Attention deficit hyperactivity disorder: diagnostic criteria using the Diagnostic and statistical manual of mental disorders (4th ed.) and Russell Barkley's 1990 model of ADHD

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ATTENTION DEFICIT HYPERACTIVITY DISORDER: DIAGNOSTIC CRITERIA USING THE DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS (4TH ED.) AND RUSSELL BARKLEY'S 1990 MODEL OF ADHD

An Abstract of a Thesis

Submitted

In Partial Fulfillment

of the Requirements for the Degree

Specialist in Education

Justin Matthew Larson

University of Northern Iowa

May 2001
ABSTRACT

School teams perform assessments to aid in the diagnosis of Attention Deficit Hyperactivity Disorder. In this thesis, a post-hoc descriptive study looked at what diagnostic model school teams in 3 Iowa Area Education Agencies used in assessing children with Attention Deficit Hyperactivity Disorder (ADHD). Three categories were used to describe the assessment process for this study, the Diagnostic and Statistical Manual of Mental Disorders (4th Ed.) (DSM-IV), Russell Barkley’s 1990 Model, and an Other category.

The researcher reviewed 24 student files to determine what diagnostic category was used in the assessment process. Data obtained through this study showed that there was no significant use of the DSM-IV model or Barkley’s 1990 model, but a significant use of the Other category.
ATTENTION DEFICIT HYPERACTIVITY DISORDER: DIAGNOSTIC CRITERIA
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Degree of Specialist in Education

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To Sara and Jacob
I would like to thank my committee for their guidance in this project. I would like to thank Donna Hansen and Dennis Sinclair from Area Education Agency 7 for their help and assistance in this project. I would like to thank Neta Stevenson, Laura Clark, and Jodi Bronson from Area Education Agency 6 for their help and assistance in the project. I would like to thank Jane Guy and Martin Ikeda from Area Education Agency 11 for their help and assistance in the project. Lastly, I would like to thank my wife Sara for her support and encouragement throughout the process.
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CHAPTER 1

STATEMENT OF THE PROBLEM

Attention Deficit Hyperactivity Disorder (ADHD) continues to be widely studied within the literature and researchers continue to investigate diagnostic procedures used by professionals. Two of the most common diagnostic procedures from 1994 to present are the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV; American Psychiatric Association, 1994) and Russell Barkley's 1990 model for ADHD diagnosis. Many studies have focused upon the prevalence of ADHD in the United States using the DSM-III; DSM-III-R; and DSM-IV. Using a specific diagnostic procedure, such as the Diagnostic and Statistical Manual of Mental Disorders, prevalence of identified children using this method becomes important. It has been reported by researchers that prevalence rates conducted within the United States vary from 2.2% (Costello, Costello, & Edelbrock, 1988) to 13.3% (Valez, Johnson, & Cohen, 1989) for studies using the DSM-III and DSM-III-R respectively.

Variation in prevalence rates as shown above, may be reflected through limitations in using the Diagnostic and Statistical Manual of Mental Disorders.

Limitations of the DSM-IV according to Barkley (1998) include:

- It is not clear that the Predominantly Inattentive Type of ADHD (ADHD-PI) is actually a subtype of ADHD.
- It is also unclear whether the Predominantly Hyperactive-Impulsive Type (ADHD-PHI) is really a separate type from the Combined Type (ADHD-C) or simply an earlier developmental stage of it.
- Whether the requirement for significant inattention to diagnose ADHD is even necessary given that ADHD-PHI children are likely to eventually move into ADHD-C.
- How well the diagnostic thresholds set for the two symptom lists apply to age groups outside those used in the field trial.
- Appropriateness of the item set for different developmental periods.
- Whether or not the criteria should be adjusted for the gender of the child being diagnosed.
- The requirement of an age of onset for ADHD symptoms (7 years) in the diagnostic criteria.
• Failure to stipulate a lower bound age group for giving the diagnosis below which no diagnosis should be made.
• A lower bound IQ might also be important below which the nature of ADHD may be quite different.
• The problem of the duration requirement being set at 6 months.
• The symptoms be demonstrated in at least two of the three environments to establish pervasiveness of symptoms is new to this edition and is problematic.
• Greater emphasis should be placed on the hyperactive-impulsive symptoms rather than the inattention symptoms in describing the disorder for clinicians.
• Diagnostic criteria do not specify precisely how developmental inappropriateness is to be established. (Barkley, 1998, p. 64-69)

“The specification of guidelines in DSM-IV for establishing the degree of situational pervasiveness of the symptoms seems important to many researchers in the field in view of findings that pervasiveness of symptoms across home and school settings” (Barkley, 1998, p. 64). Lambert, Sandoval, and Sassone, 1978; Szatmari, Offord, and Boyle, 1989 (as cited in Barkley, 1998, p. 64) state that “[P]erhaps it would be more useful or clinically prudent to establish that a history of symptoms exists across the home and school settings rather than requiring current parent-teacher agreement on symptoms to establish the presence of the disorder. Research suggests that when agreement across parent, teacher, and clinician is a requirement for diagnosis, it severely restricts the diagnosis to approximately 1% or less of the childhood population.”

Prevalency rates appear to vary considerably depending upon the type of assessment used in the identification process. Barkley commented on why standardized diagnostic procedures are necessary with regards to prevalence rates of ADHD. Barkley (1998) stated “our impression is that many clinicians, especially psychologists, administer a wide variety of psychological and neuropsychological tests, from IQ screening measures to inkblots” (p. 297). Barkley went on to argue that knowledge of testing measures could be enhanced by surveying practicing
psychologists in regards to diagnostic procedures of ADHD children. Barkley stated “[O]ur review of commonly administered psychological tests would be enhanced if we actually knew from current survey data which tests were commonly administered by clinicians who conduct ADHD evaluations” (p. 297).

In the absence of a single classification scheme for ADHD, the incidence of the disorder becomes partially dependent upon the scheme used by the diagnostician, the same is going to be true of severity, treatment initiation, and etiology of the disorder.

In discussing the DSM criteria, it may be that the declining prevalence of ADHD with age is partly or wholly artifactual. This result could possibly come from the use of items in the diagnostic symptom lists which are chiefly applicable to young children. These items may reflect the underlying construct(s) of ADHD very well at younger ages but may be increasingly less applicable to ever older age groups. This could create a situation where individuals remain impaired in the construct(s) comprising ADHD as they mature while outgrowing the symptom list for the disorder, resulting in an illusory decline in prevalence. (Barkley, 1998, p. 84)

As a prior step to studying prevalence, it is necessary to ascertain what diagnostic schemes are being used. If, for example, the DSM-IV scheme is used as frequently as Barkley’s, then incidence figures would have equal impact from the two systems. If neither is as frequent as some other scheme, then both major nosological schemes would be under-represented in the incidence figures. If competing procedures for Attention Deficit Hyperactivity Disorder are found to be the current situation, prevalence rates will be hostage to the differences in procedures and not to the occurrence of the disorder. A commonly used diagnostic scheme, on the other hand, would lend support to tracking incidence rates across time. The contribution this post-hoc study made was to shed more clarity on whether known schemes, recommended by major authors (e.g., Barkley) and organizations (e.g., American Psychiatric Association) were actually and identifiably used in the diagnosis of ADHD disorders in students.
Definitions of Attention, Impulsivity, and Hyperactivity

Definitions which have been investigated throughout the history of attention deficit hyperactivity disorder focused around three core behavioral issues. These three core behavioral issues are inattention, impulsivity, and hyperactivity, which have been described since the work of Clements and Peters (1962) and Paine (1962). These three core behavioral issues continue to be the major issues today as described by Barkley (1998).

Attention as a Definition

Tracing the historical frame of reference, short attention span and/or distractibility was defined by Clements and Peters (1962), as a:

[C]hild that is unable to concentrate on one thing for very long; he especially loses interest when abstract material is being considered; even with this symptom, some of these children show a tendency to become locked in a simple repetitious motor activity or preoccupation with one verbal topic. Some children show good attention span when their interest is aroused, but when not so engaged display marked distractibility to casual stimuli. (p. 190)

Stewart, Pitts, Craig, and Dieruf (1965) surveyed mothers of 37 children ages 5 to 11 years of age. In this study, children had to meet 5 specific criteria: overactivity and short attention span; aged 5-11; live with their parents or permanent guardian; child had to be attending school; and the child could not have a chronic medical or neurological disease. The symptoms that parents identified in this study were similar to those found in the DSM. Thirty-one symptoms were positively scored by one third or more of the patients in the study and 59% of the mothers in this study reported that their child's symptoms began in infancy.

Focusing upon the Diagnostic and Statistical Manual of Mental Disorders definition of attention, the DSM-I (American Psychiatric Association [APA], 1952) did not address the inattention factor. In the DSM-II, inattention was signified by "distractibility" and "short attention span" (APA, 1968, p. 50).
Inattention was the core deficit of the syndrome in the criteria used within the Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition (DSM-III; APA, 1980). “The DSM-III criteria focus on difficulty with task completion, listening, distractibility, and concentration on school work” (McMahon, 1984, p. 1305). Inattention was defined by the DSM-III as a child meeting three of the following criteria:

1. often fails to finish things he or she starts
2. often doesn't seem to listen
3. easily distracted; has difficulty concentrating on schoolwork or other tasks requiring sustained attention
4. and lastly has difficulty sticking to a play activity. (pp. 43-44)

In the glossary of technical terms of the DSM-III attention was defined as: “The ability to focus in a sustained manner on one task or activity. A disturbance in attention may be manifested by difficulty in finishing tasks that have been started, easy distractibility, and/or difficulty in concentrating on work” (APA, 1980, p. 354).

In 1987, the DSM-III-R contained 14 symptoms, of which, 6 symptoms of inattention were used for the diagnosis of Attention Deficit Hyperactivity Disorder. The symptoms in the DSM-III-R that focused upon inattention were:

1. easily distracted by extraneous stimuli
2. difficulty following through with instructions from others
3. difficulty sustaining attention in tasks or play
4. often shifts from one uncompleted activity to another
5. often does not seem to listen to what is being said to him or her
6. often loses things necessary for tasks or activities at school or at home. (p. 52)

In the glossary of technical terms from the DSM-III-R (APA, 1987) attention was defined as “[T]he ability to focus in a sustained manner on one activity. A disturbance in attention may be manifested by difficulty in finishing tasks that have been started, easy distractibility, or difficulty in concentrating on work” (p. 392).
In the DSM-IV (APA, 1994) glossary of technical terms, attention was defined as "The ability to focus in a sustained manner on a particular stimulus or activity. A disturbance in attention may be manifested by easy distractibility or difficulty in finishing tasks or in concentrating on work" (p. 764). The DSM-IV field trials conducted by Frick et al. (1994), proposed symptoms of Inattention-Disorganization as:

(1) Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace.
(2) Often has difficulty sustaining attention in tasks and play activities.
(3) Often does not seem to listen to what is being said to him/her.
(4) Often loses things necessary for tasks.
(5) Often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities.
(6) Often has difficulties organizing tasks.
(7) Often forgetful in daily activities.
(8) Often avoids or strongly dislikes tasks (such as schoolwork or homework) that require sustained mental effort.
(9) Often is easily distracted by extraneous stimuli. (p. 532)

As well as an area of Alternative Inattention-Disorganization which included the symptoms:

(1) Often daydreams when should be attending.
(2) Often is sluggish or drowsy. (p. 532)

In the final version of the DSM-IV (APA, 1994), inattention had the symptoms of

(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. (pp. 83-84)

Barkley's (1980) model described inattention in two forms: (a) children orienting to situations and (b) sustaining attention to tasks. Children orienting to situations, Barkley (1980) defined this form of inattention as “[C]hildren can have trouble orienting to stimuli or fail to detect altogether those stimuli to which they are expected to respond. Or the children may orient and respond to the wrong aspects of a stimulus or to an entirely inappropriate stimulus” (p. 12). In the second inattention definition, Barkley (1980) stated “[M]any hyperactive children are felt to have their most significant problems in sustaining attention to task-relevant stimuli while inhibiting their responding to stimuli not relevant to the task (i.e., controlling impulses)” (p. 12).

Hale and Lewis, 1979 (in Barkley 1990, 1998) defined inattention as a “multidimensional construct that can refer to problems with alertness, arousal, selectivity, sustained attention, distractibility, or span of apprehension, among others” (p.57). Barkley (1990, 1998) went on to describe a child clinically as:

in those situations where alternate, competing activities are available that promise immediate reinforcement or gratification, in contrast to the weaker reinforcement or consequences associated with the assigned task. In such cases, the ADHD child may appear distracted and in fact is likely to shift “off task” in order to engage the highly rewarding competing activity. (p. 41, 57-58)

Others have defined inattention as “difficulties in sustaining attention, distractibility, lack of task persistence, disorganization, and the hyperactivity-impulsivity dimension includes excessive motor activity and impulsive responding” (Lahey et al., 1998, p. 695).
Impulsivity as a Definition

Impulsivity was described by Clements and Peters (1962) as:

[T]he child cannot keep from touching and handling objects, particularly in a strange or overstimulating environment; he may speak without checking himself and even say insulting things; his impulsivity easily leads him into conflict with the demands of conformity as established by family, school, and society. Some of these children may commit striking antisocial acts, even to the point of fire-setting, stealing, and murdering with only a modicum of provocation. (p. 188)

Impulsivity was further defined by Grimes (1982) and Zentall (1993) as a child’s inability to withhold active responses because the child does not wait long enough to consider alternatives to his/her behavior. These definitions have been refined and specialized by the DSM as will be reviewed.

Tracing the DSM criteria for impulsivity, the DSM-I (APA, 1952) was generic in criteria specific to this core behavior. In the DSM-II (APA, 1968), impulsivity had “short attention span” as the only criteria used for diagnosis. In the DSM-III (APA, 1980), impulsivity was defined by 6 symptoms, in which children needed to exhibit a minimum of 3 symptoms to be diagnosed with the impulsive subcategory. The DSM-III (APA, 1980) criteria for impulsivity were as follows:

1. often acts before thinking
2. shifts excessively from one activity to another
3. has difficulty organizing work (this not being due to cognitive impairment)
4. needs a lot of supervision
5. frequently calls out in class
6. has difficulty awaiting turn in games or group situations. (p. 44)

Symptoms for the DSM-III-R (APA, 1987) regarding impulsivity were not subcategorized. Instead, the symptoms were considered part of a holistic diagnosis focusing around 14 symptoms of which 8 of the symptoms must be present in the child. From the DSM-III-R, the symptoms used to identify impulsivity were:
4. difficulty awaiting one’s turn in games or groups
5. often blurts out answers before questions are completed
10. often talks excessively
11. often interrupts or intrudes on others
14. often engages in physically dangerous activities without considering possible consequences (but not for the purpose of “thrill seeking”).

(pp. 52-53)

The DSM-IV (APA, 1994) reverted back to the subcategories of the DSM-III (APA, 1980). In the DSM-IV there were only three symptoms used to diagnose a child as impulsive. One complication arose in the DSM-IV, the diagnosis of impulsivity was combined with hyperactivity instead of being a separate category.

The symptoms of impulsivity in the DSM-IV were:

(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). (p. 84)

Barkley’s (1980) model described impulsivity as “a failure to inhibit responding” (p. 13). Barkley (1980) described impulsive children as not stopping to think about the consequences of their behavior before acting, and they generally make more mistakes in classroom settings, place themselves in generally more dangerous and risky situations, and fail more often to appreciate all aspects of instructions they may be given than normal children do. They are also more likely to respond aggressively (both verbally and physically) when frustrated or emotionally hurt by others, without considering the impact of their statements or actions. Such responding on impulse often leads to their being shunned by other children. Further, they are likely to experience more sanctions, censure, and punishment from others than are normal children. (p. 13)


children (that) are often noted to respond quickly to situations without waiting for instructions to be completed or adequately appreciating what is required in the setting. Heedless or careless errors are often the result. They may also fail to consider potentially negative, destructive, or even
dangerous consequences that may be associated with particular situations or behaviors, and so seem to engage in frequent, unnecessary risk taking. Taking chances on a dare or whim, especially from a peer, may occur more often than is normal. Consequently, accidental poisonings and injuries are not uncommon, and ADHD children may carelessly damage or destroy others' property considerably more frequently than normal children. Waiting their turn in a game or in a group lineup before going to an activity is often problematic for them. When faced with tasks or situations in which they are encouraged to delay seeking gratification and work toward a longer-term goal and larger reward, they often opt for the immediate, smaller reward that requires less work to achieve. They are notorious for taking 'short cuts' in their work performance, applying the least amount of effort and taking the least amount of time in performing tasks they find boring or aversive. (p. 42)

Parents and teachers typically described an impulsive child as “restless,” “always on the go,” “won’t sit still,” or “fidgety,” and these behaviors were usually pronounced when restrictions are placed on the child’s activity (Grimes, 1982).

Parents and teachers also used the descriptors of “[A]cting before thinking, frequent activity shifts, difficulty with organizing work, excessive need for supervision, calling out, and difficulty in awaiting one’s turn in games or group situations” (Rosenthal & Allen, 1978, p. 1305).

Hyperactivity as a Definition

Hyperactivity has become the primary focus in the diagnosis of Attention Deficit Hyperactivity Disorder because hyperactivity has the most recognizable symptoms of the major core behavioral issues. Even though hyperactivity is the most recognizable of the core behaviors, hyperactivity “is difficult to define operationally. While the diagnosis never was intended to refer to excesses of all forms of activity in children, researchers and clinicians have experienced difficulty in defining and measuring the exact class of behaviors of concern” (McMahon, 1984, p. 1301). This confusion can be understood from the previous name of hyperactivity which was hyperkineses. Clements and Peters (1962) described children with hyperkineses as being “in
constant motion, flitting from one object or activity to another, or may be merely restless and fidgety” (p. 190).

In general frames of reference, hyperactivity has been denoted as an activity level with the major difficulty stemming from the determination of a child’s activity level as deviant (Grimes, 1982). Throughout history, hyperactivity has consistently been related to excessive motor activity which was defined not only as intensity (loudness, frequency), but also by the fact that hyperactivity is variable between situations (Zentall, 1993). Trites, Dugas, Lynch, and Ferguson (1979) first linked the types of behaviors a psychologist, parent, or teacher may look for in a child with hyperactivity. Trites et al. (1979) defined hyperactive behaviors as “likely to refer to behaviors such as restlessness, impulsivity, distractibility, attentional deficiency, and a tendency to seek stimulus” (p. ix).

Barkley (1981) added more clarification to Trites et al. (1979) definition. Barkley (1981) stated that:

Hyperactivity is the developmental deficiency of age-appropriate attention and rule-governed behavior (self-control) that is present in the child since at least 2-4 years, that is pervasive in nature (cross-situational), and that cannot be attributed to mental retardation, psychosis, or gross neurologic, sensory, or motor impairment. (p. 140)

Frick and Lahey (1991) expanded the definition of hyperactivity and specified behaviors as: excessive running and climbing; excessive fidgeting; difficulty staying seated; motor restlessness; always on the go; often acts before thinking; frequently calls out in class; and difficulty waiting turn.

