Attention-Deficit/Hyperactivity Disorder:

Issues of Assessment and Diagnosis

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Abstract

The assessment process of Attention-Deficit/Hyperactivity Disorder was examined in depth for procedures and possible flaws. Seven different procedural aspects of ADHD assessment were the focus along with any tests falling under these categories. It was found that the assessment process of ADHD is highly subjective, under-regulated, and extremely lacking in nature. In addition, two focus group interviews were conducted to determine if ADHD assessment should be offered by the educational system. It was found that ADHD screening is appropriate at this point, but ADHD assessment is premature.
Attention-Deficit/Hyperactivity Disorder:
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Attention-Deficit/Hyperactivity Disorder (ADHD) seems to be sweeping the nation, affecting children everywhere. In fact, it is estimated that 5-10% of the child population is now being labeled as having ADHD (Carey, 1999). Furthermore, ADHD is considered the most common chronic behavior disorder in grade-school aged children (Johnson, 1997). For those children who are truly afflicted, treatment is very effective and their lives change dramatically; however, many children are actually misdiagnosed and placed on treatment. This also can change their lives dramatically, though usually not for the better. Likewise, there is evidence that some children are not diagnosed at all and seem to be skipped over. Thus, it seems apparent that the assessment process is somehow flawed, but exactly how is it flawed?

Perhaps one of the largest problems facing the assessment process of ADHD is its lack of universality. There is no standard forum to conduct the assessment and no set procedures to do so. While many agree on how the process should take place, there still remains no universal standard. Most experts in the field advocate a multidimensional assessment process that heavily involves the child’s school officials (teachers, school psychologists, and administrators). Since the accepted process involves the school, perhaps the school should be the forum to conduct assessments of ADHD. While this seems to be an easy fix to the problem, it includes with it several drawbacks. This paper will not only thoroughly examine the assessment process of ADHD and explore many of the faults with such, but through the findings of focus group interviews it will also seek to determine if the school is an appropriate place to handle the
assessments process.

What is ADHD?

Definitions

DSM-IV. Before addressing the issues of ADHD assessment, it is important to have a working definition of the disorder. Many opinions exist concerning the definition of ADHD; however, among experts there is little agreement on an explicit definition of ADHD (Carter, 1995). Perhaps the first place to search for a definition of ADHD is the most recent edition of *The Diagnostic and Statistical Manual of Mental Disorders* (APA, 1994). The DSM-IV presents ADHD as a disorder that adversely affects one's levels of attention, hyperactivity, and impulsivity (1994). It also divides the disorder into three subtypes claiming that while most people show symptoms of both inattention and hyperactivity-impulsivity, some people have one or the other as the predominant symptom (1994). The three subtypes are Predominantly Inattentive Type, Predominantly Hyperactive-Impulsive Type, and Combined Type.

Children who fit into the type of Predominantly Inattentive are generally lethargic, anxious, shy, and socially withdrawn (Brown, Keene, and Middleton, 1992). These children often focus on internal events instead of external demands and they can appear "cognitively sluggish in responding to tasks" (Brown et al., 1992). Predominantly Inattentive children can also be learning disabled, experiencing problems in focusing attention and cognitive processing speed (Brown et al., 1992). Parents perceive these children as lost in thought, confused, dreamy, slow-moving, apathetic, and unmotivated (Brown et al., 1992).

Predominantly Hyperactive-Impulsive Type children are usually characterized by hyper,
aggressive conduct and odd behavior (Brown et al., 1992). These children are most often unpopular with their peers and perform poorly at school. Hyperactive-Impulsive children are described as noisy, disruptive, messy, irresponsible, and immature, and they show difficulty in following rules. Their difficulty in following rules may be due to an insensitivity to consequences and reinforcements, and punishments, or both of these (Brown et al., 1992). Further descriptions of the criteria can be found in Appendix A.

Barkley. Although the DSM-IV provides one description and set of criteria, other experts have defined ADHD slightly different. Russell Barkley (1988), one of the most “widely recognized” (Gumpel & Reid, 1998) and published experts on ADHD, proposes this definition of ADHD:

ADD/H is a developmental disorder of attention span, impulsivity, and/or overactivity as well as rule-governed behavior, in which these deficits are significantly inappropriate for the child’s mental age; have an onset early in childhood, are significantly pervasive or cross-situational in nature; are generally chronic or persistent over time; and are not the direct result of severe language delay, deafness, blindness, autism, or childhood psychosis (p. 72).

While this definition encompasses most of the criteria in the DSM-IV, it presents itself in a much clearer manner and tends to be more specific. Both of the definitions presented are important to keep in mind throughout this paper, particularly during the section on assessment.

Causes

ADHD is primarily an inherited, neurobiological disorder (Gregg, 1995); however,
evidence does exist that supports the notion that certain environmental factors can worsen, if not actually produce, the symptoms of ADHD (Carey, 1999). According to Carey (1999),

Beside the predisposing traits in the child, something else is needed in the family, neighborhood, school, or elsewhere, like intolerance of those traits or various psychosocial stressors, to produce the behavior problem (p. 664).

Other external factors include complications during pregnancy and birth, illness, lead poisoning, injury, and prenatal drug exposure (Gregg, 1995). ADHD is also one of the more common effects of Fetal Alcohol Syndrome and prenatal cocaine exposure. Thus, children with ADHD are "neurobiologically different which interferes with their ability to inhibit, control, and direct behavior in response to environmental and situational demands" (Gregg, 1995). If ADHD children are neurobiologically different, is the school the best place to diagnose the disorder? This will be examined further in the Assessment section.

Theories of Brain Deficits. Concerning the cause of ADHD, several theories of brain deficiencies exist. One of the theories is that of frontal lobe deficits. Benson claimed that certain hallmarks of ADHD such as the ability to maintain sequences, control drives, self-monitor, and having a high IQ without the ability to use it effectively, are similar to characteristics observed in individuals with frontal lobe damage (Beuttler, 1996). Benson also tried to support his theory of frontal lobe deficits by noting that an individual's outgrowing ADHD could reflect a delay in brain maturation or a delay in myelination and since frontal lobes are the last to myelinate, this could indicate a relationship between ADHD and the frontal lobes (Beuttler, 1996).

