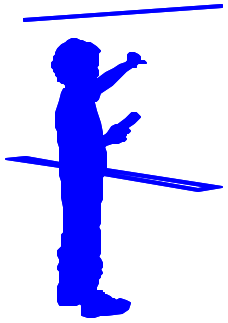

Attention-Deficit Hyperactivity Disorder: A School-Based Evaluation Manual

Jim Wright, Syracuse (NY) City Schools

About This Book…

ADHD: A School-Based Evaluation Manual was first issued in April1995. The manual was used by the Syracuse (NY) City School District to train its school psychologists to work collaboratively with other members of the school multidisciplinary Evaluation Team to carry out school-based ADHD assessments. Although the manual was originally intended as a guide for completing ADHD evaluations in school settings in New York State, much of the content applies to evaluators working in any of our nation's public schools.

In April 2002, the manual underwent minor re-editing and reformatting in preparation for posting on the Intervention Central web site as a free, downloadable Adobe Acrobat file. The content, though, is essentially unchanged from the 1995 edition of *ADHD: A School-Based Evaluation Manual.*

About The Author…

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Section I: Schools and the Assessment of Attention-Deficit Hyperactivity Disorder

Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is a syndrome first appearing in childhood that is characterized by abnormal levels of inattention, hyperactivity, or both (Barkley, 1990). Estimates of the prevalence of the disorder in the general childhood-age population run from 3 to 5% (APA, 1994; Barkley, 1990), suggesting that most classrooms may very well have at least one child with ADHD.

Despite the fact that children with ADHD form only a small minority of all students, they frequently come to the attention of their teachers because they display a high degree of externalizing behaviors (i.e., off-task behaviors that are easily observed, may distract other students, and can be disruptive to the functioning of the classroom). In fact, because the symptoms associated with attentional disorders appear to be most apparent and problematic in educational settings, ADHD has even been defined as "a school-based disorder" (Atkins & Pelham, 1991; p. 202). Consequently, students with ADHD are also quite regularly brought to the attention of the school psychologist and other members of a building child study team by concerned teachers or parents, who in addition to concerns about these children's disruptive behaviors may note academic underperformance, disorganization, and social-skill deficits.

History of ADHD As a Disorder

Syndromal constructs that closely resemble the current conception of ADHD have been around for a number of years. Clement (1966) lists a range of terms that appeared in the early research literature, including Hyperkinetic Behavior Syndrome, Hyperexcitability Syndrome, and Attention Disorders. Minimal Brain Dysfunction, or MBD, (Clement, 1966) enjoyed wide popularity for a time as a diagnostic category; the term encompassed learning difficulties, inattention, and patterns of hyperactive or impulsive behaviors. By the early 1970s, however, MBD was largely abandoned as its proposed symptomatology was absorbed into the separate childhood syndromes of learning disabilities and attentional disorders (Epstein, Shaywitz, Shaywitz, & Woolston, 1991).

A syndrome with a clear resemblance to ADHD was first described as Hyperkinetic Reaction of Childhood in the second edition of the Diagnostic and Statistical Manual of Mental Disorders (APA, 1968), the widely consulted taxonomy of psychological and behavioral syndromes. Since entering the DSM taxonomic system 26 years ago, some variant of a childhood disorder relating to inattention and hyperactivity has remained in subsequent editions of the manual to the present day. The DSM-III (APA, 1980) highlighted the symptom of inattention as a unifying element (Epstein et al, 1991), with the syndrome renamed Attention Deficit Disorder (ADD). The DSM-lll definition of ADD contained two subtypes: Attention Deficit with Hyperactivity and Attention Deficit without Hyperactivity. In the DSM-lll-R (APA, 1987), the subtypes were dropped, in response to criticism that they had not been empirically validated (McBurnett et al., 1993). The revised

syndrome, renamed Attention Deficit Hyperactivity Disorder, required the presence of any 8 of 14 diagnostic criteria to be identified.

The adoption of specific ADHD diagnostic criteria in the DSM-III (APA, 1980) marked a watershed in the development of guidelines to evaluate the syndrome. Prior to DSM-III, attentional disorders were identified based solely on a brief DSM description, without access to a core list of symptoms, limiting the ability of the clinician to objectively measure the presence and severity of the disorder and ultimately compromising the reliability of the diagnosis (McBurnett et al., 1993). DSM-III, however, listed specific, behaviorally defined criteria for use in the identification of childhood and adult disorders, along with decision rules for completing differential diagnoses. The signal advantage of the inclusion of diagnostic criteria for ADD, as well as other childhood disorders, is that the reliability in measuring a behaviorally derived construct becomes greater as the number of internally consistent indicators of that disorder increase (McBurnett, Lahey, & Pfiffner, 1993). The appearance of behaviorally defined indicators of ADHD in the third and later editions of DSM spurred the creation of a number of behavior rating scales and direct observation systems whose purpose is to quantify indices of inattention and hyperactivity-impulsivity.

Current Clinical Definition of ADHD

According to the fourth and current edition of the DSM (DSM-IV), Attention-Deficit/Hyperactivity Disorder is a disorder characterized by 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" (APA, 1994; p. 78). There are 18 individual diagnostic criteria that distinguish ADHD from either normal child development or other childhood disorders. (The complete list of indicators appears in Table 1 on page 6.) The diagnostic criteria are divided into two groups: nine are considered primarily symptoms of *inattention*, while the remaining nine are considered indicators of *hyperactive* or *impulsive* behavior.

Based upon the findings of recent research (McBurnett, et al. 1993), the DSM- IV relies upon a series of decision rules for diagnosing ADHD that allows for the identification of three possible subtypes (APA, 1994).

- If a combination of at least 6 of the 9 inattention symptoms and 6 of the 9 hyperactivity-impulsivity indicators are endorsed, the client should be diagnosed as *ADHD, Combined Type*.

- If at least 6 of the 9 inattention symptoms are endorsed, but fewer than 6 hyperactive-impulsive indicators are found to be present, the client should be identified as ADHD, *Predominantly Inattentive Type*.

- If at least 6 of the 9 hyperactive-impulsive symptoms are endorsed, but fewer than 6 inattention indicators are confirmed, the client should be identified as ADHD, *Predominantly Hyperactive-Impulsive Type*. Because this last subtype stresses hyperactivity-impulsivity in the absence of clinically significant inattention, its debut in DSM-IV represents a departure from ADHD categories or subtypes appearing in earlier editions of the DSM. The innovation addresses the reality that many clinicians

diagnose ADHD in children who appear highly impulsive or hyperactive even when inattention does not appear to be a presenting concern (McBurnett et al., 1993).

DSM-IV also contains a separate category, ADHD *Not Otherwise Specified*, for "disorders with prominent symptoms of inattention or hyperactivity-impulsivity" (AP A, 1994; p. 85), but this category lacks diagnostic criteria and will not be referred to again in this manual.

In addition to the requirement that a certain number of symptoms be endorsed, the diagnosis of ADHD also depends upon verification of several other key indicators (APA, 1994).

- First, evidence must exist that at least some of the symptoms were apparent and contributed to some degree of functional impairment when the child was younger than 7 years.

- Second, the diagnostician completing the evaluation must be able to document impairment from the ADHD symptoms in at least two settings (for example, in school and at home).

- Third, the child's inattention or hyperactive-impulsive behaviors must be shown to interfere with present functioning in social, academic, or occupational areas.

Contributions of DSM to a School-based Assessment of ADHD: The Debate

Reliance upon DSM-IV criteria in the diagnosis of ADHD marks a departure from common practice for most school psychologists, who, when arriving at diagnoses, have traditionally referred to definitions of learning-related disabilities outlined in federal legislation (Individuals With Disabilities Education Act, or IDEA) and the regulations of state education departments. The evolving taxonomy of childhood mental disorders contained in DSM has sparked considerable debate among researchers in both clinical and school psychology. Proponents argue that DSM brings a welcome order and uniformity to the diagnostic process, while opponents claim that DSM fails to contribute substantively to effective school-based interventions. It may appear to the reader that a review of the debate about the utility of DSM in diagnosis and treatment of childhood mental disorders is somewhat tangential to the school-based assessment of ADHD. However, knowledgeable evaluators should be familiar with possible limitations, as well as strengths, of the ADHD assessment process. Because the diagnosis of ADHD is ultimately grounded in criteria found in the DSM, main points of the debate about the utility of the DSM system are presented below.

Support for the DSM.

The DSM represents an ambitious attempt to catalog childhood mental disorders, the ideal goal being the compilation of an exhaustive listing of psychological syndromes with no overlap of diagnostic criteria across separate disorders (Cantwell, 1980). As a single

Table 1: DSM-IV Diagnostic Criteria for Attention-Deficit/Hyperactivity Disorder (APA, 1994)

1. Symptoms of inattention: 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:
    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, or chores (not due to oppositional behavior or failure to understand instructions);
    e. often has difficulty organizing tasks or 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 assignment);
    h. is often easily distracted by extraneous stimuli;
    i. is often forgetful in daily activities

2. Symptoms of hyperactivity-impulsivity: 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;
    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).

In addition to the above behavioral criteria, the student must (1) display hyperactive-impulsive or inattentive symptoms severe enough to cause impairment prior to the age of 7 years; (2) display impairment from symptoms in two or more settings (e.g., school and home); (3) must demonstrate clinically significant impairment in social or academic functioning; and (4) not have another disorder that can account for the behavioral symptoms.

Source: American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

recognized standard for the definition of disorders such as ADHD, the DSM-IV can serve to combat the proliferation of unsubstantiated, 'folk' indicators of childhood pathology. (As one illustration of the potential for uncontrolled drift toward multiple "symptoms," Goodman and Poillion (1992) examined 39 general informational and research articles about ADHD. The authors discovered some 69 general characteristics purported by the various authors to be diagnostic behavioral markers for students with attentional disorders!)

The adoption of the DSM definitional standard for identifying ADHD provides a uniform "code of communication" (Rutter & Shaffer, 1980) between researchers, clinicians, and educators that promotes the wide sharing of information and establishment of a consensual understanding of the disorder (First, Frances, Widiger, Pincus, & Davis, 1992). In successive revisions, the DSM has adopted atheoretical criteria and descriptive terms (Spitzer & Cantwell, 1980) to foster its use by practitioners in a variety of settings, irrespective of theoretical orientation.

Current directions in school psychological practice stress the importance of models of indirect service delivery , including consultation with teachers and the careful implementation and monitoring of behaviorally oriented pre-referral interventions (Deno, 1986; Reschley, 1987). Some researchers claim that DSM- defined childhood syndromes such as ADHD mesh reasonably well with a behavior-analytic focus in psychological consultation because diagnostic criteria are stated in behavioral terms (First et al., 1992). The cluster of behavioral traits that define each childhood syndrome can also serve as a useful starting point for the mapping of a more specific pattern of behaviors unique to the individual client (Hayes & Follette, 1992). Furthermore, identification of these behavioral traits may be useful in generating effective classroom interventions.

Criticisms of the DSM

The DSM is based upon a syndromal, 'medical' model of human behavior that focuses on variables located within the client (Krasner,1992). While one could argue that the existence of predefined behavioral syndromes might speed a clinician's diagnostic work, the nearly universal acceptance of formal categories such as ADHD may also influence the evaluator prematurely to focus in on a certain narrowly defined set of behaviors in the client (Cone, 1986) and perhaps to overlook other equally significant behaviors that do not fall neatly within that formal category. A related criticism of the DSM series is that each revision of the manual (e.g., APA, 1968; 1980; 1987; 1994) has swelled with a growing number of major categories and subtypes of mental disorder (Rutter & Shaffer, 1980). Although the inter-evaluator reliability has been found to be fairly high for broad diagnostic categories, reliability tends to decline among evaluators as they attempt to diagnose subtypes of those categories (Rutter & Shaffer, 1980). Diagnostic criteria for any particular category of mental disorder also vary considerably in the amount of empirical evidence to support their inclusion (Rutter & Shaffer, 1980), yet DSM-IV provides no indication of those diagnostic 'markers' that serve as the most valid and reliable indicators of a specific syndrome.

The DSM-IV also requires that the clinician make categorical ("yes/ no") judgments about whether a client displays a specific criterion behavioral symptom. A more realistic assumption is that behavioral variation among individuals can be plotted along a continuum, with pathological symptoms differentiated from "normal" behavior in degree

rather than in kind (Achenbach, 1980; Persons, 1986). Dichotomous response categories such as those used in the DSM-IV cannot isolate important fine-grained information about the quality of observed behaviors, including frequency , intensity , and duration (Edelbrock, 1983).

The developers of the DSM-IV were able to test at least some of the proposed diagnostic criteria for the revised manual by consulting comprehensive reviews of the relevant research literature, reanalyzing data collected in earlier studies, and running diagnostic field trials (APA, 1994). When, however, questions about diagnostic criteria arose for which no clear empirical data were available to provide an answer, the manual's developers sought consensus among clinicians to settle these questions--suggesting that DSM developers at times depended upon the working group's "clinical judgment" in the place of objective evidence (Folette, Routs, & Hayes, 1992). Studies have repeatedly demonstrated, however, that actuarial diagnostic guidelines based on clear decision rules and empirical data are usually superior to the best clinical judgments of practitioners (Dawes, Faust, & Meehl, 1989; Folette et al., 1992).

In a strongly worded criticism of the application of DSM (specifically the DSM-lll-R) to education, Gresham and Gansle (1992) state that the manual is tied to a "medical model" of mental disorders that supplies little information useful in the evaluation of students for educationally related disabilities. The authors also claim that DSM diagnoses do not have acceptable reliability , lack an adequate database of indicators that are unique to single diagnostic categories, play virtually no part in governing the nature of special education placement, and fail to contribute information helpful in the formulating of student "treatments" or interventions.

Relation of DSM to the School-based ADHD Assessment

Despite continuing debate about the role that DSM should be given in the diagnosis and treatment of special populations within the schools, the reality is that the DSM-IV now stands as the source of current, universally accepted criteria for the identification of ADHD. It would be reasonable, then, for the school-based ADHD assessment team to recognize the primacy of DSM criteria as indicators that define and "anchor" the disorder. At the same time, the diagnostic power of these simple, categorical indicators can be enhanced considerably through the adoption of a comprehensive multitrait, multimethod assessment process (Campbell & Fisk, 1959; Gresham, 1983) that (1) uses norm-referenced behavioral measures when possible to compare target students to their peers, and (2) investigates the interaction between the child and the classroom learning environment in order better to understand the student's behavior problems or skill deficits. Such a process is outlined in later sections of this manual.

ADHD in the Schools

Until recently, school districts generally have not recognized it as their responsibility to identify and provide appropriate support or remedial services to those children with ADHD whose academic performance and school adjustment are being seriously undermined by the symptoms of the disorder (Atkins & Pelham, 1991; Hakola, 1992). Special-education categories defined under the Individuals with Disabilities Education Act (IDEA) did not

include ADHD as a separate educationally related disability. IDEA limited the categories of educational disability under which federal funds would be reimbursed to school districts for special education services and thus provided monies to school districts only for the education of children whose disabilities were specifically covered under its provisions. Therefore, despite the challenging profile that children with ADHD often present in classrooms, only limited professional attention traditionally has been given in educational settings to the diagnosis and provision of school-based interventions for ADHD (and indeed for other behavioral disorders, such as Conduct Disorder) not explicitly recognized under IDEA.

A significant, though gradual, change in the attitude of schools toward ADHD can be traced to a memorandum issued by the U.S. Department of Education in 1991. The memorandum provided guidance regarding the accommodation of at least some children with ADHD under IDEA (Davila, Williams, & MacDonald, 1991) and additional civil rights protection extended to students with the disorder under Section 504 of the Rehabilitation Act of 1973. According to the memorandum, a child diagnosed with ADHD alone may be classified as "Other Health Impaired" if "the ADD is a chronic or acute health problem that results in limited alertness, which adversely affects educational performance" (Davila et al., 1991; p. 3). Alternatively, students with ADHD may be given special education services if they meet the eligibility criteria for another disability category (e.g., learning disability; serious emotional disturbance). Schools were reminded of their "childfind" responsibility to identify and complete evaluations of any children suspected of having a disability affecting school functioning, including those children with a preexisting diagnosis of ADHD.

The Davila et al. (1991) memorandum also clarified the impact of Section 504 on the schools. Children who do not meet the eligibility criteria for IDEA but are found nonetheless to have a demonstrated "physical or mental impairment which substantially limits a major life activity" (p. 6) must have an individual plan drawn up and implemented by the school to promote their full participation in educational activities. A wide spectrum of physical or mental conditions may qualify a student for Section 504 protection, including AIDS/HIV, mental illness, arthritis, and ADHD (Hakola, 1992).

Although a detailed examination of IDEA and Section 504 legislation lies beyond the scope of this manual, several points of similarity and contrast between these pieces of federal legislation are worth highlighting. Both IDEA and Section 504 stress the right of each student to a "free appropriate public education," allow parents to request an evaluation of their child for an educationally related disability at school district expense, have procedures in place to ensure that an identified student's educational program is individualized to meet that child's unique learning needs, and offer a due-process mechanism for parents to contest a school district's decision (Ahearn, Gloeckler, & Walton, 1993; Davila et al., 1991; Hakola, 1992). A major difference between the two bodies of legislation is that IDEA provides funding for those children found to be eligible for special education, while Section 504, which was intended as civil rights legislation, makes no funding available to districts to implement its provisions.

