word Test and found an increased interference effect among paranoid schizophrenics.
These performance deficits on the CPT and the Stroop are similar to the well known findings of objective attentional deficits among ADHD children (Douglas, 1972). In a more recent study, Lavoie (1994) also found that ADHD subjects had a significantly lower color word score on the Stroop and showed more hesitations than either controls or disruptive subjects without attentional problems, which is similar to the results of testing with schizophrenics and schizotypic subjects mentioned above.

Affective Disorders

**Mania.** The individual with Bipolar Disorder will also be experiencing enough symptoms of ADHD to meet criteria for the disorder. Excessive activity, flight of ideas, talkativeness, distractibility and restlessness are common to both disorders; however, the onset of Bipolar Disorder is usually more clearly identifiable than ADHD. Although there may be excitability in ADHD, the mood is usually not abnormally expansive or elevated, and will have much shorter duration than the moods associated with Bipolar Disorder. The overactivity is also more likely to be goal directed in manic episodes (Myers, et al., 1989).

**Depression.** Individuals experiencing a Major Depression, particularly if agitated will also share symptoms of ADHD. Depressed mood, psychomotor agitation, feelings of worthlessness (to some degree), and diminished ability to think or concentrate are often found in adults with ADHD. A lifetime of underachievement typically leads to mild depression, which may become more severe in times of increased stress. ADHD symptoms, however, do not include vegetative signs of depression, and suicidal ideation
is fleeting if present. There also is not usually a deterioration, or change, in functioning (Wender, et al., 1981).

For the reasons mentioned above, the milder form of depression, Dysthmic Disorder, is commonly found in individuals with ADHD, but often identified by the client as an ongoing sense of dissatisfaction and low self esteem. Depressed mood, distractibility, and irritability are common among both conditions, however, the fatigue associated with ADHD is usually related to the effort these individuals must expend in order to sustain attention and complete tasks. Low frustration tolerance can lead to irritability, but usually clear periods of good moods and even mild euphoria are present in ADHD.

Cyclothymia. Without appropriate historical information, current presentations of ADHD and Cyclothymia can be almost indistinguishable in some subjects. The relatively minor mood swings (in comparison to Bipolar Disorder), the overactivity, inattention, and impulsivity are often seen in both. In addition, although the mood swings in ADHD are generally of shorter duration, some ADHD individuals have mood swings that last more than a few hours, and at times up to a few days. The moods are usually of less intensity and more often than not, are externally precipitated. One researcher reported that ADHD adults complained of labile mood since childhood characterized by "ups" and "downs" that lasted from hours to days. These subjects reported that as they grew older, however, the "ups" tended to disappear while the recurrent "downs" persisted (Wender, et al., 1981).
Schizoaffective. For the previously mentioned difficulties with affective and cognitive functioning, ADHD may also resemble mild forms of Schizo-Affective Disorder. Again, no hallucinations and delusions are present, and mood disturbances are not as severe.

**Personality Disorders**

**Obsessive Compulsive Personality Disorder.** One of the most common "self-diagnosed" referrals for ADHD testing is Obsessive Compulsive Personality Disorder. These individuals exhibit poor task completion and preoccupation with schedules and lists; their ruminations are quite distracting to them, and the perfectionistic outlook causes them to feel they are not doing as well as they should be. They also are unable to complete work on time, again due to perfectionist standards. Individuals with ADHD also feel as if they are not living up to their potential, and have usually been told this many times in their lives. This feeling is so common, in fact, that is has been listed as part of the proposed diagnostic criteria in adults (Hollowell & Ratey, 1994). Their standards, however, are usually more realistic; and whereas the person with Obsessive Compulsive Personality Disorder may feel disorganized, the ADHD individual usually is.

An interesting finding with respect to Obsessive Compulsive Personality Disorder is that some of the ADHD adults have developed this obsessive compulsive style as a compensatory strategy. They have become aware enough of their symptoms to know that if they get off task or off schedule, they are unlikely to return to it easily. A rigidity begins to develop in order to achieve their goals. This productivity, however, at times comes at the expense of spontaneity and relaxation. These individuals are very anxious
and become very angry when distracted. Things must be done in a certain, predetermined, preplanned way or they become anxious. Additionally, some ADHD adults have internalized the high expectations of parents and can make excessive demands on themselves (Hollowell & Ratey, 1994).

Borderline Personality Disorder. Another of the behaviorally similar disorders is Borderline Personality Disorder. The unstable personal relationships, impulsiveness, affective instability, displays of temper, and feelings of boredom are similarities. Differences are suicidal gesturing, self-mutilating behavior, and identity disturbance, although through the history of underachievement and career difficulties, ADHD individuals may have some identity confusion as well. The Utah criteria suggests that the diagnosis of Borderline Personality Disorder and ADHD are mutually exclusive, however, at least one case study has shown the effectiveness of considering these two conditions together in treatment (VanReekum & Links, 1994).

Antisocial Personality Disorder. One of the most researched disorders in connection with ADHD is Antisocial Personality Disorder. Cantwell (1988) discusses the relationship of ADHD to conduct, affective disorders and later substance abuse disorders. Dykman (1993) found that children with ADHD who were also hyperactive and aggressive were at increased risk to have oppositional and conduct disorders. Lilienfeld (1990) reviewed the literature on ADHD and antisocial behavior. Findings from longitudinal, family and adoption, neuropsychological, psychophysiological, and other laboratory studies reviewed indicate that childhood ADHD is associated with adult disorders characterized by antisocial behavior. The relationship between ADHD and
Conduct Disorder is also recognized, however, and there is still a question of whether this finding simply represents the continuation of conduct problems from childhood to adulthood. Manuzza's (1993) study of 91 adults diagnosed with ADHD as children found hyperactive subjects more than seven times more likely to have an antisocial personality disorder or a drug abuse problem than controls. The previously mentioned work by Loney and colleagues (1991), however, indicates that aggressiveness rather than ADHD is the better predictor of antisocial behaviors in adulthood.

**Passive Aggressive Personality Disorder.** Finally, criteria for Passive Aggressive Personality Disorder, a DSM-III-R diagnostic category, includes forgetfulness, failure to complete tasks, angry outbursts, anxiety which may manifest as fidgetiness, authority problems, procrastination, and general inefficiency. Many ADHD individuals could have met this DSM-III-R criteria; however, they are typically overtly aggressive, and do not hold a grudge. They are also usually bothered by their performance and level of efficiency. Because this diagnosis does not appear in our current criteria, however, it is not necessary to differentiate the two.

**Anxiety Disorders**

**Obsessive Compulsive Disorder.** Obsessive Compulsive Disorder, characterized by obsessive thinking and compulsive behaviors can to some degree mimic the inattention and "hyperfocus" seen in ADHD. However, as previously mentioned, ADHD individuals typically develop ritualistic behaviors as compensatory strategies. One individual, whose nickname was "keys" because he lost his keys so frequently, developed ritualistic checking behaviors which revolved around his leaving the house with the keys,
and not locking them in his car. Interestingly, a study by Hollander (1993) found that OCD patients did not show impairment on tasks of immediate memory or focused attention, and therefore it may be possible to differentiate the two through objective measures as well as through clinical interview.

**Generalized Anxiety.** Anxiety is a frequent comorbid condition among individuals with ADHD. Dykman (1993) discovered that children with ADHD without hyperactivity had higher rates of anxiety and depression than those with hyperactivity. McClellan (1990) also found a comorbidity of ADHD, anxiety and/or depression in children ages 7 to 17. It is important to note that in addition to the comorbidity of these disorders, adults with anxiety disorders also had difficulty performing on tasks of selective attention. Fox (1993) studied high and low anxiety subjects and results suggest that high trait anxiety may be associated with a general inability to maintain attentional focus rather than a specific attentional bias to anxiety producing stimuli. This attentional difficulty was also found in individuals experiencing a social phobia (Mattia, 1993). These socially phobic subjects showed greater response latencies on a modified Stroop task regardless of whether the stimulus words were threatening, neutral, or the original color words.

**Post-Traumatic Stress Disorder.** Another group of self-diagnosed individuals actually have Post-Traumatic Stress Disorder. Most typically they are from abusive homes and present with difficulty sleeping, irritability or outburst of anger, difficulty concentrating, hypervigilance, and exaggerated startle response. Traumatic events are usually not part of the presentation of ADHD, although some have a history of fairly
severe discipline. With ADHD there is no avoidance although emotional sensitivity is present. In a few cases, however, some clients, due to embarrassment over their childhood learning disabilities and attentional problems, did experience school as traumatic and actually have nightmares about it. Some have a history of physical abuse; however, this is not common. One study examined the treatment of ADHD children and their siblings by retrospective report. Whitmore (1993) and her colleagues found no difference in the ADHD subjects' and their siblings' reports of physical punishment, discipline, or parental rejection. Furthermore, the amount of physical punishment reported was unrelated to the degree of hyperactive and aggressive symptoms. In an examination of comorbidity of these two disorders, Cuffe and his colleagues (1994) suggest that children with ADHD may be at higher risk for trauma due to their difficulties with impulse control, dangerous behaviors, and parents who may also respond impulsively. They also acknowledge that the hyperarousal, hypervigilance, poor concentration associated with PTSD may produce ADHD-like symptoms.

**Alcohol and Drug Abuse and Dependence**

Much research has focused on the connection between alcohol and/or drugs and ADHD (Horton, Fiscella, Schwartz, Anilane, & Glyshaw, 1990; Rounsaville, Anton, Carroll, Budde, Prusoff, & Gawin, 1991; Tarter, 1977). The combination of inadequate impulse control and the long history of poor peer relations and underachievement typical of adults with ADHD can lead to problems with alcohol or other drugs. Investigations of alcoholic subjects, as well as subjects seeking treatment for cocaine abuse or dependence, have shown a disproportionate number of individuals with a history of
ADHD in childhood (Tarter, 1977; Rounsaville, et al., 1991). Tarter’s (1977) study examined the incidence of childhood hyperactivity in two groups of alcoholics and found that half of the primary alcoholics, or more severe drinkers, retrospectively reported ADHD symptoms in childhood. The primary alcoholics also reported almost four times as many symptoms of ADHD in childhood than the less severe drinkers, as well as more current symptoms in adulthood. In a more recent study of treatment-seeking substance abusers, Rounsaville and colleagues (1991) found that approximately 1/3 had a history of childhood ADHD. In 99% of these subjects, diagnosis of ADHD preceded substance abuse, lending credence to the theory of self-medication in these individuals. Patients with comorbid ADHD and substance abuse often abuse cocaine. Sternberg (1989) also found that cocaine addicts had a higher incidence of coexisting ADHD when compared to subjects addicted to other substances. In a study of subjects in treatment for cocaine abuse or dependence, Horner, and her colleagues (1995) found that higher ratings of ADHD symptoms significantly correlated with increased amounts of cocaine used, more use of cocaine for self-medication, and higher degrees of craving and sleeplessness during the month prior to entering treatment.