Denckla went on to support the frontal lobe deficit theory by pointing out that the
dorsolateral prefrontal lobe is the section of the brain in control of executive functions which control one's capacity to attend to more than one element of a situation at once while resisting outside interference or distractions (Beuttler, 1996). Furthermore, this section controls the inhibition of off-task or inappropriate responses, as well as planning, sequencing, and maintaining appropriate response output for extended periods of time (Beuttler, 1996). All of these facts point to a relationship with the frontal lobes and the symptoms of ADHD.

In addition to the frontal lobe deficiency theory, other studies have indicated neurological differences in people diagnosed with ADHD. Zametkin and colleagues performed brain-imaging studies of adults with ADHD. These studies revealed significant reductions in the brain's glucose metabolism in "areas shown to be involved in the control of attention and motor activity" (Gregg, 1995). Differences were also noted concerning the neurotransmitters norepinephrine and dopamine (catacholamines). These neurotransmitters affect the brain by regulating motor inhibition and control, and projecting into areas of the frontal lobes which organize and regulate goal-directed attentive behavior (Gregg, 1995).

While these brain deficiencies would all seem to be a part of the cause of ADHD, there have not been enough studies conducted to verify actual differences in the brains of ADHD subjects and controls (Beuttler, 1996). Furthermore, although extensive searches have been conducted with sophisticated modern techniques, "no consistent pathologic changes or structural, functional, or chemical marker is found with the current ADHD diagnosis" (Carey, 1999).

Although the majority of children considered to be afflicted with ADHD do not have a history of neurological damage, cerebral dysfunction is still an important factor worthy of consideration.
(Reason, 1999). Thus, it is imperative for more studies to be conducted in order to ensure accurate assessment of ADHD and proper methods of treatment for those diagnosed with ADHD.

Once again, if any of these medical bases were proven, the current assessment process would have to be seriously altered to focus more on medical examinations. Therefore, the question still remains if the school is an appropriate forum for the assessment process. This will also be furthered explored in the section on assessment.

Paradigms

Continuum. The most accepted paradigm concerning ADHD claims that ADHD lies on a continuum of normal behavior. The logic behind this is that since most people at times appear impulsive, inattentive, or hyperactive, ADHD represents one end of a spectrum of neurological variation (Gregg, 1996). This paradigm is behaviorally based and seems to shy away from any major biological basis. The continuum paradigm also gains support in that upon reading of the symptoms of ADHD, many people wonder if they are afflicted merely because they have exhibited the symptoms. Although people often experience the symptoms of ADHD, they are not in the excess or combination as that necessary for a diagnosis of ADHD. This supports the concept that ADHD is at the high end of a continuum of "normal" behavior. Barkley also advocates the continuum paradigm (Barkley, 1988).

Biological. The other paradigm concerning ADHD is of a biological basis. Jones (1997) claims that there is increasing biological evidence supporting ADHD as a distinct category which does not belong on a continuum. These studies indicate that individuals with ADHD have an abnormal gene, weird brain waves, and lower activity level in the areas of the brain that control
concentration and the ability to get back on track after being distracted (Jones, 1997). Whereas this paradigm could mean significant advancements in the assessment process of ADHD, the treatment of ADHD, and moving towards a cure for ADHD, without the studies to support it, it remains fairly speculative.

Assessment

Components

There are several components of an effective assessment of ADHD, all of which should be addressed in some way. Again, no standards have evolved in assessing ADHD, so experts tend to have slightly different views on the components. Although opinions of the components are somewhat different, all of the components have merit and should be encompassed in a comprehensive assessment. Four of the general, and perhaps universal, components are distractibility, impulsivity, hyperactivity, and sustained attention (Brown et al., 1992). Brown and colleagues suggest that an effective, comprehensive assessment of ADHD will examine these areas to a large degree. In addition, Mirsky claims there are four crucial components that are similar to the previous four, but not exact. Mirsky's four are the capacity to focus on and perform tasks for a short time span, the capacity to encode and mentally manipulate information, the capacity to sustain attention over a longer period, and the capacity to shift attentional focus-flexibility (Brown et al., 1992).

Requirements for Diagnosis

Perhaps the best starting place for examining the requirements for an ADHD diagnosis is the criteria set forth by the DSM-IV. The first part of the criteria in the DSM-IV is split
according to type. Each type has a checklist of symptoms (See Appendix A for detailed description). In order to be diagnosed ADHD, an individual must have exhibited six or more of the symptoms for one of the types for "at least six months to a degree that is maladaptive and inconsistent with developmental level" (APA, 1994). In addition, the symptoms must be present in two or more settings and have had an onset before the age of seven. Furthermore, "there must be clear evidence of clinically significant impairment in social, academic, or occupational functioning" (APA, 1994), and the symptoms must not have occurred during the duration of Schizophrenia, Pervasive Developmental Disorder, or another Psychotic Disorder, and cannot be better accounted for by another mental disorder (Mood Disorder, Anxiety Disorder, Dissociative Disorder, or Personality Disorder) (APA, 1994).

While the DSM-IV may be a useful tool in diagnosing ADHD, it is not free from limitations. G. Spadafore and S. Spadafore (1997) propose three important limitations that are noteworthy. First of all, the DSM-IV does not differentiate among different age groups. They claim that the cut-off scores should be more stringent with younger children and less stringent with older children. The second limitation is that the DSM-IV does not differentiate between genders. According to Spadafore and Spadafore, cut-off scores should be less stringent for girls (although they do not give a reason for this). Finally, the DSM-IV does not permit responses to be scored on a scale, but instead uses an "all or none" rating with the key word "often."

Although these are important limitations, the DSM-IV is still considered one of the most important tools in diagnosing ADHD. Additional limitations of the DSM-IV will be reviewed in the section on problems with assessment.
ADHD is unique in that, although its requirements for diagnosis are included in the DSM-IV, diagnosis is not regulated by the DSM-IV, thus making the requirements open for slight variation. The first variation is by Barkley. Barkley claims that the criteria for diagnosis in the DSM-IV is not stringent enough and has the tendency to be too broad, so he proposes a set of six guidelines which are more strict and specific (1988). The first guideline requires parent and or teacher complaints of inattention, impulsivity, hyperactivity, and poor sustained compliance, self-control, and problem solving. Next he requires a score or scores two standard deviations above the mean for same-age, same-sex normal children on factors designated as "Inattention" or "Hyperactive" in well-standardized child behavior rating scales which are completed by parents or teachers. Barkley's third requirement is the onset of the problems before the age of six and he follows this with the requirement that the problems have been present for at least 12 months. The fifth criterion requires the individual to have an IQ greater than 85, or if between 70 and 85, the comparison to individuals of the same mental age in using criterion two. Finally, Barkley calls for the exclusion of a significant language delay, sensory handicaps (deafness, blindness), or severe psychopathology such as autism, or childhood schizophrenia (Barkley, 1988).