In the DSM-III (APA, 1980), hyperactivity was outlined as gross motor activity like excessive running or climbing. The child was described as “always on the go” and “running like a motor.” Typically, the symptoms varied with situations and time. The child was unable to stick to activities compared to other children around them. The specific criteria from the DSM-III were:
(1) runs about or climbs on things excessively
(2) has difficulty sitting still or fidgets excessively
(3) has difficulty staying seated
(4) moves about excessively during sleep
(5) is always “on the go” or acts as if “driven by a motor. (p. 44)

In the DSM-III-R (APA, 1987) the list of behaviors associated with hyperactivity were:

(1) fidgeting, squirming, or restlessness
(2) difficulty remaining seated when required to do so
(4) difficulty awaiting one’s turn in games or groups
(9) has difficulty playing quietly
(12) often does not seem to listen to what is being said to him or her.
(p. 51)

The DSM-IV (APA, 1994) used the following criteria for 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
(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. (p. 84)

Barkley’s (1980) model defined hyperactivity as showing up more in classroom situations than at play or at home. Barkley’s rationale for this statement was “academic classes demand considerably more sustained attention and inhibited activity than these other situations” (Barkley, 1980, p. 13). Barkley went on to describe a child with hyperactivity in the classroom situation as:

often observed to move about in their chairs more, leave their seats more often, wander about the class, manipulate objects that are not part of the assigned task, kick their feet back and forth while seated, and generally behave more restlessly than normal children. At home, similar behaviors may be seen while the child is seated at the table during meals, watching television, lying in bed, seated in public places (e.g., churches, restaurants), or riding in the car. (p. 13)
Barkley’s model (1990, 1998) defined hyperactivity as “excessive or developmentally inappropriate levels of activity, be it motor or vocal” (p. 43, 60).

Barkley (1990, 1998) explained that:

[T]hese movements are often irrelevant to the task or situation and at times seem purposeless. Parents often describe the problem in such terms as ‘Always up and on the go,’ ‘Acts as if driven by a motor,’ ‘Climbs excessively,’ ‘Can’t sit still,’ ‘Talks excessively,’ ‘Often hums or makes odd noises,’ and ‘Squirmy.’ (pp. 43-44, 60-61)

These definitions were used to enhance the understanding of the framework from which the DSM and Barkley work. These definitions for the DSM-IV (APA, 1994) and Barkley (1990) will remain constant throughout the thesis. Following is a review of the literature of the Diagnostic and Statistical Manual of Mental Disorders and Barkley’s model of assessment.

Statement of the Problem

Prevalency rates appear to vary considerably depending upon the type of assessment used in the identification process. In an effort to understand the prevalency rates in northeast Iowa, it is important to gather data on the type of assessment used to identify ADHD children.

Importance of the Study

Incidence of ADHD becomes partially dependent upon the scheme used by the diagnostician. Before studying prevalence of ADHD in an area, it is important to determine what diagnostic schemes are being used. If, for example, it is determined that both Barkley and DSM systems are equally used throughout a section of the state of Iowa, incidence figures would have an equal impact from the two systems. If neither is as frequent as some other scheme, then both nosological schemes would be under-represented in the incidence figures. This study would add clarity on whether known schemes, recommended by major authors (e.g., Barkley) and organizations
(e.g. American Psychiatric Association) were actually and identifiably used in the diagnosis of ADHD in students.

Limitations of the Study

There were several known limitations to this study. First, was the generalizability of the information to the general population. Generalizability to the general population in the state of Iowa cannot be supported because of where the subjects were obtained. The subjects for this study were obtained from a parent support group of children who have been diagnosed with ADHD. Information obtained for the study represent those parents who interested in how their particular child was diagnosed and information gathered from the child’s home school district.

Individuals diagnosed with ADHD were not randomly selected because currently there is no data surrounding the incidence of ADHD in Iowa. Due to this lack of data, a representative sample of the state of Iowa was difficult to ascertain. Randomization of the participants was not feasible to obtain enough subjects for the study to generalize within a particular AEA, therefore no subjects were denied access to the study. This study purported to show trends in possible diagnostic methodologies found within three Iowa Area Education Agencies. The individual school psychologist, AEA, and school district may not represent those across the state. In addition to this limitation, there was an underrepresentation of socioeconomic status, gender, and ethnicity due to the lack of support given to these groups.

The study was conducted post-hoc. This post-hoc study did not represent the practice individual school psychologists use currently. Post-hoc studies also are limited in the amount of information that may be obtained from individual school districts and Area Education Agencies.
CHAPTER 2

REVIEW OF THE LITERATURE ON ATTENTION DEFICIT
HYPERACTIVITY DISORDER USING THE DIAGNOSTIC
AND STATISTICAL MANUAL OF MENTAL DISORDERS

The purpose of a diagnostic classification system is to give professionals a description of a disorder which facilitates communication among professionals by enhancing the understanding of, and ability to intervene with, a particular clinical phenomenon (Adams & Haber, 1984). Attention Deficit Hyperactivity Disorder (ADHD) has been difficult for clinicians to discuss. These discussions are difficult because of the diverse characteristics a child exhibits with ADHD. The Diagnostic and Statistical Manual of Mental Disorders (DSM) has attempted to narrow the focus of clinicians toward a common clinical phenomenon. The DSM, throughout time, has attempted to narrow it's focus about classification, symptomology, and diagnostic reliability of ADHD. Even though the DSM has changed the criteria for attention deficit hyperactivity disorder and how it should be diagnosed, revisions of the DSM have attempted to remain current with the field research. A review of the evolutionary process of attention deficit hyperactivity disorder throughout the DSM will follow.

Diagnostic and Statistical Manual of Mental Disorders, 1st Edition

(DSM-I)

Members of the American Psychiatric Association (APA) in conjunction with the Council to the Standard Nomenclature, on November 6, 1950, agreed upon a publication by the APA for the Diagnostic and Statistical Manual of Mental Disorders. In order to devise a standard system of nomenclature, 520 questionnaires were sent to individual members of the APA and 241 questionnaires were returned. Of the 241 questionnaires returned, 224 showed general approval for the revision, 11 showed disapproval and 6 were neutral (APA, 1952). From these questionnaires the
Council of the American Psychiatric Association adopted and supported the nomenclature found throughout the DSM-I (APA, 1952).

The nomenclature used to identify Attention Deficit Hyperactivity Disorder in the first Diagnostic and Statistical Manual of Mental Disorders (1952) was found under the broad category of "DISORDERS CAUSED BY OR ASSOCIATED WITH IMPAIRMENT OF BRAIN TISSUE FUNCTION" (APA, 1952, p. 14). Persons found within the category of "Disorders Caused by or Associated with Impairment of Brain Tissue Function" category were characterized by a "basic syndrome consisting of:

1. Impairment of orientation
2. Impairment of memory
3. Impairment of all intellectual functions (comprehension, calculation, knowledge, learning, etc.)
4. Impairment of judgment
5. Lability and shallowness of affect. (APA, 1952, p. 14)

These characteristics were to be used with three distinct degrees within the individual (mild, moderate, or severe) and were typically found with associated reactions. Associated reactions were described as "inherent personality patterns, current emotional conflicts, the immediate environmental situation, and the setting of interpersonal relations" (APA, 1952, p. 14). The specific category used in the DSM-I was "Acute Brain Syndrome of unknown cause" (APA, 1952, pp. 17-18). This category was used for acute brain syndromes where the cause could not be found as well as for syndromes whose cause could not be classified somewhere else.

Sixteen years after the original Diagnostic and Statistical Manual of Mental Disorders (DSM-I), the DSM-II was produced by the American Psychiatric Association (APA, 1968). The DSM-II was based primarily upon the International Classification of Diseases Eighth Revision (ICD-8) published by the World Health Organization. In the revision process, a draft of the manual was circulated to 120 psychiatrists to provide feedback on how to "eliminate errors and to improve the
quality of the statements indicating the proper usage of terms which the Manual
describes.” (APA, 1968, p. ix). From these 120 psychiatrists opinions, the DSM-II
was revised and put into its final product.

**Diagnostic and Statistical Manual of Mental Disorders, 2nd Edition**

**(DSM-II)**

The nomenclature used to identify Attention Deficit Hyperactivity Disorder in
the Diagnostic and Statistical Manual of Mental Disorders Second Edition (APA,
1968) was found under the broad category of “BEHAVIOR DISORDERS OF
CHILDHOOD AND ADOLESCENCE” (APA, 1968, p. 50). Under this generic
category, the DSM-II described these subcategories as having similarities that were
“more stable, internalized, and resistant to treatment with characteristic
manifestations include such symptoms as overactivity, inattentiveness, shyness, feeling
of rejection, over-aggressiveness, timidity, and delinquency” (APA, 1968, p. 50).

In the specific category pertaining to Attention Deficit Hyperactivity Disorder,
the DSM-II used the terminology “Hyperkinetic reaction of childhood (or
adolescence)” (APA, 1968, p. 50). The DSM-II only used two sentences to describe
children with “Hyperkinetic reaction of childhood (or adolescence).” These two
sentences were:

This disorder is characterized by overactivity, restlessness,
distractibility, and short attention span, especially in young children;
the behavior usually diminishes in adolescence. If this behavior is
carried by organic brain damage, it should be diagnosed under the
50)

In the DSM-II (APA, 1968), there was no mention of age of onset, no symptom
list for identification, no thresholds for establishing how many symptoms should be
present, no criteria for duration of symptoms, and no requirements for developmental
inappropriateness of symptoms (Barkley, 1998).
Major changes in how diagnostic categories would be developed and used by clinicians in the future was a primary difference between the DSM-II and DSM-III. A major shift in Attention Deficit Hyperactivity Disorder focused around the primary symptomology presented within this population from hyperactivity to attentional difficulties present among children with the diagnosis. Hence, a shift in the name of the disorder from “Hyperkinetic reaction of childhood (or adolescence)” (APA, 1968) to “Attention Deficit Disorder” (APA, 1980). With this shift in names, two new diagnostic categories were introduced: Attention Deficit Disorder with Hyperactivity and Attention Deficit Disorder without Hyperactivity.

Attention Deficit Hyperactivity Disorder fell under the general category of “Disorders Usually First Evident In Infancy, Childhood, Or Adolescence” (APA, 1980, p. 35). Under this general category, Attention Deficit Disorder fell under the subcategory of “Behavioral (overt)” (APA, 1980, p. 36). Attention was operationally defined in the DSM-III as given in Chapter 1, however “[S]pecific diagnostic criteria continue to lack operational specificity and seem not to be based upon important research developments” (McMahon, 1984, p. 1306). The DSM-III did not operationally define impulsivity or hyperactivity which would have contributed to the specificity of the diagnostic criteria. With an operational definition there also would be less chance for individual interpretation and give diagnosticians a better grasp on Attention Deficit Disorder. In order to lower the heterogeneity of the diagnosis of ADHD, the American Psychological Association established a Task Force to clarify this complication.

In the DSM-III (APA, 1980), the American Psychiatric Association (APA) established a Task Force consisting of consultants from psychology and
epidemiology. The primary responsibility of the Task Force was to determine the most effective strategies to evaluate proposals for change and to determine if proposed changes would contribute to a better understanding of diagnoses. The Task Force established the following goals to ensure the integrity of criteria and proposals to the DSM-III. This was also the first time the APA instituted any type of committee which ensured:

- clinical usefulness for making treatment and management decisions in varied clinical settings
- reaching consensus on the meaning of necessary diagnostic terms that have been used inconsistently, and avoiding the use of terms that have outlived their usefulness
- consistency with data from research studies bearing on the validity of diagnostic categories
- being responsive during the development of DSM-III to critiques by clinicians and researchers. (APA, 1980, pp. 2-3)

In order to obtain the goals outlined above, the Task Force introduced field trials into the development of the DSM to “identify problem areas in the classification and to try out solutions to these problems” (APA, 1980, p. 4). With the transformation of Attention Deficit Disorder from Hyperkinetic disorder in children (or adolescence), the field trials helped to narrow the focus and definition of ADD.

Field trials were critical in demonstrating clinical acceptability and usefulness in a variety of settings and theoretical orientations. McBurnett, Lahey, and Pfiffner (1993) commented about how the Field Trials affected clinical decision making across settings using the DSM-III. McBurnett et al. (1993) stated “Clinical decision making occurs predominantly at the level of the symptom, not at the level of the syndrome. Once each symptom has been deemed present or absent, simple arithmetic (i.e., adding up the symptoms) determines whether the symptom count (one of several criteria for the diagnosis) is reached” (p. 109). Diagnostic reliability was the most
important factor gained from the field trials which was a criticism of the DSM-I (APA, 1952) and DSM-II (APA, 1968).

Since the focus of the Task Force was to “gain reliability in diagnostic categories” (APA, 1980, p. 2) difficulty arose out of the differential diagnosis because of the mildness placed upon ADD without H versus that of ADDH. Also, the DSM-III (APA, 1980) added a residual type where the individual had met the criteria of Attention Deficit Hyperactivity Disorder, but no longer exhibit the symptoms of the disorder.

The DSM-III (APA, 1980) also gave the diagnostician an idea of what a child would look like in the school setting. The DSM-III stated:

[1]n the classroom, attentional difficulties and impulsivity are evidenced by the child's not staying with tasks and having difficulty organizing and completing work. The children often give the impression that they are not listening or that they have not heard what they have been told. Their work is sloppy and is performed in an impulsive fashion. Performance may be characterized by oversights, such as omissions or insertions, or misinterpretations of easy items even when the child is well motivated, not just in situations that hold little intrinsic interest. Group situations are particularly difficult for the child, and attentional difficulties are exaggerated when the child is in the classroom, where sustained attention is expected. (p. 41)

The DSM-III stated the age of onset was “before the age of seven” (APA, 1980, p. 44) and established a symptom list focused around the three primary diagnostic criteria: inattention; impulsivity; and hyperactivity. In addition, the DSM-III established thresholds for how many symptoms should be present for each of the three diagnostic criteria. Duration of symptoms was addressed within this addition as “at least six months.” (APA, 1980, p. 44) and developmental appropriateness was addressed. The DSM-III recommended that for developmentally inappropriate behavior, teachers, parents, and clinicians should be sources of information with the primary focus of information coming from the teacher.
Advancing the knowledge base and addressing difficulties obtained from the DSM-III (APA, 1980) was the reason for the DSM-III-R (APA, 1987). Using the DSM-III-R, diagnosing Attention Deficit Hyperactivity Disorder required a holistic approach as opposed to the sub-categorical approach used in the DSM-III. The DSM-III-R appeared to revert back to the original DSM-I and DSM-II systems of diagnosing the disorder. The DSM-I, DSM-II and DSM-III-R gave a generic definition of the disorder and did not rely upon subcategories like those found in the DSM-III. Cantwell and Baker (1988) described the generic categorization of the DSM-III-R as “polythetic (i.e., no specific single symptom or set of symptoms is necessary or sufficient criteria for the diagnosis)” (p. 527). Using this polythetic viewpoint, only one set of behavioral domains were considered, which to the clinical committee appeared to be suspect. Many clinicians were comfortable with the multi-symptom approach identified by the DSM-III.

Combating the multi-symptom approach, the DSM-III-R field trials researched the optimal number of symptoms necessary to accurately diagnose attention deficit hyperactivity disorder. Members of the DSM-III-R Advisory Committee were responsible for the diagnostic criteria for Attention Deficit Hyperactivity Disorder (ADHD). The Advisory Committee performed a national field trial of proposed items for diagnosing ADHD. The field trials were designed to answer: a) the extent that the proposed criteria were representative of its particular domain of psychopathology and b) what are the minimum number of items to be used in making the diagnosis to “maximize its sensitivity and specificity, using a clinical diagnosis made without reference to the diagnostic criteria as the validity criterion?” (Spitzer, Davies, & Barkley, 1990, p. 690).
Three hundred and eleven children diagnosed with Attention Deficit
Hyperactivity Disorder (ADHD) were used in the study by Spitzer et al. (1990). The
Advisory Committee found “at least eight of the 14 items maximizes the total
predictive value and yields sensitivity and specificity above 0.80. Therefore, the
DSM-III-R criteria for ADHD require at least eight of the 14 items” (Spitzer et al.,

Spitzer et al. (1990) was the first study to “empirically establish the
discriminating power of item pools and cutoff scores for the classification of common
childhood psychiatric disorders” (p. 695). The first limitation of the study was that
the “criterion used for determining the validity of the new criteria was individual,
clinical judgment rather than some objective or consensus standard” (p. 696).
Heterogeneity became problematic because there was no consistent standard for
reaching diagnostic judgments. Heterogeneity was suggested to be:

limited by several factors: (1) the reliance by most clinicians on the
DSM-III criteria for these disorders; (2) substantial familiarity of the
judges with new item pools being tested; (3) some similarity between
new item pools and those used in DSM-III; (4) reliance on similar
rating scales and cutoff points across at least half or more of the sites;
and (5) the use of expert clinicians who are quite familiar with each
others’ views and likely share a common conceptualization of the
symptom constructs that comprise each disorder. (Spitzer et al., p.
696)

Another critique of the DSM-III-R was the “DSM-III-R proposed a
unidimensional definition where a child is considered to manifest ADHD if he/she
exhibits 8 or more of a list of 14 symptoms that reflect difficulties in attention,
impulsivity, or motor hyperactivity; and where the onset of symptoms is before the
age of 7” (Frick & Lahey, 1991, p. 164). This unidimensional approach “implies that
there is a single unitary dimension of maladaptive behavior that encompasses
inattention, impulsivity, and motor hyperactivity” (Frick & Lahey, 1991, p. 164).
This unidimensional approach was only used in the DSM-III-R and not any previous edition or in the DSM-IV.

Another drawback in the unidimensional approach was “the problem it creates concerning the DSM-III category of ADD/WO. It is likely that many children diagnosed with ADD/WO would exhibit eight or more of the symptoms of ADHD and be diagnosed with ADHD, even though they exhibit no motor hyperactivity” (Frick & Lahey, 1991, p. 164). In addition, “[G]rouping ADD/WO children with ADD/H children is troubling, given the research which has found several clinically important differences between the two groups of children” (Frick & Lahey, 1991, p. 165). Frick and Lahey (1991) stated “the unidimensional definition is contradictory to the substantial evidence that attention deficits and motor hyperactivity represent distinct behavioral dimensions” (p. 165). The second common criticism of the DSM-III-R was “there is mounting evidence that children who show the attention deficits with hyperactivity and those without hyperactivity differ in several clinically important ways, including co-occurring problems in adjustment, types of attentional deficits, and response to treatments” (Frick & Lahey, 1991, p. 165).