Cocaine is a potent dopamine agonist and is probably somewhat similar in effect to methylphenidate, most commonly prescribed in treatment of hyperactive children. Cocaine abusers may also, upon withdrawal, experience what Cocores (1987) refers to as cocaine induced or exacerbated ADHD, presumably due to a depletion of the neurotransmitter dopamine. Withdrawal in these self-medicating individuals may be
accompanied by a reemergence of ADHD symptomatology, therefore complicating an already difficult withdrawal period.

The dual diagnosis patient with ADHD and substance abuse may progress more slowly in treatment and be unable to focus on issues in therapy due to attentional problems and a tendency to shift quickly from one topic to another. The impulsivity common in residual form ADHD may also increase the odds of relapse. Accurate identification and treatment of residual symptoms of ADHD in substance abusers is crucial in order to facilitate communication in therapy, increase the patient’s ability to participate in rehabilitation, and decrease chances of a relapse.

Medical and Neurological Disorders Involving Attention

The discussion of syndromes with similar symptoms has focused primarily on psychiatric disorders, but it should be noted that some neurological and medical conditions can also mimic ADHD, and individuals with a history of closed head injury are fairly common as are those with borderline intellectual functioning. Bohnen (1993) studied mildly head injured patients and found that this subject group was characterized by decreased performance on the Stroop, a measure of selective attention. Ponsford’s (1992) research with severely head injured patients revealed a deficit in speed of information processing resulting in lowered scores on color naming and word reading scores on the Stroop. This processing speed deficit can be compared to Barkley’s review (1992) of neuropsychological testing with ADHD subjects. Barkley and colleagues reviewed 22 neuropsychological studies of frontal lobe functions in children with ADHD with and without hyperactivity. ADHD children with hyperactivity were compared to
ADHD subjects without hyperactivity, learning disabled and controls. All three clinical groups performed more poorly on the word and interference portions of the Stroop.

Based upon this review of the literature, Barkley and colleagues suggest a problem with perceptual-motor speed and processing in the ADHD without hyperactivity group.

Other groups with objectively measured attentional deficits or slowed processing speed were patients with chronic fatigue (Ray, 1993), symptomatic and asymptomatic HIV positive patients (Martin, 1992), bulimics (Cooper, 1993), and mentally retarded subjects (Ellis, 1991).

Assessment of ADHD in Adults

Traditionally, the evaluation of hyperactivity in children has been done through questionnaire, or through observation in clinic and school settings. Impulse control has primarily been assessed through the "go no-go paradigm," or the number of commission responses made on continuous performance tests (CPTs). Two relatively brief assessment batteries have become popular for evaluation of ADHD in adults. One is based upon the theory of frontal lobe dysfunction and includes tests measuring "executive function." Another is based upon Mirsky's research and focuses on evaluating four separate components of attention. Denkla (1991) suggests that the length of the test battery becomes important because of the increasing number of individuals seeking diagnosis and treatment of ADHD. Although this reasoning does not legitimize providing substandard services, an examination of the literature indicates that most researchers of ADHD in adults are currently using the shorter batteries. The "attentional components" and the "executive function" models will be discussed below.
Many clients seeking therapeutic services at an ADHD outpatient clinic reported that they were diagnosed by completing a checklist of ADHD symptoms similar to the ones they had seen in published books. An even more alarming report from some clients was that they were placed on Dexedrine or methylphenidate by family doctors as a method of diagnosis. These clients reportedly were told that if they did not have ADHD, the treatment with psychostimulant medication would not be effective. This issue will also be addressed in a later section.

Because of the similarities between ADHD and other diagnoses, making a diagnosis of ADHD in adults by only giving them a checklist of ADHD symptoms is an extremely poor method of assessment and will frequently yield false positives. Self-referred ADHD individuals have seen numerous checklists of ADHD symptoms through media and publications prior to coming in for the evaluation. This familiarity with the symptoms listing as well as the bias toward responding positively to questions may result in lowered defensiveness which resembles a "fake bad" response style.

Evaluation of ADHD in adults should 1) establish a history of ADHD in childhood 2) determine if ADHD is still present, and if so, which symptoms are residual 3) rule out other possible diagnoses which could be mimicking the symptoms of ADHD and which may complicate treatment. Most of the evaluation procedures have behavioral reports in common, and therefore, a discussion of retrospective, self, parent, and spouse reports of behavior follows.
Behavior Rating Scales

Retrospective Reports. As previously mentioned, the clinician diagnosing ADHD must establish childhood onset of the disorder. This can be done through the client's self-reported history and recollections of peer and family relations, school behavior and academic performance, and it can also be corroborated by parental reports. Because these parental reports best predicted medication response in the above mentioned study by Wood (1986), it is very important to gather this information when available. Obtaining historical and behavioral reports from other sources also decreases the chances of successful malingering, which deserves mention because the outcome of many evaluations is the prescription of stimulant medication.

Self Report. In spite of the above mentioned pitfalls of assessing ADHD symptoms by self report of adults, this is a necessary part of the evaluation process. Because the symptoms of ADHD appear to become more subjective as the affected individual ages, it is vital to assess areas such as "feelings of restlessness" and "daydreaming" as well as some of the secondary and tertiary symptoms, such as low self esteem and mild levels of depression. Often the initial distinction between primarily inattentive and hyperactive-impulsive types can be made through self reported symptoms.

Corroborating Adult Behavior Reports. In addition to gathering retrospective self and parental reports, it is important to have corroborating reports of current behavior. A spouse or friend can usually provide information by questionnaire format or brief interview. One reason for obtaining corroborating reports, is the ADHD individual's
"lack of outsight", a term used by Wender to describe their tendency to have difficulty in describing their own behavior accurately (1986). Conners (1985) also mentions this in relation to using self report measures with adolescents.

Comments and Cautions on Behavioral Reports. A few studies do point out additional cautions in using behavioral reports. Jensen (1993) used rating scales with groups of ADHD, psychiatric, and community children and found that symptoms of depression and anxiety were reported significantly more in the ADHD and psychiatric groups than in the community group. Subjects with ADHD were indistinguishable from the subjects with other psychiatric diagnoses on self- or parent-reported depressive and internalizing symptoms. Zelko (1991) examined three rating scales and their ability to predict group membership between ADHD, psychiatric controls and normal controls. Results suggested that psychiatric subjects were frequently misclassified, and encouraged the use of multidimensional rating scales for differential diagnosis. Zelko suggests that unidimensional scales - those measuring only ADHD symptoms are primarily useful for evaluating treatment effects in an already diagnosed ADHD population.

Psychometric Evaluation

As previously mentioned, two relatively brief assessment batteries have become popular for evaluating adults. One is based upon Alan Mirsky's factor analytic study of various components of attention, and the other is based upon the concept of frontal lobe dysfunction in adults with ADHD.

Attentional Components. One of the most popular models of attention is that of Alan Mirsky (1987). Mirsky examined numerous psychological and neuropsychological
measures which were in use at the National Institute of Mental Health laboratory. A factor analysis of the attentional measures yielded four separate factors. The first of these factors is the ability to focus and execute, and is characterized by perceptual-motor speed. This "focus/execute" factor is measured by such tests as the Trail Making Test (Reitan, 1959), the Talland Letter Cancellation Test (Talland, 1965), the Digit Symbol Substitution Test (Wechsler, 1955), and the Stroop Color and Word Test (Stroop, 1935). Mirsky's second attentional factor is "vigilance," or the ability to sustain attention, and is measured by Continuous Performance Test (CPT) omission errors, commission errors, and response time (Rosvold, Mirsky, Sarason, Bransome, & Beck, 1956). The third factor is "numerical-mnemonic," or the ability to encode information. Numerical-mnemonic is best measured by the Digit Span and Arithmetic subtests of the Wechsler tests (WAIS-R or WISC-R: Wechsler, 1955). The last attentional factor is "flexibility," or the ability to shift attention, which according to Mirsky's factor analysis, was only measured by the Wisconsin Card Sorting Test (Grant & Berg, 1948).

Consistent with previous authors, Mirsky states that this capacity to shift attention is a function supported by the prefrontal cortex.

Mirsky's battery provides a good measure of various components of attention, as well as neuropsychological screening through administration of the Trailmaking test. Because of the other disorders which also reveal attention deficits, personality testing or a thorough clinical interview should also be done. Several performance measures of the CPT load onto Mirsky's factors, and therefore, it is worth noting that Halperin and colleagues (1990) assessed children with ADHD on the CPT and found that half of the
ADHD subjects showed no objective attentional deficits. These children with no attentional deficits were more likely to have conduct problems, which is consistent with the current classification of ADHD into subtypes. Other research has discussed the pitfalls of using the CPT as a diagnostic tool in ADHD (Trommer, 1988). In Trommer's study, ADHD subjects who were classified as abnormal on the basis of the CPT also scored significantly below subjects classified as normal on measures of abstract reasoning and logical problem solving, verbal reasoning, nonverbal problem solving, and arithmetic skills. The group of subjects without ADHD also contained a high proportion of subjects with CPT performance outside the normal range. Overall, her work suggests that CPTs may yield both false negative and false positive results when used to screen for ADHD. Recent research using both auditory and visual versions of the CPT with normal adult subjects indicates that subjects attend better to visual rather than auditory stimuli. There is also less impulsive responding when visual stimuli is involved (Baker, Taylor, & Leyva, 1995). Therefore, the auditory CPT versions may be more effective in identifying adults with attentional problems.

The above mentioned Wisconsin Card Sorting Test (WCST) is the only measure on Mirsky's flexibility factor. It was originally developed in 1948 and used as a measure of the ability to shift attention, and to respond to reinforcement (Grant & Berg, 1948). This test will be examined further in the following section on frontal lobe functioning in ADHD.