At this point, the importance of ruling out other disorders should be noted. All disorders which may produce similar symptoms to that of ADHD must be determined as absent completely before an ADHD diagnosis can be made (Beuttler, 1996). In addition to the other psychological disorders, learning disabilities can also confound a diagnosis of ADHD. Studies must control for the presence of learning disabilities and conduct disorder in order to avoid misattributing deficits to ADHD (Beuttler, 1996). Furthermore, many other causes of hyperactivity exist and one must
be cautious and not merely assume ADHD when approaching the diagnosis of a hyperactive child (Johnson, 1997). Some of these causes of hyperactivity are found in Appendix B.

Thus, before making a diagnosis of ADHD, one must ask himself several questions (Carter, 1995):

- Does the student meet the criteria in the DSM-IV for ADHD?
- Does the student exhibit a significant number of behavioral symptoms of ADHD according to parent/teacher reports?
- Does the student display ADHD-related behaviors at a frequency that is significantly greater than that of students at the same age and of the same gender?
- Do these behaviors impair the student's functioning in the school, in social relations, and/or in the home?
- At what age did the student begin to exhibit ADHD behaviors, and are these behaviors evident in a variety of situations?
- Does an alternative diagnosis or conceptualization account for the student's diagnosis?

Responsibilities of Assessment

An assessment of ADHD should be a worthwhile procedure for all those involved. Proper assessment can improve the level of understanding on the parts of the parents and teachers. In addition, proper assessment will have a dramatic impact on the quality of education and life experiences a child will receive. In order to ensure these things, an assessment has some responsibilities. First of all, an assessment should have a positive impact for the child with
ADHD and/or the family involved (Carter, 1995). Next, the assessment must have practical value or meaning concerning educationally intervening with the child with ADHD and/or the family (Carter, 1995). It is also important that an assessment have the potential to be replicated at other sites with the expectation of similar results (Carter, 1995). The fourth responsibility of assessment is to acknowledge the benefits of early detection by addressing inattention, impulsivity, and overactivity (Carter, 1995). Another important responsibility of assessment is to focus on strengths and needs; to show evidence of collaborative involvement with families and the community (Carter, 1995). Finally, an assessment should address issues of cultural diversity (Carter, 1995). Perhaps the school is the best place to meet all of these responsibilities.

**Multiple Measurements of Assessment**

ADHD is a very complex disorder and in order to address this complexity, assessment should be multidimensional and cross-situational, thereby examining how a child functions in multiple settings and across different areas of development (Carter, 1995). This multidimensional method should include not only client history but also the professional's "diagnostic acumen" (Beuttler, 1996). Since the presence of symptoms from the DSM is not sufficient alone to make an ADHD diagnosis (Carter, 1995), as well as different methods tend to have compensating strengths and weaknesses (Brown et al., 1992), it is important to use multiple information sources. There has been a general agreement on the use of seven assessment procedures to provide a comprehensive measure of attention. These seven include interviews, behavioral observation, standardized tests, drawing assessments, rating scales, projective tests, and neuropsychological tests (Brown et al., 1992). This is also referred to as the traditional
model of assessment.

**Interviews.** One of the most popular and commonly used assessment tools is the interview. There are three types of interviews conducted, parent interviews, teacher interviews, and child interviews. A study which conducted a survey concerning assessment methods used by psychologists and physicians showed that psychologists tend to use teacher interviews more extensively than did the physicians; however, both groups used parent and child interviews (Brown et al., 1992).

Parent interviews can provide the most comprehensive description of a child's previous development and current adjustment, including characteristics of ADHD which the child displays in the home (Carter, 1995). Interviews with the parents can also provide an ecologically valid and important source of information regarding the child's difficulties (Barkley, 1988). There are several steps to follow in a parental interview in order to reap the most benefits. It is first important to obtain routine demographic data from the parents and then move to the major referral concerns of the parents (Barkley, 1988). Next, the interviewer should find out the specific nature, frequency, age of onset, and chronicity of the problematic behaviors including situational and temporal variations in behavior and their consequences (Barkley, 1988). The third step is to review any potential problems which may exist in the child's developmental domains of motor, language, intellectual, academic, emotional, and social functioning (Barkley, 1988). Step four requires the interviewer to obtain any developmental, medical, school, and family histories (Barkley, 1988). Next the interviewer should question the parents about the "child's ability to accomplish commands and requests in a satisfactory manner in various settings.
to adhere to rules of conduct governing behavior in various situations, and to demonstrate self-control appropriate to child's age in the absence of adult supervision" (Barkley, 1988). It is important that the interviewer also inquire about the nature of parental and family social activities to see where the parents fit into the usual social support networks (Barkley, 1988). Finally, a parent interview should conclude with a discussion of the child's positive characteristics and attributes (Barkley, 1988).

Teacher interviews are also beneficial in assessment because they not only collect information on the child but also assess the classroom environment and the currently used teaching strategies (Carter, 1995). Interviews with the teacher also offer insight into the child's academic strengths and weaknesses, as well as his/her social, emotional, and behavioral characteristics (Carter, 1995). This type of interview should focus on the specific nature of a child's difficulties in the school environment and should follow a "functional-analytic or behavioral format" (Barkley, 1988). During a teacher interview, inquiries should be made as to any potential learning disabilities the child may have (Barkley, 1988). Finally, teacher interviews should explore any academic "underachievement" such as sloppy handwriting, careless approaches to tasks, or poor organization of work materials (Barkley, 1988).

Interviews with the child are also helpful in assessing ADHD. This type of interview is used to reveal important information concerning family, school, and social interactions (Carter, 1995). These interviews may also reveal any information concerning the child's feelings which may affect his/her adjustment and behavior (Carter, 1995). Child interviews are the most variable in that the format should depend somewhat on the child's age (Barkley, 1988). While it
is beneficial to note the child's behavior, compliance, attention span, activity level, and impulse control, the interviewer should not make a diagnosis based on the interview alone.