Similarities maintained from the DSM-III to the DSM-III-R were the mention of the age of onset as “before age four” (APA, 1987) and a symptom list, however the symptom list changed considerably. The list found in the DSM-III included categories of inattention, impulsivity, and hyperactivity in contrast to the DSM-III-R which had only one list of 14 characteristics. The DSM-III-R set the threshold for how many symptoms should be present for an appropriate diagnosis at 8 symptoms. Duration of the symptoms was maintained “of at least six months” (APA, 1987, p. 52) and developmental appropriateness was addressed through age-specific features. These age specific features ranged from preschool children through adolescents and also included specific features that were associated with each age group.
Revising the Diagnostic and Statistical Manual of Mental Disorders has culminated in the most current version (DSM-IV) in 1994. The DSM-IV reverted back to the DSM-III classification system using the subcategorical approach. The subcategories used in the DSM-IV classification of Attention Deficit Hyperactivity Disorder were Inattention, Hyperactivity, and Impulsivity. Attention Deficit Hyperactivity Disorder was found in the general category of “Disorders Usually First Diagnosed in Infancy, Childhood, or Adolescence” (APA, 1994, p. 37).

Classification under this general category changed slightly from other versions in that “variation in the presentation of a disorder that are attributable to an individual’s developmental stage are described in a section in the text titled ‘Specific Culture, Age, and Gender Features.’” (APA, 1994, p. 37). Another change that occurred in the DSM-IV versus other DSM texts was the addition of “a single criteria set is provided that applies to children, adolescents, and adults” (APA, 1994, p. 37).

Attention Deficit Hyperactivity Disorder falls under the minor category of “Attention-Deficit and Disruptive Behavior Disorders. This section includes Attention-Deficit/Hyperactivity Disorder, which is characterized by prominent symptoms of inattention and/or hyperactivity-impulsivity. Subtypes are provided for specifying the predominant symptom presentation: Predominantly Inattentive Type, Predominantly Hyperactive-Impulsive Type, and Combined Type” (APA, 1994, p. 38).

The DSM-IV Task Force and Work Groups “conducted a three-stage empirical process that included 1) comprehensive and systematic reviews of the published literature, 2) reanalysis of already-collected data sets, and 3) extensive issue-focused
field trials" (APA, 1994, p. xviii). The pursuant review will focus upon the issue-focused field trials published in peer-reviewed literature bases.

Thresholds for the maximum number of symptoms to accurately diagnose Attention Deficit Hyperactivity Disorder was the focus of the study conducted by Frick et al. (1994). Specifically, this study attempted to find thresholds for the number of symptoms that were “empirically derived to maximize accurate identification of impaired cases, agreement with clinician’s validation diagnoses, and test-retest agreement (reliability)” (p. 530). This study used 440 clinic-referred subjects (336 males and 104 females) between the ages of 4 and 17 with a mean age of 9 years 5 months.

Teachers and parents of these subjects were given the Diagnostic Interview Scale for Children (DISC-2; Shaffer, Fisher, Piacentini, Schwab-Stone, & Wicks, 1993) which was changed slightly for this study. These alterations were the question for age of onset and an inclusion of symptoms added for consideration from the DSM-III-R. Using information obtained from the DISC-2 teacher and parent versions, Frick et al. (1994) concluded that each symptom identified as possible criteria for inattention tended to have moderate to high positive predictive power (.69) and negative predictive power (.76).

In developing an optimal symptom list, psychiatric research has “relied on the conditional probability statistics of sensitivity and specificity” (Frick et al., 1994, p. 530). Frick et al. used positive predictive power (PPP) and negative predictive power (NPP) to identify the presence or absence of a particular symptom. Positive predictive power was defined as “the conditional probability of the disorder being present given the presence of a symptom. Stated as a proportion, PPP is the proportion of individuals with the symptom who have the disorder. In contrast, NPP refers to the conditional probability of the disorder being absent given the absence of
the symptom. Thus it is the proportion of individuals without the symptom who do not have the disorder” (p. 530).

“The provisional criteria that were tested in this study were initially selected by the DSM-IV Disruptive Behavior Disorders Committee and subsequently reviewed and revised by the DSM-IV Child Disorders Work Group” (Frick et al., 1994, p. 531). Symptoms were assessed for diagnostic utility which “involved testing the association of symptoms with each dimension separately” (Frick et al., p. 531). With regards to the CPP thresholds of Inattention, the range of CPP was .55 to .78 for Inattention-disorganization symptoms and .48 to .88 for hyperactivity-impulsivity symptoms. In order to account for changes in base rates, Frick et al. used corrected statistics for CPP (cCPP) and NPP (cNPP). “Thus, the cPPP and cNPP statistics are the number of agreements (on the presence or absence of symptoms and diagnoses, respectively) that exceed the expected number of chance agreements, expressed as a ratio of the maximum possible number of agreements that exceed chance expectations given the base rates of the symptom and the diagnosis” (p. 533). The cPPP for Inattention varied between .55 to .78 and the cPPP for Hyperactivity varied between .48 to .88. Corrected NPP for Inattention varied between .59 to .97 and for Hyperactivity-impulsivity .51 to .85. With regards to hyperactivity-impulsivity symptoms, the “symptoms did not predict threshold levels of inattention-disorganization well, inattention-disorganization symptoms were highly predictive of threshold levels of hyperactivity-impulsivity” (Frick et al., 1994, p. 535).

Frick et al. (1994) offered some reservations to the utility of the information gained from their study. The authors state that “there was relatively little variation in the symptom utility patterns when the sample was divided into younger (<13) and older children and divided based on gender” (p. 536). There was an underrepresentation of preschool children which makes generalizations impossible to
that particular group. There was a large age range in the groups used for the analysis making several developmental stages being found in the groups. Caution should be used when generalizing findings to females because, the type of females referred for the study may not represent the typical female referred. In addition a male to female ratio was 3:1 in the study. Frick et al. concluded “there were few differences in the predictive utility of the hyperactivity symptoms based on age and gender of the child” (p. 537). Symptoms that were consistently the most predictive of the disorder according to Frick et al. were: “runs around and climbs excessively” and “acts as if he or she is driven by a motor” (p. 537). Clinical implications from this study involved symptom utility analyses which used a general way of predicting the relationship between symptoms and diagnoses.

Lahey et al. (1994) studied the “optimal diagnostic thresholds for the two symptom dimensions of DSM-IV attention deficit hyperactivity disorder” (p. 1674). Lahey et al. also assessed the “validity of the three new subtypes distinguished in the DSM-IV” (p. 1674). Data for this study were obtained from the Diagnostic Interview Schedule for Children (DISC) teacher and parent versions of 380 cases. Measures of impairment were obtained from ratings of parent and interviewer versions of the Children’s Global Assessment Scale (CGAS; Setterberg, Bird, & Gould, 1992) with scores of 60 or less considered impaired by the researchers.

Three measures of specific impairments related to ADHD were used. These measures were the parent version of the Homework Problem Checklist, teachers version of the Academic Performance Rating Scale, and teacher ratings of social impairment using peer sociometrics of like (more than 75% of peers) and dislike (less than 25% of peers).

Results of the study by Lahey et al. (1994) suggested “the number of hyperactivity-impulsivity symptoms was systematically and strongly related to scores
on both the interviewer and parent versions of the Children's Global Assessment Scale, but the number of inattention symptoms was not" (p. 1675). Analyses of hyperactivity-impulsivity symptoms based upon the CGAS parent and interviewer versions, an optimal “threshold of five symptoms would optimize both the identification of impaired patients and agreement with clinicians” (Lahey et al., 1994, p. 1676). In the final version of the DSM-IV (APA, 1994), the Child Disorders Work Group chose the threshold of 6 symptoms of hyperactivity-impulsivity to distinguish clinically significant children from children who are “normally active” (Lahey et al., 1994, p. 1676).

Inattention symptoms were measured based upon “youths with scores in the impaired range of either the parent rating of homework problems or the teacher rating of academic performance were classified as academically impaired” (Lahey et al., 1994, p. 1677). During the analysis of inattention symptoms, the authors relied upon the presumption that “the diagnosis of attention deficit disorder with hyperactivity would be defined as the presence of clinically significant numbers of symptoms of both inattention and hyperactivity-impulsivity” (Lahey et al., 1994, p. 1678). The authors found that this presumption may not be accurate and so the authors examined “the role of inattention symptoms in the diagnosis of attention deficit hyperactivity disorder” (Lahey et al., 1994, p. 1678).

Inattention appeared to play little to no role in the diagnosis of attention deficit hyperactivity disorder. Lahey et al. (1994) tested clinician’s validation of diagnoses using the number of inattention symptoms, combined with hyperactivity-impulsivity symptoms. In this testing procedure it was found that “the great majority of youths with six or more symptoms of hyperactivity-impulsivity were given the diagnosis of attention deficit disorder by the clinician, regardless of the number of inattention symptoms they exhibited” (pp. 1678-1679). Lahey et al. found that:
These findings indicate that the validation clinicians essentially ignored inattention symptoms in making the clinical diagnosis of attention deficit disorder with hyperactivity. This surprising finding means that DSM-IV attention deficit hyperactivity disorder would maximize agreement with clinicians’ judgments only if a subtype could be diagnosed on the basis of clinically significant levels of hyperactivity-impulsivity alone (i.e., with no requirement of a minimum number of inattention symptoms). (p. 1679)

Supporting the agreement of clinicians with the DSM-IV were very important for an accurate and valid diagnosis of children with attention deficit hyperactivity disorder. Lahey et al. (1994) attempted to validate clinicians’ diagnoses by studying youths with 6 or more hyperactivity-impulsivity symptoms and 6 or more impulsivity symptoms to those youths with 6 or more hyperactivity-impulsivity symptoms and less than 6 impulsivity symptoms. Results from that study indicated that if:

youths who met the threshold for hyperactivity-impulsivity symptoms but had fewer than six symptoms of inattention were not included in DSM-IV attention deficit hyperactivity disorder, DSM-IV would exclude not only patients who were judged by clinicians to have a clinically significant disorder in nearly every case but also patients whose parent and interviewer Children’s Global Assessment Scale scores were mostly in the impaired range and not significantly different from those of youths who met both the hyperactivity-impulsivity and inattention criteria. (p. 1679)

Lahey et al. (1994) used “the DSM-IV model of attention deficit hyperactivity disorder in which inattention and hyperactivity were considered to be independent dimensions” (p. 1683). The authors found that the two dimensions of the disorder were associated with different impairments. Inattention was associated with academic impairment and hyperactivity-impulsivity was associated with global ratings of impairment. In the diagnostic process, Lahey et al. found that clinicians related to the number of hyperactivity-impulsivity symptoms independently of the inattentive symptoms. When requiring a number of inattention symptoms, clinician agreement lowered markedly.
This information gained by Lahey et al. (1994) regarding clinician agreement of inattention in the diagnostic process resulted in a major change in the subotyping of attention deficit hyperactivity disorder. The Child Disorders Work Group felt it was necessary to distinguish between subtypes of inattentive youths by using the subtypes of combined, predominantly inattentive type, and predominantly hyperactive-impulsive type. Results stemming from Lahey et al. helped them to accomplish the following three goals of the DSM-IV.

First, they reduce the heterogeneity of DSM-III-R attention deficit hyperactivity disorder in terms of symptoms, impairment, and demographics by distinguishing among individuals with primary dysfunction in inattention, hyperactivity-impulsivity, or both. Second, by providing specific diagnostic criteria for the predominantly inattentive type, the DSM-IV criteria operationalize the category of undifferentiated attention deficit disorder for the first time since DSM-III attention deficit disorder without hyperactivity. Third, a small number of patients with impairing levels of symptoms who were not identified by DSM-III-R criteria are identified by DSM-IV criteria. (p. 1684)

Identification of girls and preschool children appear more successful using the DSM-IV compared to previous versions. The predominantly inattentive type described by the DSM-IV appear to identify girls which have been underrepresented in the diagnosis of ADHD because the primary focus has been upon motoric hyperactivity. In regards to preschool children, the DSM-IV improved the accuracy of diagnosis by the use of the two dimensions of symptoms. Usually preschool children will exhibit the hyperactivity-impulsivity type because the demands of academic attention required in elementary grades.

The Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV; APA, 1994) defined ADHD as a persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development. Recommendations by the DSM-IV
state that "It is especially difficult to establish the diagnosis of ADHD in children younger than age 4 or 5 years, because their characteristic behavior is much more variable than that of older children and may include features that are similar to symptoms of Attention-Deficit/Hyperactivity Disorder" (p. 81). The symptom list of the DSM-IV changed to a multisymptom approach used in the DSM-III. The pattern of inattention and/or hyperactivity-impulsivity must persist for 6 months and meet at least 6 or more observable symptoms from the categories of inattention, hyperactivity, and impulsivity. The developmental appropriateness was stated as "There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning" (APA, 1994, p. 84).

In order to use the DSM-IV system to diagnose ADHD, the diagnostician must be able to address four questions according to Schaughency and Rothlind (1991). The four questions to be answered are:

(a) Does this child meet the diagnostic criteria for ADHD?
(b) Does an alternative diagnosis or conceptualization account for his/her difficulties (differential diagnosis)?
(c) Does this child display these behaviors to a developmentally inappropriate extent (for children with Mental Retardation, compared to developmental level)? and
(d) Do these behaviors impair the child's functioning in the school, in social relations, and/or the home? (p. 198)

Potential problems for diagnosis using this method are the fact that the disorder has no specific norms on activity levels for normal or atypical children. The problem that arises from this lack of information includes the amount of subjectivity a school psychologist uses with regards to inattention, impulsivity, distractibility, and/or activity level of a child (Grimes, 1982). As a professional gains experience with one particular population, a professional may have the "feeling that he can focus on each [symptom] in turn and to some degree evaluate the contribution of each. This approach, however, is not sufficient in view of the additional evaluation methods
which are available, but which are not being utilized" (Clements & Peters, 1962, p. 186). Another consideration is the amount of tolerance parents or teachers have for those behaviors (Grimes, 1982).

McBurnett (1996) gave insight into the reasoning behind school psychologists lack of comfort with the DSM-IV. McBurnett states:

Historically, the American Psychiatric Association’s (APA) diagnostic system, the Diagnostic and Statistical Manual of Mental Disorders (DSM), has not been widely used by school psychologists. It has always been foreign to the school culture, because it (a) corresponded poorly to PL 94-142 conditions (b) found few advocates within school systems, (c) played a small or nonexistent role in most school psychologists’ academic and in-service training, and (d) adhered to a medical model not espoused in school psychology. (p. 259)

McBurnett (1996) believed that school psychologists may be apt to use the DSM-IV diagnostic procedure. “School psychologists accustomed to the precision and methodological rigor of the assessment tradition, may be more troubled by some of the untidiness in the development of DSM-IV, and by the occasional surrender of the empirical banner to pragmatic concerns” (McBurnett, 1996, p. 268). However, “[T]he current edition (DSM-IV) [is] more a product of empirical analysis and less a product of panels of psychiatrists than previous editions, which should make DSM-IV more palatable to empirically minded school psychologists” (McBurnett, 1996, p. 260). The DSM-IV, from this study, should become a valued diagnostic procedure for school psychologists from 1994 to the present.

According to the DSM-IV, diagnostic criteria were broken into five criterion.

A. Either (1) or (2):

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

(a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
(b) often has difficulty sustaining attention in tasks or play activities
(c) often does not seem to listen when spoken to directly
(d) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)
(e) often has difficulty organizing tasks and activities
(f) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
(g) often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)
(h) is often easily distracted by extraneous stimuli
(i) is often forgetful in daily activities

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

Hyperactivity

(a) often fidgets with hands or feet or squirms in seat
(b) often leaves seat in classroom or in other 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.
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).

*Code* based on type:

314.01  **Attention-Deficit/Hyperactivity Disorder, Combined Type:** if both Criteria A1 and A2 are met for the past 6 months

314.00  **Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type:** if Criterion A1 is met but Criterion A2 is not met for the past 6 months

314.01  **Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type:** if Criterion A2 is met but Criterion A1 is not met for the past 6 months
CHAPTER 3
REVIEW OF THE LITERATURE USING BARKLEY’S MODEL
OF ATTENTION DEFICIT HYPERACTIVITY DISORDER

Russell Barkley began his study of attention deficit hyperactivity disorder (ADHD) because of his dissatisfaction with the Diagnostic and Statistical Manual of Mental Disorders-III (APA, 1980) criteria. Barkley (1980) stated “while the reader may wish to employ the DSM-III criteria, I believe them to be too liberal or vague on enough issues in diagnosis that I have instead adopted the following more rigorous definition for my clinical and research use” (p. 6). Through the criteria Barkley used for his diagnoses, he narrowed the scope of the definition and incorporated psychometrically useful behavior rating scales as well as observational components not described by the Diagnostic and Statistical Manual of Mental Disorders.

Barkley’s model has been used by clinicians to diagnose children with ADHD since his original work in 1980. Barkley revised his original work in both 1990 and 1998 to reflect the theoretical growth and the research conducted. The following literature review will describe Barkley’s theory and assessment process starting with the 1980 model.

**Barkley’s Model 1980**

In 1980, Russell Barkley wrote his first book in a series of three to date which describe his theoretical framework. In the first compilation of information, Barkley (1980) relied heavily upon the behavioral theory for the definition of attention deficit hyperactivity disorder (ADHD), assessment of the child, and the treatment of the child after the diagnosis was made. Barkley described attention deficit hyperactivity disorder as:

[H]yperactivity is a developmental disorder of age-appropriate attention span, impulse control, restlessness, and rule-governed behavior that develops in late infancy or early childhood (before age 6), is pervasive in
nature, and is not accounted for on the basis of gross neurologic, sensory, or motor impairment, or severe emotional disturbance. (p. 6)

In diagnosing a child with ADHD, Barkley (1980) referred to the definition of ADHD given above. Through this definition Barkley outlined the variables to be assessed in the diagnostic process. The variables were “[P]roblems with attention span, impulse control, restlessness, and noncompliance must be demonstrated (usually through interviews, rating scales, and objective observations)” (p. 85). Barkley identified the reference group in which the child being referred should be compared as “that of children of similar mental age, as some retarded children can also be hyperactive in relation to their level of intellectual development” (p. 85). Regarding the onset and duration of the ADHD child’s behavior, Barkley recommended the information be gained from interviews. The criteria Barkley considered important for diagnosis include:

1. Parental and/or teacher complaints of inattentiveness, impulsivity, and restlessness.
2. Age of onset of problems by 6 years as reported by parents.
3. Deviation from age norms on a standardized parent or teacher rating scale of hyperactive behavior of at least two standard deviations above the mean (98% or higher). For retarded children, the child’s score is compared against chronological age norms consistent with the retarded child’s mental age.
4. Problem behaviors occurring in 50% of 16 situations discussed with the parent or 12 situations discussed with the teacher.
5. Duration of symptoms of at least 12 months.
6. Exclusion of deafness, blindness, or other gross sensory or motor impairment, or severe emotional disturbance (e.g., childhood psychosis). (pp. 6-7)

In the assessment process Barkley (1980) stated “the goal of clinical assessment should not be blame, to find fault, to accuse, or to deprecate. It should be to establish problem areas and to design effective interventions” (p. 81). Barkley also recommended the assessment approach should be broad in nature because hyperactive children have a large number of related problems in addition to the hyperactivity that
becomes the main focus in the assessment process. With this large number of related problems, Barkley lastly recommended the assessment focus upon many different situations that the child is subject.