**Executive Function / Frontal Lobe Dysfunction.** The second brief test battery is designed to measure executive, or frontal lobe functioning (Denkla, 1991). Executive
function can be defined as the ability to develop and maintain an appropriate problem-solving strategy across changing stimulus conditions in order to achieve a future goal (Luria, 1973). Another description of the executive function construct is the capacity to attend to more than one component of a situation at once, while resisting distractions; inhibiting off-task or inappropriate responses; and planning, sequencing, and maintaining output for significant periods of time (Denkla, 1991). In contrast to Mirsky's model where he hypothesizes various brain regions responsible for the components of attention, Denkla's model is intended to be a measure of frontal lobe functioning. The frontal lobe is recognized to be heavily dependent on subcortical structures and interconnections, but the focus of this assessment of executive function is as much functional as theoretical. The components of executive function as elaborated by Denkla are 1) Initiate, or planning and organization; 2) Sustain, or concentration and vigilance; 3) Inhibit, or self-control and self-monitoring, and 4) Shift, or cognitive flexibility. Obvious similarities exist between these two models. One difference is in the factors of inhibit versus encoding. For the purpose of ADHD assessment, Denkla's factor of inhibition seems promising. Suggested tests in the executive function battery are also more evenly distributed among factors, unlike the attentional model in which one test may be the singular measure for an entire factor.

Tests suggested for the measure of the Initiation factor are the WCST, Verbal Fluency (Benton & Hamsher, 1976), scores derived from Verbal Memory, or learning (Delis, Kramer, Kaplan, & Ober, 1986), and scores derived from Rey-Osterrieth copying (Waber & Holmes, 1985). Factor two (Sustain) tests are the CPT, parts A and B of the
Trailmaking test, the Stroop, and the Verbal Fluency test. Tests measuring the Inhibition factor are scores derived from Verbal Memory, Verbal Fluency, the Stroop, and the Matching Familiar Figures Test (Cairns & Cammock, 1978). The final factor, Cognitive Flexibility, which is measured only by the WCST in Mirsky's model, is measured by the WCST, the Stroop interference score, scores derived from Verbal Memory, and Verbal Fluency.

**ADHD and Neurological Status**

The focus on linking ADHD with neurological functioning is reminiscent of the old term "minimal brain dysfunction." It was originally noted over a hundred years ago in studies of primates with frontal lobe lesions that these subjects were excessively restless, and had poor ability to sustain interest in activities (cf. Barkley, 1990). These findings were then compared to the behavior of hyperactive children and it was postulated that the excessive hyperactivity was related to frontal lobe injury similar to that which was found among the primate subjects (Levin, 1938).

The reasoning linking ADHD with brain damage or dysfunction, however, is rather circular in many cases, and is also typically tied in with instruments such as the WCST. As previously stated, frontal lobe injury often produces a release from inhibition, which may cause overactivity, impulse control problems, and attentional difficulties. Researchers have reasoned, therefore, that because the symptoms commonly seen in ADHD children are similar to those of frontally injured patients, brain dysfunction or injury may also be responsible for the difficulties seen in children with ADHD (Heilman, Voeller, & Nadeau, 1991; Benson, 1991). This frontal lobe
dysfunction is then presumably demonstrated by the ADHD child's poorer performance on tests such as the WCST, a test purporting to measure frontal lobe functioning.

Whether or not the WCST actually serves as a measure of frontal lobe function, or dysfunction, is a matter of controversy. A recent study examined individuals with frontal lobe dysfunction as well as normal control subjects and did not find the WCST to differentiate between the two groups (Mountain & Snow, 1993); however, another study making use of PET scan techniques did find increased activity in the left dorsolateral prefrontal cortex during performance of the WCST (Rezai, et al., 1993). Other studies also support the sensitivity of this test to frontal lobe dysfunction (Robinson, Heaton, Lehman, & Stilson, 1980; Weinberger, Berman, & Zec, 1986).

Current research does provide support for the notion of dysfunction of the frontal lobe and its interconnections in ADHD. Gorestein (1989) measured 21 subjects rated as high in Inattention-Overactivity on the Trailmaking Test, The Stroop Color-Word Test and the Wisconsin Card Sorting Test and found deficits on these tasks. Overall, the results were compatible with a prefrontal-deficit theory of Inattention-Overactivity. Zametkin and colleagues (1990) examined adults with childhood hyperactivity using positron emission tomography during a continuous performance test. They found that both frontal and parietal regions of the right hemisphere showed reduced metabolic activation relative to controls.

Boucugnani and Jones (1989) used measures of frontal lobe functioning, including the WCST to compare children diagnosed with ADHD to controls matched on age and gender. They noted that the ADHD group was relatively deficient on measures
of self-regulation, including the tendency toward perseverative responding, failure to
inhibit impulsive responding, attentional capacity and the ability to plan and organize a
course of action and follow it through. These findings were evidenced by WCST scores
such as fewer categories completed, more perseverative responses, and more
perseverative errors than controls, which is consistent with Denkla's theory of executive
function.

In summary, both models of assessment (Mirsky and Denkla) are relatively brief
and are based on theory and research. As a result of the subtypes of ADHD, however, it
is important to consider that the predominantly Hyperactive-Impulsive types of adults
with ADHD may not have objectively measured attentional deficits. Another
consideration is that even among normal adult subjects, variations exist in attentional
measures. Therefore, in order for an individual to have either a Combined type or an
Inattentive type of ADHD, there should be objectively measured attentional deficits on
either of these test batteries which surpass the normal variation among non-ADHD
adults. Symptoms of the Hyperactive-Impulsive type of ADHD will probably best be
measured by self and other report of current behavior, as well as childhood history
corroborated by someone who knew the adult and can confirm onset prior to seven years
of age.

Assessment Comments and Cautions

**Stimulant Medication**

How valid is the client reported diagnostic technique of administering stimulants
to see what happens? Some were told, "If you don't have ADHD it won't help you."
This section examines the question: Can an accurate diagnosis of residual ADHD be made based upon response to stimulant medication? The effectiveness of stimulants in treating ADHD, various psychiatric disorders, and their effects on normal adults will be discussed along with the hazards of treating certain non-ADHD individuals with stimulants.

**Children with ADHD.** As the focus of the current paper is primarily on adults, only selected studies pertaining to children will be reviewed. Stimulant medication is indeed the treatment of choice for ADHD in children and many adolescents, particularly Dexedrine dextroamphetamine) and Ritalin (methylphenidate). Cylert has also proven to be effective, but its variable onset and duration have made it a secondary treatment choice (Elia, 1991). In a literature review, Guffey (1992) cautions that although methylphenidate is helpful in treating ADHD, it may be misused to control children whose behavioral problems have other causes. Methylphenidate has been shown to improve attention (Klorman, et al., 1988; Klorman, 1991; Kupietz & Balka, 1976; Michael, Klorman, Salsman, Borgstedt & Dainer, 1981; Rapport, et al., 1987), decrease hyperactivity (Fitzpatrick, et al., 1992), and to reduce impulsive responding in children with ADHD (Malone & Swanson, 1993).

The improvements in attention after stimulant treatment are relatively consistent when measured by continuous performance tests. Everett (1991), however, used the Stroop Color and Word Test in studying hyperactive children after a year of treatment with stimulant medication. These children continued to show selective attention deficits.
Two separate studies raise the possibility that methylphenidate does not improve social behavior of ADHD subjects. Buhrmester and colleagues (1992) observed the social behavior of hyperactive boys after treatment with methylphenidate and placebo. Results showed that methylphenidate significantly reduced social engagement and increased dysphoria relative to the placebo. In another study, different age groups were treated with methylphenidate. Although the younger children (ages 7 to 10 years) showed improvement in positive social interactions, the older subjects (12-14 years) failed to show progress in this area (Pelham, et al., 1991).

**ADHD in Adults.** Relative to the extensive literature available on ADHD in children, there are a limited number of studies on the residual disorder, and particularly on pharmacological treatment. Some of these studies are single case reports of adults who are being treated for a combination of psychiatric disorders.

Goodwin and Corgiat (1992) present a single case using integrated intervention to improve cognitive functioning, develop compensatory strategies, and modify social and physical environments. The researchers report that the program promoted more independent and accurate performance in a variety of settings and enhanced social functioning, but that cognitive deficits remained, even though methylphenidate was included in the treatment. In another single case study, VanReekum and Links (1994) used methylphenidate in a patient with Borderline Personality Disorder and ADHD. Treatment resulted in both subjective and neurocognitive improvement.

Matochik and colleagues (1993) gave methylphenidate versus dextroamphetamine to adults with ADHD. Neither drug changed global brain
metabolism on examination by PET scan, however, the dextroamphetamine improved performance on an auditory attention task. Other studies have found no overall benefits of methylphenidate in adults with ADHD (Mattes, et al., 1984).

A pilot study using methylphenidate examined 11 adult patients with ADHD and found a significant reduction in symptoms of "nervousness", concentration problems, fatigue, and "hot temper" (Wood, et al., 1976). Because of the possibility that the beneficial effect of Ritalin (methylphenidate) was nonselective for ADHD, other studies were conducted by the same group of researchers in order to rule out the possibility that "a group of unhappy people--patients with psychological nonspecificitis--had been given a euphoria-producing drug and that it could be predicted that any euphorogenic agent might have elicited the same positive results" (Wender, et al., 1985). In their next study, pemoline (Cylert) was administered to a group of ADHD subjects. No significant differences were found between this non-euphoria producing drug and placebo (Wender, 1981). When the subjects were broken down by severity of parent reported childhood symptoms, 44% experienced moderate to marked therapeutic improvement. Overall, approximately 60% of the subjects researched in this series of studies conducted by the Utah group responded to one type of medication or another--stimulants or antidepressants.

A recent article reviews the pharmacotherapy of adult ADHD (Wilens, et al., 1995). Based upon an examination of the six existing controlled studies of stimulant treatment of ADHD in adults, response rates range from 25 to 78%. To date, no studies
exist on the use of sustained-release preparations of methylphenidate, or
dextroamphetamine in adults with ADHD.

In summary, there are some adults with ADHD who respond to medication and
experience marked improvement. However, there are anywhere from 30-50% of
subjects who do not respond to medication, or who receive minimal benefit from drug
treatment and are in need of other forms of intervention. As previously discussed, drug
treatment in adolescents with ADHD does not improve social functioning and this is a
presumed area of concern for adults as well. Some studies also contain subjects whose
medication side effects were so severe that they had to discontinue treatment. In light of
the research, even an adult with ADHD given a trial of methylphenidate may not benefit,
and therefore, a conclusion cannot be drawn that an individual does or does not have
ADHD based upon medication response. Further ambiguity arises from response of
normal subjects to methylphenidate.

Ritalin (methylphenidate) has been administered to normal adult subjects who
experienced a positive response in either mood or attentional capacity. One group of
normal adults were administered methylphenidate and showed improved performance on
gave methylphenidate to normal adults and found that methylphenidate had an effect on
these subjects' ratings of positive mood and anxiety.