Behavioral Observations. Along with interviews, behavioral observations are also the most commonly used assessment techniques (Brown et al., 1992). Behavioral observations are usually performed in the school, home, or doctor's office. Observation is done the least inside the child's home. Psychologists seem to perform these observations more in the school or home, whereas, physicians tend to observe inside of their offices (Brown et al., 1992). A trained observer who is not already working on the case performs behavioral observation. While many formats exist, they all follow a similar set of criteria including giving the child a task and then inconspicuously observing how well the child stays on the task. Barkley recommends the use of the Milich Restricted Academic Playroom Situation which involves the child being given a list of math problems to complete in a room that contains some toys. The child is then observed for any off-task behaviors (Barkley, 1988). Barkley claims that this method has been found to significantly discriminate between ADHD children and normal children or non-ADHD clinic children (Barkley, 1988). An advantage of using behavioral observation is that since the observation is being conducted by an impartial observer, rater bias is reduced (Carter, 1995). The main disadvantages of behavioral observations are the cost involved in training and data collection and time limits, which may cause an observer to miss certain behaviors (Carter, 1995). It is essential to note that most practitioners still rely on interviews and behavioral observation even though they lack standardized interpretations, normative information, and uniform administration procedures (Brown et al., 1992).
Standardized Tests. Standardized tests are a highly used tool in the assessment of ADHD. School Psychologists have been trained specifically on administering these types of tests, which definitely supports an in-school diagnosis. While many tests exist, the most frequently used in the assessment of ADHD are the Wechsler Intelligence Scale for Children-Third Edition (WISC-III), and the Woodcock-Johnson Psycho-Educational Battery-Revised (WJ-R), both the Cognitive and Achievement parts (Brown et al., 1992). For detailed information concerning these tests, see Appendix C.

Morton Bortner claims that the WISC-III "remains the best standardized, most objectively administered and scored test of its kind" (Bortner, 1994). Douglas Detterman also speaks highly of the WISC-III claiming that it is easy to use, and is "short enough to be tolerable, and long enough to be reliable" (Detterman, 1994). Although the test should give relatively reliable feedback, many low-scoring children will be mislabeled and educationally misplaced due to people who do not understand many quantitative aspects such as standard error (Bortner, 1994). However, if the entire test performance is utilized, it should be possible to understand the meanings behind the final test score and to then formulate hypotheses about the bases of a child's problems (Bortner, 1994). This relates to diagnosing ADHD in that only when the test scores are interpreted by a properly educated person will generated hypotheses be correct. Thus, the test must be interpreted properly for the hint of ADHD to be present.

In addition to the WISC-III, the WJ-R is also used often in assessing ADHD. One of the biggest advantages to the WJ-R is that it offers a standard battery of tests along with more specialized subtests. Thus, the examiner can use the standard battery of tests, referral
specialized subtests. Thus, the examiner can use the standard battery of tests, referral information, and then additional subtests to test hypotheses generated in the initial phase of testing (Cummings, 1994). In addition, the WJ-R offers many different ways of scoring. The administrator should choose the scoring method with the greatest likelihood of effectively communicating an individual's test results (Cummings, 1994). This is beneficial in the assessment of ADHD because the WJ-R allows the results to be interpreted in a more specialized manner pertaining to ADHD. The WJ-R also seems to be normed very well and has an acceptable reliability. Its validity seems to be questionable. Furthermore, the test's manual does not deal appropriately with the issue of validity (Cummings, 1994).

Drawing Assessments. Although less than 20 percent of practitioners use drawing assessments (Brown et al., 1992) some still incorporate this into the assessment of ADHD. The most common Drawing assessment used is the Bender Gestalt Test (Brown et al., 1992). This test cites its purpose as measuring perceptual-motor abilities ("Bender Gestalt Test," 1994) (See Appendix C). Little information is available as to the reasoning behind using drawing tests in the assessment of ADHD, but it seems that this type of test would be extremely subjective and not as useful.

Rating Scales. There are three different categories of behavior rating scales that are used; parent, teacher, and child. Although parent and teacher scales are used often, child rating scales are a bit more scarce. The main advantage to rating scales is that they are very economical; however some disadvantages should be mentioned. Perhaps the biggest disadvantage is that parent and teacher rating scales are both subject to rater bias (Carter, 1995). In the case of
teachers, the data rely on the teacher’s familiarity with the student, and in the case of parents, objectivity may be lost due to the desire to respond in ways which may not be realistic (Carter, 1995). In addition, parents may not be objective due to their lack of exposure to children of the same age as their child (Carter, 1995). Nevertheless, it has been estimated that 52% of all practitioners use behavior rating scales in the diagnosis of ADHD (Brown et al., 1992). The two most popular tests are the Conners’ Teacher and Parent Rating Scales and the Child Behavior Checklist (Brown et al., 1992). See Appendix B for a detailed description of these tests.

The Conners’ Parent Rating Scale is a 48 item rating scale which is scored to yield five factor scales, two of which are Impulsive/Hyperactive and Conduct Problems (Barkley, 1988). Barkley (1988) claims it to be briefer and more easily repeated over brief time intervals than the Child Behavior Checklist. Judy Oehler-Stinnett (1994) has a negative opinion of the Conners’ Scales (both Teacher and Parent) and claims that the test “lacks comprehensive coverage of the scales in the manual, retains all versions of the scales, uses outdated norms, gives inappropriate interpretative advice, and gives a general lack of caution to readers regarding shortcomings of the scale.” In addition, she urges the reader to keep up with the literature and not the status quo (Oehler-Stinnett, 1994). Brian Martens (1994) says that while scoring is easy, all the items are negatively worded, and the normative sample is not well-described. Similarly, the Conners’ Teacher Rating Scale has an inadequately described normative sample. It is comparable in nature to the Parent Rating Scale. Barkley describes the test-retest reliability and the interteacher reliability as "quite satisfactory" (Barkley, 1988).