The first step within the assessment process is the parent interview. The parent interview serves five distinct purposes. Barkley (1980) stated these purposes as:

1. It (the interview) establishes a necessary rapport among the parents, the child, and the examiner that will prove invaluable in enlisting parental cooperation with later aspects of assessment and treatment (p. 89).

2. The interview is an obvious source of descriptive information about the child and the family; it also reveals the parents’ view of the child’s problems and helps to narrow the focus of later stages of assessment (p. 89).

3. The interview allows the child to remain within the room during part of the interview so as to permit an informal assessment of parent-child interactions (p. 89).

4. The interview can focus the parent’s perception of the child’s problems on more important and more specific controlling events within the family. Parents often tend to emphasize developmental-historical causes of a global nature (p. 89). The interview in the 4th step also serves to shift the parents’ attention to more immediate antecedent and consequating events surrounding child behaviors (p. 89).

5. The final purpose of the interview is that of formulating a diagnosis, though this is certainly not essential to treatment planning. The diagnosis of hyperactivity, however, may gain prognostic utility as more follow-up studies are done (p. 89).

After the parent interview, an interview should be conducted with the child’s teacher. In the teacher interview, the examiner should find out information regarding the child’s problem behaviors in the classroom. The teacher may describe the child’s physical actions, relationships with other classmates, as well as how the child acts in
different situations throughout the school day outside of their particular classroom (Barkley, 1980).

After interviewing parent’s and teacher’s, Barkley (1980) felt that it was important to “objectify adult opinions about children” (p. 104). The best way to objectify adult’s opinions was to use “questionnaires with multiple-choice or numerically scaled answers” (Barkley, 1980, p. 104). Behavior rating scales should have certain properties which Barkley stated as follows:

1. Items in the scale should be worded so as to be easily understood by the vast majority of adults who must use it. (p. 104)

2. Rating scales should have a sufficient number of items to assess the construct(s) under study but not so many as to be inordinately time-consuming and hence discouraging to those who must complete it. (p. 104)

3. The answer format should allow for some indication of degree of the problem being endorsed, rather than merely for a ‘yes’ or ‘no’ answer. (p. 104)

4. It (rating scale) should have ‘face validity’. (p. 104)

5. Construct validity should be considered before using the scale. Construct validity is rarely met by most rating scales dealing with hyperactivity. (p. 104)

6. Predictive validity. Predictive validity of a scale has been found to correlate with other useful measures at the same time that it is completed or at a future time. (p. 104)

7. Discriminant validity. Discriminant validity was defined as the degree to which it (rating scale) distinguishes between children who score high on one construct, such as hyperactivity, and those who are ‘normal’ on that construct. A scale should produce a satisfactory level of correctly classified children if it is to be helpful in diagnostic problems. (p. 104)
8. A rating scale should have acceptable reliability not only between two points in time with the same rater, but between two raters using it at the same time with one child. (p. 104)

9. The scale should have normative data available for children at differing age levels when age is likely to influence the construct being studied. (p. 104)

10. Virtually all of the rating scales for hyperactivity do not meet the requirement of prescriptive utility. That is, they do not provide much information that is particularly useful in planning interventions, although they have frequently been used as one measure of the success of such treatment programs. (p. 104)

Parent behavior rating scales that Barkley (1980) recommended for use in the diagnostic process were the Conners Parent Symptom Questionnaire (PSQ; Goyette, Conners, & Ulrich, 1978); the Werry-Weiss-Peters Activity Rating Scale (WWPARS; Routh, Schroeder, & O'Tuama, 1974); Child Behavior Checklist (CBCL; Achenbach, 1978); Personality Inventory for Children (PIC; Wirt, Lachar, Klinedinst, & Seat, 1977); and the Home Situations Questionnaire (HSQ; Barkley & Edelbrock, 1987). Barkley (1980) summarized his thoughts about parent behavior rating scales as “it appears that a thorough assessment of hyperactive children would include at least the Conners PSQ, the Achenbach CBCL and the HSQ” (p. 134). Barkley goes on to elucidate the use of parent rating scales as:

[T]hese scales assist in establishing the diagnosis of hyperactivity, in elucidating the associated behavior problems and social competence deficits, in establishing the statistical deviance of these problems, and in revealing the specific settings in which they are problematic. Where desirable, these scales can be supplemented by the WWPARS, though these data would seem to be redundant, and by the PIC, if a more thorough ‘personality profile’ of a particular child is of specific interest to the examiner. (p. 134)

The specific criteria Barkley (1980) suggested for making a diagnosis using these behavior rating scales were:
1. Score of 1.5 or higher on the hyperactivity index of the Conners PSQ, or
2. A score of 20 or higher on the WWPARS. A score of two standard deviations above the mean for age on either questionnaire would be a more rigorous criterion.
3. Problems with behavior in 50% or more of the situations in the HSQ. (p. 143)

Teacher behavior rating scales that Barkley (1980) recommended were the Conners Teacher Rating Scale (TRS; Goyette et al., 1978); Behavior Rating Scale (BRS; Kendall & Wilcox, 1979); and the School Situations Questionnaire (SSQ; Barkley & Edelbrock, 1987).

Barkley (1980) summarized teacher behavior rating scales as:

Where a diagnosis of hyperactivity in school is of interest, the following criteria are used:
1. Score of 1.5 or higher on the hyperactivity index of the Conners TRS (or two standard deviations above the mean for age).
2. Problems with behavior in at least 50% of the situations on the SSQ. (p. 143)

After administering behavior-rating scales to the parents and teachers of the child, it is important for the clinician to observe the child natural settings. Barkley (1980) stated:

interviews and rating scales will have given the examiner some idea of a particular child’s problems, the degree of their deviancy from normal behavior, and their settings. These sources of information will assist in narrowing the focus of the evaluation to certain behaviors and their settings so that objective methods of observing the problems are more likely to capture the essence of the parental complaints. Such a narrowing of focus also permits the selection of certain objective instruments or methods most likely to record the child’s problems accurately. (p. 146)

Observational methods, according to Barkley (1980), should “permit the recording of social interactions and their antecedent and consequent events” (p. 147). Barkley described in-home observations and classroom observations as the most
important sources of information in the assessment process. Regarding in-home observations, Barkley recommended that caution be used in the interpretation of the data obtained. Barkley felt that because there were several precautions and limitations in the observation process, observations within the clinical setting were just as useful as home visitations. In regards to classroom evaluations, Barkley suggested that the clinician will need to make several trips to the school to obtain a true picture of the child's behavior and great care must be taken to protect the anonymity of the child being observed to avoid negative consequences to the child. Barkley's comment regarding these types of observational systems concluded as "[W]hatever recording method is used, observers should give attention to those events that precede or consequte the target child behaviors, as these will likely be the events that will require alteration during treatment" (p. 157).

In order to adequately record target behaviors, as well as antecedents and consequences of these behaviors, Barkley (1980) described the prerequisites of an adequate behavioral coding procedure for clinical practice. Barkley's recommendations were as follows:

1) the method chosen should have categories of behavior that are relevant to the problems a particular child is experiencing. In most cases these will involve command-compliance interactions between a parent or a teacher and a hyperactive child. (p. 158)
2) the clinician or other observers should obviously have some familiarity with the method to be used. (p. 158)
3) some decision will have to be made as to the length of time the observations are to last. (p. 158)
4) the behaviors to be recorded should be clearly defined so as to permit the primary referral complaints. (p. 158)

The first compilation of information that Barkley has written was sparked by his dissatisfaction with the Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition (APA, DSM-III, 1980). From this dissatisfaction came a comprehensive
assessment process using psychometrically valid tests and observations. This idea of the assessment process Barkley (1980) described was expanded upon in his second edition to be reviewed.

**Barkley's Model 1990**

Between 1980 and 1990, Barkley remained within the behaviorist theoretical system. Barkley (1980) believed that the primary deficit found in children with attention deficit hyperactivity disorder (ADHD) was attention. In 1990 Barkley believed that the primary deficit found in children with ADHD was that of a motivational deficit, specifically, “stimulus control or regulation of behavioral responses, particularly in the area of behavioral inhibition” (p. 71). Barkley (1990) defined Attention Deficit Hyperactivity Disorder as consisting of:

> developmental deficiencies in the regulation and maintenance of behavior by rules and consequences. These deficiencies give rise to problems with inhibiting, initiating, or sustaining responses to tasks or stimuli, and adhering to rules or instructions, particularly in situations where consequences for such behavior are delayed, weak, or nonexistent. The deficiencies are evident in early childhood and are probably chronic in nature. Although they may improve with neurological maturation, the deficits persist in comparison to same-age normal children, whose performance in these areas also improves with development. (p. 71)

This definition stems from Barkley's (1990) focus on the biopsychosocial perspective of assessment. In the biopsychosocial model, Barkley described, there were:

> various levels of analysis or functioning (that) are analogous to a series of concentric circles, with the innermost circle representing the biological level of functioning, surrounded by the successive levels of cognitive or neuropsychological functioning, behavioral-environmental interactions, social-familial functioning, and finally the socioeconomic or sociopolitical level. Impairments in functioning at any level may have an impact upon the functioning of adjacent levels, which then may create spillover or radiating effects into other levels of this model. (p. 210)
Through the biopsychosocial model, the assessment battery proposed by Barkley (1990) relied heavily upon the development of the child. Barkley pointed out that in the assessment process:

- a consideration of individual differences and the context in which the child functions necessarily implies a consideration of developmental factors such as the child’s chronological age; level of cognitive and adaptive development; age of onset and chronicity of symptoms; family background; and social factors. (p. 219)

Therefore, in choosing an assessment battery, developmental factors should guide the instruments that would be used in the evaluation. Using the developmental factor in the assessment process:

- the developmental approach recognizes that change is inherent in any child’s behavior. Thus, the ADHD evaluation may need to include instruments that can be administered over time, that have high test-retest reliability, and that include developmental norms, in order to determine whether the problem behaviors represent ADHD or a transient developmental phase that will improve with time alone. (Barkley, 1990, p. 220)

Barkley’s (1990) recommended assessment battery began with an extensive clinical interview and medical examination. The clinical interview was conducted with the parent(s) of the referred child and served several purposes. Barkley stated the purposes of the parent interview as:

1) establishing rapport to gain parent cooperation for later portions of assessment and intervention.
2) the interview gives the clinician descriptive information about the child and family. The second stage of the interview should focus the child’s problems and evaluation procedures as seen by the parent’s and clinician respectively.
3) the interview can give the clinician an idea of how well the family is coping with the child as well as the parent’s personal psychological stability.
4) identify parent-child relationships.
5) focus the parent’s ideas about the child’s problems at a much deeper level than what the child’s problems appear to be holistically.
6) formulate a diagnosis and develop treatment recommendations.  
7) give the parent’s catharsis. (pp. 235-236)

Barkley recommended that an interview be conducted with a child if possible as well as the child’s teacher to gain a holistic perspective of the child in a multiple information context.

The pediatric medical examination should occur either before the initial interview or after the initial appointment. The pediatric medical examination serves the purposes of a medical interview which focuses more on differential diagnoses other than, or in addition to, attention deficit hyperactivity disorder (ADHD). “In rare cases, the ADHD may have arisen secondary to a clearly biologically compromising event, such as severe Reye’s syndrome, hypoxic-anoxic event (such as near-drowning or severe smoke inhalation), significant head trauma, or central nervous system infection or cerebral-vascular disease” (Barkley, 1990, p. 255). “A second purpose of the medical exam is to thoroughly evaluate any co-existing conditions that may require medical management. In this case, the child’s ADHD is not seen as arising from these other conditions but as being comorbid with it” (Barkley, 1990, p. 256). “A third purpose of the medical examination is to determine whether physical conditions exist that are contraindications for treatment with medications” (Barkley, 1990, p. 256). The physical exam also should rule out the possibility of a hearing or visual difficulty.

Barkley (1990) subscribed heavily to behavior rating scales to make his judgments regarding the diagnosis of children with ADHD. The most important component was the diagnostic interview described above, but to support the interview information, behavior- rating scales became essential. Barkley described 9 essential requirements clinicians should look for before using the behavior-rating scale. These 9 requirements were:
1) “The scale should have items that are worded so as to make it clear to the respondent what is being rated. The more specific and operational the content of the item, the greater its reliability will be” (p. 279).

2) The scale that the clinician chooses should have enough items that pertain to the construct being measured that it is considered adequate and reliable. The scale also should not be too time consuming that it discourages the person filling out the survey, therefore not completing the scale.

3) The answer format should represent the range and frequency of the symptom or construct such as likert scales.

4) “The item should have some ‘face validity,’; that is, its content should reflect the construct(s) of interest. This does not guarantee that the scale actually assess the construct” (p. 279).

5) “The scale should demonstrate validity in assessing the construct of interest. That is, it should correlate significantly with other measures of the same construct(s) taken by other means or from other sources. Rating scales for ADHD symptoms vary considerably in the degree to which they have demonstrated this type of validity” (p. 280).

6) “Discriminant validity” is the next psychometric property Barkley discussed. “In other words, does the scale discriminate between samples of subjects that are known to have more or less of this particular behavior or symptom? In the case of ADHD, many rating scales have been able to show that they can discriminate ADHD groups from normal and non-ADHD clinical samples, which is why they are so highly recommended as part of the assessment process” (p. 280)

7) Demonstration of predictive validity is considered. It is important that the scale being used “correlates significantly with the same scale or other comparable measures taken at some later time in development” (p. 280).
8) The scales being used should have adequate levels of test-retest and interrater reliability. (p. 280)

9) The scales should lead a clinician to a treatment specific for the individual child. (p. 280)

Barkley (1990) stated that there were many advantages to using rating scales over other methods of assessment of Attention Deficit Hyperactivity Disorder (ADHD). The advantages Barkley described were:

(1) have the capability of gathering information from informers with many years of experience with the child across diverse settings and circumstances; (2) permit the collection of data on behaviors that occur extremely infrequently and are likely to be missed by in vivo measures; (3) are inexpensive to administer and require little time to complete; (4) may have normative data for establishing the statistical deviance of child behavior ratings; (5) exist in a variety of forms focusing on a diversity of dimensions of a child psychopathology; (6) incorporate the opinions of significant people in the child’s natural environment who are responsible for the care, management, and ultimately the therapeutic treatments a child will receive; (7) filter out situational variation, thereby focusing on the most stable and enduring characteristics of the child; and (8) permit quantitative distinctions to be made concerning qualitative aspects of child behavior that are often difficult to obtain through direct observational methods. (pp. 282-283)

In addition to the advantages of rating scales in the diagnostic process, Barkley (1990) expanded upon 4 critical aspects in using rating scales. The first advantage Barkley described was “most rating scales for ADHD now have adequate normative data that permit clinicians to determine the degree of deviance of a particular child within the population of same-age and same-sex children” (p. 283). Second, “rating scales can be a convenient means for collapsing information about a child across situations and lengthy time intervals into units of information of value to diagnosis” (p. 283). Thirdly, “ratings can provide a convenient means for assessing dimensions of child behavior that are hard to quantify by other means” (p. 283). Barkley meant that it was difficult to understand “perceptions of other adults, clinicians must obtain
their opinions and contrast them against the typical views of normal children by these same types of caregivers" (p. 283). Lastly, "rating scales provide a convenient means for evaluating a person's response to clinical interventions" (p. 284). Barkley felt that since parent's and teacher's would be monitoring the progress of the child to the treatment, behavior rating scales would give the clinician an idea of how well medication was working and the effect on the child, family, and teacher.

Barkley (1990) cautioned the notion of rating scales. Barkley cautioned "it must not be forgotten that rating scales are merely quantified opinions and can be subject to the same biases as can anyone's opinions of another; thus, they should not be the only means of assessing ADHD children. Moreover, rating scales fail to assess certain antecedent and consequent events surrounding a child's behavior that may be of substantial importance to determining why the problem behavior occurs" (p. 284). With the benefits and cautions given for rating scales, those rating scales Barkley recommended for assessment of children with attention deficit hyperactivity disorder will now be reviewed.

Parent rating scales that Barkley (1990) described within this edition include the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983, 1986). Barkley says "[T]here can be little doubt that this is the most well-developed, empirically derived behavior rating scale currently available for assessing psychopathology and social competence in children" (p. 286). The Conners Parent Rating Scale-Revised (CPRS-R; Goyette et al., 1978). Barkley recommends that the CPRS-R be used for evaluating treatment effects and not used for initial assessment and diagnosis of ADHD. Eyberg Child Behavior Inventory (ECBI; Eyberg, 1980) was next to be reviewed by Barkley. The ECBI, it was recommended by Barkley, should be used "where the clinician desires a scale measuring child conduct problems and oppositional behavior, particularly for evaluating the effects of parent training
programs” (p. 290). Barkley described his Home Situations Questionnaire (HSQ; Barkley & Edelbrock, 1987). Barkley recommended that the HSQ be used “where assessment of general behavior problems (especially oppositional or aggressive behavior) is of interest” (p. 292). The Home Situations Questionnaire-Revised (HSQ-R; DuPaul, 1990) should be used “where a more refined assessment of attention deficits is of interest” (p. 292). DuPaul (1990b) revised the original HSQ to “assess specific problems with attention and concentration across a variety of home and public situations” (p. 293).

Teacher rating scales that Barkley (1990) described include, the Child Behavior Checklist-Teacher Report Form (CBCL-TRF; Edelbrock & Achenbach, 1984). The CBCL-TRF has the distinct advantage of “an Adaptive Functioning scale (that) has been developed, reflecting the child’s work habits, level of academic performance, degree of teacher familiarity with the child, and general happiness of the child” (p. 296). The Conners Teacher Rating Scale-Revised (CTRS-R; Goyette et al., 1978) was suggested as “a quick screening measure for conduct problems and hyperactivity, but not especially useful for evaluating internalizing, neurotic, depressive, and anxious symptoms” (p. 299). The School Situations Questionnaire (SSQ; Barkley & Edelbrock, 1987) was recommended to be used “to evaluate where children may be exhibiting their problem behaviors (i.e., situational variation of behavior disorder)” (Barkley, 1990, p. 299). Barkley recommended that the SSQ be used “where assessment of general behavior problems (especially oppositional or aggressive behavior) is of interest” (p. 301). Barkley next discussed the revised version of the School Situations Questionnaire (SSQ-R; DuPaul, 1990b). The SSQ-R was “designed to assess specific problems with attention and concentration across a variety of school situations. It is therefore of benefit when a more refined measure than the SSQ is desired for establishing the pervasiveness of attention problems, as it
is in the diagnosis of ADHD” (Barkley, 1990, p. 301). The Child Attention Problems (CAP; Barkley, Fischer, Newby, & Breen, 1988) was recommended by Barkley in the assessment of stimulant drug effects. The last rating scale Barkley reviewed was the Academic Performance Rating Scale (APRS; DuPaul, Rapport, & Perriello, 1990). The APRS was developed “to complement other teacher rating scales, which are inadequate for evaluating a child’s academic productivity and accuracy in the classroom” (p. 306).