To sum up the issue of ADHD in the schools, there appears to be a trend in public education toward the eventual explicit mandate that schools be prepared to diagnose, and propose appropriate treatments for, children with the disorder. Even though ADHD is not yet recognized under federal funding legislation to comprise a separate category of school disability, students with the syndrome can receive special education services under the category of Other Health Impaired. Furthermore, when parents suspect that their children's

school performance or social/ emotional adjustment has been adversely affected because of an undiagnosed condition such as ADHD, they have the right to request, under the terms of either IDEA or Section 504, that the school complete an evaluation of the child at public expense. (Ahearn et al., 1993; Williams et al., 1991). Given the present interpretation of schools' responsibilities regarding ADHD, it seems increasingly likely that in the near future members of a school-based child study team will be expected to confront issues relating to diagnosis and treatment of the syndrome much more aggressively than has been true in the past.

Medical versus Multi-Disciplinary Diagnosis

Under the mandates of both IDEA and Section 504, schools are required, in response to a parental request, to evaluate children for any disorder, including ADHD, that may have a detrimental impact on school performance. Presently, a number of professional groups, including physicians, clinical psychologists, and school psychologists, are vigorously debating the question of who is qualified to diagnose ADHD.

Traditionally, the ADHD diagnosis has been regarded as the preserve of the medical community, owing in part to the placement of ADHD within the "Other Health Impaired" category under IDEA ("Attention Deficit," 1994) as well as the wide acceptance of physician-prescribed psychostimulant medication (e.g., Ritalin) as a major treatment for ADHD. As an area of diagnostic strength, *physicians* typically have a bring a comprehensive knowledge of children's physical development and behavioral changes across age groups. Physicians, particularly pediatricians, may also be expert in the diagnosis of congenital or acquired disorders with unambiguous physiological markers (e.g., Fetal Alcohol Syndrome; lead poisoning). Medical researchers, however, have not as yet isolated reliable physiological markers to assist in the identification of ADHD, nor have any medical tests been found to screen for the disorder (Hynd, Hem, Voeller, & Marshall, 1991). In addition, physicians often have access to only limited information about the target child's behavior in school and at home, even though data from these settings is considered essential to the reliable and valid ADHD diagnosis.

Clinical psychologists are competent in a number of methods of psychological and behavioral assessment that can determine the possible presence of ADHD. Psychologists in the private sector are also typically well-versed in DSM diagnostic criteria and have extensive experience in the differential diagnosis and treatment of childhood disorders. Like physicians, conscientious private psychologists often make sincere attempts to contact the schools to gain information about a child's classroom adjustment. However, they face the same constraint as medical doctors in that the expense of their devoting time to collect extensive data about a student's school functioning can be prohibitive.

School psychologists and other members of a school child study team have at hand a rich source of data about student behavior in classrooms, which represent often-demanding learning environments. Because schools require that children sustain their attention in academic, goal-directed activities while suppressing impulsive or hyperactive behaviors (DuPaul & Stoner, 1994), they create conditions under which students with ADHD are far more likely than in other settings (e.g., a physician's office) to appear behaviorally disordered relative to age-peers. Indeed, as Atkins and Pelham (1991) observe, "it would be enormously difficult to set up a laboratory for clinical assessment with

the wealth of information available in schools" (p. 197). School psychologists and other educational staff have also been trained in the use and interpretation of a wide range of assessment instruments-- including behavior rating scales, semi-structured interviews, and direct observation-- that comprise the accepted battery of ADHD assessment tools (Atkins & Pelham, 1991; DuPaul, 1992; DuPaul & Stoner, 1994; Montague, McKinney, & Hocutt, 1994).

While school psychology training programs emphasize training in psychoeducational assessment, teacher consultation and system-wide interventions, however, they give less attention to the assessment and treatment of child psychopathology. There is also a lack of congruence between school-based categories of learning- related disabilities (e.g., Severe Emotional Disturbance, Learning Disability , etc.) canonized under federal special education legislation and the more extensive taxonomic system of mental disorders outlined in the DSM series commonly used by mental health professionals practicing outside of schools. Furthermore, school psychologists and members of building child study teams may have few links to community resources for the diagnosis and treatment of psychological disorders.

Ideally, assessment of ADHD should involve a multidisciplinary team of professionals (" Attention Deficit," 1994) that capitalizes on the strengths of medical and mental health professionals both in schools and in the larger community. The ADHD assessment process outlined in this manual assumes that, with the appropriate training in the essential diagnostic techniques, a multidisciplinary team of school-based professionals that has appropriate access to medical consultation possesses the expertise necessary to undertake student ADHD evaluations. That same team can make important recommendations to the classroom teacher, school administrators, parents, and other key adults within the identified child's educational circle about the formulation of academic and behavioral interventions that will better accommodate the student. Because ADHD is associated with relatively high rates of comorbidity (the simultaneous presence in the child with ADHD of other syndromes such as Conduct Disorder or Mood Disorder), particularly complex cases may require additional consultation with, or assessment by, private psychologists who specialize in child psychopathology. Finally, parents may be encouraged to review the results of the school ADHD evaluation with their family physician to determine whether psychostimulant medication is indicated to improve attending and reduce hyperactive or impulsive behaviors. The physician should also play a central role in monitoring both beneficial and unintended effects of prescribed medications.

Purpose of the Manual

This manual is intended primarily for school psychologists, who it is anticipated will assume much of the responsibility for coordinating a school-based ADHD assessment. School nurses, school social workers, special educators, and other members of a child study team, however, may also play important roles in collecting information relevant to the ADHD diagnosis (Montague, McKinney, & Hocutt,1994). Therefore, these professionals, too, should be encouraged to become knowledgeable about the ADHD evaluation process. A chief goal of the manual is to familiarize the diagnostic team with the major psychological measures used to assess the presence and severity of ADHD. Because the sheer volume of data collected in a multi-method assessment conducted across settings and

respondents can quickly become overwhelming, a later chapter of the manual will also provide guidance in the interpretation of data and determination of appropriate diagnoses. Discussion will also focus on the unique constraints imposed upon evaluators in public schools, who must navigate the often-murky waters of IDEA and Section 504 legislation in their investigations of school-related disabilities.

It is expected that practitioners who apply the techniques and decision-rules outlined here will be able to carry out comprehensive evaluations built upon a strong empirical database of information. Because a number of norm-referenced and quantifiable assessment methods are incorporated into the ADHD assessment, it should follow that the findings presented in any single evaluation will be sufficiently reliable to allow others to replicate the results if necessary. A less immediate but highly desirable outcome of a well-documented, school-based ADHD diagnostic procedure would be the improvement of communication between school teams and clinicians in the community. Such improved communication might allow school and community professionals to work more effectively together to provide truly multi-disciplinary case management as a service to children and parents struggling to come to terms with the academic and behavioral effects of ADHD.

Section II: Conducting the School-Based ADHD Assessment

Introduction

Conducting a reliable and valid assessment of ADHD presents considerable challenges to the evaluator. To establish a diagnosis, the clinician must verify the presence of a minimum number of behavioral symptoms; these symptoms, however, are not deviant in their own right but assume significance only to the degree that their severity or intensity sets them apart from normal developmental patterns of behavior (McBurnett et al., 1993). Children with ADHD can display widely varying behavior over time and across settings, suggesting the need for a range of assessment instruments to aid in the collection and comparison of disparate kinds of information that might converge into a single, stable diagnostic picture (Barkley, 1990; DuPaul & Stoner, 1994; McBurnett et al. 1993). In pursuit of a diagnosis, the clinician ideally should employ a multitrait, multimethod assessment strategy, make use of a range of instruments that provide differing amounts (bandwidth) and specificity (fidelity) of data to ensure as broad a sampling of information about the child as possible, and take into account issues unique to the assessment of childhood disorders.

Multitrait, Multimethod Assessment

The recommended protocol for ADHD evaluation draws upon several sources and methods of data collection, and therein lies its strength. While each source of data contains unavoidable bias (DuPaul & Stoner, 1994), when the larger assessment profile is reviewed, different sources of bias in the data tend to cancel each other out. The roots of the broad-based ADHD evaluation lie in the multitrait, multimethod matrix of test development first presented by Campbell and Fisk (1959). Test theorists recognize that, when any one psychological measure is used to gauge presumed behavioral or personality traits (e.g., inattention), the evaluator may be unable to separate variance inherent in the expression of the trait across individuals from undesirable variance present in the instrument itself. In order to tease out method variance from trait variance, the researcher must both employ several assessment methods and use each method to track two or more traits. A matrix of correlations between traits and measures can then be established which traces variance to either the instrument or the trait being measured (Campell & Fisk, 1959).

The multitrait, multimethod (MTMM) approach, although originating in a paradigm of group research, can be fruitfully applied to individual psychoeducational evaluation as well. A central assumption of MTMM assessment is that the diagnostician who systematically consults a large data-base of information gathered through different methods of measurement is likely to reduce the bias in the process of identifying disorders, commit fewer false-positive and false-negative errors in diagnosis, and arrive at findings that are of maximal relevance to the child's educational program (Gresham, 1983). Because any diagnosis depends upon the "convergence" of evaluation data, a variety of testing methods

with differing degrees of reliability and validity can be integrated into the MTMM assessment battery. An added benefit of the multitrait, multimethod approach is that the school psychologist does not have to collect all of the evaluation data. Information collected by others(e.g., parents, teachers, youth self report) also has potential value if judiciously integrated into the MTMM evaluation (Gresham, 1983). An essential element of any application of MTMM, though, is the compilation of clear decision rules for evaluating the data collected.

Dimensions of Bandwidth and Fidelity

The clinician undertaking an ADHD evaluation will quickly recognize that not all data contain the same information value. As an example, a teacher comment made at a child study team meeting that a child is “always disrupting the classroom" contains very different information than frequency counts taken of that same student's out-of-seat and calling-out behaviors during math instruction. A useful means of understanding the information value of any measure is to be found in the concept of bandwidth-fidelity , a term originating in information theory (Shannon 19491 cited in Cronbach, 1984) and adopted by Cronbach (1984) to provide a framework for understanding the relationship in psychological measures between breadth and specificity of assessment.

The term *bandwidth* refers to the amount of information or degree of complexity that a message communicates. *Fidelity* indicates the specificity of the information. An inverse relationship exists between these concepts. That is, as the bandwidth (variety of information) of a message increases, that greater bandwidth is inevitably accompanied by a decrease in fidelity (clarity of the information). At the same time, as the bandwidth of a message narrows, the overall scope of information decreases, but the resulting information has greater specificity.

In an application of the bandwidth-fidelity concept to methods of psychological assessment, Cone (1977) conceptualized assessment methods as lying along a continuum, whose poles are defined by indirect and direct methods of evaluation.

Indirect methods, which include interviews, self-report, and ratings of others' behavior, can be considered wide-band, low fidelity measures. That is, such measures draw upon a cumulative data-base with much informational content (e.g., teacher remarks based upon observation of a student across 4 instructional months) but the information is presented in a general form that does not allow one to predict specific student behaviors with confidence at any single time or in any particular setting.

Direct methods are defined by Cone (1978) as direct observations of target student behavior, either in analog (contrived) or natural settings, and are categorized as narrow band, high fidelity. As conditions of behavioral observation more closely approximate the natural conditions in which the treatment or intervention is to be implemented, the bandwidth narrows (that is, the information collected is restricted in its application) but the fidelity increases (one can place increasing confidence in the relevance of the assessment data to the target setting). The ADHD assessment is most efficient when it makes use of multiple measures of data collection, which vary in bandwidth and level of specificity.

Comorbidity

Because ADHD is associated with relatively high rates of co-morbidity with learning disabilities (DuPaul & Stoner, 1994), as well as externalizing (Hinshaw, 1988) and internalizing (McConaughy, 1993) patterns of emotional maladjustment, it is important for the clinician carefully to review the assessment data at several points in the evaluation to detect any patterns suggesting alternative or additional disorders. (See Table 2 on 16 for brief diagnostic descriptions of several of the more commonly diagnosed DSM-IV childhood disorders.)

Especially in its early stages, the ADHD assessment should not focus solely on ADHD symptoms. The ideal ADHD evaluation can be described as "funnel-shaped", with "broad-band" assessment instruments such as teacher / parent interviews and general behavior rating scales administered early in the assessment process and more fine-grained assessment techniques (e.g. ADHD-symptom checklists and direct observations in the classroom) coming into use later in the evaluation.

To state the issue somewhat differently, the evaluator should not at the outset decide to undertake an "ADHD evaluation"--because the *a priori* assumption that a single disorder is waiting to be uncovered can influence the eventual diagnosis and predispose the diagnostician to focus on information that simply corroborates the initial hypothesis (Garb, 1989). Rather, the evaluation should be data-driven, with the clinician periodically reviewing case information and adjusting further evaluation efforts accordingly. It would not be uncommon, for example, for an evaluation in which ADHD is initially suspected to develop upon further investigation into a diagnosis of a possible learning disability or emotional disturbance.

Assessing Childhood Disorders: Special Considerations

An adequate understanding of the nature and development of childhood disorders like ADHD cannot be achieved through a simple extrapolation from adult psychiatric diseases. According to Achenbach (1980), children form a unique group for several reasons. While adults may be diagnosed with a disorder because they display clinically pathological "signs," children are more likely to be considered deviant from the norm because they fail to progress through expected phases of development or display behaviors that differ markedly in intensity or frequency from those of age-mates.

Children are also not as reliable a source of information about their own diagnostic symptoms as are adults, so that much of the evaluative data of younger clients must instead be collected from teachers, parents, and mental health professionals. Childhood mental disorders typically differ from adult psychological syndromes in their presumed causes, rates of occurrence in the population, course of illness, and responsiveness to intervention (Achenbach, 1980). Children also do not usually self-refer for mental disorders but are brought to the attention of mental health professionals by parents or other concerned adults.

Table 2: Descriptions and Diagnostic Summaries of Selected Childhood Psychiatric Disorders from DSM-IV:

Examiners assessing the possible presence of ADHD in children must consider whether the child (a) has one or more *coexisting* psychiatric disorders or (b) has an alternative disorder whose symptoms *mimic* those of Attention-Deficit Hyperactivity Disorder. Consult this table for a brief review of diagnostic criteria for several more commonly diagnosed DSM-IV disorders of childhood:

- ***Conduct Disorder (CD):*** If three or more diagnostic items have been endorsed, further investigation is warranted about the possible presence of this disorder. Conduct Disorder is defined in DSM-IV as a constellation of behaviors, including one or more of the following tendencies: a persistent pattern of aggression toward people or animals, destruction of property, deceitfulness or theft, and serious violations of rules.

- ***Generalized Anxiety Disorder (GAD):*** If four or more items are endorsed, the evaluator should consider investigating the possibility of this disorder. For GAD to be present, a key item endorsed is likely to be "experiences anxiety and worry about a number of events for past 6 months." Children with Generalized Anxiety Disorder tend to be anxious and to worry but also have trouble controlling their worrying. GAD has previously been referred to as Overanxious Disorder of Childhood.

- ***Oppositional Defiant Disorder (ODD):*** Endorsement of four or more items suggests the need for additional assessment. Behaviors typical of children with Oppositional Defiant Disorder are arguing with adults, refusing to follow rules or to obey requests, anger and losing one's temper, and spiteful or vindictive behavior.

- ***ADHD, Predominantly Inattentive Type (ADHD/IA):*** Six or more endorsed items point to the possible presence of this subtype of ADHD. As the name implies, ADHD/IA is marked by difficulty in sustaining attention, as manifested by difficulty attending to and following through with instructions, making "careless" mistakes in schoolwork, and frequent daydreaming or lack of concentration.

- ADHD, Predominantly Hyperactive-Impulsive Type (ADHD/HI): Six or more endorsed items suggest a subtype of ADHD characterized by hyperactivity or impulsive behaviors. Children with ADHD/HI may fidget, leave their seat without permission, have trouble waiting their turn, blurt out answers prematurely, and interrupt others.

- ADHD, Combined Type: If twelve items are endorsed (six or more items for both ADHD/IA and ADHD/HI), this behavioral pattern points to the possible diagnosis of ADHD, Combined Type. Particularly when in instructional settings, individuals with this subtype of the disorder can be expected to display symptoms of both inattention and hyperactivity and/or impulsivity.

Source: American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Because children grow and change at a rapid rate, they are less likely to form stable clinical groups with predictable syndromes, or constellations of abnormal behaviors, than are adult clinical populations. The diagnostician evaluating the behaviors of children usually plots those behaviors along a continuum that ranges from normal to clinically significant. A child's "behavioral phenotype," or surface patterns of behavior, changes as the child matures (Streissguth, Sampson, Barr, Clarren, & Martin, 1986). In childhood, for example, a person with ADHD may display many behaviors indicating inattention, hyperactivity , and impulsivity. As the individual approaches adulthood, the more visible, disruptive behaviors may diminish or even disappear but with significant impairments in attention and subjective feelings of "restlessness" may still remain (APA, 1994; Barkley, 1990).