Schizophrenia. Other subject groups may not experience a positive or even a
neutral response to methylphenidate treatment. Levy and colleagues (1993)
administered methylphenidate to schizophrenic patients and normal controls and found
that the treatment increased thought disorder in schizophrenic patients, but not normal controls. Another study with similar results indicated that methylphenidate significantly increased the positive symptoms of schizophrenia. Even subjects whose psychotic symptoms were otherwise dormant experienced an increase in these symptoms with administration of methylphenidate (Sharma, et al., 1991). The only beneficial effect of methylphenidate in this population was to counteract the side effect of sedation caused by clozapine treatment, which was successfully done with a schizophrenic and a schizoaffective adult by Burke and Sebastian (1993).

Affective Disorders. Treatment with methylphenidate has been shown to improve or alleviate several types of depression. Gurian and Rosowsky (1993) used methylphenidate to successfully treat minor depression in older adults (ages 80-105 years). Other research confirms the benefit of methylphenidate in the treatment of depression in elderly patients (Pickett, et al., 1990). Methylphenidate has also been helpful in treatment resistant, or severe depression. Little (1993) compared the effects of two stimulants (d-amphetamine and methylphenidate) on depressed inpatients. Some of these depressed adults showed acute symptomatic improvement after either stimulant. Simpson (1991) also suggests the use of methylphenidate as a treatment for resistant depression.

Additionally, methylphenidate has been given to patients experiencing an organic depression. Lazarus and colleagues (1992) administered methylphenidate to individuals experiencing poststroke depression and found it to be helpful in 80% of the subjects. Stiebel and Kemp (1990) used methylphenidate in the successful treatment of two
patients diagnosed with organic mood syndrome secondary to medical illness.

Rosenberg (1991) found that methylphenidate also improved depression in medically ill patients.

**Anxiety.** Treatment with methylphenidate has been much less successful, and in some instances, has had deleterious effects on individuals experiencing various anxiety disorders, even when combined with ADHD. Pliszka (1990) found that ADHD children with comorbid anxiety disorders had a significantly poorer response to stimulant medication (methylphenidate). He suggests that these individuals may actually represent children with primary anxiety who develop secondary inattentiveness, or they may represent a different subtype of ADHD. In another study with younger subjects, Borcherding and colleagues (1990) found that stimulant medication exacerbated abnormal movements and compulsive behaviors in hyperactive boys with tics and perseverative/compulsive behaviors. Similar negative results were found by DuPaul and colleagues (1994) who examined the differences in methylphenidate response based upon the degree of other comorbid internalizing symptoms, which included anxiety. They found that subjects with comorbid internalizing symptoms were significantly less likely to have a positive response to methylphenidate.

One interesting study related to the physiology of Obsessive Compulsive Disorder, administered dextroamphetamine and methylphenidate to patients with OCD. Although dextroamphetamine reportedly had an positive effect on the OCD symptoms, methylphenidate caused anxiety in the patients (Joffe, et al., 1991). Another group of researchers found similar results after administering methylphenidate to five patients with
obsessive compulsive disorder. Subjects' affective responses were varied and included dysphoria and mood elevation. Three of the five subjects experienced a marked worsening of their obsessive compulsive symptoms. (Lemus, et al., 1991).

**Personality Disorders.** Successful, and partially successful treatment has been found with using methylphenidate among younger subjects with antisocial behaviors. Klein (1993) found methylphenidate reduced antisocial behavior in children and adolescents regardless of the presence of hyperactivity. Brown and colleagues (1991) treated a hyperactive and an antisocial group of subjects. Methylphenidate improved behavior of adolescents (12-18 years) with conduct disorder with maximum doses (20 mg.) yielding greater improvement in behavioral symptoms. In the same study, the ADHD subjects had a greater improvement on an academic task on the lowest dose (10 mg.) and their performance on arithmetic decreased at the higher 15 and 20 mg doses. The previously mentioned study of an individual with ADHD and Borderline Personality Disorder indicated benefits of methylphenidate treatment (VanReekum & Links, 1994).

**Miscellaneous Uses of Methylphenidate.** Methylphenidate has also been helpful in treating a variety of other disorders. Clark (1992) found methylphenidate to be effective in treating head injured children ages 7 to 15. Improvements were seen in the attentional capacities of these youngsters. In a chronic head injured adult population, however, methylphenidate was not helpful (Speech, et al.,1993). Aman and colleagues (1993) indicated that methylphenidate was helpful in children with both ADHD and mental retardation, and reduced symptoms of inattention, hyperactivity, and conduct problems. Methylphenidate treatment quickly reversed anorexia and apathetic behavior
in demented geriatric patients (Maletta & Windgarden, 1993), improved the symptoms of Kleine-Levin syndrome (Holmes, 1992), and was used to improve the symptoms of normal pressure hydrocephalus (Wheeler, 1994), a condition in which the ventricles are enlarged without increased cerebrospinal fluid pressure. Angrist (1992) treated seven male patients diagnosed with AIDS-related neuropsychiatric impairment with methylphenidate or dextroamphetamine and found marked functional improvement.

Another condition that generally responds well to methylphenidate is narcolepsy. Mitler and Hajdukovic (1991) reviewed studies of drug treatment of narcoleptic subjects and found fairly consistent improvement on methylphenidate and other catecholamine agonists. In another interesting case, methylphenidate was given to a bulimic woman after surgery for an appendectomy. After treatment, the subject reported a calm emotional state and no longer had any temptation to binge or induce vomiting (Messner, 1989).

In summary, it is obvious that methylphenidate response does not confirm a diagnosis of ADHD, nor does non-response rule out the diagnosis. The trial of stimulant medication in an adult who has not been properly evaluated can have deleterious effects. The literature suggests that subjects with a schizophrenic spectrum disorder may respond with psychotic symptoms, and patients who are actually experiencing the restlessness of anxiety rather than ADHD may experience an increase in their symptoms. Additionally, individuals who do have ADHD may or may not respond to psychostimulant treatment, or may experience side effects of anxiety or dysphoric mood.
The purpose of the present study is to develop a more accurate screening measure for use as a tool in the diagnosis of residual ADHD. This measure is intended to be relatively brief and to alert the clinician to difficulties other than ADHD. Although measures such as the Minnesota Multiphasic Personality Inventory - 2 (MMPI-2; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) and the revised Symptom Checklist (SCL-90-R; Derogatis, 1992) may be appropriate for ruling out other conditions, they either lack a coherent grouping of ADHD symptoms, or contain symptoms of ADHD within scales or subscales which may signal the presence of depression or anxiety (e.g., Mental Dullness subscale on the MMPI-2). Because these instruments do not include the necessary cluster of items specifically related to ADHD, it is necessary to give additional rating scales for the measurement of these symptoms. Conversely, when using checklists of ADHD symptoms, it is necessary to administer additional measures to rule out other disorders. The proposed screening measure 1) includes the symptoms of ADHD 2) is brief enough to fit in with the shorter ADHD adult batteries currently in use, and 3) attempts to identify other possible disorders which contain similar symptoms of ADHD, and in so doing, will assist the clinician in making dual and differential diagnoses in this population.

The previously discussed disorders which are most similar to ADHD will be the focus of the screening instrument. Main areas with symptoms similar to ADHD will be examined and are classified as follows: Obsessive Compulsive (Includes OC Personality Disorder, and OCD symptoms), Anxiety (Generalized Anxiety, PTSD, and Panic symptoms), Depression, Mania (and Hypomania), Psychotic, Personality (Borderline,
Dependent, Antisocial) and Alcohol problems. Most questions have been formed
directly from the current DSM-IV diagnostic criteria for all the disorders included. The
questions are broken down by scale in Appendix D. Additional questions representative
of some of the disorders have been added in order to determine which symptoms best
differentiate ADHD from other disorders.

This proposed screening instrument, the Checklist for Differential Diagnosis of
Attention Problems (CDDAP), is accompanied by a computer scoring program which
will yield a score for each scale, and two global scores. The first global score will reflect
the total number of symptoms endorsed, and the second will be a severity index in order
to account for the weighting of item responses. The severity index will be calculated by
dividing the total weighted score by the total number of symptoms endorsed. Possible
responses will include "Never", "Sometimes", "Often", and "Almost Always" and will be
assigned weighted point values of 0, 1, 2 or 3.

The purpose of this study is to establish normative data, and initial reliability and
validity for this screening measure in order to determine its utility with adults seeking a
diagnosis of ADHD. It is hypothesized that

1) Scores on the CDDAP scales will be significantly correlated with similar
scales on the revised Symptom Checklist - 90 (similar scales include Depression,
Anxiety, Obsessive Compulsive, and Psychoticism).

2) Scale scores on the CDDAP are also expected to be significantly correlated
with final diagnostic group as listed above (e.g., subjects who receive a diagnosis of
dependent personality disorder are expected to have elevated scores on the Personality disorders scale).

3) Self-referred subjects with ADHD will report more symptoms of ADHD with greater severity than non-ADHD self-referred and normals.
CHAPTER 2

METHOD

Subjects

Subjects were 313 adults ranging in age from 16 to 61 years with a mean age of 31.75 (S.D. = 10.89) years. Of the 313 subjects, 156 (50%) were male and 157 (50%) were female. Normal subjects were 100 students who participated on a voluntary basis and did not receive a formal evaluation. The normal subject group consisted of 36 males and 64 females whose mean age was 28.6 years (S.D. = 8.83). The remaining 213 subjects were self-referred for evaluation of ADHD at the ADD Treatment and Research Center, an outpatient clinic specializing in the evaluation and treatment of ADHD, in Dallas, Texas.

Of these 213 self-referred subjects, 106 received a diagnosis of ADHD. Of those remaining 106 subjects who were evaluated and did not meet diagnostic criteria for ADHD, 93 were diagnosed with another disorder, and 13 did not fully meet criteria for any disorder, although most were symptomatic to some degree.

Diagnoses for the clinical groups were made by careful examination of self-reported symptoms, objective testing (e.g., MMPI-2, IQ or IQ estimates, and achievement test results when available), and historical information obtained in clinical interview, which was corroborated by a parent or relative of the subjects. Distribution of the subjects according to DSM-IV Axes diagnoses is shown in Table 3.
Inclusion Criteria. For correlational and test item analyses, all subjects were used. For discriminant function analyses and ANOVA on ADHD symptoms, subjects were excluded as described below.