Scales that can be used for either parents or teachers Barkley (1990) recommended the ADHD Rating Scale (DuPaul, 1990a) which assessed “the 14 symptoms of ADHD from the diagnostic criteria in the DSM-III-R” (American Psychiatric Association, 1987, p. 310). The other scale that Barkley recommended for either parents or teachers is the Attention Deficit Disorders Evaluation Scale (ADDES; McCarney, 1989). Barkley felt that the ADDES was useful for educators because there are recommendations that fit into individual education plans.

Other rating scales Barkley (1990) described that may be useful for ADHD assessment, but will not directly determine the presence or absence of ADHD include the following. Measuring conflict in families, the Conflict Behavior Questionnaire (CBQ; Robin & Foster, 1989) would be suggested. Barkley stated “[T]he CBQ is designed to assess the degree of conflict and quality of communication in the parent-teen relationship” (p. 314). The Issues Checklist (IC; Robin & Foster, 1989) is “designed to assess relatively volatile behavior over a short time period” (p. 317). Adolescent self-report measures included the Child Behavior Checklist-Youth Self-Report (CBCL-YSR; Achenbach & Edelbrock, 1987) which Barkley believed “may be more useful as a screening measure for symptomatology frequently associated with ADHD (e.g., aggression, depression) than for ADHD per se” (p. 319).
Lastly, Barkley (1990) reviewed parent self-report measures that would be useful in the assessment process. The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) which is a measure of depression in adults. Barkley also recommended using the BDI in a "clinical assessment of either the parents of ADHD children or ADHD adults" (p. 321). The Symptom Checklist 90-Revised (SCL-90-R; Derogatis, 1986) "is a brief rating scale of various psychiatric symptoms for adults" (Barkley, 1990, p. 321). The Locke-Wallace Marital Adjustment Test (MAT; Locke & Wallace, 1959) "is a commonly used brief rating scale of marital satisfaction" (Barkley, 1990, p. 321). The MAT should be used "to screen for marital difficulties in the families of ADHD children" (p. 321). The Parenting Stress Index (Abidin, 1986) which "assesses different aspects of child behavioral problems as well as parenting stress" (p. 321). The last parent self-report measure Barkley suggested in the assessment battery was the Parenting Practices Scale (Strayhorn & Weidman, 1988). The Parenting Practices Scale (Strayhorn & Weidman, 1988) was designed to "assess the extent to which parents use practices commonly taught in most behavioral parent training programs and considered to be the most effective skills in managing child behavior problems" (Barkley, 1990, p. 324). Barkley goes on to group the rating scales by specific problems that referrals may contain (i.e., assessment of: an ADHD child, an ADHD adolescent, child or adolescent's response to medication, effects of parent training, and assessment of parent adjustment).

Parent and teacher rating scales that Barkley (1990) recommended for attention deficit hyperactivity disorder were broken down into children aged two through eleven and the ADHD adolescent. In Barkley's view "If a general clinical and diagnostic assessment of an ADHD child (ages 2-11) is the intent, then the following scales would seem most useful, in my opinion: CBCL (parent and teacher versions);
ADHD Rating Scale (parent and teacher versions); HSQ-R; SSQ-R; APRS” (p. 324). “If the intent is evaluation of an ADHD adolescent, these scales would seem helpful in my view: CBCL (parent and teacher versions); ADHD Rating Scale (parent and teacher versions); CBCL-YSR; CBQ; and IC” (p. 324). Barkley summarized his thoughts about rating scales as follows:

the use of rating scales has risen to the level of an essential component in the evaluation of ADHD children and their families. Despite their ease of administration and scoring, great care and sensitivity must be used in the proper clinical application of these scales. Their utility is considerable in the assessment process, but one must never forget that they are mere quantifications of the opinions of people. They are therefore prone to the same biases as are any opinions of people about themselves or others. Their role is to complement, not to replace, other sources of information about the person obtained through other (possibly more objective) means. (p. 326)

In addition to the interviews, physical examination, and behavioral rating scales, the last link in the assessment process according to Barkley’s (1990) model is the behavioral observation of the child being referred. “Behavioral observations from natural settings (e.g., the classroom) provide a wealth of information regarding the frequency, severity, antecedents, and consequences of ADHD symptoms” (p. 336). Barkley developed his own behavioral observation system named the “ADHD Behavior Coding System” which “the child or adolescent is observed during performance of independent academic work (the Restricted Academic Situation)” (p. 337). Behaviors that the child exhibits are categorized into: “off task,” “fidgets,” “out of seat,” “vocalizes,” and “plays with objects.” In 15 to 30 second intervals for a total of 15 to 20 minutes, the clinician checks on the coding sheets whether the behavior was exhibited by the child. Barkley also described the Child Behavior Checklist-Direct Observation Form (CBCL-DOF) produced by Achenbach (1986). The CBCL-DOF can be used “in group or classroom settings that is comparable to the items contained on the parent and teacher report forms of the CBCL” (p. 341).
Barkley (1990) stated:

the advantages of this observational system are numerous. First, a much wider array of both internalizing and externalizing symptoms can be assessed than is typical of other observational systems described above. Second, it is the only system with normative data for elementary-age children for classroom observations. Third, its scales were empirically developed, and so provide an impression of precisely how a variety of behaviors cluster in their natural occurrence. And finally, it has been shown to discriminate among various types of child psychiatric disorders and their behavioral profiles. (p. 341)

Barkley (1990) went on to describe limitations of using behavioral observations. Barkley suggested that variables are difficult to translate into codable categories and may not have standard coding systems. Some of the behavioral observations require a great deal of training in the use of the behavioral categories. Despite the limitations, direct behavioral observations provide information regarding target behaviors especially in the treatment phase that cannot be easily obtained through other means. Chances for bias are also limited due to the already defined variables. Barkley summarized his thoughts about behavioral observations as:

While the diagnosis of ADHD should never be based solely on this type of information, these behavioral observations-when combined with parent, child, and teacher interviews and rating scales-can add greater validity, integrity, and rigor to the clinical diagnostic process than could these other sources of information alone. (p. 352)

Barkley's 1990 model is the comparison component to the Diagnostic and Statistical Manual of Mental Disorders, 4th ed. (DSM-IV; APA, 1994) in this study. This model has been described in much greater detail than the other two editions of Barkley's work in order to make a better comparison to that of the DSM-IV. Barkley's last revision of his theory was conducted in 1998 and will now be reviewed.
Barkley's Model 1998

In 1998, Barkley's behaviorism theoretical base stayed the same, but how he approached the major symptomology of the disorder changed drastically. Barkley (1998) viewed attention deficit hyperactivity disorder (ADHD) through the primary symptom of behavioral disinhibition. Barkley defined behavioral disinhibition as creating "difficulties with maintaining attention to tasks, especially in settings in which other activities offer competing immediate consequences of a higher magnitude than those inherent in the task assigned to the children" (p. 87).

Through the change in the primary symptomology, Barkley (1998) felt that there was a need to produce a new theory surrounding ADHD. Barkley's new theory argued "that ADHD, by virtue of its delay in inhibitory processes, disrupts the development and performance of self-regulation. This theory provides a needed definition of self-regulation, articulates the cognitive components (executive functions) that contribute to it, specifies the primacy of behavioral inhibition within the theory and the evidence for such a conclusion, and sets forth a motor control component to ADHD" (p. 227). In Barkley's theory, he gave 5 key requirements necessary for an appropriate theoretical framework. These key requirements were:

1) it must explain why an actual deficit in attention in children with ADHD has not been found. (p. 227)
2) A theory must explain the link that exists between poor behavioral inhibition (hyperactivity-impulsivity) and the sister impairment of inattention, or whatever this latter symptom turns out to be. (p. 227)
3) Any credible theory of ADHD also must link the two dimensions of hyperactive-impulsive behavior and inattention that currently describe this disorder with the concept of executive or metacognitive functions because most, if not all, of the additional cognitive deficits associated
with ADHD seem to fall within the realm of self-regulation or executive functions. (pp. 227-228)

4) A theory of ADHD must ultimately bridge the literature on ADHD with the larger literatures of developmental psychology and developmental neuropsychology as they pertain to self-regulation and executive functions. (p. 228)

5) Any theory of ADHD must prove to be useful as a scientific tool. Not only must it better explain what is already known about ADHD, but it must make explicit predictions about new phenomena that were not previously considered in the literature on ADHD, or which may have received only cursory research attention. (p. 228)

Barkley's (1998) theory was a hybrid model focusing around the “prefontal lobe functions, or the executive function system” (p. 229). Barkley went on to explain:

[T]his theory specifies that behavioral inhibition, representing the first and foundation component in the model, is critical to the proficient performance of the four executive functions. It permits them, supports their occurrence, and protects them from interference, just as it does for the generation and execution of the cross-temporal goal-directed behavioral structures developed from these executive functions. The four executive functions are non-verbal working memory, internalization of speech (verbal working memory), the self-regulation of affect/motivation/arousal, and reconstitution. These executive functions can shift behavior from control by the immediate environment to control by internally represented forms of information by their influence over the last component of the model, motor control. (p. 229)

Diagnosis of children with attention deficit hyperactivity disorder (ADHD) should focus around 3 components. Barkley (1998) stated “[P]robably the three most important components to a comprehensive evaluation of the client with Attention-Deficit/Hyperactivity Disorder (ADHD) are the clinical interview, the medical examination, and the completion and scoring of behavior rating scales” (p. 263). These procedures have not changed from the previous two editions, however,
the reason a clinician should use these procedures and the information to be gained from the procedures has changed.

Changes in the procedures stem primarily from the assessment issues Barkley (1998) outlined versus the other editions. Barkley stated that "[C]linicians should bear in mind several goals when evaluating children for ADHD. A major goal of such an assessment is the determination of the presence or absence of ADHD as well as the differential diagnosis of ADHD from other childhood psychiatric disorders" (pp. 263-264). The second purpose of the evaluation should "begin delineating the types of interventions needed to address the psychiatric disorders and psychological, academic, and social impairments identified in the course of assessment" (p. 264). The third purpose of the evaluation "is to determine conditions that often co-exist with ADHD and the manner in which these conditions may affect prognosis or treatment decision making" (Barkley, 1998, p. 264). The last purpose for the evaluation "is to identify the pattern of the child’s psychological strengths and weaknesses and to consider how these strengths and weaknesses may affect treatment planning" (p. 264).

In regards to education and assessment issues, Barkley (1998) made his first statement regarding educational services. Barkley stated "[S]ome determination also must be made as to the child’s eligibility for special educational services within his or her school district if eligible disorders, such as developmental delay, learning disabilities, or speech and language problems, are present" (p. 264). Within the educational services realm, Barkley stated that there were various tests that could be incorporated into ADHD-related evaluations. "The various tests incorporated into ADHD-related evaluations tend to fall into four categories: (1) cognitive/achievement tests, (2) general neuropsychological batteries, (3) individual neuropsychological
tests, and (4) projective/personality tests” (p. 297). School psychologists typically use tests that fall into at least one or more of these categories in their assessment.

With the addition of the educational aspect to his theory, Barkley (1998) also changed the way in which information is obtained from parents and teachers. In Barkley’s data collection process, “[C]linicians may want to send out a packet of questionnaires to parents and teachers following the parents’ call to their clinic but in advance of the scheduled appointment” (p. 265). In the packet, Barkley recommended including a cover letter, “a General Instruction Sheet, a Child and Family Information Form, and a Developmental and Medical History Form” (p. 265). In addition to these forms Barkley also recommended that the parents receive “a comprehensive child behavior rating scale that covers the major dimensions of child psychopathology, such as the Child Behavior Checklist (CBCL; Achenbach, 1991) or the Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 1994). Also in this packet should be a copy of a rating scale that specifically assesses ADHD symptoms” (p. 266).

Barkley (1998) suggested that any rating scale that specifically assesses ADHD should allow “the clinician to obtain information ahead of the appointment concerning the presence of symptoms of Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD), as well as ADHD symptoms and their severity” (p. 266). If a clinician wants to “assess adaptive behavior via the use of a questionnaire might consider including the Normative Adaptive Behavior Checklist (NABC; Adams, 1984) in this packet. Finally, the Home Situations Questionnaire (HSQ) is included so that the clinician can gain a quick appreciation for the pervasiveness and severity of the child’s disruptive behavior across a variety of home and public situations. Such information is of clinical interest not only for indications of pervasiveness and severity of behavior
problems but also for focusing discussions around these situations during the evaluation and subsequent parent training program” (p. 266).

Barkley (1998) also suggested that a packet of forms be sent to teachers in advance of the scheduled appointment. In the packet sent to the teacher, the packet should include a parent permission form as well as “the teacher version of the CBCL or BASC, the School Situations questionnaire (SSQ), and the same rating scale for assessing ADHD symptoms. The Social Skills Rating Scale (Gresham & Elliott, 1990) might also be included if the clinician desires information about the child’s social problems in school as well as his or her academic competence” (p. 266).

The assessment process begins with the parent and teacher interviews. The purposes of the parent and teacher interviews are the same as Barkley’s 1980 edition described above. After the interviews, the child behavior rating scales are to be administered, and according to Barkley (1998), they are to be sent to the parent’s and teacher’s before the scheduled appointment.

Barkley (1998) began his rationale for using rating scales by describing the types of rating scales which should be used in the assessment process. “Initially, it is advisable to utilize a ‘broad band’ rating scale that provides coverage of the major dimensions of child psychopathology known to exist, such as depression, anxiety, withdrawal, aggression, delinquent conduct, and, of course, inattentive and hyperactive-impulsive behavior” (p. 278). The specific rating scales Barkley suggested were the BASC (Reynolds & Kamphaus, 1994); CBCL (Achenbach, 1991); Personality Inventory for Children (Lachar, 1982); and The Connors Parent and Teacher Rating Scales (Conners, 1989). These rating scales should be used for “the initial screening for psychopathology” (p. 279).

After the administration of the “broad band” screeners, Barkley (1998) recommended the usage of narrow band scales. Barkley stated “[N]arrow-band
scales should be employed in the initial screening of children that focus specifically on the assessment of symptoms of ADHD” (p. 279). The scales that Barkley recommended as narrow band were: the Parent and Teacher versions of the Disruptive Behavior Rating Scale (Barkley & Murphy, 1998); The Child Attention Profile (Barkley et al., 1988); Home Situations Questionnaire (HSQ; Barkley & Edelbrock, 1987); School Situations Questionnaire (SSQ; Barkley & Edelbrock, 1987); and The Academic Performance Rating Scale (DuPaul, Rapport, & Perriello, 1991).

Barkley (1998) added four additional components to his assessment process in regards to rating scales. Barkley first added a self-report measure for children ages 11 to 18. The self-report scale Barkley recommended was the CBCL Self-Report Form (Achenbach & Edelbrock, 1986) or the BASC (Reynolds & Kamphaus, 1994) self-report form. Secondly, Barkley added “Adaptive Behavior Scales and Inventories” (p. 280). Barkley suggested that clinicians use The Vineland Adaptive Behavior Inventory (Sparrow, Baila, & Cicchetti, 1984) or if there was limited time the Normative Adaptive Behavior Checklist (NABC; Adams, 1984) may be used (p. 280).

The third addition to the behavior scales Barkley (1998) recommended for assessment focused upon peer relationships. Since Barkley felt “children with ADHD often demonstrate significant difficulties in their interactions with peers, and such difficulties are associated with an increased likelihood of persistence of their disorder” (pp. 280-281). Scales that Barkley recommended for assessing peer relationships were: scales within the CBCL and BASC; Matson Evaluation of Social Skills with Youngsters (MESSY; Matson, Rotatori, & Helsel, 1983); the Taxonomy of Problem Social Situations for Children (TOPS; Dodge, McClaskey, & Feldman, 1985); and the Social Skills Rating System (Gresham & Elliott, 1990).
The last edition Barkley (1998) made in the assessment process was the "Parent Self-Report Measures" (p. 281). With the possible link of ADHD genetically, Barkley recommended "screening parents of ADHD children would be a helpful first step in determining whether the parents have ADHD" (p. 282). Barkley recommended the following scales for measuring marital discord, depression and general psychological distress, and parental stress respectively. In measuring marital discord Barkley recommended the Locke-Wallace Marital Adjustment Scale (Locke & Wallace, 1959). For depression and general psychological distress Barkley recommended The Beck Depression Inventory (Beck, Steer, & Garbin, 1988) and the Symptom Checklist 90-Revised (Derogatis, 1986). Lastly, for parental stress, Barkley recommended the shorter version of the Parenting Stress Index (PSI; Abidin, 1986).

After the parent and teacher interviews and rating scales are completed, a complete pediatric medical examination including the medical interview and physical examination are conducted as described above. The last step in the assessment process is the feedback session where the results of the assessment batteries are given to the parents. In the feedback session, the first step is to "give parents some information about ADHD" (Barkley, 1998, p. 289). The second step in the feedback session is "to establish a history consistent with the notion of a 'developmental' problem. Do these symptoms have a long-standing history that stretches back over time" (Barkley, 1998, p. 289). The third and last step in the feedback session is "to rule out any other logical explanation for the problem. Is there anything else going on that would overrule ADHD as a diagnosis or be a better explanation than ADHD for the problems the child is having" (Barkley, 1998, p. 289).

The following section focuses around the specific tests Barkley recommended for the assessment of children purported to have ADHD in his books written in 1980,

"The Academic Performance Rating Scale (APRS; DuPaul, Rapport, & Perriello, 1991) was designed to assess the effect of childhood behavior problems on a child’s academic skills" (Kamphaus & Frick, 1996, p. 177). "The APRS includes 19 items that assess a child’s academic productivity (e.g., percentage of work completed accurately), and impulse control (e.g., neatness of work, amount of work begun carelessly)” (p. 177). Normative data came from 493 children grades 1-6. Internal consistency of the APRS “was quite high for the academic productivity and academic success scales (both .94) but somewhat lower for the impulse control scale (.72). Two-week test-retest reliability for a sample of 25 children ranged from .88 for the impulse control scale to .95 for the total scale” (pp. 177-178). Impulse control was negatively correlated with ratings of ADHD symptoms at -.61 and academic productivity scale was significantly correlated with behavioral observations of on-task behavior at .31.