Assembling the ADHD Assessment Battery

To date, no single diagnostic test exists to identify ADHD, nor is such a measure expected in the foreseeable future. Indeed, the battery of individual psychological tests that school psychologists have traditionally employed in educational settings are of only limited help in the ADHD diagnosis (DuPaul, 1992).

Children with ADHD show a great deal of variability in behavior across settings and tasks (Guevremont, DuPaul, & Barkley, 1990) that can be adequately assessed only through the casting of a wide assessment net. The clinician must also translate the categorical symptoms of the DSM-IV into measurable criteria with age- appropriate developmental norms (DuPaul, 1992).Thus, current research (e.g., Atkins & Pelham, 1991; DuPaul, 1992; DuPaul & Stoner, 1994; Guevremont et al., 1990; Montague, McKinney, & Hocutt, 1994) supports an assessment protocol that relies primarily on documentation of general-education interventions, parent and teacher interviews, behavior rating scales, and classroom observations as an evaluation approach best able to distinguish children with ADHD from those without the disorder. Important supplemental information may also be gathered through the administration of cognitive and academic achievement tests.

Documentation of General-Education Interventions

Before a student displaying academic or behavioral deficits can be considered educationally disabled, the evaluator should first present evidence that the instructor has tried several interventions to address the child's needs in the general-education setting and that these attempts have failed to remediate the presenting problem(s). At the outset of an ADHD evaluation, the evaluator may consult with the instructor during the teacher interview (see below) and offer strategies to the teacher (e.g., assisting the student to increase time on-task or to reduce the frequency of distracting or disruptive behaviors). These strategies will then be implemented and monitored.

One convenient method to monitor the student's behavioral adjustment during teacher interventions is to have the instructor complete a daily behavioral report card (Pelham, 1993). This global behavior rating scale would typically contain only a few important behavioral items, which the teacher would rate using a Likert-type response scale. The evaluator can then graph the resulting teacher ratings across instructional days (by

individual behavior or groupings of behaviors) to document any improvements in student behavior that occur as a result of the teacher's classroom interventions. It should be recognized, however, that any classroom intervention must typically be in place for several weeks before it can be adequately evaluated. An example of a daily "report card" and recording chart for behaviors associated with ADHD can be found in Appendix D of this manual.

Behavior Rating Scales

Behavior rating scales provide a means for the clinician to tap into the general knowledge-base that key adults interacting with a target child have developed over time about the range and frequency of that child's typical behaviors (Elliott, Busse, & Gresham, 1993). McConaughy (1993) outlines the characteristics that define behavior-rating scales. In child assessment, rating scales typically contain a pool of response items, often stated in observable behavioral terms, to be endorsed by a teacher, parent, or other person who knows the child well. The adult's responses are summed to yield global estimates of the student's functioning. The results of rating scales are usually stated in standard scores based upon a normative sample.

Rating scales may be either rationally or empirically derived (McConaughy, 1993). *Rational scales* are those whose items are selected because they appear to relate logically to the behavioral or personality constructs that the scale creator wishes to measure. The ADHD Rating Scale (DuPaul, 1990), which is based on DSM- lII-R criteria for ADHD, is an example of a rationally derived scale; its items are based on consensual judgments of clinicians about the criteria that define the disorder. A strength of rational scales is that they can have content validity (the wording of constituent items seem logically designed to measure the behaviors of concern). However, the items in a rational scale are typically not validated using numerical methods of analysis to identify significant patterns of covariance (statistical evidence that changes in one behavior are accompanied by meaningful changes in one or more additional behaviors). There is, therefore, no assurance that a rationally derived scale is in fact measuring unitary psychological or behavioral constructs.

Empirically derived scales, in contrast, begin as a pool of items administered to a normative sample. Endorsed rating items for the norm group are then subjected to statistical analyses to determine which subgroups of items covary. Subgroups of items showing the greatest degree of covariance make up scales that measure general classes of behavior or personality constructs (Edelbrock, 1983; McConaughy, 1993). The Child Behavior Checklist (Achenbach, 1991) is perhaps the best-known example of an empirically derived rating scale. Scales that are empirically derived have the advantage of being based upon significant patterns of shared variation among reported behaviors, reflecting behavioral constructs or syndromes (e.g., ADHD) for which estimates can be computed for rates of clinical significance in the population sampled (Achenbach, 1980).

The school psychologist should keep several points in mind when selecting behavior rating scales suitable for the ADHD assessment. Scales should employ a multiple-response format rather than a dichotomous response scale (Edelbrock, 1983) to allow respondents to make sufficiently finegrained distinctions in their endorsements. The behavioral or psychological constructs of the rating scale should match the diagnostic needs of the evaluator. For example, rating scales used in ADHD evaluation ideally should

yield measures of *inattention* and/or *hyperactivity/impulsivity*, as these categories are central to the diagnosis and assignment of subtype for the disorder. The psychometric properties of any rating scale should be examined to ensure that the instrument is reliable and demonstrates both internal and external validity (Elliot et al., 1993).

As a method of measuring the behavior of children, rating scales do have limitations and constraints on use. Teachers should generally be asked to complete rating scales only after they have known the target student for at least 60 days (Edelbrock, 1983) to ensure sufficient knowledge of the child. Although the information provided can be quite helpful in guiding additional assessment activities and determining a diagnosis, rating scale data does not reveal to the examiner possible causes for behaviors of concern and gives little guidance either in the selection of behaviors for intervention or treatments that should be implemented (Elliott et al., 1993). Separate respondents (e.g., teacher and parent) may show only moderate correlation in their responses when completing similar rating scales (Elliot et al., 1993). Such variation across respondents is to be expected as it most likely reflects both differences in the target child's behaviors across settings or individuals and variation in response tendencies between adults completing the rating scales.

Interviews

Adults who work directly with a target child have a wealth of stored knowledge about that student's "typical" behaviors and abilities accumulated over months or (in the case of parents) years of face-to-face interaction. Therefore, teacher and parent interviews are of great value in the ADHD evaluation. The interview provides an efficient means of tapping the cumulative knowledge base of adults closely associated with the child. Another advantage is that, if the parent or teacher supplies information that suggests the presence of symptoms related to ADHD or other childhood disorders, the interviewer has the flexibility to ask additional questions to probe a point more fully. Additionally, interviews can set the groundwork for effective behavioral interventions for ADHD. In a study of teacher consultation using interviews with a behavioral focus, for example, Bergan and Tombari (1976) found that when the interviewer and teacher identified and agreed upon the primary problem behaviors for a child, there was a high likelihood that a solution to the problem behavior would be found. In effect, accurate problem identification has treatment validity because it can contribute to interventions that work.

A drawback of the diagnostic or behavioral, interview, however, is that it generally has poor psychometric qualities. As typically conducted, parent and teacher interviews are found to have low reliability and only limited validity. In other words, we can have little assurance that two clinicians using informal interviewing techniques with the same parent will elicit identical information about a child's ADHD symptoms or even that information derived from the clinician's interview can be used as a valid measure of the disorder. Much of the variation that creeps into the interview process appears due to differences in the theoretical orientation and training of interviewers, as well as to the common use of vague, non-standardized procedures in diagnostic interviews (Hay et al., 1979).

Suggestions for improving the measurement qualities of the interview include the creation of a pool of interview questions as well as a standardized protocol for administering the interview (Gresham, 1984; Hay et al, 1979; Baynes, 1979).

This manual adopts the solution of using a semi-structured interview to reduce variation among interviewers while preserving the necessary flexibility in the interview process. Both parent and teacher interviews should contain a preselected pool of questions to guarantee that salient diagnostic points relating to ADHD are covered. At the same time, the clinician has the flexibility to alter the line of questioning as needed to pursue unexpected information of potential clinical significance that might surface during the interview.

- ***Interviewing the Teacher.*** The classroom teacher is the best source of cumulative information about a child's school functioning. The teacher interview should assess the child's general level of functioning in the classroom, including academic skills, work completion, quality of peer interactions, and problem behaviors. Because ADHD is a behavioral disorder, the interview should devote time to a careful analysis of behaviors of concern for the target student. Among variables to be assessed are the frequency , severity , duration, and chronicity of the behavior(s). Events that appear to elicit or support problem behaviors should also be determined, along with any observed variations in the child's academic performance across time or setting (Guevremont et al., 1990). An interview protocol suitable for use in teacher interviews appears in Appendix C.

- ***Interviewing the Parent.*** It is usually the parent who supplies an account of the child's developmental history, providing information about early onset of symptoms that is crucial to the ADHD diagnosis. During the parent interview, the clinician should assess parent concerns regarding the child's behavior. As when interviewing the teacher, the clinician should collect detailed accounts from the parent(s) of the child's behavior. As additional goals in the parent interview, the clinician should take a medical history (including data relating to developmental milestones), determine whether any other family members have diagnosed disorders, and broadly assess the child's social skills and emotional adjustment.

Direct Observation

The conducting of behavioral observations in the classroom using standardized techniques to observe selected behaviors of the target student is an essential part of the ADHD assessment. The examiner uses direct observational data to corroborate (or question) teacher reports of student behaviors, to compare types and rates of behavior typically displayed by the target student to those exhibited by his or her classmates, and to estimate the stability of the target student's school behaviors from day to day.

- *Selecting Behaviors to Record.* Before observational data can be obtained, the examiner must select appropriate target behaviors to record. Information gathered from the teacher during the initial interview can give the examiner an excellent idea of particular behaviors to monitor, especially if the interviewer defines the behaviors of concern in sufficient detail to make them straightforward to monitor.

  The teacher is not the only source of information for possible target behaviors, though.

Research has also provided insight into behaviors that are the most salient indicators of ADHD. In a review of various ADHD observational methods employed in 39 studies, Platzman et al. (1992) found that three behaviors-- excessive motor activity, negative vocalization, and off-task behavior--were found most reliably to distinguish between children with and without ADHD. One might conceptualize off-task behavior as primarily a measure of inattention and the combined behaviors of overactivity and negative vocalization chiefly as an index of hyperactivity/impulsivity.

- *Methods of Recording.* Ideally, any ADHD observational system should track at least the three key behaviors isolated by Platzman et al. (1992). However, the examiner can select from among several formal methods for recording observed behaviors.

  Momentary time-sampling requires that the observer look at the target student at one set point during each time interval (e.g., the onset), record relevant behaviors observed, and then not again observe and record those behaviors until same point in the next interval. An advantage of momentary time sampling is that it is less subject to overestimating the rate of target behaviors than are other methods of recording. A disadvantage is that momentary time-sampling potentially will miss a large number of behaviors that occur outside of the instant of observation in each time interval. This procedure is best suited to the recording of an "event" behavior that has no clearly marked onset or end (Saudargas & Lentz, 1986) such as a student paying attention to a class lesson or activity.

  In *whole interval recording*, the examiner marks a behavior as having occurred only if it takes place through the *entire* observed interval. While an advantage of whole interval recording is that it imposes a criterion of duration on the observed behavior, this approach also tends to underestimate considerably the rate of target behaviors (because it ignores those behavioral incidents that fail to persist through a complete time interval). Whole interval recording is not often used in behavioral observation but would seem most useful for tracking academically appropriate behaviors, such as student involvement in group instruction or independent seatwork, that must persist for some minimum period of time to have a positive effect.

  When using a *partial interval* procedure, the examiner notes a behavior as having occurred if it appears at *any* point during a time interval. An advantage of this recording procedure is that it is very sensitive in reflecting changes in the rates of behaviors. A disadvantage, though, is that partial interval recording is more likely than other recording methods to overestimate the frequency of a behavior. Serious negative behaviors such as physical aggression are often monitored using partial interval recording, presumably because observers reason that the importance of recording every manifestation of the negative behavior outweighs in importance the possibility that the recording method may exaggerate somewhat the rate of the target behavior.

  A final method, *event* or *frequency recording*, can be adopted for behaviors whose starting and end points are readily recognizable (e.g., a single vocalization, touching of another student). These "event" behaviors (Saudargas & Lentz, 1986) can be recorded as separate incidents within any given time interval. When each successive time

interval arrives, all additional behavioral events will be recorded each time that they occur within the space allotted for the new time interval.

Along with the selection of methods of behavioral recording, the examiner who is preparing to complete direct observations of children suspected of ADHD must determine the length of the observational interval. Shorter intervals allow for the collection of increasingly fine-grained information about behaviors, but force the observer to record often-complex sets of behavioral notations in a compressed period of time. In contrast, longer time intervals ease the observer's task of accurately capturing behavioral observations in permanent notation but the coarser divisions of time may lead to the loss of nuanced information about variations in student behavior. Accomplished observers may want to adopt time intervals of 10 to 15 seconds while those who are less familiar with recording techniques might lengthen their observational intervals to as long as 30 seconds. Intervals longer than 30 seconds, however, should probably be avoided, as they permit the loss of too much behavioral information to play a part in most ADHD observational systems.

- *Time and Setting.* Regardless of the behavior recording system adopted, the ADHD observation protocol should yield information about the target student's behavior within the context of the classroom environment and in relation to his or her classmates. During the initial teacher interview, the interviewer should ask the teacher to identify academic situations in which the child is most likely to display inattentive or hyperactive/impulsive behaviors; at a minimum, observations should be conducted at those times. Classroom observations are generally carried out during periods when the target student is expected to work for extended periods on individual assignments (DuPaul & Stoner, 1994) or to attend to lectures while suppressing impulsive or overactive behaviors (Montague et al., 1994). The observer may also wish to observe the child in less-structured situations such as on the playground. However, in most cases, such observations are probably not necessary. As a rule, students with ADHD more closely resemble their non-ADHD classmates during free time, when the group level of activity is high and there are few demands placed on the student to focus attention, than during academic tasks. Thus, behavioral observations collected in less-structured settings may not result in information of much diagnostic significance.

- *Peer Norms.* The observer should also make an effort to obtain a normative standard of behavior for classmates of the target student in each observation period. Establishment of a classroom behavioral "benchmark" is necessary because ADHD can be diagnosed only when a target child's level of inattention or hyperactivity/impulsivity deviates to a *clinically significant* degree from age-appropriate norms. There are several related methods that the observer can follow to establish useful classroom norms during a behavioral observation. In one widely used method for generating trustworthy norms, classmates of the same sex as the target student are selected to serve as comparisons. The observer alternates in each successive time interval between the target and a comparison student, recording the same behaviors for each of the two children being observed. Every few minutes, the observer shifts from one randomly selected comparison student to another to ensure

that the behavioral norms are truly representative of the classroom "average."

- *Number of Observations.* There are no set guidelines about the recommended number or length of observations that should be completed during the ADHD assessment. The logical time to determine a probable observation schedule is during the initial teacher interview. At a minimum, though, observations should be conducted on at least two (and preferably three) different school days, with each observation lasting at least 20 minutes. Multiple observations are required to determine the degree that the behaviors of the target student vary from day to day. In many cases, however, more than two observations may be required to collect adequate behavioral data. For example, if a teacher reports that the child appears off-task and overactive in the reading group, yet pays close attention during math, the observer will probably need to observe at least two reading and two math sessions to establish the variability of student behavior both across days and across academic subjects.

  Although formal systems of observation allow the clinician to quantify the frequency and duration of student behaviors, they are of necessity very narrowly constructed and must inevitably miss a considerable amount of important information about interactions between the target student and the classroom environment. Therefore, it is a good practice for the observer to supplement the formal behavioral observation with a brief, qualitative summary of observed events written at the conclusion of each visit to the classroom. The qualitative summary might address the presence and quality of the student's interactions with peers and the teacher, degree of academic engagement and work completion, the noise level in the classroom, apparent amount of teacher preparation, and any other significant events or environmental variables noted during the observation. (An example of a qualitative classroom observation sheet appears in Appendix B.)

Permanent Products

Written products produced by the student during instructional periods or assigned as independent seatwork can be useful indicators of the efficiency with which the student uses allocated learning time. There are many possible reasons why a student may not be on-task in the classroom. For example, the child may be bored by work that is too easy or placed in instructional material that is much too difficult. As a hypothetical case to illustrate the point, imagine two students in the same classroom who display similar levels of off-task behavior during seatwork. An examination of the worksheets of the two students at the conclusion of the period could reveal very different outcomes. One student might have quickly completed the entire worksheet with no errors and then engaged in off-task behaviors, while the second student might have worked only sporadically on the worksheet (getting a handful of those problems attempted correct) with work efforts punctuated with longer periods of inattentiveness. Clearly, the presumed causes underlying the inattention of each student differ. The first child may simply be placed in material that is not challenging, while the second student may be placed in instructional material that is too difficult or may in fact have an attentional disorder that interferes with work completion.

Examination of permanent products is most useful when information is also collected about how much time, attention, and effort the student put into completing those assignments. There are several ways in which the student's work performance can be monitored. For example, the teacher can keep a record of the amount of time allocated for a particular assignment and then share the student's completed work samples with the examiner. This approach yields even more useful information if an observer is able also to complete a direct observation of the student for the duration of the assignment to observe the amount of student time actually spent on-task. In an alternative approach, a parent may be willing to keep a log of the child's homework activities for several evenings, noting the amount of time the student spent apparently working, the number and duration of breaks taken, and number of requests for help or attempts by the child to engage others in conversation on topics unrelated to the homework. These logs can then be matched to the assigned homework turned in by the child for those same days to arrive at some estimate of the student's work efficiency and ability to complete the assignments independently.