Twenty subjects in the “normal” group were excluded because they had a T-score above 65 on the SCL-90’s global severity index. None of the control subjects reported an existing diagnosis of ADHD on the demographic questionnaire, and therefore, none were excluded on the basis of having been previously diagnosed with ADHD. A small number of the controls, however, did report having a family member diagnosed with ADHD.

ADHD subjects included 106 subjects who met DSM-IV criteria for some type of ADHD. Subjects who received a diagnosis of ADHD, NOS were not included in this study. In order to be included, subjects must have had a history of ADHD symptoms in childhood, and must still meet full criteria for either ADHD, Predominantly Inattentive Type, Predominantly Hyperactive-Impulsive Type, or Combined Type. Many of the subjects in the ADHD group also had another psychiatric disorder. One subject with a long history of ADHD was also experiencing psychotic symptoms and was excluded from the study leaving 105 subjects in the ADHD group.

Instruments

All clinical subjects received an extensive evaluation, including an unstructured, clinical interview, and were administered one of two assessment batteries depending upon whether they were also requesting testing for learning disabilities. Both batteries included the Trail Making Test Parts A and B (Reitan, 1955; Reitan, 1988), the Stroop Color and Word Test (Golden, 1978), the Wisconsin Card Sorting Test (Grant & Berg, 1948), the
Vocabulary and Block Design subtests of the Wechsler Adult Intelligence Scale - Revised (WAIS-R; Wechsler, 1981) and the Minnesota Multiphasic Personality Inventory - 2 (MMPI-2; Butcher, et al., 1989). All subjects also completed a checklist of ADHD symptoms; and were asked to have a parent or living relative complete: a) the ADHD Rating Scale (DuPaul, 1991) retrospectively, reporting behaviors of their adult offspring in childhood (between the ages of 6 and 12 years), and b) a developmental and medical history questionnaire. Subjects receiving the more extensive test battery were administered the entire WAIS-R and the Wide Range Achievement Test - 3 (WRAT-3; Wilkinson, 1993). All testing was administered by clinic staff who had completed at least a master’s degree in psychology and formal coursework in psychological assessment, and was supervised by a licensed clinical psychologist. Diagnostic decisions were a collaborative effort by evaluator and supervising psychologist. None of the subjects were aware of hypotheses and purpose of study. The clinical subjects were simply asked to complete the additional questionnaires as part of the evaluation process. Student volunteers were told they were participating “in a study measuring a variety of psychological symptoms.”

**Measures**

All subjects completed a demographic questionnaire (Appendix A), the Checklist for Differential Diagnosis of Attentional Problems (Appendix B), and the Symptom Checklist-90, Revised. The SCL-90 was administered with the CDDAP in an attempt to establish concurrent validity with similar scales on the SCL-90, which has reliability coefficients (alpha) ranging from a low of .77 for Psychoticism to a high of .90 for
Depression. (SCL-90; Derogatis, 1992). Test-retest coefficients for the SCL-90 range between .80 and .90.

**CDDAP.** The CDDAP contains 124 items primarily composed to reflect DSM-IV diagnostic criteria of various disorders containing symptoms similar to ADHD. Individual item responses include "Never", "Sometimes", "Often", and "Almost Always" and are assigned point values of 0, 1, 2 or 3 respectively. The number of possible total scale points varies on each scale due to variation in the number of items on each scale.

There are four main summary scores and twelve scaled scores. The individual scales by item are listed in Appendix D. Scale names and description are as follows:

- **ADA:** ADHD, Inattentive symptoms
- **ADH:** ADHD, Hyperactive Impulsive symptoms
- **OC:** Obsessive Compulsive Personality and Obsessive Compulsive Disorder symptoms
- **BPD:** Borderline Personality Disorder
- **DEP:** Dependent Personality Disorder
- **APD:** Antisocial Personality Disorder
- **DE:** Depression
- **MAN:** Manic
- **ANX:** Anxiety disorders (generalized anxiety, PTSD and panic symptoms)
- **PTSD:** Post-traumatic stress disorder
- **PSY:** Psychotic symptoms
- **ALC:** Alcohol related symptoms

The four summary scales are 1) ADHD, which is the combined total of ADA and ADH; 2) the PER scale, which is the total of BPD, DEP, and ANT scales; 3) SC, which is the total number of symptoms positively endorsed and 4) GSI which is the global severity index and is calculated by dividing the total weighted score (described above) by the total number of positively endorsed symptoms.
CHAPTER 3

RESULTS

Test Construction

Scale analysis. Prior to examining specific hypotheses, alpha coefficients were obtained to determine the internal consistency for each of the scales of the CDDAP. Statistical properties of each scale are listed in Table 4. Alpha coefficients ranged from .77 (Alcoholism) to .93 (ADHD-Total). To ensure unidimensionality of constructs, interitem correlations were obtained for each scale, and ranged from -.17 to .72. (see Table 4).

Convergent and Discriminant Validity. For the first hypothesis, a correlational analysis was computed to evaluate the relationship between the scales of the CDDAP with corresponding scales of the SCL-90. Results can be found in Table 5. Correlations between individual scales range from .16 to .81. Correlations for total symptom composite scores range from .36 to .77. Scales believed to measure the same basic construct were highly correlated. The four scales expected to have greatest similarity between measures were Obsessive Compulsive, Depression, Anxiety, and Psychoticism. For the purposes of this study, a correlation of .70 or higher was used as a minimum value for convergent validity. Correlations between measures on these scales were .57, .80, .73, and .55 respectively. Correlations among scales on the CDDAP are listed in Table 6. Interscale correlations on the CDDAP ranged from .14 to .93. When comparing scales
on the two tests, it is important to note that some of the scales on the CDDAP are summary scales and contain symptoms of a variety of disorders (e.g. PER, which is an overall indicator of the presence of a personality disorder and contains symptoms of antisocial, dependent, and borderline personality). This is particularly true of the CDDAP's Anxiety scale. The anxiety scale had moderate to high correlations with all of the scales of the SCL-90. The CDDAP's 19 item anxiety scale is quite broad and encompasses symptoms of generalized anxiety disorder, post-traumatic stress disorder, and some symptoms overlapping with obsessive compulsive disorder and phobic anxiety. Additionally, some of the symptoms on this scale are also indicators of depression, such as difficulty sleeping or early morning wakening and therefore, it is not surprising that this scale is highly correlated with the others. Other clusters would be the personality disorder summary scale (PER) which contains symptoms of Antisocial (ANT), Dependent (DEP), and Borderline Personality disorders (BPD).

Analysis of Scaled Scores and Final Diagnoses. For the second hypothesis, discriminant function analyses were used to examine the relationship between scaled scores and final diagnoses. It should be noted that many of the subjects had more than one diagnosis and therefore, some symptom overlap was present in all of these analyses. For each of these analyses, subjects were classified by the presence or absence of a disorder. An example of this is for the discriminant function analysis computed to determine the test's ability to predict a diagnosis of ADHD, all subjects were divided into one of two categories - ADHD or Non-ADHD. Likewise, subjects for the mood disorder analysis were reclassified into one of two groups - either presence or absence of a mood
disorder. Accuracy of predictions ranged from 72% for anxiety disorders to 92% for psychosis. Results of these analyses are listed in Table 7.

ADHD Symptoms by Diagnostic Groups. For the final hypothesis, an ANOVA was computed with the number and severity of ADHD symptoms (total number and weighted Inattentive and Hyperactive-Impulsive scaled scores) as dependent variables, compared across each of the three subject groups (ADHD, Other Psychiatric (OP) diagnosis, and Normals). Sixty-eight percent of the ADHD group also had at least one other psychiatric disorder. Individuals in the OP group were those subjects evaluated for ADHD and who did not receive a diagnosis. As previously mentioned, 93 of the subjects in the OP group had another psychiatric disorder and 13 did not receive any diagnosis.

There were significant differences between the groups on severity of ADHD symptoms $F(2, 288) = 153.59, p < .0001$. Post hoc analysis indicated that each of the three groups differed significantly from the others (see Table 8). Because the weighted scores (ADA, ADH, and ADT) are derived from the raw scores and have a high covariance, a separate ANOVA was computed to examine the number of symptoms endorsed (raw scores). The results were significant $F(2, 288) = 142.52, p < .0001$. Post hoc analyses using a Bonferroni adjustment revealed that all groups differed significantly on the number of hyperactive-impulsive symptoms reported (ADH). The post hoc analysis examining differences on the inattentive symptoms indicated that the normal subjects reported significantly less symptoms than either of the clinical groups (ADHD: $p < .0001$ or OP: $p < .0001$). The two clinical groups, however, did not differ significantly from one another (ADHD vs. OP: $p = .07$) after Bonferroni adjustment was made. The
mean number of symptoms endorsed by the ADHD group was 16.11 (S.D. = 2.05) versus the mean number for the OP group which was 14.79 (S.D. = 2.84). Means for these three groups on all of the CDDAP scales can be found in Table 9.
CHAPTER 4

DISCUSSION

This study examined the utility of the Checklist for Differential Diagnosis of Attention Problems (CDDAP) for discriminating adults with ADHD from both normals and individuals with other psychiatric disorders. Prior to examining the hypotheses, a preliminary analysis of test items was done in an attempt to examine the internal consistency of the instrument. Overall results indicate that the CDDAP possesses high reliability with the highest alpha being on the ADDT scale, which is a weighted score for the items representing the 18 symptoms of ADHD as listed in the DSM-IV.

It was hypothesized that scales on the CDDAP which were conceptually similar to scales on the SCL-90 would be highly correlated. The scales most similar between the two tests were Depression and Anxiety. Both instruments also have scales measuring obsessive compulsive symptoms. These were moderately correlated (.57), but were not as high as expected and did not approach the minimum cut off value of .70. One reason for the lowered score on the OC scales is that the CDDAP OC scale combines symptoms of obsessive compulsive disorder with symptoms of obsessive compulsive personality disorder, whereas the SCL-90-R contains symptoms more typical of obsessive compulsive disorder. Therefore, these two scales may have been somewhat different conceptually and thus, the lower correlation. The other scale similar on the two tests was Psychoticism which was moderately correlated (.55). Although this correlation is lower than expected,
the Psychotic scale on the CDDAP correlated most highly with scales measuring similar constructs, such as the paranoid, psychotic, and phobic scales of the SCL-90. It should be noted that only nine individuals in this study were experiencing psychotic symptoms as assessed by self-reported hallucinations or delusions.