The Child Behavior Checklist (CBCL) is also used extensively in diagnosing ADHD. It
is divided into parts: a teacher form, a parent form, and a self-report form. The CBCL compares the target child to typical children of the same age (Elliott & Busse, 1994). Sandra Christenson (1994) highly recommends the use of the CBCL for several reasons. First of all, Christenson claims the manual is very user-friendly and easy to understand (Christenson, 1994). Furthermore, the test is comprehensive, gathering information from multiple sources (Christenson, 1994). In addition, the CBCL has shown to be reliable and valid with strong evidence for test-retest reliability, stability of ratings, and interrater agreement, as well as high content, construct, and criterion validity (Christenson, 1994). Finally, the authors have a strong commitment that assessment practices and interpretations should be firmly grounded in research (Christenson, 1994). One major criticism of this test is that the norms do not represent an effective race distribution (Elliott & Busse, 1994).

Three other rating scales have been developed specifically to aid in the diagnosis of ADHD. The first in question is the Attention Deficit Disorder Behavior Rating Scale. Although the authors present this instrument as being limited to use for screening and not a diagnostic tool, they do recommend it for persuading parents, teachers, and doctors to begin an intervention (Newman, 1998). The test yields three possible ranges of score: 1) normal, 2) at risk, 3) very high risk (Newman, 1998). There are many criticisms of this test. First of all, there is not much information on the norming samples except that they included 200 children who were already being treated for ADHD (Newman, 1998). The authors offer no evidence of validity and do not show consistency over time, consistency with similar instruments, generation of appropriate range of scores, inclusion of differential samples, or of large enough samples for statistical

The next secondary rating scale is the ADD-H Comprehensive Teacher's Rating Scale. The goals of this test are to put appropriate emphasis on attention, to be used by clinicians for diagnosis of ADD and monitoring the treatment effects, and to reveal individual differences in the behavior of children who manifest a deficit in attention, both before and during treatment (Miller, 1995). Each item on the test is gender neutral and the test offers gender-specific profiles (Miller, 1995). Norming information is lacking which limits the test's usefulness as a diagnostic tool (Miller, 1995). Furthermore, the manual's discussion of validity is inadequate (Miller, 1995).

Perhaps the most useful secondary rating scale is the Attention Deficit Disorder Evaluation Scale. This scale uses a percentile score that compares the target child to average children. The normative sample is well documented and seems to account for the general population (Collins, 1995). In addition, test-retest, interrater, and internal consistency were all shown to have a high degree of reliability from administration to administration, across different raters, and within and among construct subscale areas (Collins, 1995). Furthermore, the results of validity strongly support the scale's ability to correctly identify ADD behavior (Collins, 1995).

The one limitation of this test is its inability to address co-occurring conditions such as learning disabilities (Collins, 1995).

Projective Tests. Projective tests are also used in the diagnosis of ADHD, although the reasoning for them is very inconspicuous. Tests like the Rorschach, TAT, and CAT are sometimes used as a part of the assessment process. While nearly one-third of psychologists use
these tests, almost no physicians choose these tests as part of their assessments (Brown et al., 1992). Information as to what is gained through the use of these tests was unavailable and considering the subjectivity of the interpretation, it may not be the most appropriate tool in diagnosing ADHD. Perhaps clinicians use them more out of habit and demand rather than usefulness.

**Neuropsychological Test.** The final procedure in the traditional assessment process of ADHD involves neuropsychological testing. Three of these tests seem to be preferred:

1) *Wechsler Memory Scale-Revised*, 2) *Wide Range Assessment of Memory and Learning*, 3) *Continuous Performance Test* (Brown et al., 1992; Barkley, 1988). The *Wechsler Memory Scale-Revised* (*WSM-R*) is designed to assess "memory for verbal and figural stimuli, meaningful and abstract material, and delayed as well as immediate recall" ("Wechsler Memory," 1994). Part of the scoring assesses attention and concentration which is where its usefulness in diagnosing ADHD becomes apparent. In addition, the *Wide Range Assessment of Memory and Learning* (*WRAML*) allows the user to "evaluate a child's ability to actively learn and memorize a variety of information" ("Wide Range," 1994). This is used in a similar way to the *WSM-R*.

The *Continuous Performance Test* (*CPT*) is highly advocated by Barkley. It is a test of vigilance or sustained attention and impulse control (Barkley, 1988). It is one of the most reliable tests in discriminating ADHD children from normal children (Barkley, 1988). There are, however, some problems with this test. First of all, there are no standardized procedures (Barkley, 1988). In addition, the absence of normative data makes it difficult to compare ADHD children to average children (Barkley, 1988). These problems should not be minimized;
However, the value of the test should not be overlooked either.

Problems with Assessment

It is frighteningly apparent that many problems exist with the current assessment process of ADHD. Perhaps Carter captured one of the biggest problems when she said, "because ADD does not carry the stigma attached to many other labels, such as emotionally disturbed, or behavior disordered, it has become a catchall classification that attempts to explain a variety of behaviors" (1995). ADHD is oftentimes overdiagnosed because of the faults of the assessment process. This can adversely affect a child in ways that may last the duration of his/her life. Furthermore, according to Reason, “everyday manifestations of overactivity, impulsivity, or inattention do not necessarily imply the existence of the abstract concept of ADHD” (1999). This addresses Carter’s “catchall” hypothesis in that many people assume that the normal symptoms of hyperactivity automatically mean a diagnosis of ADHD. This could definitely cause a problem if assessment was done in the schools because every child at some point will become hyperactive. When teachers or administrators jump to conclusions based on hyperactivity is when an assessment “frenzy” will occur. The product of this would be both false positives and false negatives.

In addition, a primary fault in the assessment of ADHD is that there are no set regulations for diagnosis, only a framework by which one has to follow. This allows for much subjectivity that may result in an inaccurate diagnosis. In addition, there is no universally accepted assessment process. Different people use different measures, depending on their occupation, personal views, and background. This allows for several different sets of criteria to be used in
the diagnosis and treatment of ADHD. If assessment of ADHD were offered in the schools, a general set of criteria would have to be produced. While this is a possible benefit of in-school assessment, the criteria would most likely vary across different school districts.