Screening and Formal Evaluation

The decision to undertake a school-based ADHD assessment should not be made lightly. As Gammel (1992) notes, a formal evaluation is quite costly when the services of all school personnel associated with a particular case are taken into account. At the same time, under the terms of both IDEA and Section 504 legislation, parents have the legal right to request that their child be formally evaluated for suspected disabilities that might negatively affect school performance. This section will offer suggestions for completing an ADHD screening and for determining when screening results warrant a formal evaluation. In the process outlined below, it is essential that parents participate as informed and involved partners in the evaluation process.

Screening

The purpose of the ADHD screening is to separate those students who are strongly suspected of having ADHD from children who either are not thought to have any disorder or who are suspected of having an alternative educationally related disability. To accomplish this task, general information about the child is collected and evaluated to determine what more specific assessment should take place. Figuratively, the screening procedure can be thought of as taking the "shape" of a funnel, moving from the collection and analysis of general to more specific information. While DuPaul (1992) recommends the use of a single ADHD behavior rating scale completed by the teacher as the sole screening measure, this manual advocates for the use of a more comprehensive screening battery in order to control for the vagaries of any particular assessment instrument. The minimal screening battery should include:

- documentation of general-education interventions
- teacher interview
- parent interview
- general behavior rating scale to be completed by the teacher(s)

- an ADHD-specific rating scale to be completed by the teacher(s)
- at least one direct observation of the student
- a measure of academic achievement
- review of the student's cumulative folder and other school records

The teacher interview should be completed as an early element of the screening. The teacher will be able to inform the interviewer about the behaviors of concern that the child displays as well as the best times to observe the child during independent seatwork or group instruction. Documentation of general-education interventions can be done through use of a daily behavior report card or alternative method. At the interview, the instructor can be asked to complete both a general behavior rating scale and scale rating ADHD symptoms. The profile resulting from the general rating scale will give the clinician good information about the possible presence of comorbid disorders (e.g., Generalized Anxiety Disorder, Conduct Disorder) and will provide a broad normative measure of attentional focus and perhaps hyperactivity/impulsivity. An ADHD-specific rating scale allows teachers to share their global perceptions of the child by completing items about school performance and behavior that map to DSM-IV diagnostic criteria for ADHD.

While an initial discussion with the parent is important, during a screening the parent interview may take place either fact-to-face or by telephone to review the student's typical home behaviors and any possible parent concerns. The clinician should complete at least one direct observation of the child during an instructional time selected in advance by the teacher as typically being problematic for the student. Using procedures outlined elsewhere in this manual, the observer should collect time-series data on the target child and comparison children. It is expected that the target child will display considerably higher rates of inattention and/ or overactivity and impulsivity than peers. Through a review of the student's school records, the evaluator should look for any observations from past teachers that the child has had trouble completing classwork, remaining focused, or suppressing inappropriate behaviors. Such teacher comments may help eventually to establish the chronicity necessary for the diagnosis of the disorder. Finally, the student should be given some form of academic achievement test to determine if the child has one or more deficits in academic skills.

Formal ADHD Evaluation

The results of the ADHD screening should be carefully evaluated to determine how the case will proceed. If no evidence of a disorder is found, the evaluation should be concluded. If evidence comes to light suggesting a disorder *other* than ADHD (e.g., learning disability, emotional disturbance), the child should be evaluated further for that alternative disorder. If a review of the screening results points to a possible diagnosis of ADHD, however, a formal evaluation should be pursued. A formal ADHD evaluation will incorporate all information collected during the screening phase of the assessment. In addition, the formal evaluation for this disorder should include:

- a cognitive measure
- extended parent interview
- parent versions of general behavioral rating scales and ADHD rating scales

- additional classroom observations of the student
- an examination of the student's classroom work ("permanent products").

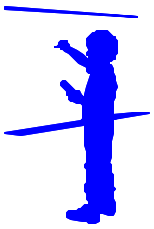
While not called for in all cases, the examiner may also wish to assess the student's social competencies in the classroom, using a sociometric scale.

The cognitive measure will allow the examiner to adjust expectations for the student's attentional focus and degree of activity and impulse control by tying those observed traits to the child's cognitive ability or "mental age." The parent interview provides insight to the child's functioning at home and may offer evidence that the student displays behaviors consistent with ADHD across settings. Parent responses on rating scales yield a normative comparison of the child's behaviors to those of same-age and same-sex peers. Additional observations of the child in the classroom during times of instruction or independent seatwork will allow the examiner to determine the relative amount of variation in the child's performance and general behaviors across time, setting, and academic subject. The examiner can estimate the child's efficiency in completing school assignments by collecting and reviewing independent seatwork or homework. If the instructor reports that the student has difficulty being accepted by classmates, the examiner may wish to have the teacher administer a sociometric rating instrument, in which each student in the room rates the degree to which they like each other student. The resulting cumulative scores will indicate whether the child being evaluated is popular, generally accepted, or rejected by classmates.

Safeguarding Parent Rights in the ADHD Evaluation

In an effort to provide efficient delivery of services, school personnel are justified in selectively screening children for possible disorders rather than moving directly to a formal evaluation in all cases. However, at the point at which any screening is planned, parents should always be informed of the nature and purpose of the screening. Furthermore, at the time of the proposed initial screening, parents should be informed that the screening does not comprise or replace a formal evaluation and that it does not prevent the parents from requesting a full evaluation of their child at any time under either Section 504 or IDEA. Screening results should be summarized, either in report or letter format, and shared with parents. Furthermore, if screening results suggest that the child may have ADHD, school personnel should seek active parent input and participation in making a decision to pursue a formal psychoeducational evaluation.

Section III: Interpreting ADHD Assessment Data in a School Setting



Introduction

The most challenging aspect of the ADHD evaluation begins at the point when the majority of the assessment information has been collected. The clinician must sort through a large mass of evaluation data to determine whether the general *pattern* of those data suggests a single diagnostic profile congruent with the set of behavioral criteria that define ADHD. In addition, the school-based practitioner can expect to be called upon to answer a second, potentially even thornier, question: if a child is diagnosed with ADHD, what specific changes, if any, are required in that student's educational program to help the child to function more successfully in school?

The remainder of this chapter will focus on the interpretation of ADHD evaluation data. We will consider the need for an "actuarial bias" in ADHD assessment, examine in some detail the criteria for diagnosis of ADHD and its subtypes, and briefly discuss issues of differential and comorbid diagnoses that relate to ADHD and other childhood disorders. The reader will next be presented with a set of decision rules to be followed both for judging the status of ADHD as an educationally related disability and for determining the necessary accommodations that individual children with ADHD may require to function to their fullest potential in school. Finally, difficulties associated with the ADHD diagnosis will be reviewed.

Clinical vs. Actuarial Judgment

Investigators who study the nature of diagnostic decision-making distinguish between clinical and actuarial judgment. While most clinicians probably engage in a mixture of clinical and actuarial decision-making in their practice, a review of "pure" forms of these processes will demonstrate that, whenever possible, professionals should maintain an "actuarial bias" in the diagnosis of ADHD and other childhood disorders.

In diagnosis based on clinical judgment, emphasis is placed on the investigator's interpretation of the unique profile of the child's abilities that emerges as data is collected from different sources in an evaluation. The diagnostician draws upon a loosely organized knowledge base of past cases as the primary source of clinical "intuition." Rather than applying decision rules to analyze information uniformly across cases, the diagnostician assigns data importance only within the context of the individual evaluation.

In contrast, actuarial judgments make use of simple statistical models, or "diagnostic algorithms," constructed to allow evaluation data from different sources to be quantified, assigned a specific "weight," and incorporated into the diagnostic decision-making process (Einhorn & Hogarth, 1978; Garb, 1989). A hallmark of actuarial decision making is that information is collected and analyzed in a similar manner across cases, reducing the "random fluctuations in judgment" (Dawes et al., 1989; p. 1671) that can accompany clinical reasoning.

Assumptions of the superiority of clinical judgment to other types of diagnostic reasoning have been widespread among physicians (Dawes, Faust, & Meehl, 1989) and psychologists (e.g., Einhorn & Hogarth, 1978). The research literature suggests that such confidence is misplaced. To cite just one prominent review of the burgeoning research in this area, Garb (1989) analyzed a series of studies investigating "clinical judgment" of psychiatrists and psychologists and concluded that experienced clinicians were no more accurate than inexperienced professionals in the diagnosis of personality traits.

Inaccuracies in clinical judgment appear to stem from a number of causes, including (1) limited feedback after diagnosis about case outcomes, (2) the failure of the clinician to consult actual base rates of occurrence for target behaviors or disorders in a given population, (3) a predisposition of clinicians to form hypotheses early in an evaluation and to hold fast to these hypotheses in the face of disconfirming data, and (4) the clinician's tendency for selective recall of client symptoms in which anomalous findings are ignored while more prototypical indicators of a specific disorder are remembered. In addition, clinicians are likely to engage in "hindsight bias"; that is, after a particular diagnosis has been arrived at, diagnosticians may (after the fact) inflate their estimate of probability that such a diagnosis would have occurred (Einhorn & Hogarth, 1978; Fischhoff, 1975; Garb, 1989). This overestimate of diagnostic probability may in turn distort future clinical reasoning.

A solution to the fallibility of clinical judgment in the diagnostic decision-making required in ADHD assessment can be achieved through increased reliance upon actuarial judgments, which routinely yield improved rates of accuracy in diagnosis and better predictions of treatment outcomes. It should be borne in mind, though, that while an actuarial approach is typically superior to the sole application of clinical judgment, the gains may be modest. Furthermore, an ongoing research program is recommended to seek constant improvements in the validity and reliability of the actuarial assessment process (Dawes et al., 1989).

It would be an overstatement to claim that, even with our present understanding of ADHD, diagnosticians are in a position to adopt a predominantly actuarial approach to identification of the syndrome. Important sources of information from the multitrait, multimethod ADHD evaluation, including parent and teacher interviews and qualitative accounts of classroom observations, cannot easily be reduced to quantitative data and incorporated into a diagnostic algorithm. Nonetheless, recent developments in the definition and evaluation of the disorder have made viable the provisional application of actuarial methods to the ADHD evaluation.

A large part of the data collected during the assessment can be subject to a form of actuarial analysis by converting norm-referenced scores to standardized units and compiling a comparative score profile. Even the partial adoption of actuarial methods in diagnostic decision-making can be expected to reduce the level of error in the classification of children--including *false-positives*, or the spurious labeling of children who do not have the disorder, and *false-negatives*, or failure to diagnose children who actually have ADHD). An actuarial approach to diagnosis can also offer the clinician clearer guidelines for determining the possible presence of a disorder, and, if necessary, permit other clinicians to replicate the results of an ADHD evaluation.

Making the ADHD Diagnosis

Key criteria must be met before the diagnosis of ADHD can be made. These criteria include chronicity of the suspected disorder, the presence of specific behaviors suggesting inattention and/or impulsivity/hyperactivity, and the pervasiveness of symptomatic behaviors across settings and situations.

Chronicity

Data gathered during the evaluation should demonstrate that the child displayed at least some behavioral symptoms of ADHD prior to 7 years of age and that those symptoms were sufficiently pronounced to have presented a substantial impairment in at least one important aspect of functioning (e.g., social interactions, academic performance). The parent interview is typically the best source of documentation of the chronic nature of a child's pattern of inattentive or hyperactive-impulsive behaviors. To substitute for or corroborate parent reports, the examiner should review the student's cumulative school records, particularly teacher comments and ratings on preschool and early primary grade report cards. This archival evidence may also turn up evidence of behavioral or attentional problems at a young age. In the absence of any indication that symptoms existed before age 7, ADHD would typically not be diagnosed.

Diagnostic Criteria and Subtyping

To verify the presence of ADHD, the evaluator must first confirm that a student displays particular behaviors associated with ADHD (e.g., "has difficulty awaiting turn"); the evaluator is then required to demonstrate that a sufficient number of related "marker" behaviors exist to allow the evaluator to infer that the child presents significant impairments in the larger behavioral constructs of inattention and/or hyperactivity/impulsivity.

It is unrealistic to expect that all information collected in an ADHD evaluation will result in perfect agreement on all behaviors measured. For example, parents and teachers often show only low levels of agreement on behavior rating scales. Therefore, this manual adopts as a working premise that "convergence of data" is accomplished in two stages. First, the distribution of scores from standardized, norm-referenced behavioral measures is examined. If a simple majority of scores happen to support a single diagnostic decision, information from other sources (e.g., teacher and parent interviews, direct observation) is examined to ensure that it corroborates data from standardized behavioral measures.

Because behavior-rating data are simple to obtain, ADHD evaluators often administer several rating scales to multiple respondents. However, the task of finding meaningful relationships among a thicket of resulting scores--each of which may be expressed in different units (e.g., T scores, percentiles, etc.)--can be daunting.

One solution developed for this manual that simplifies the comparison of scores on similar scales across different instruments is the Attentional Disorders Standard Score Comparison Chart (ADSSCC). The evaluator scores each behavior rating scale; these subscale scores are converted to standard, or z , scores and plotted as standard deviation units on the Standard Score Comparison Chart. The ADSSCC separately groups

measures of Inattention and Hyperactivity/Impulsivity to facilitate decisions about ADHD subtyping. In addition, collections of parent and teacher scales are juxtaposed to offer a simple comparison of student behavioral difficulties across settings. (Instructions in the use of the ADSSCC appear in Appendix A). By the conclusion of the diagnostic process, the clinician will have examined all behavior rating scale and additional assessment information, noting the presence or lack of consistency across informants, settings, and instruments.

Pervasiveness

According to the predominant view in the diagnostic community, ADHD is a physical condition representing a single behavioral disorder with a number of possible etiologies, or causes. It is expected, then, that symptoms of the disorder will be readily apparent across settings. The clinician must verify the presence of ADHD indicators in at least *two* settings to meet criteria for diagnosis. The most obvious settings for comparison are school and home. Information from parent and teacher interviews can provide anecdotal accounts of the child's problems with attentional focus or hyperactive/impulsive behaviors. General and ADHD-specific behavior rating scales tap parents' and school staff's knowledge of the child in a structured format and often offer the additional advantage of possessing good psychometric qualities.

In cases of disagreement between school and home about the relative presence and severity of ADHD-like symptoms, the teacher's ratings should usually be given the greater consideration. Teachers have experience with a multitude of children and therefore are likely to have a more representative idea of "typical" versus "abnormal" levels of behavior (DuPaul, 1992). Also, ADHD symptoms tend to be more apparent in school settings than at home, owing to the greater expectations in the classroom that children pay attention and suppress distracting or disruptive behaviors. If the clinician encounters complete disagreement between the student's teacher and parents regarding ADHD indicators, it may be worthwhile to investigate a third setting in which the child spends a significant amount of time (e.g., a daycare center). Reports from the third setting may support those of either parent or teacher and help to resolve the impasse. However, if ADHD cannot be demonstrated in at least two settings, the diagnosis should not be made.

Differential and Comorbid Diagnoses

Other syndromes of childhood may produce behaviors that superficially appear to stem from ADHD. Thus, the evaluator must be competent in differential diagnosis, examining the assessment data to decide whether an alternative disorder provides a better explanation of a child's patterns of behavior than does ADHD (APA,1994). ADHD is also associated with a high rate of comorbidity with other disorders, including learning disabilities (Epstein et al., 1991), internalizing disorders such as depression and Generalized Anxiety Disorder (e.g., McConaughy & Skiba, 1993), and Conduct Disorder (Hinshaw, 1988). If one or more additional disorders are present with ADHD, their presence should be noted and treatment recommendations made for all of the comorbid syndromes. Below is a brief listing of the most common disorders which might either

coexist with or masquerade as ADHD, with suggestions for determining the proper diagnosis.

- ***Learning disabilities.*** Students with learning disabilities may appear to have an attentional deficit if they are placed in instructional material that is too difficult for them to complete or understand. Rather than follow a teacher's lecture or complete independent seatwork, the student might instead "daydream," play with objects, or talk to other children at inappropriate times. Learning disabled children also often find that academic situations are difficult to tolerate because they have become associated with failure. To escape an academic setting that has become aversive, these students may become disruptive or display apparently hyperactive/impulsive behaviors, with the (reinforcing) result that they are placed in time-out, sent from the room, or given easier assignments to complete.

  When the evaluator finds a severe discrepancy between cognitive and achievement test scores, a learning disability should be investigated. If teacher reports and data from direct observations provide evidence that a student has difficulties with behavior or attention during only certain academic tasks, this information supports the diagnosis of a learning disability. A combination of ADHD-like behavioral or attentional difficulties across classroom learning situations and academic test scores that fall far short of the child's cognitive potential may indicate the coexistence of both ADHD and a learning disability.