**Discriminant Function Analyses**

It was hypothesized that scaled scores on the CDDAP would be related to final diagnosis. An examination of discriminant function analyses for each diagnostic group indicates that the CDDAP scaled scores were accurate approximately 3/4 of the time in identifying the individual’s final diagnosis. Diagnostic categories examined were ADHD, mood disorders, alcohol abuse, anxiety disorders, personality disorders, post-traumatic stress disorder, and the presence of psychosis. For each discriminant function analysis, all of the scales were entered and a stepwise analysis was computed. Scales which would logically be expected to have the highest predictive power for each diagnostic category had the highest F values. For example, the weighted total of ADHD symptoms most accurately predicted the diagnosis of ADHD, and the weighted depression and manic scales most accurately predicted the diagnosis of a mood disorder. The least accurately predicted diagnoses were the anxiety disorders. There are two possible reasons for the lower accuracy of this scale. One is that many individuals who were experiencing symptoms of anxiety with another disorder, such as a mood or personality disorder, did not meet full criteria for an additional diagnosis of an anxiety disorder. The other reason, which was previously mentioned, may be with the anxiety scale itself, in that it is too broad and overlaps too much with the symptoms of other disorders rather than containing
symptoms specific to one diagnosis. Many of the symptoms on the anxiety scale are similar to symptoms of ADHD as well, such as difficulty concentrating and restlessness or fidgeting. The scaled scores related to substance abuse were slightly better at ruling out disorders than as indicators of their admitted presence; however, overall accuracy ranged from 71% on anxiety disorders to 92% for the presence of psychosis.

ADHD Symptoms

The final hypothesis examined severity and number of ADHD symptoms within the three groups (Normals, ADHD, and Other Psychiatric problems). Each of the groups was significantly different from the others on severity of ADHD symptoms with the normal subjects having the lowest scores and the ADHD subjects having the highest. Although the ADHD subjects had the highest weighted mean, it is important to note that the individuals with other psychiatric diagnoses were not significantly different on the number of inattentive type symptoms. The OP group reported an average number of 7.92 (S.D. = 1.55) inattentive symptoms and 6.86 (S. D. = 1.92) hyperactive-impulsive symptoms. The ADHD group had a slightly higher raw score on the hyperactive-impulsive symptoms only. The high number of symptoms endorsed by the other psychiatric group is consistent with previous research which has shown a variety of attentional impairment in many other psychiatric disorders (Taylor & Miller, 1997). Therefore, when evaluating adults for the possibility of ADHD it is important to provide a comprehensive psychological evaluation, to obtain a detailed history which establishes childhood onset of the disorder, and to rule out other conditions which also contain attentional deficits. The emphasis for diagnosis
should be on the long-standing nature and severity of the symptoms, rather than merely their presence.

In summary, the CDDAP displayed internal consistency, adequate convergent validity with similar scales on the SCL-90, and was able to predict final diagnoses with acceptable levels of accuracy. The present study was a preliminary examination of the test items and an initial attempt at establishing the test's reliability and validity. This measure needs further investigation to establish test-retest reliability and to examine the discriminant validity of the scales. The present study compared the CDDAP to the SCL-90. Scales on the CDDAP and the SCL-90 which were conceptually different generally had smaller correlations than scales believed to measure the same construct, as would be anticipated. Establishing discriminant validity using the SCL-90, however, was problematic for several reasons. First, statistics related to the discriminant validity of the SCL-90 are not given in the manual. Second, the SCL-90 has a poor record in attempts to establish discriminant validity with other measures that contain independent dimensions of distress (Cyr, McKenna-Foley, & Peacock, 1985). Brophy and his colleagues suggest that the SCL-90 may be most useful as a measure of global distress (Brophy, Norvell, & Kiluk, 1988).

Future research could focus on revision of two of the scales which contained negatively correlated items, and to collect additional normative data in diverse populations. Overall, the CDDAP was a useful tool in the differentiation of ADHD adults from normals and those individuals with other psychiatric problems, and because of its
good ability to rule out the presence of other psychiatric problems, the CDDAP will be a
good screening instrument in other settings as well.
APPENDIX A

TABLES
Table 1

**DSM-III-R Criteria for ADHD**

A. A disturbance of at least six months during which at least eight of the following are present:

1) often fidgets with hands or feet or squirms in seat (in adolescents, may be limited to subjective feelings of restlessness)

2) has difficulty remaining seated when required to do so

3) is easily distracted by extraneous stimuli

4) has difficulty awaiting turn in games or group situations

5) often blurts out answers to questions before they have been completed

6) has difficulty following through on instructions from others (not due to oppositional behavior or failure of comprehension), e.g. fails to finish chores

7) has difficulty sustaining attention to tasks or play activities

8) often shifts from one uncompleted activity to another

9) has difficulty playing quietly

10) often talks excessively

11) often interrupts or intrudes on others, e.g., butts into other children's games

12) often does not seem to listen to what is being said to him or her

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

(Table Continues)
14) often engages in physically dangerous activities without considering possible consequences (not for the purpose of thrill-seeking), e.g., runs into street without looking

B. Onset before the age of seven

C. Does not meet the criteria for a Pervasive Developmental Disorder
Table 2

**DSM-IV Diagnostic 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

(Table continues)
(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 development 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 situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)

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

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

(f) often talks excessively

Impulsivity

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

(h) often has difficulty awaiting turn

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

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

(Table continues)
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).
Table 3

Breakdown of DSM-IV Diagnoses in the Clinical Groups

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<th>Diagnosis Description</th>
<th>Count</th>
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<td>ADHD Only</td>
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<tr>
<td>ADHD + Adjustment Disorder</td>
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<tr>
<td>ADHD + Anxiety Disorder</td>
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<td>ADHD + Anxiety + Substance Abuse</td>
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</tr>
<tr>
<td>ADHD + Mood + Anxiety + Substance Abuse</td>
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<td>19</td>
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<td>ADHD + Mood + Substance Abuse</td>
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<tr>
<td>ADHD + Mood + Sub + Psy</td>
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<tr>
<td>ADHD + Substance Abuse</td>
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<td>ADHD and Personality Disorder only</td>
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<tr>
<td>Other Psychiatric Group Total</td>
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<tr>
<td>Other Psychiatric Diagnoses</td>
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<tr>
<td>No Diagnosis</td>
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<td>Anxiety + Organic Problem</td>
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<tr>
<td>Condition</td>
<td>Count</td>
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<tr>
<td>---------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Anxiety + Psychotic symptoms</td>
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</tr>
<tr>
<td>Anxiety + Substance Abuse</td>
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<td>Anxiety + Substance Abuse + Tourette’s</td>
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<td>Mood + Anxiety</td>
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<td>Mood + Anxiety + Substance + Psychotic Sx</td>
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<tr>
<td>Mood + Anxiety + Substance Abuse</td>
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<td>Mood</td>
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<td>Mood + Substance Abuse</td>
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<td>Mood + Substance + Psychotic</td>
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<td>Psychotic Symptoms + Substance Abuse</td>
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### Table 4

**CDDAP Scale Characteristics**

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<tr>
<th>Scale Name</th>
<th>Alpha</th>
<th>Interitem Range</th>
<th>Mean Item Correlation</th>
<th>Mean Item SD</th>
<th>Range of Item Means</th>
<th>Range of Item SD</th>
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</thead>
<tbody>
<tr>
<td>ADDT</td>
<td>0.93</td>
<td>.15-.72</td>
<td>0.43</td>
<td>0.07</td>
<td>0.65-1.63</td>
<td>.74-1.07</td>
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<tr>
<td>ADA</td>
<td>0.92</td>
<td>.45-.72</td>
<td>0.57</td>
<td>0.06</td>
<td>1.05-1.63</td>
<td>.74-1.07</td>
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<tr>
<td>ADH</td>
<td>0.86</td>
<td>.25-.66</td>
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<td>0.07</td>
<td>.65-1.47</td>
<td>.81-1.06</td>
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<td>.65-1.02</td>
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<td>.66-1.01</td>
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<td>.67-1.35</td>
<td>.78-96</td>
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<td>0.10</td>
<td>.36-1.35</td>
<td>.62-96</td>
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<td>.06-.48</td>
<td>0.27</td>
<td>0.09</td>
<td>.11-.78</td>
<td>.41-.93</td>
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<td>0.78</td>
<td>-.17-.67</td>
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<td>.00-.65</td>
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<td>.43-1.68</td>
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<td>.43-1.07</td>
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<tr>
<td>ALC</td>
<td>0.77</td>
<td>.11-.56</td>
<td>0.36</td>
<td>0.13</td>
<td>.38-.81</td>
<td>.66-.78</td>
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</table>

ADDT = ADHD - Total; ADA = ADHD, Inattentive; ADH = ADHD, Hyperactive-Impulsive; OC = Obsessive Compulsive; MAN = Manic; DEP = Dependent Personality; ANT = Antisocial Personality; TDE = Depression; PSY = Psychotic; BPD = Borderline Personality; ANX = Anxiety; PTSD = Post-traumatic Stress Disorder; ALC = Alcohol-related symptoms.
Table 5

Correlations between CDDAP and SCL-90 Scales

<table>
<thead>
<tr>
<th></th>
<th>ADA</th>
<th>ADH</th>
<th>ADT</th>
<th>OC</th>
<th>BPD</th>
<th>DEP</th>
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<th>ANX</th>
<th>PSY</th>
<th>ALC</th>
<th>PER</th>
<th>PTSD</th>
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ADDT = ADHD - Total; ADA = ADHD, Inattentive; ADH = ADHD, Hyperactive-Impulsive; OC = Obsessive Compulsive; MAN = Manic; DEP = Dependent Personality; ANT = Antisocial Personality; TDE = Depression; PSY = Psychotic; BPD = Borderline Personality; ANX = Anxiety; PTSD = Post-traumatic Stress Disorder; ALC = Alcohol-related symptoms; SC = Symptom Count; GSI = Global Severity Index
Table 6
Pearson correlation matrix of CDDAP scales

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ADA = ADHD, Inattentive; ADH = ADHD, Hyperactive-Impulsive; ADDT = ADHD - Total; OC = Obsessive Compulsive; BPD = Borderline Personality; DEP = Dependent Personality; ANT = Antisocial Personality; TDE = Depression; MAN = Manic; ANX = Anxiety; PSY = Psychotic; ALC = Alcohol-related symptoms; PER = Personality; PTSD = Post-traumatic Stress Disorder; SC = Symptom Count; GSI = Global Severity Index.
Table 7

**Discriminant Function Analyses using Scales to Predict Final Diagnosis**

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$ADDT = ADHD - Total; ADA = ADHD, Inattentive; ADH = ADHD, Hyperactive-Impulsive; OC = Obsessive Compulsive; MAN = Manic; DEP = Dependent Personality; ANT = Antisocial Personality; TDE = Depression; PSY = Psychotic; BPD = Borderline Personality; ANX = Anxiety; PTSD = Post-traumatic Stress Disorder; ALC = Alcohol-related symptoms; SC = Symptom Count$
### Table 8

**Severity of ADHD Symptoms by Group (Normals, ADHD, and Other Psychiatric diagnoses)**

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<td>Mean  SD</td>
<td>Mean  SD</td>
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**Note:** Scores with different subscripts are significantly different.
ADA = ADHD, Inattentive Symptoms (weighted)
ADH = ADHD, Hyperactive-Impulsive Symptoms (weighted)
ADDT = ADHD - Total Symptoms (weighted)
RADA = Raw number of ADHD, Inattentive symptoms
RADH = Raw number of ADHD, Hyperactive-Impulsive symptoms
RADDT = Total number of ADHD symptoms

*** $p < .0001$
Table 9

CDDAP Normative data by diagnostic group (ADHD, OP, Normal)

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APPENDIX B

DEMOGRAPHIC QUESTIONNAIRE
Demographic Questionnaire

Subject Number ___________ Date of Birth: _____ / _____ / ______

Sex: ___M___ F  Marital Status: ___M___S___D_____

Current Classification: FR  SO  JR  SR  Grad

Highest Degree Obtained: HS  Assoc. BA/BS  MA/MS  Ph.D.