Yet another problem with the assessment process is that many of the professionals assessing ADHD use the criteria set forth in the DSM-IV. While this is an accepted way to diagnose, several of the changes made from DSM-IIIR to DSM-IV have seemed to impact the amount of children diagnosed. The new subtypes in the DSM-IV seem to have increased the prevalence of children diagnosed with ADHD (McBurnett et al., 1999). McBurnett et al. report that almost 50% of the DSM-IV Inattentive-type cases and approximately 17% of the Hyperactivity/Impulsivity-type cases are “new cases” that would not have qualified for a diagnosis of ADHD under the DSM-IIIR (1999). In addition the new Hyperactive/Impulsive type from the DSM-IV may have caused many children who would not have met criteria in the past to be considered for a diagnosis of ADHD (Lahey et al., 1998). If this is true, then the newer definition in the DSM-IV may “encourage inappropriate diagnoses of ADHD for exuberant young children who are not impaired” (Lahey et al., 1998). Furthermore, no solid empirical data has been established that would support “the use of 6/9 of the activity or inattention behaviors as defining a true “cutpoint” where normal leaves off and abnormal begins” (Carey, 1999). While these are serious problems to be considered, they only mildly affect a school-based assessment because school faculty members most likely use the DSM-IV only as a guide or crutch, not as absolute criteria.

Beuttler states three problems with most of the assessment procedures (Beuttler, 1996).
First of all, many of the procedures rely heavily on the ability of the reporters to observe and describe behavior accurately. Second, the scoring techniques of several of the procedures require many subjective judgements. Finally, the traditional assessment process has the potential to produce many false positives. In conjunction to these three problems, a proper assessment of ADHD involves an entire team of people including teachers, parents, psychologists, and/or physicians, with at least one member having special expertise in the field of ADHD. This, however, is oftentimes not the case. There is usually a team, but it only includes the parents, one teacher, and a school psychologist. Furthermore, according to the survey sent out by Brown et al. (1992), among the physicians and psychologists surveyed, a significant percent of their professional time was spent with ADHD, but they had spent relatively little professional development time learning about this area. This survey also revealed that on the average, school psychologists surveyed had attended three workshops with ADHD as the focus, whereas clinical psychologists and physicians had attended only one. This data implies that the very people assessing ADHD are oftentimes underqualified, but it also points to school psychologists as, perhaps, the most qualified. This would support ADHD assessment in the schools, especially if a true multi-dimensional team was established and trained in ADHD assessment.

ADHD has many similar symptoms to other disorders such as learning disabilities and conduct disorders, thus it is imperative that these other disorders be ruled out, or at least accounted for, before a diagnosis of ADHD is made. Likewise, studies on the assessment process of ADHD should control for these types of problems and they often do not. By not controlling for learning disabilities or other such disorders, the possibility of a misdiagnosis
increases dramatically. Furthermore, many children who are above average intelligence will display symptoms of ADHD due to their boredom. It is imperative that assessment looks deeply into this possibility before misdiagnosing someone. While this would create a huge resource vacuum, it is essential that a school rule out all of these other possible disorders.

Another growing problem is the lack of biological testing in the assessment process. While there are many biologically based theories, most of them have not been researched enough. It would seem likely that a biological basis for ADHD would be the best reasoning for using medication in treatment, and since most assessments do not encompass this component, it is alarming to consider the amount of children that are being medicated for ADHD. Furthermore, since this component seems to be missing from the assessment process, one would wonder why more physicians administer ADHD assessments than do psychologists. It would seem as though the most accepted components of the assessment process would be best administered by someone who has special training in such. This reasoning further advocates the team process.

Current Laws on Assessment in Public Schools

**IDEA**

In 1975, the Education of the Handicapped Act (P.L. 94-142) was passed (House, 1999). Essentially, this law guaranteed all handicapped children a free and appropriate public education (Phelan, 1996). In 1990, Part B of this act was revised and renamed the Individuals with Disabilities Act (P.L. 101-476) or IDEA (House, 1999). At this time, the U.S. Department of Education decided that it was not necessary to add ADHD as a separate disability. The reasoning
for this was that children in need of special services could be eligible for those services under the "other health impaired" category if their educational performance was handicapped by their attention deficits (House, 1999). Furthermore, the symptoms of ADHD could qualify a child for services under the mandated categories of "specific learning disability" or "seriously emotionally disturbed" (House, 1999). While children may qualify for services under several categories if symptoms of ADHD impair their learning, the diagnosis of ADHD, in and of itself, does not qualify a child for inclusions under the terms of IDEA (House, 1999).

Section 504

If a child with ADHD does not meet the criteria to receive services under IDEA, he/she may still be eligible for services under Section 504 of the Rehabilitation Act of 1973 (Phelan, 1996). Section 504 deals with a wider variety of handicapped individuals than does IDEA. Under Section 504, a student with ADHD would be eligible for school adaptations and interventions if his/her symptoms significantly disturbed a "major life activity" (i.e. learning) (Phelan, 1996).

Summary

Thus, ADHD is a very complex disorder that can be difficult to assess. A proper assessment should be multimodal involving many different tests that have proven to be effective, reliable, and valid. According to the literature, the assessment of ADHD should be a team process consisting of parents, teachers, psychologists, and physicians, some of who should be considered experts in the field of ADHD. The assessment process should be extensive and comprehensive measuring the full psychological and medical range of this disorder. This takes
time, money, and energy, but it is necessary to insure a proper diagnosis.

According to this review, the assessment process of ADHD has a long way to go. Assessment needs to take on more standardization and regulation so as to avoid underdiagnosis and overdiagnosis. In addition, further research into the biological theories is necessary to treat ADHD properly. If assessment of ADHD is not controlled soon, eventually this disorder will be an epidemic and many adults who were misdiagnosed as children could experience long term adverse effects.

Perhaps one way to standardize this assessment process is by offering it through the educational system. Since children spend most of their days at school, the school environment may be the most comprehensive place for assessment. In addition, the team process, which according to this review is the most inclusive method of assessment, is implemented in any school-based diagnostic situation. Furthermore, school psychologists have been shown to have more specific training and knowledge in the area of ADHD than medical doctors or clinical psychologists. Thus the question remains: Should assessment and diagnosis of ADHD be offered by the schools? Possible answers are further examined through the responses from the focus group interviews.

Method

Participants

Two focus group interviews were conducted. The first consisted of three participants. The first participant was a middle-aged male who is currently practicing school psychology in a rural county. This participant was the father of high-school aged children. Another participant
was a middle-aged female who is a Professor of Psychology and the Director of Special Education Services at a small suburban liberal arts college. This participant has two sons, one in preschool and one in high school. Her younger son is in an early childhood special education program. The third participant was a young female who is finishing her first year as a social studies teacher at a junior high in a large suburban district.