- ***Borderline Intellectual Potential or Mental Retardation***. Students with limited cognitive ability as measured on an individually administered intelligence test may display behaviors consistent with their mental, rather than chronological, age (APA, 1994). When testing a student whose IQ is found to be below the average range, the clinician should first compute an estimate of the student's mental age. This estimate of mental age, not the child's chronological age, should then be used as the standard of comparison when determining age-norms for behavior rating scales (Barkley, 1990). If a student falls into the clinically significant range on behavior rating scales when compared to chronological age norms, but does not fall into the significant range when the mental age is used, ADHD should not be diagnosed. Of course, a child can be diagnosed as having both mental retardation and ADHD if the student meets criteria for both disorders (although mental retardation might be cited as the primary school-based disability).

- ***Emotional Disturbance***. The classification of Severe Emotional Disturbance describes an educational disability rather than a clinical syndrome; it is defined in IDEA legislation as "an inability to learn," as manifested in one or more of the following areas: impaired peer and teacher relationships, "inappropriate" behavior or feelings; unhappiness or depression, and phobic reactions to school or personal problems. As presently defined, Emotional Disturbance can encompass many of the childhood disorders outlined in DSM-IV.

  Because attentional disorders are often associated with atypical levels of inattention,

restlessness, and impulsivity , clinicians may at times misidentify ADHD as an Emotional Disorder. ADHD can be differentiated from Emotional Disturbance, however, because ADHD is presumed to be a medical condition, a status that both explains the etiology of the behavioral symptoms and points to Other Health Impaired as the most appropriate classification for the disorder under IDEA. An additional useful distinction between ADHD and Emotional Disturbance can be inferred from Barkley's (1994) characterization of ADHD as a chronic "delay in the development of response inhibition" (p. vii). If the behavioral issues for a child center primarily on that student's inability to inhibit response to environmental stimuli (e.g., wandering attention, restlessness, calling out without permission despite repeated reprimands), the suggested diagnosis is ADHD. If instead the issues for the student center on abnormality in the quality of peer and adult relationships, display of inappropriate emotional reactions to situations, or highly atypical or bizarre behavior, the educational diagnosis is more likely to be Emotional Disturbance.

A hypothetical example involving a child with Generalized Anxiety Disorder may served to illustrate the differential diagnosis of Emotional Disturbance from ADHD. Children with chronically elevated levels of anxiety may display patterns of behavior that mimic those associated with ADHD, including an apparent lack of attentional focus and restlessness (APA, 1994). Evidence of anxiety disorders may be detected through general teacher and parent behavior rating scales, as well as through interviews with adults who know the child. Teacher and parent endorsements of rating scale items or verbal reports may indicate that the child seems irritable, has difficulty sleeping, tends to fatigue easily, and is physically tense. These symptoms would point to the presence of short-term difficulties with adjustment or a more pervasive anxiety disorder, while downgrading ADHD as a likely explanation of the student's problems.

ADHD and the School-based Assessment Process: Guidelines for Decision-Making

The school-based ADHD assessment must take into account the conventions and regulations of both mental health and educational settings. Although the DSM-IV symptom list is the starting point for an ADHD evaluation in the schools, procedures outlined under IDEA and Section 504 govern the process through which school professionals make a determination about both the presence and severity of an educationally related disability, as well as the possible assignment of individualized services. Assessment of ADHD in the schools can be summed up in a four-step approach that incorporates the decision-points of IDEA and Section 504 legislation, as well as DSM clinical criteria, into a single, coherent evaluation process.

Step 1: Determine whether the student qualifies for special-education services under the terms of IDEA for a condition other than ADHD.

If YES, the child generally should be diagnosed with the alternative educational disability. If NO, proceed to Step 2.

The categories of disability outlined in IDEA (1990) are intended to signify those conditions expected to have the greatest negative impact on student functioning in school. A shared feature of the most common educational disabilities, including mental retardation, learning disabilities, and emotional disturbance, is that affected children display long-term academic deficits that have failed to respond to instructional interventions available in general-education classrooms. In addition, alternative explanations for the student's poor school performance must be ruled out. Therefore, when the results of an evaluation indicate that a child who displays clinical symptoms for ADHD also meets federal and state criteria for a school-related disability *other* than an attentional disorder, *the alternative classification generally should be selected as the primary diagnosis.*

This decision-rule reflects the fact that, while ADHD symptoms contribute to either inattention or hyperactivity/impulsivity, the "pure" syndrome is not associated with reduced intellectual potential or ingrained learning problems (APA, 1994). Therefore it is presumed that ADHD alone cannot account for stable and severe academic underperformance over an extended period of time that would mimic another IDEA disability.

Step 2: Determine whether the child meets DSM-IV diagnostic criteria for ADHD.

If YES, proceed to Step 3. If NO, find no educationally related disability.

For the school psychologist, the task of resolving the question of a clinical diagnosis of ADHD may be the most challenging step of the entire assessment. In the absence of definitive individually administered diagnostic tests, ADHD must be diagnosed through the "convergence" of data collected through a number of methods and from a number of sources and settings.

Step 3: Determine if the ADHD is so severe as significantly to impair the child's school functioning due to "limited strength, vitality, or alertness".

If YES, identify as the child as Other Health ImpairedIAttention-Deficit Hyperactivity Disorder. If NO, proceed to Step 4 (IDEA, 1990).

The Other Health Impaired (OHI) category of IDEA covers those long-term, health-related conditions, including ADHD, that may affect a student so severely as to prevent the child from achieving his or her presumed educational potential (Ahearn et al., 1993) Williams et al., 1991). As with other formal categories of disability , OHI requires that the evaluator first rule out competing explanations for educational difficulties (e.g., poor attendance). The clinician must present a range of evidence to document the extent and severity of a student's impaired school performance, as well as to establish the likelihood that ADHD symptoms play a causal role in those academic skill- or performance-deficits. Students who are candidates for the designation OHI/ ADHD are those who:

- demonstrate significant academic deficit(s)

- do not show evidence of alternative educational disabilities
- have been diagnosed with ADHD through a comprehensive assessment process
- have proven resistant to the range of interventions typically available in general education

Decision rules for the diagnosis of OHI/ ADHD are presented at greater length in Appendix E.

On occasion, the clinician may wish to assign dual diagnoses to a student (e.g., as learning disabled in reading and OHI/ ADHD) in recognition of the equal contribution that ADHD and another educational handicap appear to make toward the child's school difficulties. While federal and state regulations contain no restrictions regarding the assignment of dual diagnoses, the mental health community at present recognizes no single "gold standard" (McConaughy & Achenbach, 1993) for defining, assessing, or treating childhood disorders in general or ADHD in particular. Because we are seldom able to predict the differential impact of various disorders on child functioning beyond the most general approximations, it might be best to exercise a conservative approach in school-based classifications.

As schools generally lack strong links between diagnosis and effective educational treatments, a good rule of thumb may be to assign a single IDEA diagnosis for those children with ADHD symptoms who also meet criteria for an alternative learning-related disability--unless *each* of the dual diagnoses dictates very different intervention strategies that are feasible in schools. Diagnostic virtuosity that is not linked to differentially effective treatments brings little lasting benefit to the target child. Of course, if a disorder such as ADHD is documented in a child but is not sufficiently severe to meet criteria for an educational disability under special education guidelines, the evaluator should still document all evidence for the syndrome and present educational recommendations for addressing the observed symptoms.

Step 4: Determine whether the child's ADHD symptoms present an impediment to school functioning sufficient to warrant services under Section 504.

If YES, establish an individual "accommodation plan." If NO, find no educationally related disability (Ahearn et al., 1993; Hakola, 1992).

When a child fails to meet criteria for an educational disability under IDEA, that student should next be evaluated to determine whether he or she meets criteria under Section 504 for school program accommodations. Section 504 requires that an assessment team of educators "knowledgeable about the child, the evaluations and the program options" (Ahearn et al., 1993; p. 8) assess the referred student to determine if the child "has a physical or mental impairment which substantially limits one or more major life activities" (Section 34 CFR 104.3[k][2], cited in Ahearn et al., 1993; p. 2). If the child is found to be impaired in school functioning under the guidelines of Section 504, an "accommodation plan" must be written that addresses the instructional needs of the student. Typically, these accommodations can be implemented in general-education classrooms (Ahearn et al.,

1993), with special education services being reserved for students who display more profound educational or behavioral impairments.

The school psychologist and other members of the ADHD diagnostic team completing a comprehensive evaluation of a child suspected of ADHD should routinely include in their reports information about (1) the degree of impairment that the child experiences in the classroom because of specific disabilities, and (2) detailed suggestions for developing effective academic interventions and behavioral programming to address the documented impairments. Members of the Section 504 assessment team can then consult the report to determine the student's eligibility for services under Section 504 and the nature and extent of services for which the child might qualify.

Difficulties with the ADHD Diagnosis

In the majority of ADHD evaluations, the clinician can sift through the collected information and arrive at a reasonably confident diagnosis based upon convergence of the data gathered. However, there are limitations at present as to how accurately we might diagnose ADHD in children. First, the three subtypes of ADHD (i.e., Inattentive, Impulsivity /Hyperactive, and Combined Types) are not equal in the ease with which they are diagnosed. While the disorder can be accurately identified in pre-school children when a strong element of hyperactivity or impulsivity is noted, children with ADHD whose symptoms are limited primarily to inattention are not likely to be diagnosed until upper elementary school or even later. Similarly, girls with ADHD are less likely than boys to be identified, perhaps because they are more likely to have problems with inattention (which unfortunately often escape a teacher's notice) rather than to display overt behavioral symptoms (Montague et al., 1994).

A second difficulty in diagnosis is encountered when the data fail to converge into a unified diagnostic picture. In their review of models of eligibility determination for special education services, Barnett and Macmann (1992) use the term "indefinite triangulation" to refer to case profiles in which the data appear inconclusive. Applied to the diagnosis of childhood disorders, "indefinite triangulation" would suggest that a single diagnosis cannot be arrived at because the "fixed points" of evaluative data from which that diagnosis would be determined are not equally clear or do not all fall within a common range of severity.

There are many instances in which clinicians may encounter this problem of inconsistent diagnostic data. The same teacher, for example, may complete two separate behavioral rating scales for a child, with one scale showing the student within the clinically significant range for inattention and the other placing the student in the normal range. Or parents may disagree with the classroom teacher that a child displays inattention or hyperactivity. A student may be reported to be inattentive at both school and home, while behavioral observations confirm that the child displays moderately elevated levels of inattention across subjects; yet the child evidences only mild delays in academic progress.

No simple solution exists for addressing complex diagnostic cases containing discrepant data. In some cases, the clinician is advised to collect additional information to resolve the referral question. In other cases, it may be advisable to refer the child to an outside practitioner (e.g., clinical child psychologist) who is qualified to complete a more intensive evaluation of the child's emotional functioning and to investigate more fully the possible presence of childhood disorders.

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Appendix A: Converting ADHD behavior rating scale scores into *z* scores

Standardizing Behavior Rating Scale Information
for Comparison Across Instruments

The number of norm-referenced behavior rating scales and checklists designed for use in ADHD assessments is increasing rapidly. These instruments are popular among evaluators, as they are time-efficient to complete yet tap into the broad knowledge-base that teachers and parents have developed about a child. When the clinician has collected several rating scales from both parents and teachers, however, it can become difficult to find convergence among the resulting data, particularly when attempting comparisons among measures whose scores are reported in differing formats (e.g., T-scores, simple percentile rankings, etc.). Interpreting a battery of scores from behavior scales completed by several respondents (e.g., parents, teachers) can be especially problematic, because the underlying pattern of results that may signify clinically significant levels of inattention and hyperactivity-impulsivity across settings can be obscured in the seeming clutter of scores.

Because the norms for most assessment instruments approximate a normal distribution, we can compare these scores directly by converting the original scores to standard units and arranging those standardized scores as a single visual display. Standard scores (or *z* scores) are scores from psychological tests that have been converted into "standard-deviation units" through the following formula (Anastasi, 1982):

$$z = \frac{X - M}{SD}$$

Each rating scale score is standardized by subtracting the mean for the scale (M) from the individual score (X). The difference is then divided by the standard deviation (SD) for the scale. When scores from two different scales have been converted to standard scores, they employ the same metric and can thus be compared directly with one another.

Occasionally, rating scales will report results in the form of percentile rankings. Assuming that the distribution of scores obtained follows a normal distribution, one can use the chart below to make the necessary estimate of significance in converting percentile rankings to *z* scores:

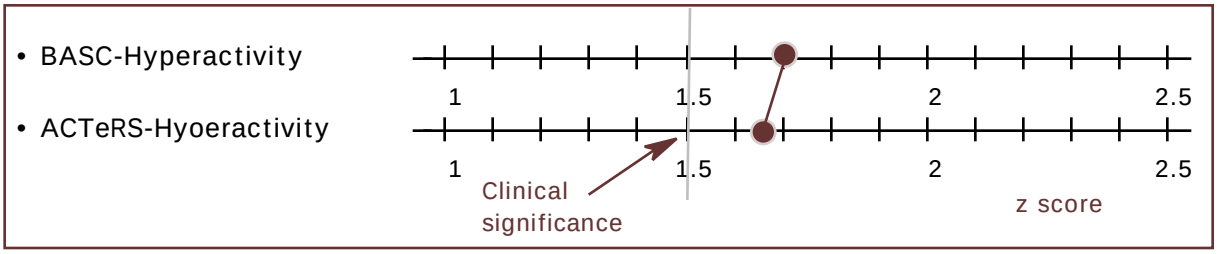
Behavior Rating Scale Percentile	*z* score equivalent
84th percentile	1.0
93rd percentile	1.5 (Clinical significance)
98th percentile	2.0
Above 98th percentile	>2.0

An example will illustrate the use of the conversion formula. Jeri Ann, a girl in the 3rd grade whose teacher referred her to the building Child Study Team because of behavior problems, received a score of 67 on the Hyperactivity Scale of the BASC Teacher Rating Scales. Because the BASC reports *T* scores, we know that the mean of the instrument is 50 and the standard deviation is 10 points.

$$z = \frac{67\text{-}50}{10} = 1.7$$

The *z* , or standard, score for her teacher's rating of Jeri Ann on the Hyperactivity scale is 1.7 standard deviation units.

On the ADHD Comprehensive Teacher's Rating Scale (ACTeRS), Jeri Ann's teacher rated her as within the normal range in the areas of Attention, Oppositional [Behavior], and Social Skills. However, Jeri was rated as falling at approximately the 95th percentile on the Hyperactivity index. While an exact *z* score cannot be computed from the test profile, we can see by referring to the percentile ranking conversion chart that Jeri Ann falls at least above the 93rd percentile for Hyperactivity, the level generally accepted as clinically significant. When rating scores are converted to a common metric, they can be plotted for direct comparison, as illustrated below:



On both a more general rating scale (the BASC) and an instrument that rates behaviors specific to ADHD (the ACTeRS), data collected for Jeri Ann converge to suggest pattern of difficulty with hyperactive behavior across measures. Of course, additional information (e.g., parent behavioral ratings, direct observation, teacher and parent interviews) must be collected to corroborate these preliminary findings.

Creation of a visual display can greatly simplify often-complex data from behavior rating scales and thus help to make that information much more accessible to physicians, parents, teachers, and others who must read and fully understand ADHD evaluations. The Attentional Disorders Standard Score Comparison Chart (ADSSCC), presented below, simplifies charting of *z* scores by listing common ADHD rating scales. To facilitate diagnosis, the chart is divided into measures of *inattention* and *hyperactivity-impulsivity* , which reflect the distinction between these subtypes of ADHD as outlined in the DSM-IV. The horizontal axes are marked in standard score units, so that converted scores can be marked with an "X" on the axis corresponding to the measure (or subscale of a measure) administered to the teacher or parent.

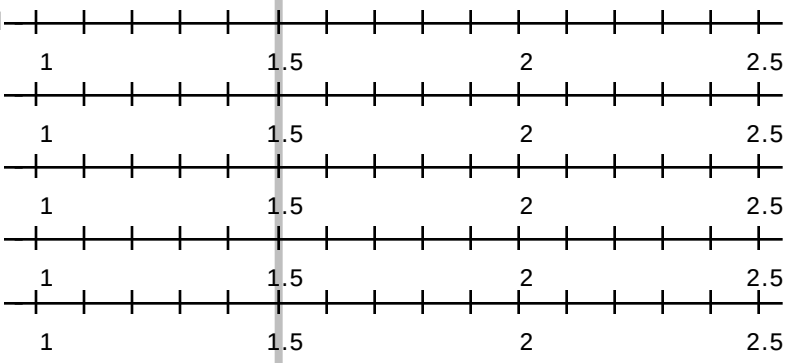
When plotting scores on this graph, the evaluator should be mindful of several points. First, Barkley (1991) sets 1.5 standard deviations from the mean as

the threshold of clinical significance for commonly used measures of inattention and hyperactivity-impulsivity such as the ADHD Rating Scale (DuPaul, 1990) and the Home Situations Questionnaire (Barkley, 1991). A line on the chart at the 1.5 standard deviation mark indicates the border of clinical significance. Second, the clinician using this chart may not always have a manual handy to obtain all the information necessary to convert each measure to standard scores. In these instances, it may be helpful to keep in mind that scores falling at or above the 93rd percentile on norm-referenced scales meet clinical significance, using Barkley's 1.5 standard deviation rule. Third, the tests listed on the chart represent a survey of rating scales widely used in ADHD assessment. However, the list is not intended to be exhaustive. The reader is encouraged to explore other measures as well, although it is recommended that any rating scale selected offer scales that separately measure inattention, hyperactivity-impulsivity, or both, to avoid the confounding of these dimensions of ADHD.