Have you ever been diagnosed with a psychiatric illness? ___yes ___no  If yes, please check:

___Attention Deficit Disorder

___Depression

___Schizophrenia

___Anxiety Disorder

___Learning Disability

___Bipolar Disorder

___Alcoholism

___Drug Use

___Other: ____________________________

Has any member of your family ever been diagnosed with a psychiatric illness or learning problem? ___yes ___no

Relationship ___________ Diagnosis ___________

Relationship ___________ Diagnosis ___________

Are you currently on any medications? ___yes ___no

Drug and dosage: ____________________________
APPENDIX C

CHECKLIST FOR DIFFERENTIAL DIAGNOSIS

OF ATTENTIONAL PROBLEMS
Checklist for Differential Diagnosis of Attentional Problems

Name__________________________ Date of Birth_____/_____/_____

Sex: M  F  Date of Test_____/_____/_____

Please answer the following questions by circling the letter which most accurately describes how often you experience each of these statements.

N = Never  S = Sometimes

O = Often  A = Always

1. I fail to give close attention to details or make careless mistakes.  
   N  S  O  A

2. I get so preoccupied with details, rules, lists, order, organization, or schedules that I lose the major point of the activity.  
   N  S  O  A

3. I will do almost anything to avoid being abandoned.  
   N  S  O  A

4. I have thoughts that make me anxious.  
   N  S  O  A

5. I have difficulty sustaining attention to tasks.  
   N  S  O  A

6. I need advice or reassurance from others to make decisions.  
   N  S  O  A

7. I have been in trouble with the law.  
   N  S  O  A

8. I feel depressed most of the day almost every day.  
   N  S  O  A

9. I do not seem to listen when spoken to directly.  
   N  S  O  A

10. My appetite is poor.  
    N  S  O  A

11. I have so much energy I can't sleep.  
    N  S  O  A

12. Something traumatic has happened to me.  
    N  S  O  A

13. I don't follow through on instructions and fail to finish tasks.  
    N  S  O  A
14. I hear my name being called when no one is there. N S O A
15. I am a perfectionist. N S O A
16. My personal relationships have been unstable. N S O A
17. I like for others to take charge of things. N S O A
18. I could con people if I wanted to. N S O A
19. I don't enjoy doing the things I used to. N S O A
20. I have difficulty organizing tasks and activities. N S O A
21. I am so devoted to my work that I rarely have time for leisure activities. N S O A
22. I can fit in with almost any crowd. N S O A
23. I don't like to disagree with others. N S O A
24. I act without thinking. N S O A
25. I have lost, or gained, weight recently. N S O A
26. I avoid, or dislike tasks that require sustained mental effort. N S O A
27. I sleep too much. N S O A
28. I feel so good I think I can do almost anything. N S O A
29. Things have happened to me that I avoid thinking about. N S O A
30. I feel like things are crawling on my skin. N S O A
31. I feel anxious. N S O A
32. I lose things necessary for tasks or activities. N S O A
33. I am overly conscientious and scrupulous. N S O A
34. I think of killing myself. N S O A
35. I have difficulty doing things on my own. N S O A
36. I have been physically aggressive. N S O A
37. I am easily distracted by extraneous stimuli. N S O A
38. I have difficulty falling asleep at night. N S O A
39. I feel fatigued. N S O A
40. I feel rested after only two or three hours of sleep. N S O A
41. My mind goes blank. N S O A
42. I am forgetful in daily activities. N S O A
43. People can read my mind. N S O A
44. I like for things to be in order. N S O A
45. I worry about many things. N S O A
46. I have threatened to kill myself. N S O A
47. I lack self confidence. N S O A
48. I fidget with my hands or feet. N S O A
49. I am fearful. N S O A
50. I wake up early and can’t go back to sleep. N S O A
51. I plan things in my head. N S O A
52. I feel hopeless. N S O A
53. I feel like a camera is filming me. N S O A
54. It is hard for me to stop talking. N S O A
55. I often leave my seat in situations where remaining seated is expected. N S O A
56. I have nightmares about things that have happened to me. N S O A
57. I have special talents no one else has. N S O A
58. I like to count things. N S O A
59. I feel empty inside. N S O A
60. I volunteer to do things just to please others. N S O A
61. It is hard for me to keep a job. N S O A
62. My hands shake. N S O A
63. I feel restless. N S O A
64. Recently I do things more slowly. N S O A
65. My self esteem is low. N S O A
66. My thoughts race. N S O A
67. I become very frightened or uncomfortable in certain situations. N S O A
68. Other people are jealous of me. N S O A
69. I have difficulty engaging in leisure activities quietly. N S O A
70. I am inflexible about matters of morality, ethics, or values. N S O A
71. I am very suspicious of others. N S O A
72. I feel uncomfortable when I am alone. N S O A
73. I have so much to say I can't get it all out. N S O A
74. I'm a "thrillseeker." N S O A
75. I am very agitated and move quickly. N S O A
76. I am "on the go" or feel as if "driven by a motor." N S O A
77. My activity level can increase rather suddenly. N S O A
78. I avoid places that remind me of my past. N S O A
79. I can see things others around me can't see. N S O A
80. I can't seem to throw things away, even when they don't have sentimental value. N S O A
81. I talk too much. N S O A
82. I have intentionally hurt myself. N S O A
83. When a significant relationship ends, I urgently look for another one. N S O A
84. I feel like I don't have any energy. N S O A
85. There are times when I am extremely productive. N S O A
86. I feel numb. N S O A
87. I have a "sixth sense" and know things others don't know. N S O A
88. I am reluctant to delegate tasks to others. N S O A
89. I blurt out answers before questions have been completed. N S O A
90. My muscles feel tense. N S O A
91. I have been in trouble because of my drinking. N S O A
92. I would rather save for a rainy day than spend my money. N S O A
93. I have a fear of being left to take care of myself. N S O A
94. I feel worthless. N S O A
95. I take risks that are potentially dangerous. N S O A
96. I have driven a car after drinking. N S O A
97. I don't expect to live long. N S O A
98. Someone is trying to steal my thoughts.
99. I have difficulty awaiting my turn.
100. I can be rigid and stubborn.
101. I have difficulty making decisions.
102. Words or phrases get stuck in my head.
103. I have hangovers.
104. I feel detached from others.
105. I hear my thoughts being spoken out loud.
106. I check things.
107. I feel guilty much of the time.
108. I interrupt others in conversation.
109. Alcohol helps me relax.
110. I wash my hands over and over.
111. I sweat a lot.
112. I think of death.
113. I get so anxious my heart races.
114. I use alcohol and/or drugs.
115. I have tried to quit drinking.
116. I feel irritable.
117. My mood changes suddenly.
118. I overreact to little things.
119. I have a bad temper.
120. It is hard for me to concentrate. N S O A
121. I am very aware of my surroundings. N S O A
122. I am a reckless driver. N S O A
123. I engage in binge eating. N S O A
124. I am an impulse buyer. N S O A
APPENDIX D

CONSENT FORM
Consent Form

I ______________________ give my consent to participate in a study measuring a variety of psychological symptoms. I understand that I will only be asked to complete questionnaires, which will take approximately an hour, and that I will receive one extra credit point for each half hour of participation.

I have been informed that any information to be used for research purposes will be recorded in such a manner that it will not be personally identified with me.

I understand that there is no personal risk or discomfort directly associated with this research and that I am free to withdraw my consent and discontinue participation in this study at any time.

If I have any questions or problems that arise in connection with my participation in this study, I should contact Cindy Taylor, M. A. regarding this dissertation project at (817) 320-6120.

This project has been reviewed and approved by the UNT Committee for the Protection of Human Subjects (817) 565-3940.