The Attention Deficit Disorders Evaluation Scale (ADDES; McCamey, 1989) is administered to parents and teachers of children referred for ADHD, and is designed to evaluate and diagnose ADD in children and youth. The ADDES was primarily designed to provide measures on 3 behavioral constructs of ADD centered around the DSM-III (APA, 1980) criteria; inattention, impulsiveness, and hyperactivity. The scores given in the scale are inattentive, impulsive, hyperactive and total. After obtaining a standard score, the author suggests that a standard score less than 7 for any subscale indicates a potential behavioral problem and standard scores below 4 should be considered severe (Collins, 1995, pp. 94-97).
In the School Version of the ADDES, the norming procedure contained “a sample of 4876 students and 1567 teachers from 72 school districts and 19 states. The Home Version was normed on a sample of 1754 students and 3172 parents from 12 states.” (Olejnik, 1995, p. 96). In the School and Home Version the test-retest reliability over a 30-day period ranged between .89 and .97 and .90 and .92 respectively. Internal consistency using the Kuder-Richardson 20 exceeded .90 for all three subscales. Interrater reliability for 13 age groups were between .81 and .90 for the School Version and .80 and .84 for the four age groups on the Home Version.

Content validity of the ADDES was supported through a review of the scale items which were written based on the literature surrounding attention-deficit disorder. However, no information was given regarding the number of individuals involved or degree of consensus of these individuals. Construct validity was obtained by factor analysis of the principal components which were not convincing according to Olejnik (1995). Many of the items had significant secondary loadings and the subscales appeared to be highly related. A comparative analysis of standard scores from a sample of ADD students and a random sample from the normative group found that the subscales of the ADDES were able to discriminate between the two groups. Concurrent validity of the ADDES used the Conners’ Teacher Rating Scale-Revised. All correlations for the School Version were significant at the .05 level, and ranged between .389 to .828. The Home Version of the ADDES was correlated with the Conners’ Parent Rating Scale-48 and were found to be significant at the .05 level, and ranged between .305 and .830.

Olejnik (1995) concludes his review by stating that “the School Version and the Home Version of the Attention Deficit Disorders Evaluation Scale appear to be excellent assessment tools” (p. 97). Olejnik also comments that “[T]hey should
provide extremely useful data to identify students with attention-deficit disorder and to provide some guidance in the development of intervention strategies for these students” (p. 97).

The ADHD Rating Scale (DuPaul, 1990a) was designed to “assess the 14 symptoms of ADHD from the diagnostic criteria in the DSM-III-R” (Barkley, 1990, p. 310). The ADHD Rating Scale gives direct ratings of parent and teacher thoughts about essential symptoms of the disorder. Three scores are obtained from the scale: total score, Inattention-Restlessness, and Impulsivity-Hyperactivity. “The scale has been shown to discriminate ADHD children from learning-disabled and normal children, as well as to differentiate children with ADD/+H from those with ADD/-H” (Barkley, 1990, p. 310). No other reliability or validity issues were discussed.

The Beck Depression Inventory (BDI; Beck et al., 1961) is an adolescent and adult (age 13 years and older), self-administered inventory that is used to detect possible depression and to assess severity of depression. “An important use of the BDI is examining the specific items as significant information about a person’s experience of depression” (Kramer & Close Conoley, 1992, p. 78). The BDI had an internal consistency rated by Cronbach’s alpha of .73 to .95 in a review of 25 studies. The mean coefficient alphas for 15 nonpsychiatric populations was .81 and the test-retest correlations for nonpsychiatric samples ranged from .60 to .83 using the Pearson correlation. Test-retest for psychiatric samples using the Pearson correlation found the range to fall between .48 to .86.

Content validity “is substantiated by comparing the BDI to the criteria of the American Psychiatric Association’s Diagnostic and Statistical Manual on Mental Disorders” (Kramer & Close Conoley, 1992, p.72). “Discriminant validity via 14 studies that tout fairly strong discriminate validity. It is important to consider that the BDI was not developed for discriminating between populations” (p. 78). Construct
validity considers that the “BDI correlates as predicted with biological and somatological issues, suicidal behavior, alcoholism, adjustment, and life crisis” (p. 78). “The mean correlations for the concurrent validity studies ranged from .60 to .76” (p. 78). “The BDI has demographic correlates. Gender correlates with BDI scores. Women have been found to have slightly higher scores than men” (p. 79). Nonpsychiatric adolescents score higher than nonpsychiatric adults, however, younger psychiatric patients scored lower than older patients. The more educated a person is, the lower the BDI score and non-white persons were, at times, found to score higher than white persons.

The Behavior Assessment System for Children-Parent Rating Scale (BASC-PRS; Reynolds & Kamphaus, 1994) “takes a broad sampling of a child’s behavior in home and community settings” (Kamphaus & Frick, 1996). The BASC-PRS was normed with 309 preschoolers; 2084 children, and 1090 adolescents. “All scales and composites have median reliability estimates of .80 and above, with the exception of the Adaptability, Conduct Problems, Hyperactivity, and Somatization scales” (Kamphaus & Frick, 1996, p. 124). Factor analytic validity found three factors; externalizing, internalizing, and adaptive. The strongest externalizing factors were Hyperactivity and Attention Problems. Criterion-related validity has “produced lawful relationships between the PRS and other parent rating scales” (p. 125).

The Behavior Assessment System for Children-Self-Report of Personality (BASC-SRP; Reynolds & Kamphaus, 1994) “attempts to gauge the child’s perceptions and feelings about school, parents, peers, and his or her own behavior problems” (Kamphaus & Frick, 1996, p. 89). The BASC-SRP was normed with 5,188 children and 4,423 adolescents following U.S. Census figures for age, race/ethnicity, geographic region, gender, and community size.
Internal consistency reliability coefficients are generally in the .80s and test-retest reliability of a one month interval were in the .70s. In a seven month test-retest reliability, results varied widely with "a coefficient of .05 for Interpersonal Relations scale and a .74 for the Atypicality scale" (Kamphaus & Frick, 1996, p. 91). In factor analyzing the BASC-SRP, three factors were found in the analysis; school maladjustment, clinical maladjustment, and personal adjustment. Criterion-related validity for the BASC-SRP was conducted with the MMPI, Achenbach Youth Self-Report, Behavior Rating Profile, and Children's Personality Questionnaire, however no correlations were given in this review.

The Behavior Assessment System for Children-Teacher Rating Scale (BASC-TRS; Reynolds & Kamphaus, 1994) "was designed to gather information on a child's observable behavior from the child's teacher" (Kamphaus & Frick, 1996, p.155). The BASC-TRS was normed with "333 preschoolers, 1259 elementary school children (ages 6-11), and 809 middle/high school students (ages 13-18) with fairly equal sex distributions in all age groups" (p. 158). Internal consistency for the scales averaged above .80 across all age groups. Test-retest reliability over two to eight weeks for preschoolers was .89, for elementary .91, and for middle/high school .82. "The manual of the BASC-TRS provides factor analytic support for the construct validity of the scales and provides correlations between the BASC-TRS scales and several other teacher rating scales" (p. 159).

Strengths of the BASC-TRS (Kamphaus & Frick, 1996) include item content, which covers classroom behavioral and emotional functioning similar to many other teacher rating scales. The BASC-TRS covers several aspects of adaptive behavior and includes separate hyperactivity and attention scales. Weaknesses of the
BASC-TRS include the limited sample of adolescents, especially ages 14-18 and the lack of validity, especially the factor analytic support for the scale structures and correlations with other teacher rating scales.

The Behavior Rating Scale (BRS; Kendall & Wilcox, 1979) is completed by teachers of students in kindergarten through eighth grade. "The BRS is limited in it's use because of the lack of data regarding the children in the study and the lack of demographic data. The BRS is important to find out the teachers' perception of the traits they expect children in their classroom to exhibit" (Parker, 1985, pp. 168-169). The traits were measured using a 5-, 7-, or 9-point scale ranging from "strongly agree" to "strongly disagree."

Test-retest reliability of the BRS over a 2-week interval "were unacceptably low" (Parker, 1985, p. 168). The BRS has no data regarding the sample of children, and demographics surrounding the teachers who did the ratings and the academic environment. There were also no data available regarding test-retest or interrater reliability which makes this test problematic as an evaluative tool.

The Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983) is completed by parents and was designed to assess the behavioral problems and social competencies of children ages 4 to 16. The scale consists of 118 items scored on a three-point scale from "true" to "not true." The scaled scores obtained from the CBCL are social competence and behavior problems. The subscales assessed in the social competence scale are activities, social, and school. The subscales assessed in the behavior problems scale are internalizing and externalizing (Freeman, 1985, pp. 300-303).

The Child Behavior Checklist-Direct Observation Form (CBCL-DOF; Achenbach, 1986) is to be completed by a trained observer and should be used for children ages 4 to 16. The CBCL-DOF consists of 10 minute intervals where two
scores are obtained; behavior problems, on-task score and the self-explanatory form (Freeman, 1985, pp. 300-303).

The Child Behavior Checklist-Teacher Report Form (CBCL-TRF; Edelbrock & Achenbach, 1984) is completed by teachers and used for children ages 4 to 16. On the CBCL-TRF, more emphasis is placed on evaluating current and past academic performance and on evaluating behavior problems likely to be observed by a teacher (Freeman, 1985, pp. 300-303). “The [CBCL-]TRF is an empirically derived rating scale that covers a wide range of potential problem behaviors and a small number of academic and prosocial competencies. It is used by many psychologists and educators to screen and to classify children in need of special services” (Elliott & Busse, 1992, p. 166).

The CBCL-TRF test-retest reliability for a 2-week period was .89, for a 2 month period was .74 and for a 4 month period .68. Interrater reliability was .57 and “no internal consistency data are presented as evidence for reliability” (Elliott & Busse, 1992, p. 167). “Reliability’s reported for the [CBCL-]TRF are very respectable and compare well to other teacher rating scales such as the Revised Behavior Problem Checklist (Quay & Peterson, 1983) or the Social Skills Rating System (Gresham & Elliott, 1990).”

Elliott and Busse (1992) stated

The primary validity data for the [CBCL-]TRF focus on the Behavior Problems Scale and are the result of factor analytic work and a concurrent validity study with the Conners Revised Teacher Rating Scale. The validity coefficient resulting from Pearson correlations between the total problems scores on the [CBCL-]TRF and the Conners scale was high (r=.85). In addition, good convergent validity was documented for [CBCL-]TRF subscales concerning Aggressive, Nervous-Overactive, and Inattentive behaviors and those subscales respectively labeled Conduct Disorder, Hyperactivity, and Inattentive-Passive on the Conners. (p. 167)
Criterion-related validity was established using multiple regression methods for all ages and both sexes. Referral status accounted for the largest percent of variance in ratings which was desired because of the purpose of the CBCL-TRF. Overall, CBCL-TRF scores misclassified approximately 28% of the sample with false-positives and false-negatives, which was considered adequate because the CBCL-TRF is used for description purposes only.

Drawbacks of the CBCL-TRF were an unrepresentative sample size of the U.S. population with regard to racial status and regional representation. The Adaptive Functioning Scale is weak conceptually and psychometrically. The CBCL-TRF is also “consistent with the presently popular empirical/descriptive approach to childhood psychopathology and generally has good to very good reliability and validity data to support its use as a method for describing children’s behavior” (Elliott & Busse, 1992, p. 167).

The Child Behavior Checklist-Youth Self Report (CBCL-YSR; Achenbach & Edelbrock, 1987) is completed by children ages 11 to 18. The report focuses upon the child’s assessment of their own social competence and behavior problems. This scale requires a reading ability at or above the fifth grade level and “provides a potentially useful measure for cross-informant comparisons when employed concurrently with parent and teacher reports” (Elliott & Busse, 1992, p. 168).

The CBCL-YSR was “standardized in 1985-86 with 344 boys and 342 girls aged 11 to 18 from eight communities in Worcester, Massachusetts” (Elliott & Busse, 1992, p. 168). Racial distribution was 81% White, 17% Black, and 3% mixed/other and age and handicap status are not given. The CBCL-YSR is an empirically derived scale and therefore internal consistency is not required for reliability.

Test-retest reliability for a 1-week interval was used and found to have a median of .81 (Elliott & Busse, 1992, p. 168). Broad-band and total behavior reliability’s of
test-retest reliability ranged from .83 to .87 with small mean differences. Narrow-band and Competence Scale reliabilities ranged from .39 to .83 for the sample and an eight month test-retest reliability yielded very small mean differences and satisfactory broad-band and total behavior reliabilities ranged from .64 to .67. Content validity appeared adequate if "referral status as the validity criterion, the authors have demonstrated satisfactory concurrent validity, as evidenced by lower competence and higher problem scores for referred adolescents" (p. 169).

Validity of the CBCL-YSR focused upon cross-informant data which "is clearly presented by correlations with the CBCL and its counterpart in the school setting, the [CBCL-]TRF. Correlations between these measures also provide an index of construct validity. Mean correlations are acceptable between the [CBCL-]YSR and CBCL (r = .41 for boys and .45 for girls). Similar correlations are reported for the [CBCL-]YSR and [CBCL-]TRF" (Elliott & Busse, 1992, p. 169).

The 93-item Conners Parent Rating Scale (CPRS-93; Conners, 1989) is completed by parents of children. There is not an adequate description of the test conceptualization or item selection/analysis. The CPRS-93 is lacking psychometric data and therefore "the test cannot be recommended for use and all validity data must be considered questionable" (Oehler-Stinnett, 1992, p. 238).

"Internal consistency of the current factor structure cannot be determined due to lack of reported alpha coefficients" (Oehler-Stinnett, 1992, p. 238). Between mothers and fathers, interrater reliability was .85 on the original scale. Test-retest reliability coefficients ranged from -.08 to .91 on 12 factors of the scale. Concurrent validity between the CPRS-93 factors and the Behavior Problems Checklist correlated between .14 to .82. Hyperactivity and Conduct Problems correlated highest at .82 and .75 respectively. Discriminant validity between the Revised Child Behavior Profile and CPRS-93 was greater than .80 for conduct problems. Hyperactivity
measures for the Child Behavior Profile and CPRS-93 were correlated only at .46 for boys and .85 for girls which does not give support for discriminant validity of the scale for this item. The CPRS-93 was revised and the CPRS-48 (Goyette et al., 1978) was suggested for use. The CPRS-48 contains more pure items of impulsive-hyperactive factors and conduct problem factors compared to the CPRS-93.

The CPRS-48 contains a hyperactivity index which many hoped would be considered a comprehensive coverage of hyperactivity in a short form. "The author fails to adequately describe how or why users should use the 10-item scales separately from the factors of the longer scales or from each other" (Oehler-Stinnett, 1992, p. 239). The strength of the Hyperactivity Index was "the items have been described as those most sensitive to drug change and most frequently checked by parents and teachers. However, the item selection process and data supporting the superiority of these 10 items over others have never been adequately described" (p. 239).

Reliability was affected by practice effect, which was evidenced by a decrease in scores from the first administration to subsequent administrations. "It is critical that users conduct at least two pretests, and preferably multiple ratings, when using the scale as a treatment outcome measure. Test-retest coefficients are acceptable (.89) between second and third administrations" (Oehler-Stinnett, 1992, p. 239). Construct validity was a major consideration for the Hyperactivity Index. The items within the Index were not selected for discriminating between hyperactivity, inattention, conduct disordered, or anxious children although the scale has been adopted for identifying hyperactive children.

The Conners Teacher Rating Scale (CTRS; Goyette et al., 1978) is completed by teachers of children ages 3 to 17. There are two versions of the CTRS, the CTRS-39 and CTRS-28. The CTRS-39 was designed to "obtain ratings in response to
medication, with a *mixed* clinical group of behavior disordered, hyperactive, and inattentive students. The original goal, to obtain relatively objective ratings from a source in the child's actual environment" (Oehler-Stinnett, 1992, p. 235). "Although the intent of the scale was to determine response to medication given for inattention/hyperactivity, the majority of the items measure behavior more related to conduct disorder" (p. 235).

Short- and long-term test-retest reliability "suggest that scores consistently regress to the mean on second administration. Although administering two pretests may obviate this problem" (Oehler-Stinnett, 1992, p. 236). "Interrater reliability data with teachers as raters indicate adequate correlations among ratings for the 1969 factor version of the CTRS-39" (p. 236) which were .94. With regards to construct validity, the CTRS-39 moderately correlated with the Quay-Peterson Behavior Problems Checklist, the Primary-Secondary Checklist and Teacher Off-Task Scale, the Behavior Problem Checklist, and the Child Behavior Profile. "Adequate convergent but not discriminant validity has been established" (p. 236). "Discriminant validity of the factors has not been strongly supported through research conducted so far" (p. 236). Lastly, treatment validity was discussed because "the scale gained popularity as a measure of treatment effects, specifically to medication" (p. 237). "The CTRS-39 appears to have circumvented the diagnostic problem by demonstrating that it is sensitive to medication treatment effects for children evidencing behavior problems. The CTRS-39 has also been shown to be sensitive to behavioral and cognitive treatment effects, and these in combination with medication" (p. 237). However, "[T]here is no evidence to suggest the scale is capable of determining changes in discrete domains of behavior" (p. 237).

The CTRS-28 was considered better for assessing conduct problems and hyperactivity factors than the CTRS-39 (Oehler-Stinnett, 1992). However the
inattentive-passive factor contains items which were not clearly associated with this construct which makes interpretation difficult. The CTRS-28 was "normed on essentially the same group as the revised parent scale, so comparisons can be made" (p. 237). "Correlations between the revised parent and teacher scales indicate modest but significant correlations between corresponding factors (.33 -.45). However, inter-correlations among the teacher factors show that all factors are correlated (.49-.68), with Hyperactivity factor having correlations of (> = .60 with both the Conduct Problem and Inattentive-Passive factors)" (p. 237).

Convergent validity was established using the Child Behavior Profile (.62-.90) for the three factors, particularly for the Conduct Disorder factor. The Hyperactivity factor of the CTRS-28 was correlated with the CBP Aggressive factor (.83) and "all CTRS-28 factors were significantly correlated with the three corresponding CBP factors" (Oehler-Stinnett, 1992, p. 237). Discriminant validity between Conduct Problem and Hyperactivity factors "is troublesome, as with the CTRS-39, given the clinical use of the scale in discriminating these two groups" (pp. 237-238).

One week test-retest reliability coefficients for the CTRS-28 ranged from .88 to .96 and coefficients from a longer retest interval would likely be lower, but Oehler-Stinnett (1992) felt the results would be excellent. Interrater reliability was not reported which Oehler-Stinnett felt was necessary for psychometric properties for a scale of this magnitude.