ADSSCC-1

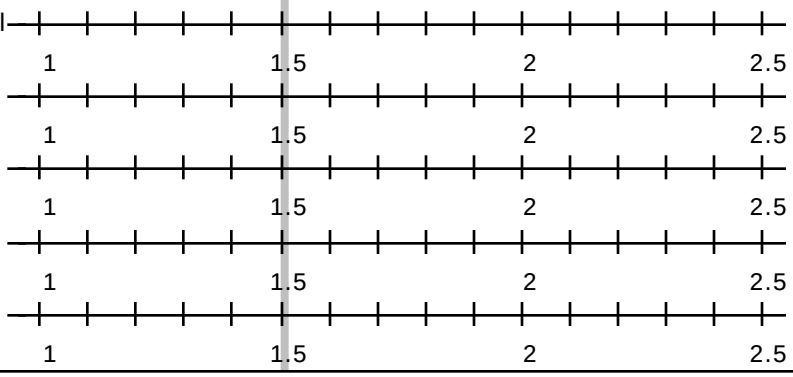
Inattention: Parent Ratings

- ADHD Rating Scale--Factor I (Inattention)
- Home Situations Questionnaire-Revised
- BASC/PRS--Attention Problems
- CBCL--Attention Problems
- ACTeRS Attention Problems



Inattention: Teacher Ratings

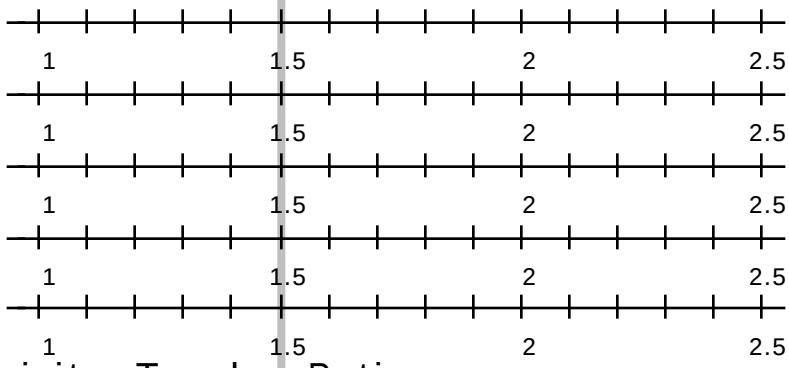
- ADHD Rating Scale--Factor I (Inattention)
- Child Attention Profile--Inattention
- School Situations Questionnaire-Revised
- TRF--Attention Problems
- ACTeRS Attention Problems



Hyperactivity-Impulsivity: Parent Ratings

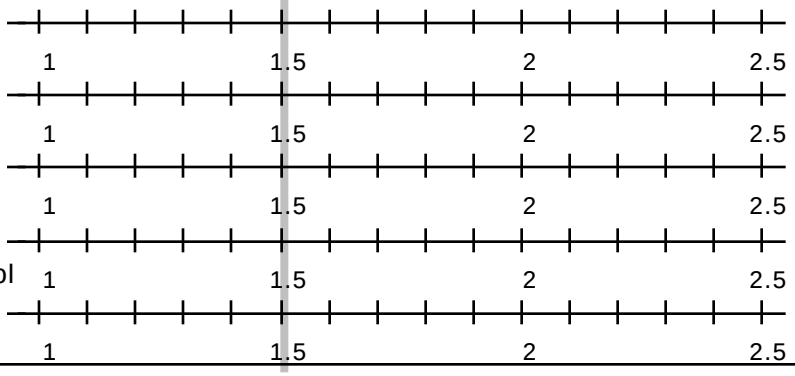
- ADHD Rating Scale--Factor II (Hyperactivity)
- Home Situations Questionnaire
- BASC/PRS--Hyperactivity
- ACTeRS Hyperactivity

_____



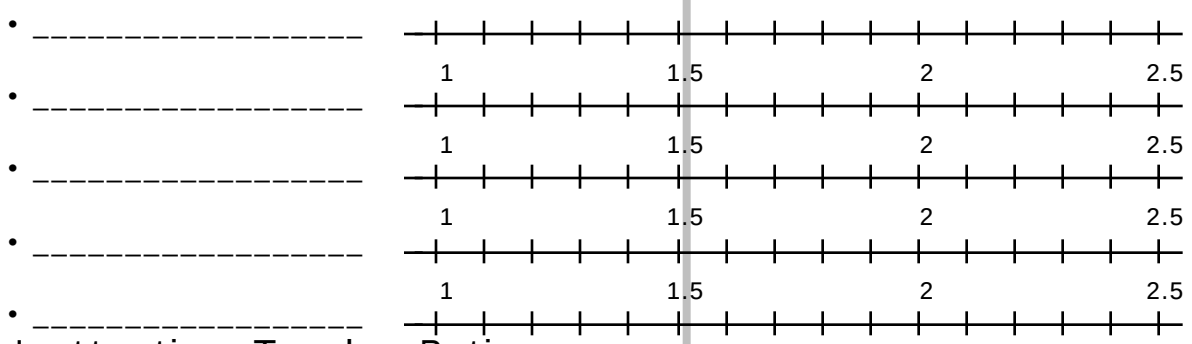
Hyperactivity-Impulsivity: Teacher Ratings

- ADHD Rating Scale--Factor II(Impulsivity)
- Child Attention Profile--Overactivity
- School Situations Questionnaire
- Academic Performance Rating Scale-Impulse Control
- ACTeRS Hyperactivity

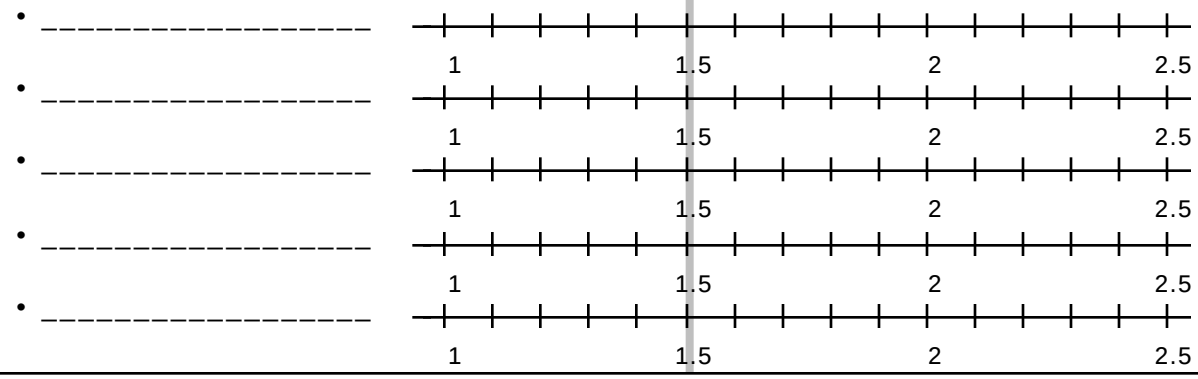


Inattention: Parent Ratings

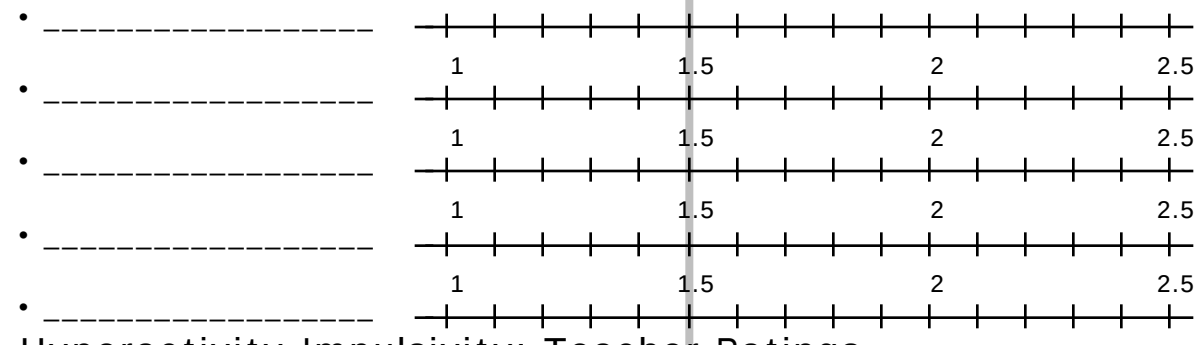
ADSSCC-2



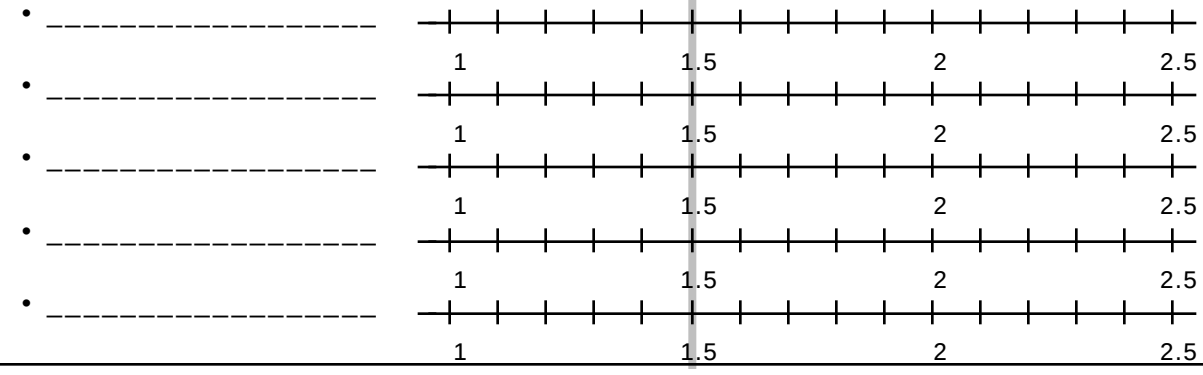
Inattention: Teacher Ratings



Hyperactivity-Impulsivity: Parent Ratings



Hyperactivity-Impulsivity: Teacher Ratings



Appendix B: ADHD Direct Observation System

The ADHD Direct Observation System (A-DOS) is a formal method for recording student behaviors associated with ADHD. A-DOS incorporates the the findings of Platzman et al. (1992), who conducted a comprehensive survey of ADHD observation systems and discovered that three general classes of behavior were most effective in distinguishing children with ADHD from those who lacked the disorder. The three most "diagnostic" behaviors for ADHD are inappropriate calling out or verbalizations, excessive motor activity, and rates of off-task behavior.

Behavioral Categories

The A-DOS contains six behavioral categories: (1) Schoolwork; (2) Calling Out / Verbalizations; (3) Out of Seat; (4) Playing with Objects / Motor Activity; (5) Peer Interaction; and (6) Teacher Interaction. A brief definition of each category and the manner in which it is recorded appears below:

Schoolwork (SW) --This category encompasses any formal learning activity that the student has been assigned to complete or is expected to take part in. For example, if the entire class has been assigned a worksheet to complete independently at their desks, School Work is defined as the student sitting at his or her desk, completing the worksheet. In a large group setting in which the teacher is presenting a lesson to the class and asking them questions about the instructional content, School Work is defined as obvious attending, with the student watching the teacher and responding as appropriate. Schoolwork is not scored if the child is doing something other than the assigned work (e.g., daydreaming, talking with a friend about non-school subjects). If the observer is at all unsure if the student is engaged in an allowable and educationally related activity, the teacher should be approached unobtrusively during or soon after the observation and asked if the student's activities fell within the instructor's definition of acceptable academic engagement that qualifies as Schoolwork.

The SW category is coded using a momentary time-sampling procedure. At the start of each 15- to 30-second interval, the observer glances at the target child for approximately two seconds and determines if the child is on-task or off-task during the brief observation. If the child is found to be on-task (doing schoolwork), the interval is marked with an "X." If the child is off-task, the interval remains unmarked. The observer then ignores this behavior category until the onset of the next time interval.

Out of Seat (OS) -- Any observed instance in which the student has left his or her seat during instructional time is scored as Out of Seat. This category includes those situations in which the student obtains permission to leave his or her seat (e.g., to run an errand for the teacher, take a bathroom break, etc.), as well as those in which the student has left his or her seat without permission.

Incidents of OS are recorded as whole -interval events; that is, if any incident of OS is observed during an interval, the entire interval is marked with a single "X." If a single episode of OS continues uninterrupted across intervals, each successive interval in which the student remains out of seat is coded as OS. Multiple episodes of OS during a single interval are not separately noted but instead are simply coded with a single "X" for that interval.

Playing with Objects/Motor Activity (PLO/MO) -- Two related kinds of behavior are collapsed into the single category. Any instance in which the child plays with an object (e.g., a small toy, eraser, piece of paper) is scored. Additionally, this category is scored for instances in which the child displays repetitive, "restless" motor movement (e.g., rapping a desktop, rocking a tipped chair back and forth, tapping a foot). On the other hand, if the child were rummaging through her or his desk apparently looking for something, the observer would not score the behavior as PLO/MO because the behavior is presumed to be purposeful and to lack the aimless or repetitive quality that defines the category.

PLO/MO behavior is recorded using the whole-interval method. When any incident of PLO/MO is observed during an interval, the entire interval is marked with a single "X." If a single episode of PLO/MO continues uninterrupted across intervals, each successive interval in which the student remains out of seat is coded as PLO/MO. Multiple episodes of PLO/MO during a single interval are not separately noted but instead are simply coded with a single "X" for that interval.

Calling out/Verbalization (CO/Verb) -- The basic unit for the category is any verbalization by the target child during an instructional period that is considered inappropriate because the child failed to use accepted procedures for gaining permission to speak or is making noises that fall outside accepted academic discourse. Examples of Calling out/Verbalizations might include a student shouting out an answer without raising his hand, a child humming loudly during a math test, or a student who makes "nonsense" noises while another child is reading aloud to the group. Whispering is considered an example of CO/Verb if audible to the recorder. Direct communication between the

target child and another individual is not coded as CO/Verb but instead is noted as a "Peer Interaction" or "Teacher Interaction."

CO/Verb is marked using a frequency count. That is, each successive episode of calling out or verbalization observed during a particular observation period is recorded with a separate mark. At the end of a particular interval, the observer moves to the next interval and continues to keep a running frequency count of the behavior.

Peer Interaction (PI) -- Verbal exchanges between the target child and classmates are scored, regardless of which party initiated the interaction. PI is marked using a frequency count. That is, each successive episode of peer interaction observed during a particular observation period is recorded with a separate mark. At the end of a particular interval, the observer moves to the next interval and continues to keep a running frequency count of the behavior. The observer may want to record a (+) to signify positive or neutral interactions and a (-) to denote negative interactions.

Teacher Interaction (TI) -- Verbal exchanges between the target child and the instructor are coded. TI is marked using a frequency count. That is, each successive episode of student interaction with the teacher observed during a particular observation period is recorded with a separate mark. At the end of a particular interval, the observer moves to the next interval and continues to keep a running frequency count of the behavior. As with the previous category, the recorder may wish to code the quality of interactions as well as their frequency. A (+) can signify a positive or neutral exchange, whild a (-) may signify a negative interaction.

Collecting Target Student Behavioral Data and Peer Norms

A central element of all ADHD assessment measures, including the A-DOS, is the use of peer norms to determine the degree to which the target child's behavior deviates from local, or classroom, norms. To obtain peer norms, the A-DOS requires that the observer randomly select a peer of the same sex as the target student (hereafter called the "comparison student") and collect behavioral data on both students. As the observer advances through successive intervals, he or she alternates attention between target and comparison students. It is suggested that the observer randomly monitor several comparison students during a single observation to maximize the likelihood that the peer norms generated are in fact representative of the classroom. To make the task of alternating between target and comparison students easier, the A-DOS has labeled successive intervals as "T" (Target Student) and *"C"* (Comparison Student).

Qualitative Observations

At the conclusion of each observation period, the observer should take a few moments to complete the qualitative observation form on the back of the A-DOS. This form allows the observer to rate the quality of various aspects of the instructional environment. Information about these instructional variables may help to explain student behaviors at least in part as a function of the learning environment in which he or she is placed. The observer may also notice patterns between qualitative ratings and student behavior (e.g., the student appears to be much more focused during instructional tasks in which directions are clear and teacher feedback is given often, phrased in specific terms, and given immediately after student performance).

Summing Behavioral Observations

When the A-DOS has been completed for a single session, the observer can sum up the observations. Both SW and OS observations are summed as:

$$\frac{\text{number of intervals in which the behavior was observed}}{\text{all possible intervals.}}$$

The quotient from the above operation is then multiplied by 100 to yield an approximate percentage of time in which the target behavior was observed.