The second interview consisted of four participants. The first participant was a young female student from a suburban liberal arts college. She will be pursuing a degree in school psychology in the next school year. The second participant was also a young female and is a special education teacher for children with behavior disorders. She is employed at a private school. The next participant was a male middle-aged Professor of Psychology at a small suburban liberal arts college. This participant’s background is in clinical psychology and he has worked as a clinician. The final participant was a middle-aged female school psychologist for a larger suburban county special education cooperative. She also has school-aged children.

The scheduling process for focus group interviews is arduous, to say the least. An initial sample was asked to participate in these interviews, but due to scheduling problems, many could not take part in the interviews. The initial sample was very representative of the most important categories of opinions necessary to conduct valid interviews; however, since many could not attend, the interviews were conducted with whomever could attend. While the end sample is not ideal, it still does represent an array of relevant fields and opinions.

Materials

The interviews took place on the campus of North Central College in a small conference
Procedures

Each focus group interview began at 6:30 in the evening. As the participants arrived they were given consent forms to sign. While the consent forms were designed to give the participants some idea as to the topic, it was imperative that the participants were given vague information. Due to the nature of the interviews, it was important for the participants to not be fully prepared on the topic. This allowed the participants to feel strongly about a question without really thinking about their reaction.

Once the consent forms were signed, the participants were introduced to each other. After the introductions, the interview began. The interviews were a simple question and answer format and each participant was given the opportunity to state their opinions on the questions. The participants were encouraged to speak freely and extensively. Although the questions varied slightly between the two groups, the base was the same. In addition, any information that was yielded from questions only presented to one group was for informational purposes only and will not be used in this particular analysis. A list of the fifteen core questions is provided in Appendix E. After the question/answer period was complete, the participants were debriefed as to the purpose of the study and the reasoning behind the study.

Results and Discussion

The two groups of participants share many of the same viewpoints regarding ADHD. Concerning the symptoms of ADHD, the participants' thoughts essentially parallel what is
described in the DSM-IV. One of the symptoms mentioned is that of impulse control. The participants believe that children with ADHD react spontaneously with very little foresight as to the possible consequences of their actions. In addition to impulse control, another symptom exhibited by children with ADHD is "lack of follow-through," especially when pursuing an activity that is of little interest to the child. The participants believe that this is a possible explanation as to why children with ADHD can often attend to television shows or video games but not to school subjects. A third major symptom is the inability to concentrate. Each participant described children that have been diagnosed as having ADHD to lack focusing capabilities. Finally, the last major symptom discussed was that of time management. The participants claimed that ADHD children have very little sense of time and, thus, have immense difficulty when trying to manage their time. This could explain why ADHD children have problems with remembering assignments and turning them in on time. Since all of the participants are working in the school setting, in one form or another, it is beneficial that they are aware of the accepted symptoms of this disorder.

When the participants were asked if they could identify a child with ADHD from a crowd of children, they remained in agreement. The participants generally agree that it is much easier to detect an ADHD child when the child is younger. By the time the child is in high school or college, he/she has learned to cope with the symptoms and this can mask the disorder. In essence, the participants agree that identification depends on the severity and extent of the exhibited symptoms. This aspect is also somewhat determined by the setting in which the child is observed. While easy identification may seem like a benefit for children and those who are
conducting an assessment, it can actually create false positives. Many children will show attention difficulties at different times, especially advanced children who are merely bored. This is important for school officials to realize.

The participants also agree on the causes of ADHD. The accepted cause is a mixture of biological and environmental issues. The participants were aware of this. They agree that there is a genetic component that produces a biological/neurological predisposition to the disorder. In addition, they also agree that the environment plays a role in the development of ADHD. In particular, a lack of family structure seems to be a strong precursor to ADHD because children are expected to function in a highly structured environment at school. A child that lacks structure at home has a difficult time abiding by the structure at school. This has implications for not only the ways in which parents structure their families but also for the way teachers structure their classrooms.

The first point of contention between the groups of participants occurred during the responses to a question about diagnosis. The participants were basically asked if they would feel comfortable diagnosing ADHD. Most of the participants said that they were comfortable in their ability to screen for ADHD, but would need great amounts of training if they were required to diagnose the disorder. The participants agree that one needs to look at many of the child's settings and environments in order to diagnose him as having ADHD. Furthermore, every participant promotes the team process. They claim that the best way to have an objective diagnosis that is evident across situations is to include many people in the assessment process. This would perhaps include the child's parents, teachers, school psychologists, social workers,
family physician, and any other person with pertinent information. The point of contention came from the clinical psychologist in Group 2. The psychologist claimed that the diagnostic process of ADHD could be performed by only one person if that person viewed the child in question across different settings. While this psychologist has faith that the assessment of ADHD could be completed by one person, he still advocates the team process.

Next, the participants were asked to describe the ways in which the educational system has or has not benefited from the recognition of ADHD. Overall, Group 1 claimed that schools have benefited from the recognition of ADHD by improving teaching skills and increasing teacher awareness of children with unique needs. Group 1 believes that teachers have needed to compensate for their ADHD students and this has forced them to become more creative in the classroom. Teachers are constantly creating ways to make their classes interesting. In addition, teachers have had to make allowances for ADHD students’ lack of concentration ability. On the other side, Group 1 also said that the recognition of this disorder has made it more difficult to reach every child and maintain control in the classroom.

Group 2 had a more negative view on this topic. They believe that the recognition of ADHD has been more of a detriment than a benefit to the educational system. Group 2 claimed that the categorization within the schools is disadvantageous to students because it pulls them away from each other. Furthermore, the participants stated that many children, parents, and teachers have used the ADHD as a scapegoat for negative behavior. In other words, children with ADHD get away with too much because they attribute their negative behavior to their disorder. Finally, Group 2 holds the belief that many teachers do not want to deal with an
ADHD student in their classroom so they have negative views of this student, oftentimes before they have any experience with the student. Thus, the groups believe that while many positives have occurred as a result of the recognition of ADHD, many negatives have also occurred and these should not be ignored.