Eyberg Child Behavior Inventory (ECBI; Eyberg, 1980) was completed by parents of 512 children ages 2 to 16. The ECBI is used to obtain ratings of conduct problems and acting out behaviors. Two scales found in the inventory are the Problem scale, which focuses on behaviors viewed as problematic, and the Intensity scale which reflects the frequency of conduct problems. The ECBI yields information concerning the prioritization of areas for intervention in the problem or intensity
scales (Reed, 1985, pp. 567-568). Split-half reliabilities correlated at an average of .95 for the Intensity scale and .94 for the Problem scale. Correlations between individual items and scale totals ranged from .31 to .73 for the Intensity scale and .35 to .69 for the Problem scale. Test-retest reliability of a 3-week time period of 17 children ranged from .49 to .90. Across items, test-retest reliability was .86 for the Intensity scale and .88 for the Problem scale. Discriminant validity was considered acceptable for a sample of 2- to 7-year-old children because means reported between conduct problem of .43 and clinic control of .20 and non-clinic children of .22. For this sample the correlation between the Intensity and Problem scales was .75 and item intercorrelations averaged .31 for intensity and .29 for problem ratings.

Advantages of the ECBI are “it taps a wide range of acting out behavior and it is easy to administer and score. Information concerning which behaviors are problematic and their frequency of occurrence can contribute to the identification and prioritization of areas for intervention” (Reed, 1985, p. 568). Reed also suggested that the ECBI be used for a descriptive measure for conduct disordered children and not a screening instrument.

The Home Situations Questionnaire (HSQ; Barkley & Edelbrock, 1987) “was designed to evaluate where children and adolescents may be exhibiting their problem behaviors” (Barkley, 1990, p. 291). Normative data came from children ages 4 to 18 years. The scale “readily discriminates ADHD adolescents from normal adolescents, and childhood ratings are predictive of ongoing conflicts in parent-child interactions up to 8 years later in adolescence” (p. 291). “One significant problem with the scale is that it confounds ratings of conduct problems with those of ADHD, so that it is not a pure measure of either” (pp. 291-292).

The Home Situations Questionnaire-Revised (HSQ-R; DuPaul, 1990b) was “designed to assess specific problems with attention and concentration across a
variety of home and public situations” (Barkley, 1990, p. 293). “It is a more refined measure than the HSQ where the pervasiveness of attention problems is of interest” (p. 293). Normative data was obtained from children 6 to 12 years of age and a relatively equal number of boys and girls. “The scale has been shown to have satisfactory test-retest reliability and to correlate significantly with other parent-completed rating scales of hyperactivity, such as the CPRS-R and the ADHD Rating Scale” (p. 294).

The Normative Adaptive Behavior Checklist (NABC; Adams, 1984) is completed by an adult such as a parent or teacher which can be used for people birth to 21 years of age. The NABC was proposed to measure how a child compares to their peers in performing skills needed for independent living. The NABC gives the clinician information regarding seven areas of performance: self-help, home living, independent living, social skills, sensory motor, language concepts, and total. The most important areas of performance to be used in the assessment process are self-help and social skills scales (Mitchell, 1985, p. 1059).

The Parenting Stress Index (PSI; Abidin, 1986) is completed by parents of children below 10 years of age and was designed to identify parent and child systems under stress. There are 7 child domain scores and 8 parent domain scores. “The PSI supposedly measures stressful aspects of the parent-child system including child characteristics, parent (mother) characteristics, and life stress events” (Gresham, 1989, p. 600). “The PSI is recommended for this use as a screening, diagnostic, and research instrument” (Wantz, 1989, p. 602).

Normative data for the PSI was from 534 parents, 92% White and 6% Black, from central Virginia. The sample was not representative of the “U.S. population with 25% of the sample earning less than $10,000 per year and 25% of the sample earning over $20,000 per year. The normative sample was also unrepresentative of
the U.S. population in terms of educational level of parents, with over 33% of the sample having graduated from college, graduate school, or professional school" (Gresham, 1989, p. 600).

"The PSI is not reliable enough to make individual interpretations of scores obtained from the subscales" (Gresham, 1989, p. 601). "Internal consistency estimates (coefficient alphas) of the Child Domain subscales range from .62 to .70 (median = .64). Coefficient alphas for the Parent Domain subscales range from .55 to .80 (median = .73)” (p. 601). “The only reliability estimates meeting minimally acceptable standards for clinical interpretation are the Child Domain score (.89), the Parent Domain score (.93), and the Total Stress score (.95)” (p. 601). Test-retest reliability from a one month to three month period “appears to be approximately .70 for the Child Domain, .80 for the Parent Domain, and .92 for the Total Stress score. No stability estimates are reported for the 13 individual subscales” (p. 601).

“The manual offers little convincing evidence that the PSI is actually a measure of stress. Instead, the PSI appears to be measuring a duke’s mixture of parental and childhood behavior problems/psychopathology, primarily with error” (Gresham, 1989, p. 601). In summary the “PSI is poorly standardized, unreliable, and invalid measure of stress. Users of the PSI should be aware that whatever it is that is being measured with the PSI is being measured with a great deal of error” (p. 601). Wantz (1989) does suggest that the PSI be used “as a screening, diagnostic, and research instrument for Caucasian parents of children below 10 years of age” (p. 602).

The Personality Inventory for Children (PIC; Wirt et al., 1977) is completed by the parents of children between the ages of 3 and 16. The purpose of the PIC is to provide a “comprehensive and clinically relevant descriptions of child behavior, affect, and cognitive status, as well as family characteristics” (Knoff, 1989, p. 624). The PIC was “normed between 1958 and 1962 on an extremely large sample of 2,390 children
from the greater Minneapolis area" (Knoff, 1989, p. 627). The PIC is “dated, geographically localized, their stratification was weak” (p. 627). The PIC also has the difficulty of “social and societal perceptions of normality and abnormality on which they are based certainly differ from the early 1960s” (p. 627).

Test-retest reliability studies for the PIC Defensiveness Scale ranged from .46 to .94, for psychiatric outpatients, and from .50 to .89 for normal children. Test-retest reliability studies for Somatic Concerns ranged from .68 to .97 for normal children. The length of time between the two testings averaged from 15 days to 51 days. Internal consistencies ranged from .57 to .86 with a mean alpha of .74. Interrater reliability ranged from .34 to .68 with a mean of .57 for normal children and from .21 to .79 with a mean of .64 for a clinical sample and an average of .66 for the 13 clinical scales for a sample of psychiatric evaluated children.

In his review of the PIC, Knoff (1989) writes “Four final broad-band factors were generated through a factor analysis of data from a sample of 1,226 children evaluated at the Lafayette Clinic” (p. 629). “Both sets of derived factors are fairly consistent, and overlap significantly with those factors typically reported by other objective, empirically-based personality assessment tools. Rather than review the impressive number of individual validity studies, it will only be noted in summary that they create an excellent foundation for the PIC” (p. 628).

The PIC “is a significant contribution to the field of personality assessment. It is fairly easy to administer and score, its manuals are written in understandable language, and the authors appear to have an understanding of its complexity and limitations” (Knoff, 1989, p. 629). “The PIC’s clinical/diagnostic use is questionable at the present time. The instrument’s chief need is an appropriately stratified, national restandardization” (p. 630).
The School Situations Questionnaire (SSQ; Barkley & Edelbrock, 1987) describes 12 different situations where the child may have problems rather than descriptors of children's behavior. The SSQ was designed to assess specific situations in which behaviors occur rather than focusing on the specific behaviors. Normative data for the SSQ (Barkley & Edelbrock, 1987) came from 599 children ages 6 to 11 years in central Wisconsin. The sample was limited in representing ethnic-minority children and geographical area, but was fairly equally distributed between boys and girls. “Test-retest reliability of a sample of 119 regular education children was estimated at .68 for number of problem situations and .78 for the mean severity score” (Kamphaus & Frick, 1996, p. 177). “Empirical evidence for its ability to detect true situational variability in behaviors is not available. This aspect of its validity relies on face validity” (p. 177).

The School Situations Questionnaire-Revised (SSQ-R; DuPaul, 1990b) was "designed to assess specific problems with attention and concentration across a variety of school situations" (Barkley, 1980, p. 301). Norming came from a sample of children ages 6 to 12 years with relatively equal numbers of boys and girls. “The scale has been shown to have satisfactory test-retest reliability and to correlate significantly with other parent-completed rating scales like the CTRS-R and the ADHD Rating Scale” (p. 302).

The Social Skills Rating System (SSRS; Gresham & Elliott, 1990) is completed by parents, teachers, and children which should be used for and by children aged 3 years through grade 12. The purpose of the SSRS was to screen and classify children suspected of having social behavior problems and to assist in the development of appropriate interventions for identified children. The SSRS-Parent Form is completed by the parent and focuses around the rate of frequency of specific behaviors. The parent form gives 4 social skills subscale scores and 2 problem behaviors subscale
scores. The Teacher Form is completed by the child’s teacher who has had contact with the student for 2 months prior to filling out the form. The teacher form contains 3 social skills subscale scores and 2 problem behaviors subscale scores as well as an academic competence scale at the elementary and secondary levels which are converted to scaled scores. Lastly, the Student Form comes in two different formats, one for elementary grades and one for grades 7-12. In the elementary grades, only frequency of behavior is assessed. The grade 7-12 form contains a responsibility subscale and an empathy subscale in addition to the same information gained from parents and teachers (Benes, 1995).

Standardization sample of the SSRS (Gresham & Elliott, 1990) included 4170 self-ratings of children and youth, 1027 parents, and 259 teachers. For students in the study, the male to female ratio was approximately the same, special education and regular education students were used, ethnic and racial representation had a slight overrepresentation of Whites and Blacks. The sample was drawn from 18 states found in urban, rural, and suburban communities.

Internal consistency for the SSRS (Gresham & Elliott, 1990) for all forms ranged from .83 to .94 for Social Skills, the range was from .73 to .88 for the Problem Behavior Scale, and .95 for Academic Competence. Test-retest was over a 4-week time frame and the correlation for teachers were .85 for Social Skills, .84 for the Problem Behavior scale, and .93 for Academic Competence. Test-retest for parent ratings correlations were .87 for the Social Skills scale and .65 for the Problem Behavior scale. Test-retest for self ratings on Social Skills was .68, which was lower than the teacher and parent forms, however the correlation suggests adequate stability for all three forms (Benes, 1995, p. 965).

Content validity of the SSRS (Gresham & Elliott, 1990) was demonstrated because items were developed based on extensive empirical research.
Criterion-related validity was considered acceptable as the SSRS was compared with the Social Behavior Assessment, Harter Teacher Rating Scale, Piers-Harris Children’s Self-Concept Scale, and the Child Behavior Checklist (Benes, 1995, p. 966). In regards to predictive validity, Furlong and Kamo (1995) stated “the SSRS can be used to identify students who have social skills deficits that require special education services” (p. 967).

Strengths of the SSRS (Gresham & Elliott, 1990) include the fact that the SSRS is “an assessment system lies in the attempt to link assessment findings with program planning and implementation” (Furlong & Karno, 1995, p. 969). In addition “[T]he model presented is behavioral so users must be comfortable with the use of operant, social learning, and cognitive-behavioral intervention strategies” (Furlong & Karno, 1995, p. 969).

The Symptom Checklist-90-R (SCL-90-R; Derogatis, 1986) is a self-report measure used primarily for psychological symptom patterns of psychiatric and medical patients. The SCL-90-R contains 90 items which the individual chooses from a five point scale from 0 “not at all” to 4 “extremely.” Scores are then obtained on nine factors: somatization; obsessive-compulsive; interpersonal sensitivity; depression; anxiety; hostility; phobic anxiety; paranoid ideation; and psychoticism. The SCL-90-R contains three “global” scales, the “Global Severity Index” (GSI) is the average rating of all 90 items, the Positive Symptom Total is the number of symptoms which the individual complained of, and lastly, the Positive Symptom Distress Index which is the average rating given to symptoms complained of.

The SCL-90-R (Derogatis, 1986) depression factor score was found to correlate significantly with “other measures of depression such as the Beck Depression Inventory, the Dempsey D-30 Depression Scale, the Weissman and Beck Dysfunctional Attitudes Scale, the Zuckerman and Lubin Multiple Affect Adjective
Check List, the Raskin Depression Screen, the Hamilton Depression Rating Scale, and the CES-D Depression Scale" (Payne, 1985, p. 1327). “Convergent validity of the SCL-90-R in general was further supported by the finding that the ‘Somatic Symptoms,’ ‘Obsessive-Compulsive,’ ‘Depression,’ ‘Free Floating Anxiety,’ ‘Phobic Anxiety,’ ‘Paranoia,’ and ‘Global’ scores of the Middlesex Hospital Questionnaire were each substantially and significantly correlated with the respective ‘Somatization,’ ‘Obsessive-Compulsive,’ ‘Depression,’ ‘Anxiety,’ ‘Phobic Anxiety,’ ‘Paranoid Ideation,’ and ‘Global Severity Index’ of the SCL-90-R” (p. 1327).

Payne (1985) suggested that the SCL-90-R (Derogatis, 1986) failed to demonstrate discriminant validity. A replication study by Gotlib (1984) attempted to test the hypothesis that scales of “depression,” “anxiety,” and many scales of symptomatology in general cannot be distinguished from one another. Gotlib gave the Beck Depression Inventory, the Dempsey D-30 Depression Scale, the Weissman and Beck Dysfunctional Attitudes Scale, the Spielberger et al. State-Trait Anxiety Inventory Form Y, and the Zuckerman and Lubin Multiple Adjective Check List to 443 undergraduate students. The scores were found to significantly correlate with a mean r = .47. Therefore, Payne stated “not only do the results support the hypothesis that ‘anxiety’ and ‘depression’ scales cannot be distinguished, but there was no evidence in this population that the nine SCL-90-R scales measured anything beyond a single factor of ‘psychiatric disturbance,’ or ‘complaining.’ The 36 intercorrelations among the nine SCL-90-R scales ranged from .41 to .74, with an average of .58” (p. 1328). Payne summarized his thoughts about the SCL-90-R as “[I]t may be particularly useful in evaluating the changes in symptoms produced in a group by some treatment regime.” As well as “[T]here is no evidence that it can be used clinically either for psychiatric screening, or for purposes of psychiatric diagnosis, using for example the nomenclature of DSM III” (p. 1329).
The Vineland Adaptive Behavior Scales (VABS; Sparrow et al., 1984) is administered by a trained examiner or a parent or teacher can fill out a questionnaire. The VABS has three forms: the Survey, Expanded, and Classroom Editions. The VABS was designed to assess social competence of handicapped and nonhandicapped individuals from birth through 19 years of age. Adaptive behavior is the focus of the VABS, and is measured by four domains: communication, daily living skills, socialization, and motor skills (Sattler, 1989, pp. 878-881). “The standardization sample for the Survey and Expanded forms closely matched the population as described by 1980 U.S. census data” (Sattler, 1989, p. 880). The standardization sample contained 3000 individuals aged newborn through 18 years 11 months and were stratified by sex, race or ethnic origin, geographical location, community size, and parental education. The Classroom Edition had a sample of 2984 students aged 3 to 12 years 11 months and used the same stratification variables as above.

Split-half reliability for the Vineland Survey Form were as follows. For the Communication domain reliability ranged from .73 to .93, for Daily Living Skills the range was from .83 to .92, for the Socialization domain the range was from .78 to .94 and for Motor Skills, the range was from .70 to .95. The Adaptive Behavior Composite split-half reliability coefficients ranged from .84 to .98 and the Maladaptive Behavior domain coefficients ranged from .77 to .88. Split-half reliability coefficients for the Vineland Expanded Form were estimated “based on the Survey Form and adjusted by the Spearman-Brown formula” (Sattler, 1989, p. 880). For Communication, estimates of split-half reliabilities ranged from .84 to .97; for Daily Living Skills reliability coefficients ranged from .92 to .96; for Socialization reliability coefficients ranged from .88 to .97; and for Motor Skills .83 to .97. Maladaptive Behavior domain split-half reliability coefficients were identical to those for the Survey Form (p. 880). Test-retest reliability for the Vineland Survey Form
with a 2 to 4 week retest interval, were found in the .80s and .90s. The Expanded Forms have no test-retest reliability information (Sattler, 1989, p. 880). “Interrater reliability coefficients for the Survey and Expanded Forms range from .62 to .75” (p. 880).

Concurrent validity for the VABS correlated at .55 with the original Vineland. Concurrent validity with the Kaufman Assessment Battery for Children Mental Processing was .32 and for the Achievement scales .37. With the Peabody Picture Vocabulary Test-Revised concurrent validity was $r = .28$. “Correlations with the Wechsler Intelligence Scale for Children (WISC) or Wechsler Intelligence Scale for Children-Revised (WISC-R) were .52 for emotionally disturbed children, .70 for visually handicapped children, and .47 for hearing-impaired children” (Sattler, 1989, pp. 880-881). “Correlations with the Hayes-Binet and Perkins-Binet were .82 and .71 respectively, for visually handicapped children” (p. 881).

Relationships between the VABS Adaptive Behavior Composite and demographic variables. Females obtained scores that were “.5 to 5.3 points higher than those of males and there was less than a 4.6 point difference, on the average, among racial or ethnic groups” (Sattler, 1989, p. 881). Children whose parents had 4 or more years of college averaged 8.3 points higher than children whose parents had less than a high school education. Regional and community size had less than 4 points and virtually no effect respectively.

The Werry-Weiss-Peters Activity Rating Scale (WWPARS; Werry, Weiss, & Peters, 1970) “was developed as a means of quantifying activity level in children” (Barkley, 1980, p. 661). No information on test-retest reliability was given, however interparent agreement was between .82 to .90. Discriminant validity was able to determine hyperactive from normal and clinic-referred nonhyperactive children. The scale has been found to correlate significantly with the Davids Hyperkinesis Index, the
Behar Preschool Behavior Questionnaire, and direct observational measures. "The scale has limited usefulness, being helpful perhaps where parental reports of situationally inappropriate activity are desired. The scale may be of some value in measuring changes in this behavior in response to interventions, as it has been shown to be sensitive to both stimulant drug and parent training programs for hyperactive children" (pp. 661-662).
CHAPTER 4

METHODOLOGY, RESULTS, AND DISCUSSION

Subjects

All subjects for this study came from the central and northeastern portions of the State of Iowa. The subjects had been referred to a team, including a practicing school psychologist, for an assessment of attention deficit hyperactivity disorder. The children within this study were diagnosed with ADHD by a qualified professional between January 1994 and May 1999. The purposive sample came from three Area Education Agencies (AEA) in Iowa. The specific AEAs from which the sample came were AEA 6, which is primarily rural in nature; AEA 7, which is the third largest AEA within the state; and AEA 11, which is the largest AEA and contains the largest metropolitan area within the State of Iowa.

In Area Education Agency 6 (AEA 6), the researcher spoke with Neta Stevenson regarding ADHD support groups within AEA 6. Ms. Stevenson recommended speaking with practicum supervisors to gain participants due to the break up of the AEA 6 ADHD support group. The researcher spoke with Laura Clark and Mary Mack, school psychologists, about obtaining subjects for the study and they compiled a list of parents whose children had been diagnosed with ADHD. The school psychologists and researcher mailed out the parent consent form along with a letter from the school psychologists explaining the AEAs role in the study. The letter written by the school psychologists follow:

Dear Parent:

Justin Larson is a student from UNI working with Laura Clark. He is doing a research project about ADHD. He would like to look at your child’s records to see how school and AEA staff have helped doctors, mental health staff, and parents to make the diagnosis. He will only be reviewing the records. He will not need to make any contact with you or your child about this project.
Attached is a letter explaining this project and asking your permission for him to review your child’s records. Please sign where indicated and return in the enclosed envelope. If you have any questions please call: (515-939-3494).