For example, if the observation period lasted for 60 intervals and the child was found to be dong Schoolwork during 42 of those intervals, an estimate of time on-task would be calculated as follows:

$$\frac{\text{42 intervals observed as SW}}{\text{60 possible intervals}} = 0.7$$

0.7 x 100 = 70 % of observed intervals coded as SW

All remaining behavioral categories are scored as frequency counts. A convenient unit for expressing these behaviors is as a rate of target behaviors exhibited per minute of observation time. The rate would be calculated as:

$$\frac{\text{Total number of target behaviors observed}}{\text{Number of minutes that the observation was conducted}}$$

Let's assume, for example, that the observer completed a 20 minute observation of a student and noted 38 separate episodes of calling out. To convert this raw data to a rate per minute, the observer would calculate as follows:

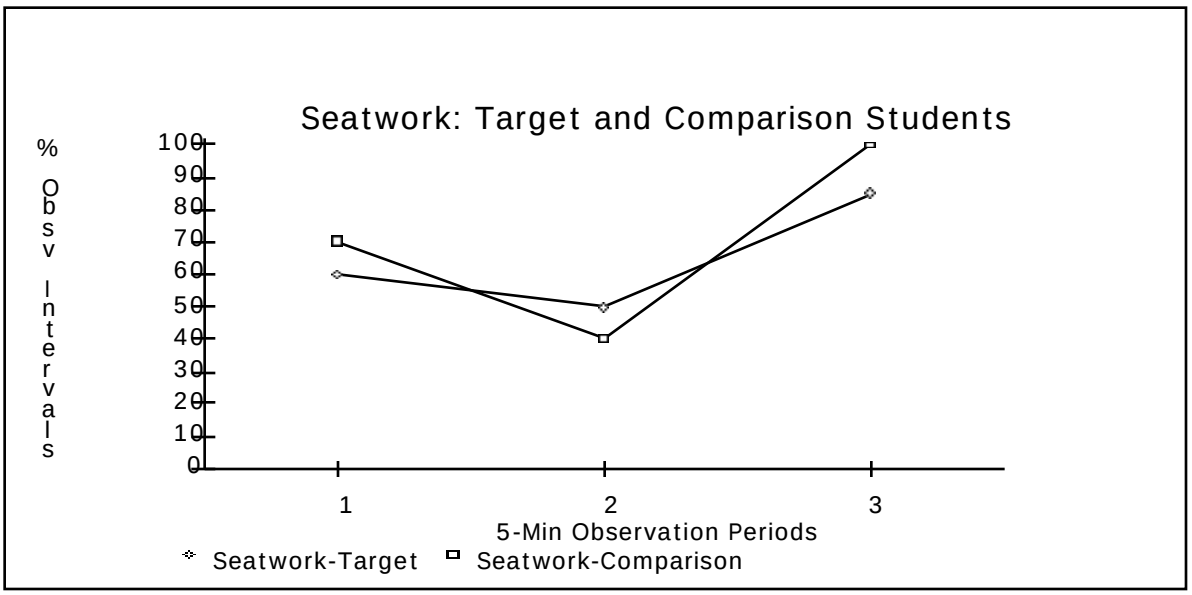
$$\frac{\text{38 call-outs}}{\text{20 minutes}} = \text{1.9 call-outs per minute}$$

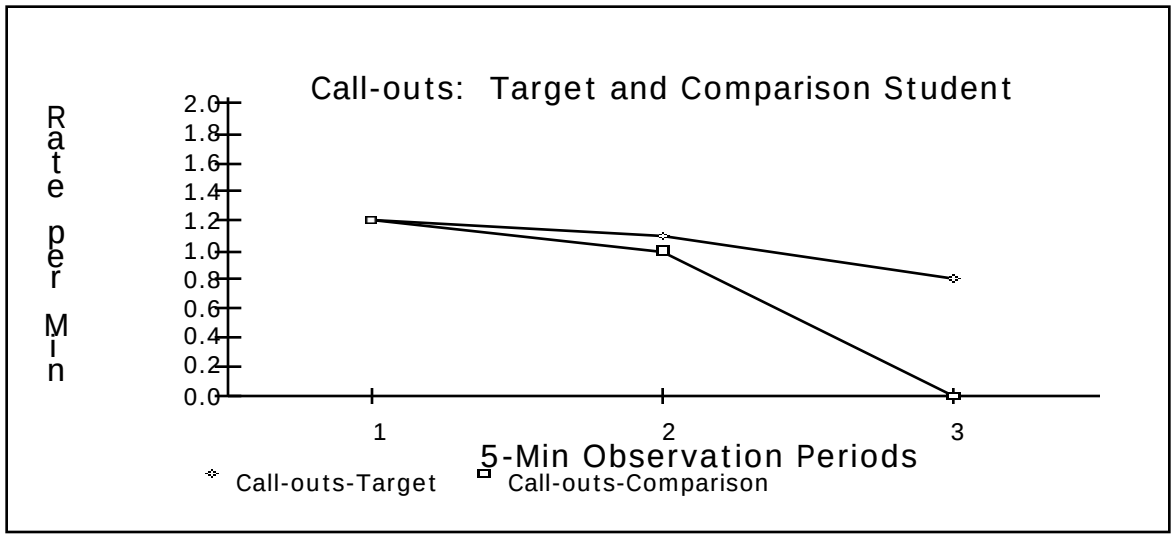
Separate summary figures should be calculated for both the target and comparison students. Keep in mind that, when observation time is divided between target and comparison students, the total observation time devoted to each student is only half that of the entire observation period, because the overall observation period is divided between the two students.

Interpreting the A-DOS

A structured behavior observation such as the A-DOS can supply the observer with direct behavioral measures of attention and hyperactivity/impulsivity. The category Schoolwork can be viewed as a behavioral equivalent of attentional focus. It can be argued that children found to be focused on an instructional task throughout several observation periods have little trouble with inattention. Similarly, students who have low rates of Calling Out/Verbalization, Out of Seat, and Playing with Object/Motor Activity can be viewed as excercising appropriate control over impulsivity and to display normal levels of activity rather than being hyperactive. Peer Interaction was included to give some information about the quality of student interactions with classmates (a measure of social skills) as well as additional data about student off-task behavior. Teacher Interaction was included to provide an index of the degree to which the instructor provides directions, prompts, opportunities to respond, redirection, and other signals to the student as part of the child's academic program.

A useful way to present the ADOS data is to prepare time-series charts that display the data of target and comparison students. One simple method to convert





numeric data to visual displays is to sum up behavioral observations across short periods (e.g., 5 minutes of observation time) and to plot these summary values on a time-series graph. The two charts above offer examples of how a graph may be set up. Notice that two separate graphs have been prepared to plot Schoolwork and Calling Out, because each behavior is represented by a different basic unit (Schoolwork is presented at percentage of observed intervals, while Calling Out is presented as a rate of behavior displayed per minute). An examination of the graphs suggests that there is little difference in the apparent attention exhibited by both students but that the target student engages in consistently higher rates of calling out than the comparison child.

Cautions Regarding the Use of Direct Observation Methods

Classroom observations using systems such as the A-DOS provide unique information about the deviation of a child's behaviors from the classroom norm. However, "packaged" methods for recording student behaviors are actually formal assessment techniques, with potential limitations that accompany any "test." Because the observer is the "instrument" which student behaviors, that observer must be calibrated according to a known standard. At the very least, prospective users of the A-DOS or similar behavior recording procedure should become thoroughly familiar with the instrument, practicing until they are comfortable with its recording format. It is also important that the user train with a colleague, so that both observers are able to complete simultaneous observations of a student. Shared observational sessions will allow observers to compute rates of shared agreement in their recording, in essence providing an indication of the extent to which both observers are "calibrated" according to the same standard (Kazdin, 1977).

The observer who uses a behavior observation system over a period of time should also be aware of the phenomenon of "observer drift;" over time, observers may unknowingly change the manner in which they define behaviors (Kazdin, 1977). The potential complications of inadequate agreement among observers and observer drift can both be controlled for by regular consultation among users of the

behavior recording instrument, occasional shared observations and comparison of results, and periodic review of behavioral categories and definitions.

Date____/____/___ Time__:__ to __:___ Room_____ Tchr_____
Please rate the items below evaluating the instructional environment during your observation of the student. For each item, circle the response that best fits your observation. Add comments, particularly to explain items that receive low ratings.

1. The teacher made sure that the student was paying attention before giving instructions, directions, or asking questions:

1	2	3	4
Not at all	Occasionally	Frequently	Nearly all of the time

2. The teacher monitored to be sure that the student understood the material being taught:

1	2	3	4
Not at all	Occasionally	Frequently	Nearly all of the time

3. Classroom disruptions were handled immediately or prevented:

1	2	3	4
Not at all	Occasionally	Frequently	Nearly all of the time

4. The teacher engaged the student in the lesson by asking questions that the student could answer:

1	2	3	4
Not at all	Occasionally	Frequently	Nearly all of the time

5. Expectations for appropriate student behavior were clear (e.g., follow classroom rules, work carefully):

1	2	3	4
Not at all	Occasionally	Frequently	Nearly all of the time

6. Interactions between the student and classmates were positive:

1	2	3	4
Not at all	Occasionally	Frequently	Nearly all of the time

7. Interactions between the student and teacher were positive:

1	2	3	4
Not at all	Occasionally	Frequently	Nearly all of the time

8. The student received imediate, specific, positive feedback about her or his behavior or academic performance:

1	2	3	4
Not at all	Occasionally	Frequently	Nearly all of the time

9. The general noise level and behavior of other students in the classroom were conducive to group instruction or independent seatwork:

1	2	3	4
Not at all	Occasionally	Frequently	Nearly all of the time

10. The student appeared to be placed in work that was instructionally appropriate:

YES NO

Comments:_____

_____

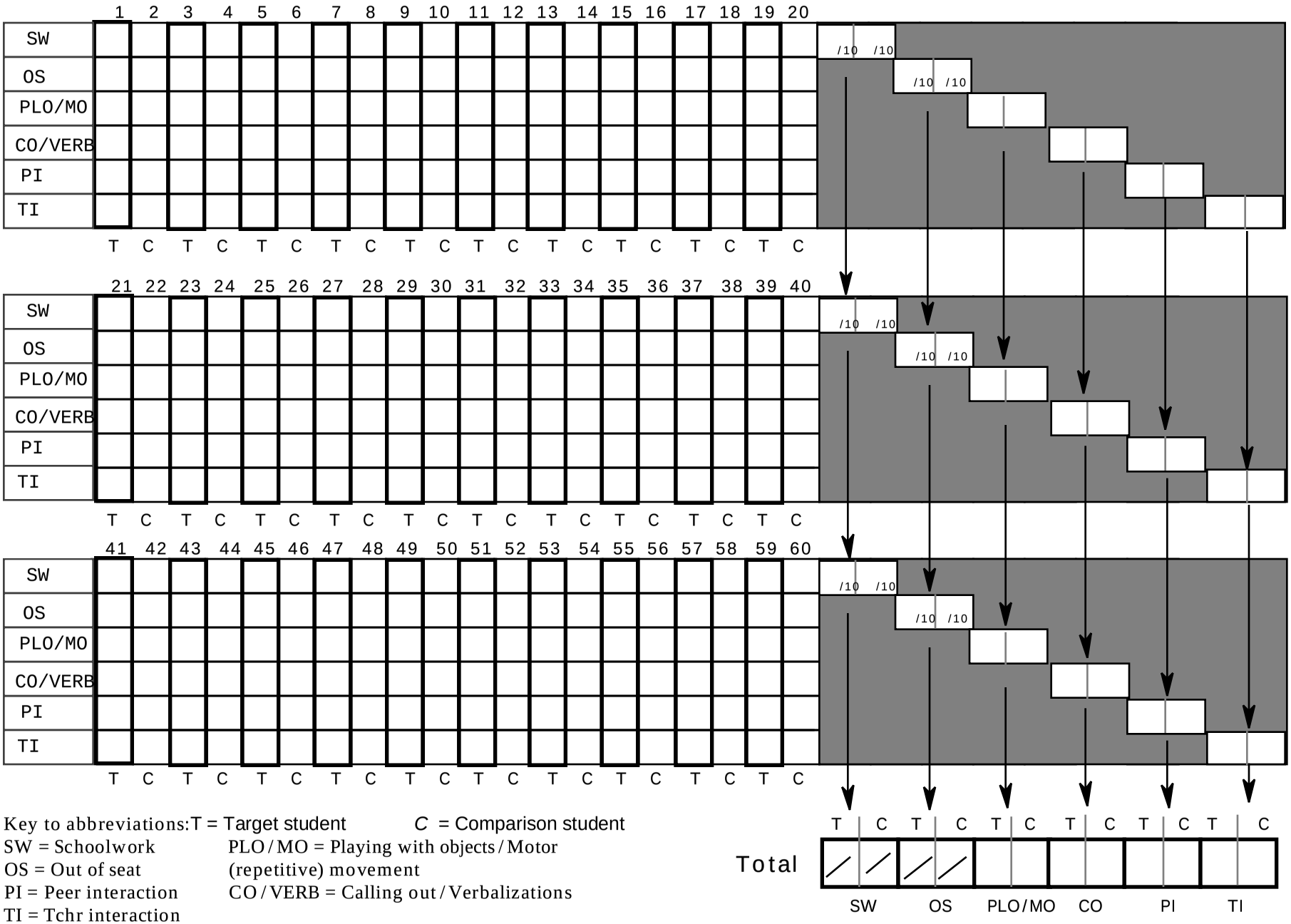
_____

_____

_____

ADOS: Student Name_____ Tchr/Room_____ __ 15 sec intervals __ 30 sec intervals

Date __/__/___ Day of Week _____ Observation time __:___ to__:___



Key to abbreviations: T = Target student C = Comparison student
SW = Schoolwork PLO/MO = Playing with objects/Motor
OS = Out of seat (repetitive) movement
PI = Peer interaction CO/VERB = Calling out/Verbalizations
TI = Tchr interaction

Appendix C: Teacher ADHD Interview

The teacher interview can net a large amount of information about a child's school adjustment, individual strengths, and problem behaviors in a relatively short amount of time. Because of its flexibility and comprehensiveness, an interview with the tacher should be one of the first steps in an evaluation for a suspected attentional disorder. A well-structured teacher interview conducted in the early stages of the evaluation can (1) focus assessment efforts on ADHD or an alternative disorder (such as a learning disability), (2) isolate those classroom times and settings in which the child displays behaviors of concern, (3) provide a normative standard of comparison, contrasting the performance of the child to his or her classmates in the areas of learning-related and general behaviors , and (4) supply information that is useful in planning effective school-based interventions.

The clinician should set aside at least 40 minutes for the teacher interview. The interview is intended to be conducted using a semi-structured format; that is, questions contained in this interview do not have to be asked verbatim but may be expressed in the consultant's own words. The advantage of the semi-structured interview is that it allows the interviewer to bring a standardized set of questions to each interview while maintaining the flexibility to react with specific followup questions to unique information provided by the teacher. Care should be taken to review with the instructor all questions in this interview that might apply to the target student The interview questionnaire contained in this appendix consists of a series of general questions about the child's classroom functioning. The interviewer will probably want to ask particular questions relating to the individual case as well.

ADHD Teacher Interview

Student Name_____ Student Grade_____ Interview Date_____

Teacher _____ Length of time teacher has known student_____

Describe the student's academic perfomrance and present placement in the curriculum (using relevant district criteria) in:

Reading:_____

_____

Math:_____

_____

Written language_____

_____

Content area subjects:_____

_____

Describe any behavioral difficulties that the child may have in the classroom or any other school setting. [Note to interviewer: This question is repeated until no further problem behaviors are given].

When did this behavior first appear?_____

_____

How frequently does the problem behavior occur?_____

_____

In what settings does the behavior typically appear? When is it most severe?_____

_____

What do you think motivates the student to show this behavior?_____

_____

Are there any observable events that allow you to predict that the behavior will occur?_____

_____

What are the typical outcomes or consequences of this behavior?_____

_____

What are some factors that seem to make the behavior worse?_____

_____

What are some strategies that have already been tried to address the problem behavior?____

_____

_____

How successful was each strategy?_____

_____

Please rank those behaviors listed above that concern you, ranked from greatest to least importance:

1._____ 4. _____

2. _____ 5. _____

3. _____ 6. _____

How are this student's social interactions with other students? _____

_____

Where would you rank this student in social skills?

1	2	3
Lowest quarter of the class	Average range of social skills	Highest quarter of the class

Describe the general quality of the student's interactions with you:_____

_____

Please describe any physical symptoms of concern (if any) you have observed in this student (e.g., complaints of stomach pains, excessive sleepiness, low or high attention level, etc.):

_____

_____

What would you consider to be relative strengths for this child?:_____

_____

_____

What are some activities, experiences, or opportunities that this child sees as rewarding or positively reinforcing in school? For each example, please indicate the frequency that the child seeks to engage in the activity / experience:

_____

_____

_____

_____

[Note: Before the conclusion of the interview, the interviewer should have the instructor complete the Child Behavior Disorders Rating Scale]

Additional notes:

_____

_____

_____

_____

_____

_____

_____

_____

Appendix D: Daily ADHD Behavioral Report Card

Monitoring Student Behavior in the Classroom

A school multi-disciplinary ADHD team may have several possible reasons for wanting to collect daily ratings of student behavior in the classroom. For example, the team may wish to measure the variability of student behavior across days, monitor the impact of a teacher intervention on student behavior, or track the effectiveness of psychostimulant medication in improving the child's behavior and/or academic performance. Daily student behavioral measures are typically difficult to obtain using traditional assessment methods. Direct observation of the child, for instance, can prouce behavioral information of high quality but is overly time-intensive for all but the most difficult cases. Daily teacher completion of general behavioral questionnaires (e.g., BASC TRS; Achenbach TRF) is usually not feasible, because of both excessive time demands made upon the instructor and a lack of congruence between many rating scale items and actual classroom behavioral goals.