The question which encompasses the essence of this research remains: Should ADHD be diagnosed in the schools? This question created the most disagreement between the groups. Group 1 agrees that schools should offer some sort of diagnosis for ADHD because the school environment offers a broader sample of behavior than perhaps any other environment. The staff and faculty of a school see a child five days a week for several hours each day whereas a child’s parent may see him/her for a short time in the morning, a few hours in the evening, and over the weekends. Essentially, a child spends most of his time at school; therefore, school personnel may have a better sense of a child’s true behavior than would a physician or clinical psychologist. Furthermore, Group 1 believes that since the schools advocate the team approach in basically every assessment procedure, it would foster a more objective approach to diagnosis. While Group 1 claimed that ADHD diagnosis probably should be offered by the schools, they also stated that they “took comfort in knowing” that ADHD diagnosis was not, as of yet, a part of their job descriptions.

Group 2 had slightly different answers to this question. Within this group, the participants had varied opinions. Overall, they agree that ADHD should not be a special education category. In addition, they agree that while screening for ADHD is beneficial, a definitive assessment process should not yet be offered by the schools. This is due to the fact
that the professional world is still debating whether ADHD should be a behavioral, clinical, or medical diagnosis. Furthermore, if the school begins to assess ADHD then the school will be responsible for treating this disorder in the best manner for the child. For instance, if the child responds the best to medication, then the school district is obligated to pay for that medication if they are the diagnosticians.

Both groups agree that if assessment of ADHD is offered in the schools, the process will cost the school much time and money in order to properly train those involved in the assessment. In addition, as previously stated, if the school offers the diagnosis then they are legally obligated to treat it. This could also cost the school an exorbitant amount of money.

Thus, when examined in combination, it seems as though the groups feel that ADHD screening should be offered by the educational system, but that a definitive assessment of the disorder should not be added as of yet. Both groups seemed to agree that there are many unanswered questions about this disorder that need to be addressed before an assessment can be offered by the schools. Both groups also agree that while eventually ADHD assessment will be a positive addition in the educational system, the thought of this occurring is rather overwhelming given the recent popularity of the disorder.

It seems as though the participants of the focus group interviews were fairly well-educated in ADHD; however, many people involved in the schools are not. This should be a major concern if assessment is ever offered in the educational system. Should assessment be offered, numerous training sessions should be required to ensure the reliability of the diagnosis. In addition, the school assessment process should be comprehensive and team-based so as to be
certain of the conclusion. Many schools are already offering screening for ADHD and some have gone so far as to offer the assessment process, thus it is imperative that proper training be implemented immediately.

This study seems to conclude that ADHD screening should be offered in the schools, but ADHD assessment should not be offered. It is important to note, however, that this was an initial study on a vast topic. In order to obtain more applicable and reliable results, it is imperative that these focus group interviews be replicated across several different geographical locations with several different types of education professionals as the participants.
References


Brock, S. E. Diagnosis of Attention-Deficit/Hyperactivity Disorder (ADHD) in childhood: a review of the literature. ED410512, 1-11.


Appendix A

Diagnostic Criteria for Attention-Deficit/Hyperactivity Disorder:

For each subtype, six or more symptoms are required for at least six months to a degree that is maladaptive and inconsistent with developmental level.

**Symptoms of Inattentive Type**

1. Often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
2. Often has difficulties sustaining attention in tasks or play activities
3. Often does not seem to listen when spoken to directly
4. 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)
5. Often has difficulty organizing tasks and activities
6. Often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)
7. Is often easily distracted by extraneous stimuli
8. Is often forgetful in daily activities (APA, 1994, p. 83-84)

**Symptoms of Hyperactive/Impulsive Type**

**Hyperactivity**

1. Often fidgets with hands or feet or squirms in seat
2. Often leaves seat in classroom or in other situations in which remaining seated is expected
3. 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)
4. Often has difficulty playing or engaging in leisure activities quietly
5. Is often "on the go" or often acts as if "driven by a motor"
6. Often talks excessively

**Impulsivity**

7. Often blurts out answers before questions have been completed
8. Often has difficulty awaiting turn
9. Often interrupts or intrudes on others (e.g., butts into conversations or games)

(APA, 1994, p. 84)
Appendix B

Causes of Hyperactivity and Impulsivity in Children

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<thead>
<tr>
<th>Cause</th>
<th>Disorder/Condition</th>
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<td>ADHD</td>
<td>Family and social disruptions (divorce, abuse, etc.)</td>
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<tr>
<td>Anxiety Disorders</td>
<td>Toxin Exposure (e.g., lead)</td>
</tr>
<tr>
<td>Mood Disorders</td>
<td>Hearing Loss or Visual Disturbance</td>
</tr>
<tr>
<td>Medication effects</td>
<td>Thyroid Disorders</td>
</tr>
<tr>
<td>Conduct Disorder</td>
<td>Tourette’s syndrome</td>
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<td>Some Seizure Disorders</td>
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*(Johnson, 1997)*
## Appendix C

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| Cost | $58.00 Examiner’s kit  
$48.00 100 Rating/Profile forms  
$145.00 Microcomputer version  
$12.00 Introductory kit  
$12.00 Manual |
| Other | Available in microcomputer version |

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<td>Test Publisher</td>
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| Cost | $19.50 100 Scoring sheets  
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<td>Cost</td>
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Youth Self-Report  
Direct Observation Form  
Semistructured Clinical Interview |
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Appendix D

Consent Form

I understand that I am here to participate in a Focus Group Interview. The topic of this interview is Attention Deficit / Hyperactivity Disorder. I further understand that I will be informed of the exact purpose of this research following the interview. I hereby give my consent for any information that I provide in the interview to be used as an aid in this research project.

Name ____________________________________________________________________________ Date ___________
Appendix E

Core Questions

1. Tell me about an experience that you have had involving ADHD.

2. If there was one person whom you believe to be characteristic “ADHD,” who would that person be?

3. What are the primary symptoms?

4. How did the person get to be the way he/she is in terms of biological, social, and environmental factors?

5. How well/easily could you recognize ADHD?

6. How would you react if your supervisor told you that in addition to your normal duties, you need to follow-up on any referrals of possible ADHD cases?

7. What if you had to actually diagnose these cases?

8. How has the school system benefited (or not benefited) from the recognition of ADHD?

9. Should ADHD diagnosis/assessment be offered by the schools?

10. In terms of money, time, and employees, what will happen if schools start to diagnose ADHD?

11. Should the assessment be completed by only one person?

12. How much does personal bias influence the ADHD assessment process?

13. If it were your child (possible ADHD), how would you want the assessment/diagnostic process to be handled?

14. How did ADHD become so well-known?
15. Is ADHD underdiagnosed or overdiagnosed?