In Area Education Agency 7 (AEA 7) Donna Hansen was the coordinator of the ADHD Parent Support Group. The researcher attended the parent support group at two sites and obtained permission from parents at those group meetings. In addition to presenting at the parent support group meetings, the Parent Support Coordinator and the researcher sent out one mailing in the ADHD parent newsletter. The mailing included the parent permission form as well as a letter from the researcher and Donna Hansen describing AEA 7 participation in the study.

Dear Parents:

I am a graduate student at the University of Northern Iowa and am in the process of gathering information for my thesis. I have been working with Donna Hansen, the Parent Educator Connection Coordinator for AEA 7 to obtain subjects for my study. I am in the process of getting permission from parents like yourself to gather this information. My thesis is trying to determine if there is a preference of school teams in assessing children for ADHD between January, 1994 and the end of the school year (May or June) 1999. If your child was diagnosed with ADHD between January, 1994 and the end of the school year (May or June) 1999, you would qualify for the study. Unfortunately, if your child was diagnosed before or after these dates, you are not eligible for the study.

In this process, I am wanting to have access to your child’s Area Education Association (AEA), cumulative school file, special education file (if there is one), and any other files that the school or AEA may have regarding your child’s assessment or diagnosis. I would be collecting information contained in your child’s files at the AEA first, and then your child’s individual school if necessary. I will not be talking to your child, I will not be talking with any of the school personnel about your child, nor will I be interviewing you through this process. Once I have completed collecting the information, I will be giving a presentation over my findings in either June or July at AEA 7 and all parents will be invited, even if your child did not qualify for the study.

If you have any questions about the study, you can call Donna Hansen at 273-8265 or myself at the numbers given on the parent permission form. If you are interested in being a part of this
information gathering process, please sign the enclosed parent permission form and drop it off at the AEA office or send it to:

Donna Hansen  
C/O Area Education Association, Parent Educator Connection  
3712 Cedar Heights Dr.  
Cedar Falls, IA 50613

Thank you for your time and cooperation in helping me gather this information. I look forward to working with you and sharing this information with you in June or July.

Sincerely,  
Justin Larson, M.A.E. and Donna Hansen, Parent Educator Coordinator

Area Education Agency 11 (AEA 11) no longer held ADHD parent support groups because of the Children with Attention Deficit Disorders support group meetings held in Des Moines. Jane Guy was the parent support coordinator for AEA 11 and she was instrumental in soliciting parents for the study. She held a meeting with her parent support coordinators in which she gave each coordinator a copy of the parent permission form and a letter she wrote regarding AEA 11 support in the study, both of which could be mailed to parents. The researcher asked if he could attend the meeting so that the coordinators could ask questions about the study. The parent support coordinator said that she would give the other parent support coordinators the researcher’s phone number so that they could contact him individually if they had any questions. No one contacted the researcher with questions, but permission was obtained using this method.

The letter Jane Guy wrote to parents regarding the study was as follows:

Dear Parents,

Thank you for agreeing to help Justin with his thesis by giving permission to have him review your child’s records. He has asked me to help him to secure names.
Enclosed you will find a description of his research. These are comments which he presented to some existing parent groups in another AEA. Also there is a permission form which he is asking you to sign and an envelope which you should use to return the signed form to Justin.

In early summer Justin will hold a session in which he plans to report the results of his work. He has told me that he will be sending the information about the time and place of this meeting to families who have allowed him to review records. Thanks for your help. If you have any questions please call me or call the number given in the enclosed information.

The total number of subjects obtained for this study was 24. For all subjects, parent consent was obtained. Following is the parental consent form used for this study.

Dear Parents:

As a family with a child who has been diagnosed as having an Attention Deficit Hyperactivity Disorder, I am sure you have already experienced the difficulty we all have in finding clear definitions and effective treatment for the problems the disorder causes in children.

Before we can conduct the research that cross-compares the effectiveness of different treatment strategies, we need to have a concise definition of the disorder and to have all diagnosticians using that consensual definition. Right now there are two major systems used to define ADHD, one is called the Barkley System and the other is the DSM-IV system of the American Psychiatric Association. These two systems do not use the same procedures to reach the conclusion of ADHD.

I need your help. I want to determine, if possible, whether school-based diagnostic teams are using the Barkley System, the DSM-IV system, or some other systematic definition to assist the diagnosis of ADHD. If we can’t agree on a definition, it will be very difficult to get consensus on effective treatment.

Please give me permission to search your child’s school and AEA records to see if it can be determined what system was used to
make the ADHD diagnosis. Your child’s records will be kept in strictest confidence, no material will be copied or kept, and your child’s file will be assigned a numerical code so that his/her name cannot be identified in the data records, analyses, or interpretations.

When the study is complete, I hope to have established which systems are providing the dominant definitions of this disorder in Iowa. This data will thus be used as a background for discussions between professionals to improve diagnostic precision and to further the research on what treatments are effective.

Refusing to participate in this study will not have a loss of benefit or penalty to you as a parent that you currently enjoy through the support group. If you have any questions you may reach me at the Educational Psychology and Foundations Office (Phone: 273-2695) or Donald Schmits EdD (Phone: 273-3384). You may also contact the office of the Human Subjects Coordinator, University of Northern Iowa, (319) 273-2748, for answers to questions about the research and about the rights of research subjects.

I am fully aware of the nature and extent of my participation in this project as stated above and the possible risks arising from it. I hereby agree to participate in this project. I acknowledge that I have received a copy of this consent statement.

(Signature of subject or responsible agent, Parent) Date

(Printed name of subject)

(Signature of investigator)

I ______________, give Justin Larson M.A.E. and Donald Schmits, EdD., permission to obtain my child ______________ school and AEA file.

(child name)

(Today’s Date)

School District your Child Attends

File Review Process

The DSM-IV criteria described in Chapter Two and Barkley’s 1990 criteria described in Chapter Three was used to determine whether or not school
psychologists used one of these models, or another model not described here. To determine if the child was diagnosed using one of these methods, a file review was conducted on each child.

In the file review, it was determined that the child had been diagnosed using the DSM-IV criteria if the child had met either 6 of the 9 inattention criteria or 6 of the 9 combined hyperactivity-impulsivity criteria.

**Inattention**

1. often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
2. often has difficulty 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 avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
7. often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)
8. is often easily distracted by extraneous stimuli
9. is often forgetful in daily activities

**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**

1. often blurts out answers before questions have been completed
2. often has difficulty awaiting turn
3. often interrupts or intrudes on others (e.g., butts into conversations or games)
In regards to Barkley's (1990) model, a file review was conducted and for an accurate assessment with this model, the following criteria were necessary. The file must have contained the following numbers which are described below: 1, 2, 3, 4, 5, 6, 7, or 8, 9, 10; 11 or 12; 13 or 14; 15 or 16; 17 or 18; and 19.

1. Pediatric Medical Examination
2. Parent Interview
3. Child Interview
4. Teacher Interview
5. Child Behavior Checklist, Parent version
6. Child Behavior Checklist, Teacher version
7. Child Behavior Checklist, Youth Self Report (Children age 12 or older)
   OR
8. Behavior Assessment System for Children, Parent Rating Scale
9. Behavior Assessment System for Children, Teacher Rating Scale
11. Home Situations Questionnaire
12. Home Situations Questionnaire-Revised
13. School Situations Questionnaire
14. School Situations Questionnaire-Revised
15. Academic Performance Rating Scale
16. Attention Deficit Disorders Evaluation Scale
17. Issues Checklist (children 12 or older)
18. Conflict Behavior Questionnaire (children 12 or older)
19. ADHD Behavior Coding System or CBCL-Direct Obs. Form
Any case files that did not meet the requirements for either the DSM-IV (APA, 1994) or the Barkley (1990) category as described above were placed into the "Other" category.

**Inter-Rater Reliability**

During the study, inter-rater reliability was conducted using the above criteria for DSM-IV (1994) and Barkley (1990). Inter-rater reliability was conducted between the researcher and the thesis committee chair. Both researchers went to a site with the parent permission forms, the files at individual sites were obtained per site procedures, and the researchers took the files to a private room. In the room, the files were split so that each researcher would have about half of the files. The researchers independently reviewed the files and made decisions as to which model had been used by the school team. When each researcher was finished with their half of the files, the halves were switched and those files were independently reviewed. At the end of the review, the researchers shared their results and agreement data was recorded. There was 100% agreement on 11 of 11 files and the thesis chair decided sufficient inter-rater reliability had been established and the researcher continued alone for the rest of the study.

Table 1 describes the inter-rater reliability component of the study. Subjects of the study are found in the first column, the Pilot subject is counted in the study’s results. The models used for the study include the DSM-IV (APA, 1994), Barkley (1990), and Other. Each model determination is shown by an X corresponding to the subject. Inter-rater reliability is shown in the final column with "AGREED" for each individual in which the file was used for this portion of the research.
Table 1

Classification of Team Decision

<table>
<thead>
<tr>
<th>Subject</th>
<th>Model</th>
<th>I-R-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSM-IV</td>
<td>Barkley</td>
<td>Other</td>
</tr>
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<td>Pilot</td>
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Note. I-R-R = Interrater reliability
Results

Table 2 describes the summary of team decisions. The models used for the study are found in the first column, the number of subjects determined in each of the models is shown in column two, and the percent diagnosed using a particular model are found in the third column.

Table 2

Summary of Team Decisions

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of Subjects</th>
<th>Percent Diagnosed</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Number of Students (n = 24)</td>
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<tr>
<td>DSM-IV</td>
<td>3</td>
<td>12.5</td>
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<tr>
<td>Barkley</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>Other</td>
<td>20</td>
<td>83.3</td>
</tr>
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</table>

This study was intended to determine what diagnostic model school teams used to aid in diagnosing children with ADHD. This study used the Diagnostic and Statistical Manual of Mental Disorders 4th Edition (APA, 1994), Barkley’s 1990 model, and an Other category to determine if there was a preference by school teams for one of these models. Data obtained through this study showed that there was no significant use of the DSM-IV model or Barley’s 1990 model, but a significant use of the “Other” model.

Discussion

This study was important because it shed light upon the school role in diagnosing children with ADHD. In looking through the files the researcher noted that, school teams appear to be consistent in the manner they obtain information about students.
The school teams within an AEA typically use similar testing and identification procedures. After data was collected in AEA 6, the researcher discussed with Laura Clark, a school psychologist in AEA 6, about how the teams she has been a part of identify children referred for ADHD. In that discussion, she stated that she and other AEA personnel met with the child psychotherapists who typically diagnose children referred by the AEA. During that meeting, the psychotherapists stated they wanted the school psychologists to administer the Conner's Performance Test and conduct observations of the child in the school setting. In reflecting upon the files from her teams, as well as other teams within AEA 6, consistency of the testing protocols used between teams were high. In reflecting upon the other AEAs in the study this also appeared to be true. The teams typically used similar protocols within the AEA, however the protocols between the AEAs were different.

It appears that school personnel follow the directions of physicians or refer families to a physician for assessment throughout all of the AEAs in this study. This factor may be one of the reasons there was such a large number of diagnoses found in the "Other" model. One study that would clarify this hypothesis would include a survey of physicians, pediatricians, or psychiatrists who make diagnoses of children with ADHD. The survey for this study should focus upon protocols and observations these professionals use in identifying children with ADHD and how information from school systems could be integrated into the diagnostic process. This study should include a checklist similar to that found in the methodology section of the research presented in this study, in addition to other possible tests professionals use in their assessment process. Once data have been collected through this process, matching information from each professional, to researched assessment practices could be obtained. Once information was gained from the professionals that make the
diagnosis, a consortium of professionals throughout the state of Iowa could meet to discuss the path of identification necessary for the state.

Information obtained from this study is valuable in helping identify what method, if any, was used by school teams. Learnings from this study include professional practices being used in the field, obtaining information for future studies related to ADHD, and propelling professionals to consider what practices they are currently using in the diagnosis of ADHD.

Recommendations for Further Research

Since school based personnel do not, at this time, appear to be using either the DSM-IV model or Barkley's model, the researchers interested in determining the incidence of ADHD are likely to be forced to conduct their own diagnostic procedures on stratified random samples using clearly defined criteria. Using the stratified random sampling procedure, the researcher should choose one AEA. Once the AEA has been chosen, the researcher should select the number of students to be used for the study. After the students have been chosen, the researcher should determine whether they will use the DSM-IV model or Barkley's 1990 model to monitor incidence rates within the study.

Once parent permission was obtained, using Barkley's 1990 model, the researcher would mail the following protocols along with a direction sheet to all of the parents in the school district:

- Child Behavior Checklist or Behavior Assessment System for Children, Parent versions;
- Normative Adaptive Behavior Checklist;
- Home Situations Questionnaire. (Barkley, 1998, p. 266)

Once the researcher received the protocols from the parents, the researcher would determine those students which were significant to the possibility of an ADHD
diagnosis. Once these students were identified the researcher would send the following protocols to the necessary teachers:

- Child Behavior Checklist or Behavior Assessment System for Children, Teacher versions;
- School Situations Questionnaire. (Barkley, 1998, p. 266)

Once the teacher forms have been returned to the researcher, the researcher should conduct the necessary interviews and observations of the students. Once the researcher has converged the obtained data, the researcher should make a decision regarding the child being diagnosed with ADHD. Once the determination has been made, a checking system with the school or parent to determine if their child was diagnosed with ADHD should be conducted. Analysis from this validity study should yield significant results for the incidence of ADHD using Barkley’s model.

Using the DSM-IV (APA, 1994) model, the researcher would obtain permission from all selected parents prior to any assessment. Using the DSM-IV criteria outlined above, the researcher would observe individual classrooms watching each child for signs of inattention, hyperactivity, and impulsivity. Over the course of six months, the researcher should track symptom patterns for children in the school building. The researcher should use the DSM-IV checklist outlined above and mark the dates they observed the behavior in children. The researcher must keep field notes for all of the children during the 6-month-time period to make sure that the symptom patterns are not due to researcher bias.

At the end of the 6-month-time period, the researcher should send a direction sheet and questionnaire to the parents. The direction sheet should describe how to answer the questionnaire, and the questionnaire should use the DSM-IV checklist described above. Once the researcher has identified the children he/she would recommend for diagnosis, the researcher should check with the school or parent to
validate the decisions. Analysis from this type of study should yield significant results for the incidence of ADHD using the DSM-IV model.

Obviously a researcher could also conduct a single study using both Barkley's (1990) model and the DSM-IV (APA, 1994) model with the same subjects. Such a design carries with it the ability to directly compare incidence figures from the two models without undue concern about how well the subjects match from separate studies.

It is very clear from the data in this study that ADHD diagnostic decisions are either (a) not being made by school based personnel or (b) that school based personnel are not using a clearly defined, single system for making their decision. It is not possible in a post-hoc file review format to determine how the decisions were being made. Consequently, one step in the research process is to conduct in-vivo studies that follow the process as it is being conducted.

Based upon the large number of subjects found in the "Other" category, this study may indicate the use of several different methods for assessing children with ADHD. In order to validate team decisions, the researcher for this follow up would use a qualitative, single subject design method. Using this method, the researcher would randomly select a practicing school psychologist in the state of Iowa. Once the school psychologist has been selected, the researcher would obtain permission from all team members to record the process of diagnostic decision making. The researcher should document the decision making process from time of referral to time of decision. The most effective process to document the team decision would be to record the team's meetings and follow team members in their data gathering measures.

During the team meetings, the researcher should tape record the proceedings of the meetings to code individual input. Coding the meetings would help the researcher
determine who makes assessment recommendations and who conducts assessments within that particular team. Coding would also help identify the roles each team member played within the decision making process.

In following the team members as they assess the child, the researcher should note the tests being used and if they match what was agreed upon by the team. As the assessor uses diagnostic protocols, standardization of procedures that are recommended by the testing company, as well as the time frame which the assessment was conducted should be documented. Before observing the assessment, the researcher should take into consideration their training and knowledge of assessment protocols the team recommends.

Once the assessment has been completed and the team meets to discuss the results, the researcher should record how the information was presented to the team, any discussions held regarding the recommendations, and what the school or parents would like to see happen from that point.

This study proves useful for further researchers who want to determine if there is a relationship between models used for diagnosis and the treatment students receive after the diagnosis. A descriptive study using the same methodology used here, and adding a component regarding treatment outcomes would be interesting. Using this study as a pilot, the researcher would be able to randomly select AEAs in the state of Iowa and obtain permission to conduct file reviews regarding diagnostic decision making and treatment outcomes. While conducting the file review, the researcher would identify one of the three models outlined here, and describe the treatment used with each subject.

Conducting this type of research would yield information regarding a diagnosis to treatment correlation. If a correlation between diagnosis and treatment does exist, it should be determined if different models yield the same treatment. Therefore, it
should be determined if the Barkley 1980 model, versus the DSM-IV (APA, 1994) model, versus the “Other” model of assessment, identify the same treatment outcomes.

Barkley (1998) offers several different treatments after a diagnosis is made. In *Attention-Deficit Hyperactivity Disorder* (1998), Barkley has written the following eight chapters focusing upon treatment options:

- Counseling and Training Parents;
- A Large-Group Community-Based, Family Systems Approach to Parent Training;
- Training Families with ADHD Adolescents;
- Treatment of ADHD in School Settings;
- Student-Mediated Conflict Resolution Programs;
- Stimulants
- Pharmacotherapy of ADHD with Antidepressants
- Other Medications in the Treatment of Child and Adolescent ADHD;
- Psychological Counseling of Adults with ADHD;
- Pharmacotherapy of Adult ADHD. (Barkley, 1998, p. xii)

The DSM-IV (APA, 1994), does not recommend specific treatments in it’s publication. The “Other” model, since it has the most variety in assessment, has the potential to have more varied treatments than Barkley and the DSM-IV. Regarding the “Other” model, treatments may come from sources which may yield more significant correlations between this model, Barkley, and the DSM-IV, or between two of the three models.

The researcher should be strict in the manner which they describe the treatments used by teams. Author’s are precise in describing treatments to be used by practitioners. In order to maintain integrity of the author’s treatment, the researcher must be precise in their description. In addition to maintaining integrity, the researcher will be determining whether identical treatments were used for specific models. In order to make an accurate decision, treatment descriptions must match each other. Once the treatment descriptions have been matched, the treatment descriptions are matched with the diagnostic model to identify a correlation.
In the studies described above, a time component would be helpful to determine if one method of assessment proves shorter than another. If the methods and treatment descriptions yield the same results, then more time efficient methods may be preferred by practitioners.
REFERENCES