__________________________________________  ______________________________
Signature                                        Date

__________________________________________  ______________________________
Investigator                                     Date
APPENDIX E

CDDAP QUESTIONS BY SCALE
### CDDAP Questions by Scale

#### Attention Deficit Hyperactivity Disorder, Predominantly Inattentive Type (ADA)

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I fail to give close attention to details or make careless mistakes.</td>
</tr>
<tr>
<td>5</td>
<td>I have difficulty sustaining attention to tasks.</td>
</tr>
<tr>
<td>9</td>
<td>I do not seem to listen when spoken to directly.</td>
</tr>
<tr>
<td>13</td>
<td>I don't follow through on instructions and fail to finish tasks.</td>
</tr>
<tr>
<td>20</td>
<td>I have difficulty organizing tasks and activities.</td>
</tr>
<tr>
<td>26</td>
<td>I avoid, or dislike tasks that require sustained mental effort.</td>
</tr>
<tr>
<td>32</td>
<td>I lose things necessary for tasks or activities</td>
</tr>
<tr>
<td>37</td>
<td>I am easily distracted by extraneous stimuli</td>
</tr>
<tr>
<td>42</td>
<td>I am forgetful in daily activities</td>
</tr>
</tbody>
</table>
Attention Deficit Hyperactivit Disorder, Predominantly Hyperactive-Impulsive Type (ADH)

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>I fidget with my hands or feet.</td>
</tr>
<tr>
<td>55</td>
<td>I often leave my seat in situations where remaining seated is expected.</td>
</tr>
<tr>
<td>63</td>
<td>I feel restless.</td>
</tr>
<tr>
<td>69</td>
<td>I have difficulty engaging in leisure activities quietly.</td>
</tr>
<tr>
<td>76</td>
<td>I am “on the go” or feel as if “driven by a motor.”</td>
</tr>
<tr>
<td>81</td>
<td>I talk too much.</td>
</tr>
<tr>
<td>89</td>
<td>I blurt out answers before questions have been completed.</td>
</tr>
<tr>
<td>99</td>
<td>I have difficulty awaiting my turn.</td>
</tr>
<tr>
<td>108</td>
<td>I interrupt others in conversation.</td>
</tr>
</tbody>
</table>
### Obsessive Compulsive (OC)

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>I get so preoccupied with details, rules, lists, order, organization, or schedules that I lose the major point of the activity.</td>
</tr>
<tr>
<td>4</td>
<td>I have thoughts that make me anxious.</td>
</tr>
<tr>
<td>15</td>
<td>I am a perfectionist</td>
</tr>
<tr>
<td>21</td>
<td>I am so devoted to my work that I rarely have time for leisure activities.</td>
</tr>
<tr>
<td>33</td>
<td>I am overly contentious and scrupulous.</td>
</tr>
<tr>
<td>44</td>
<td>I like for things to be in order.</td>
</tr>
<tr>
<td>51</td>
<td>I plan things in my head.</td>
</tr>
<tr>
<td>58</td>
<td>I like to count things.</td>
</tr>
<tr>
<td>70</td>
<td>I am inflexible about matters of morality, ethics, or values.</td>
</tr>
<tr>
<td>80</td>
<td>I can’t seem to throw things away, even when they don’t have sentimental value.</td>
</tr>
<tr>
<td>88</td>
<td>I am reluctant to delegate tasks.</td>
</tr>
<tr>
<td>92</td>
<td>I would rather save for a rainy day than spend my money.</td>
</tr>
<tr>
<td>100</td>
<td>I can be rigid and stubborn.</td>
</tr>
<tr>
<td>102</td>
<td>Words and phrases get stuck in my head.</td>
</tr>
<tr>
<td>106</td>
<td>I check things.</td>
</tr>
<tr>
<td>110</td>
<td>I wash my hands over and over.</td>
</tr>
<tr>
<td>Item No.</td>
<td>Content</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>3</td>
<td>I will do almost anything to avoid being abandoned.</td>
</tr>
<tr>
<td>16</td>
<td>My personal relationships have been unstable.</td>
</tr>
<tr>
<td>22</td>
<td>I can fit in with almost any crowd.</td>
</tr>
<tr>
<td>34</td>
<td>I think of killing myself.</td>
</tr>
<tr>
<td>46</td>
<td>I have threatened to kill myself.</td>
</tr>
<tr>
<td>59</td>
<td>I feel empty inside.</td>
</tr>
<tr>
<td>71</td>
<td>I am very suspicious of others.</td>
</tr>
<tr>
<td>82</td>
<td>I have intentionally hurt myself.</td>
</tr>
<tr>
<td>117</td>
<td>My mood changes suddenly.</td>
</tr>
<tr>
<td>118</td>
<td>I overreact to little things.</td>
</tr>
<tr>
<td>119</td>
<td>I have a bad temper.</td>
</tr>
<tr>
<td>Item No.</td>
<td>Content</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>6</td>
<td>I need advice or reassurance from others to make decisions.</td>
</tr>
<tr>
<td>17</td>
<td>I like for others to take charge of things.</td>
</tr>
<tr>
<td>23</td>
<td>I don’t like to disagree with others.</td>
</tr>
<tr>
<td>35</td>
<td>I have difficulty doing things on my own.</td>
</tr>
<tr>
<td>47</td>
<td>I lack self-confidence.</td>
</tr>
<tr>
<td>60</td>
<td>I volunteer to do things just to please others.</td>
</tr>
<tr>
<td>72</td>
<td>I feel uncomfortable when alone.</td>
</tr>
<tr>
<td>83</td>
<td>When a significant relationship ends, I urgently look for another.</td>
</tr>
<tr>
<td>93</td>
<td>I have a fear of being left to take care of myself.</td>
</tr>
</tbody>
</table>
### Antisocial Personality Disorder (ANT)

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>I have been in trouble with law.</td>
</tr>
<tr>
<td>18</td>
<td>I could con people if I wanted to.</td>
</tr>
<tr>
<td>24</td>
<td>I acts without thinking.</td>
</tr>
<tr>
<td>36</td>
<td>I have been physically aggressive.</td>
</tr>
<tr>
<td>61</td>
<td>It is hard for me to keep a job.</td>
</tr>
<tr>
<td>74</td>
<td>I am a “thrillseeker”.</td>
</tr>
<tr>
<td>91</td>
<td>I have been in trouble because of my drinking.</td>
</tr>
<tr>
<td>95</td>
<td>I take risks that are potentially dangerous.</td>
</tr>
<tr>
<td>96</td>
<td>I have driven a car after drinking.</td>
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<td>Item No.</td>
<td>Content</td>
</tr>
<tr>
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<td>---------</td>
</tr>
<tr>
<td>8</td>
<td>I feel depressed most of the day every day.</td>
</tr>
<tr>
<td>10</td>
<td>My appetite is poor.</td>
</tr>
<tr>
<td>19</td>
<td>I don’t enjoy doing the things I used to enjoy.</td>
</tr>
<tr>
<td>25</td>
<td>I have lost, or gained weight recently.</td>
</tr>
<tr>
<td>27</td>
<td>I sleep too much.</td>
</tr>
<tr>
<td>34</td>
<td>I think of killing myself</td>
</tr>
<tr>
<td>38</td>
<td>I have difficulty falling asleep at night.</td>
</tr>
<tr>
<td>39</td>
<td>I feel fatigued.</td>
</tr>
<tr>
<td>50</td>
<td>I wake up early and can’t go back to sleep.</td>
</tr>
<tr>
<td>52</td>
<td>I feel hopeless.</td>
</tr>
<tr>
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<td>Recently I do things more slowly.</td>
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<td>My self esteem is low.</td>
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<tr>
<td>75</td>
<td>I am very agitated and move quickly.</td>
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<td>84</td>
<td>I feel like I don’t have any energy.</td>
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<td>94</td>
<td>I feel worthless.</td>
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<tr>
<td>101</td>
<td>I have difficulty making decisions.</td>
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<tr>
<td>107</td>
<td>I feel guilty much of the time.</td>
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<tr>
<td>112</td>
<td>I think of death.</td>
</tr>
<tr>
<td>120</td>
<td>It is hard for me to concentrate.</td>
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<td>Content</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>11</td>
<td>I have so much energy I can't sleep.</td>
</tr>
<tr>
<td>28</td>
<td>I feel so good I think I can do almost anything.</td>
</tr>
<tr>
<td>37</td>
<td>I am easily distracted by estraneous stimuli.</td>
</tr>
<tr>
<td>38</td>
<td>I have difficulty falling asleep at night.</td>
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<td>I feel rested after only two to three hours of sleep.</td>
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<td>It is hard for me to stop talking.</td>
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<td>I have special talents no one else has.</td>
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<tr>
<td>66</td>
<td>My thoughts race.</td>
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<td>68</td>
<td>Other people are jealous of me.</td>
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<tr>
<td>73</td>
<td>I have so much to say I can't get it all out.</td>
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<td>77</td>
<td>My activity level can increase rather suddenly.</td>
</tr>
<tr>
<td>85</td>
<td>There are times when I am extremely productive.</td>
</tr>
<tr>
<td>95</td>
<td>I take risks that are potentially dangerous.</td>
</tr>
<tr>
<td>124</td>
<td>I am an impulse buyer.</td>
</tr>
<tr>
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</tr>
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</tr>
<tr>
<td>4</td>
<td>I have thoughts that make me anxious.</td>
</tr>
<tr>
<td>12</td>
<td>Something traumatic has happened to me.</td>
</tr>
<tr>
<td>29</td>
<td>Things have happened to me that I avoid thinking about.</td>
</tr>
<tr>
<td>31</td>
<td>I feel anxious.</td>
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<td>I worry about many things.</td>
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<td>I have nightmares about things that have happened to me.</td>
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<td>My hands shake.</td>
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<td>I become frightened or uncomfortable in certain situations.</td>
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<tr>
<td>78</td>
<td>I avoid places that remind me of my past.</td>
</tr>
<tr>
<td>86</td>
<td>I feel numb.</td>
</tr>
<tr>
<td>90</td>
<td>My muscles feel tense.</td>
</tr>
<tr>
<td>97</td>
<td>I don't expect to live long.</td>
</tr>
<tr>
<td>104</td>
<td>I feel detached from others.</td>
</tr>
<tr>
<td>111</td>
<td>I sweat a lot.</td>
</tr>
<tr>
<td>113</td>
<td>I get so anxious my heart races.</td>
</tr>
<tr>
<td>116</td>
<td>I feel irritable</td>
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<td>97</td>
<td>I do not expect to live long.</td>
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<td>104</td>
<td>I feel detached from others.</td>
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</tbody>
</table>
Psychotic (PSY)

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>I hear my name being called with no one is there.</td>
</tr>
<tr>
<td>30</td>
<td>I feel like things are crawling on my skin.</td>
</tr>
<tr>
<td>43</td>
<td>People can read my mind.</td>
</tr>
<tr>
<td>53</td>
<td>I feel like a camera is filming me.</td>
</tr>
<tr>
<td>57</td>
<td>I have special talents no one else has.</td>
</tr>
<tr>
<td>68</td>
<td>Other people are jealous of me.</td>
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<td>I can see things others around me can't see.</td>
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<td>87</td>
<td>I have a “sixth sense” and know things others don’t know.</td>
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<td>98</td>
<td>Someone is trying to steal my thoughts.</td>
</tr>
<tr>
<td>105</td>
<td>I hear my thoughts being spoken out loud.</td>
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<tr>
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<td>Content</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>91</td>
<td>I have been in trouble because of my drinking.</td>
</tr>
<tr>
<td>96</td>
<td>I have driven a car after drinking.</td>
</tr>
<tr>
<td>103</td>
<td>I have hangovers.</td>
</tr>
<tr>
<td>109</td>
<td>Alcohol helps me relax.</td>
</tr>
<tr>
<td>114</td>
<td>I use alcohol and/or drugs.</td>
</tr>
<tr>
<td>115</td>
<td>I have tried to quit drinking.</td>
</tr>
</tbody>
</table>
REFERENCES