A report card rating the behaviors of the target student is a solution that can yield useful daily readings of child classroom functioning at an acceptable cost in time and effort by school personnel. Pelham (1993) outlines a procedure for operationalizing teacher concerns about student classroom behaviors, converting those concerns into a customized student behavior rating scale, having the teacher rate the student's behavior on the scale on a daily basis, and charting the resulting ratings as time-series data across days to reveal meaningful trends in behaviors. (The reader is referred to Pelham (1993) for a complete discussion of preparation and use of such a monitoring procedure.)

While a daily rating scale composed of items of specific concern to the teacher has both face validity and social validity and would most likely be useful in setting specific treatment targets, there are potential obstacles to that assessment approach. Teachers may have difficulty isolating and operationalizing individual behaviors of concern, even with the assistance of a skilled consultant. The effort to pin down finely delineated behaviors may be further frustrated if the student's topography, or range, of presenting behaviors varies a great deal in response to such environmental variables as instructional setting, and proximity of children and adults. As one possible result, the teacher may rate a student with suspected ADHD on behaviors previously singled out with the aid of a consultant, only to discover that, while those target behaviors may decrease, the overall degree of inattention or hyperactivity/impulsivity remains unchanged.

While it only partly addresses these measurement concerns, the student Daily Behavior Rating Report Card presented in this section uses a format that is quick to score and attempts to link discrete school-related behaviors associated with attentional disorders to broader dimensions of ADHD. A feature of the standardized behavioral report card is that individual behavioral items can be consolidated into larger "response classes," or broad groupings, made up of behavioral items that covary (Evans, Meyer, Kurkjian & Kishi, 1988). To the degree that discrete behaviors

are symptomatic of ADHD, they are assumed to stem from variables within the child. As outline in DSM-IV (APA, 1994) two major response-classes relating to ADHD, then, are those of inattention and hyperactivity / impulsivity. The six rating items on the behavior rating report card include measures of attention / productivity (items 1 and 2), and hyperactivity / impulsivity (items 3, 4, and 5). Item 6 rates the student's general rate of compliance in the classroom. While non-compliance is not a criterion for ADHD, it is a frequent behavioral correlate of the disorder, particularly in boys (Pelham, 1993). Table 1 presents the items appearing on the ADHD Report Card.

Table 1: Items from the ADHD Daily Behavior Rating Report Card

During the day, this student:

1. Focused attention on school work during academic periods.
2. Finished assigned class work.
3. Remained in seat during academic periods.
4. Avoided calling out or inappropriate verbalizations (e.g., nonsense noises).
5. Avoided repetitive motor behaviors (e.g., table-tapping) or playing with objects.
6. Complied with reasonable adult requests.

The advantage of the standardized ADHD Report Card over a customized rating scale that incorporates only specific teacher concerns about student behaviors is that the ADHD Report Card can track fluctuations at the levels of both dicrete behaviors and more inclusive response classes. To cite a hypothetical case, a child may show a high degee of hyperactivity / impulsivity in the classroom. The teacher institutes an intervention in which the student is positively reinforced for remaining in his seat. After the start of treatment, daily behavior ratings reveal that indeed the student responds to the intervention by remaining seated during the entire academic period. However, the student may also show a corresponding increase in degree of calling out and verbalizations. Put another way, the student may have decreased a single inappropriate behavior but the teacher's impression of overall level of the child's hyperactivity / impulsivity may remain relatively constant because of the greater frequency of student calling out.

Using the Daily Behavior Report Card

The Daily Behavior Report Card can be used for a variety of data-gathering requirements. In all cases, the instructor is given the Report Card and instructed to rate the student's behavior on each dimension on a daily basis. It is recommended that the consultant meet with the instructor initially to explain the Report Card, its function, and the use that will be made of the resulting data. The instructor should

complete the Card at the same time each day, ideally just after students have been dismissed. In classrooms with more than one instructor or adult staff member, the same instructor should complete the form each day, to prevent unwanted variation across raters. Whenever possible, of course, the teacher who has the most contact with the child within the greatest number of settings should be assigned as the rater.

The consultant collects completed ADHD Report Cards periodically and charts teacher ratings. The consultant has the option of charting the data at increasingly fine-grained levels. For example, if a preliminary assessment of the child indicates that she has ADHD, Predominantly Combined Type, the consultant may simply add up all teacher ratings and chart those values on the global chart. However, if a child has been found to be inattentive yet well-behaved, the consultant might select instead to rate the child only on the dimension of inattention. Finally, if a particular behavioral category (e.g., non-compliance) is of particular concern to the teacher, the consultant may choose to chart that behavioral dimension separately in addition to charting summed values of behavioral items.

The ADHD Report Card can be used in any situation in which student behaviors should be monitored on a daily basis. Several potential applications of the Report Card appear below:

ADHD Evaluation

The ADHD Report Card can be used as one of the assessment instruments in the ADHD evaluation. The examiner might look for corroboration between the instructor's observations of student behavior obtained during the teacher interview and the teacher's daily rating of the child's behavior. Teacher behavioral ratings can also be cross-checked against the day of the week and instructional demands placed on the child from day to day to investigate possible situational or instructional variables that may be contributing to student problem behaviors.

The Report Card can also be used to obtain peer norms. The consultant should review the class list for the target student, selecting at random from that list other children of the same sex as the child being evaluated. This list of randomly selected peers is then given to the teacher, along with extra Report Cards. As the teacher rates the target student each day, the instructor will also rate the behaviors of a randomly selected peer, rating a different peer each day. The results for both target and comparison students can be charted to give a normative point of comparison for the teacher's ratings.

Behavioral Interventions

Despite careful assessment, the consultant may not be sure of the degree to which variables relating to the interaction of the target child and his or her instructional environment may contribute to behavioral difficulties that may mimic ADHD. Generally, authorities on the treatment of ADHD recommend the implementation of behavioral and instructional interventions before psychostimulant medications are prescribed. The ADHD Report Card can serve as one measure of the effectiveness of classroom interventions. If the Report Card is to be used to judge the efficacy of a behavioral intervention, at least two weeks of baseline data should first be collected and charted to gauge behavioral levels and

amount of variation in ratings across days prior to intervention. Of course, classroom behavioral interventions are also recommended even when medication is an active part of the child's ADHD treatment plan. The ADHD Daily Behavioral Report Card can provide ongoing monitoring of the identified student's classroom adjustment and performance with little effort required for data collection. (A signature block is included on the Report Card for the parent; teachers may want to send them home for parents to review and sign as part of a school-home behavioral intervention.)

Medication Trials

Children placed on psychostimulant medication such as Ritalin or Dexadrine should be closely monitored to determine the effects of pharmacotherapy on their school behaviors and academic achievement. Research indicates that, when the dosage of ADHD medication is altered, medication changes can differentially affect student behaviors (defined as the display of overt classroom behaviors) and cognitive abilities (capacity to attend and learn) (Swanson, Cantwell, Lerner, McBurnett & Hanna, 1991). Because ADHD Report Card items track both cognitive (inattention) and behavioral (hyperactivity/impulsivity) dimensions, the consultant may be able separately to chart these values during successive trials in which the student receives varied dosages of medication (and perhaps placebo) to judge behavioral and cognitive responses to medication. While sufficient information may be available from the parent to coordinate school behavioral monitoring with reliable recording of daily medication dosages, the consultant should be in contact with the child's physician if a blind trial of psychostimulant medication is intended (Pelham, 1993). As with behavioral interventions, at least two weeks of baseline data should be collected when the effects of ADHD medication are to be monitored.

Limitations of the Instrument

The ADHD Daily Behavioral Report Card incorporates the broad dimensions of inattention and hyperactivity/impulsivity derived from DSM-IV (APA, 1994). The DSM-IV relies upon a rationally derived rating system for the identification of ADHD. Because of its reliance on the DSM-IVdefinition of attentional disorders, the ADHD Report Card can also be viewed as a rating scale that relies upon a clinical consensus, rather than empirically demonstrated evidence, about what behaviors are considered indicators of ADHD in the classroom. No research studies have yet been undertaken to determine the reliability of the ADHD Report Card in diagnosing the presence of attentional disorders or the sensitivity of the instrument in detecting behaviors thought to be symptomatic of ADHD. (The reader seeking a daily rating instrument with demonstrated psychometric qualities is advised to consider the Iowa Connors Teacher's Rating Scale (Loney & Milich, 1982).) Furthermore, the Report Card relies upon teacher report as its source of information, raising the additional question of whether teachers are reliable sources of information to be used in the identification of ADHD.

Despite potential limitations of the ADHD Report Card, several factors appear to support its use in diagnosis and classroom monitoring of ADHD. Research on

the use of direct observation systems ADHD studies has shown that a number of items appearing on the Report Card (e.g., attention to schoolwork, calling out, excessive motor activity) are positively correlated with the ADHD diagnosis (Platzman et al., 1992). Items on the Report Card also closely approximate items on general behavior scales that have been demonstrated through statistical analysis to be linked to the behavioral constructs of inattention and hyperactivity / impulsivity. Teachers have also been recognized as reliable informants in educational assessment for many years, both in face-to-face interviews with consultants and when responding to general behavior rating scales. In fact, some (e.g., Witt, 1990) have argued that teacher "complaints" about student behavior are some of the most meaningful data that consultants can collect, as teacher attitude toward a target student can greatly influence case outcome. A daily behavior measure, then, that tracks student behavior as interpreted by the instructor may yield some of the most salient information available about the student's adjustment to the classroom and instructor.

Person Completing **Daily Behavior Rating Report Card**::_____

Student Name:_____ Date:_____ M T W Th F (Circle)

During the day, this student:	Seldom / Never		Sometimes		Most / All of Time
1. Focused attention on school work during academic periods.	0	1	2	3	4
2. Finished assigned class work.	0	1	2	3	4
3. Remained in seat during academic periods.	0	1	2	3	4
4. Avoided calling out or inappropriate verbalizations (e.g., nonsense noises).	0	1	2	3	4
5. Avoided repetitive motor behaviors (e.g., table-tapping) or playing with objects.	0	1	2	3	4
6. Complied with reasonable adult requests.	0	1	2	3	4

Comments:_____

_____

Signature of Parent / Guardian_____Date_____

Person Completing **Daily Behavior Rating Report Card**:_____

Student Name:_____ Date:_____ M T W Th F (Circle)

During the day, this student:	Seldom / Never		Sometimes		Most / All of Time
1. Focused attention on school work during academic periods.	0	1	2	3	4
2. Finished assigned class work.	0	1	2	3	4
3. Remained in seat during academic periods.	0	1	2	3	4
4. Avoided calling out or inappropriate verbalizations (e.g., nonsense noises).	0	1	2	3	4
5. Avoided repetitive motor behaviors (e.g., table-tapping) or playing with objects.	0	1	2	3	4
6. Complied with reasonable adult requests.	0	1	2	3	4

Comments:_____

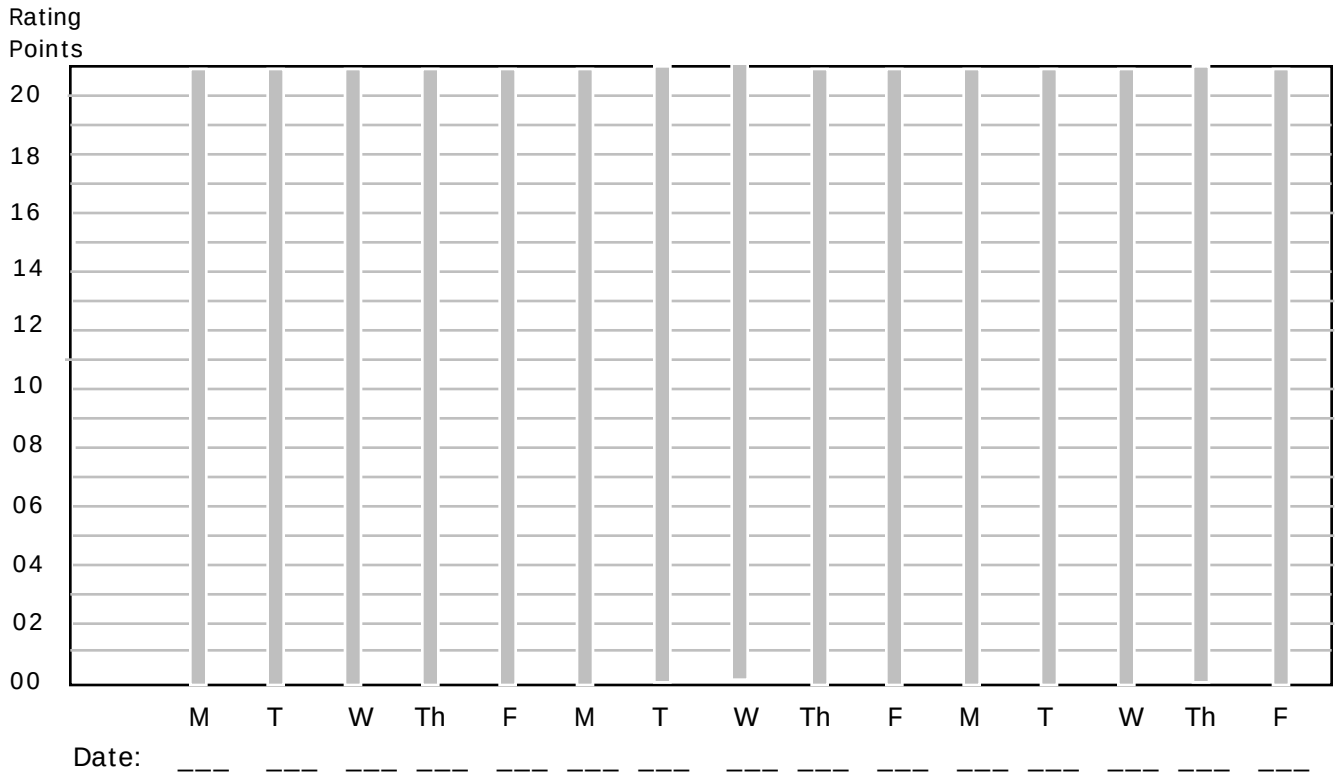
_____

Signature of Parent / Guardian_____Date_____

ADHD Teacher Daily Behavioral Report Card Charts

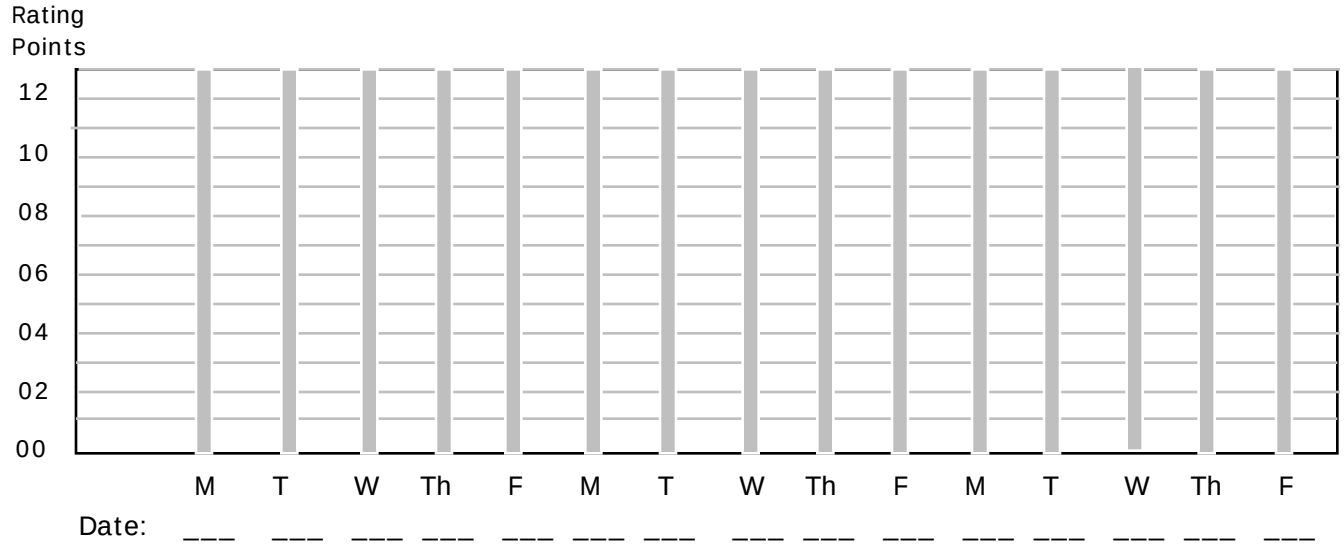
Inattention-Hyperactivity/Impulsivity (Items 1-5)

If the child being evaluated has low teacher ratings on both item-groups 1-2 and 3-5, sum instructor ratings for each day and chart below. Record the date for each observation.



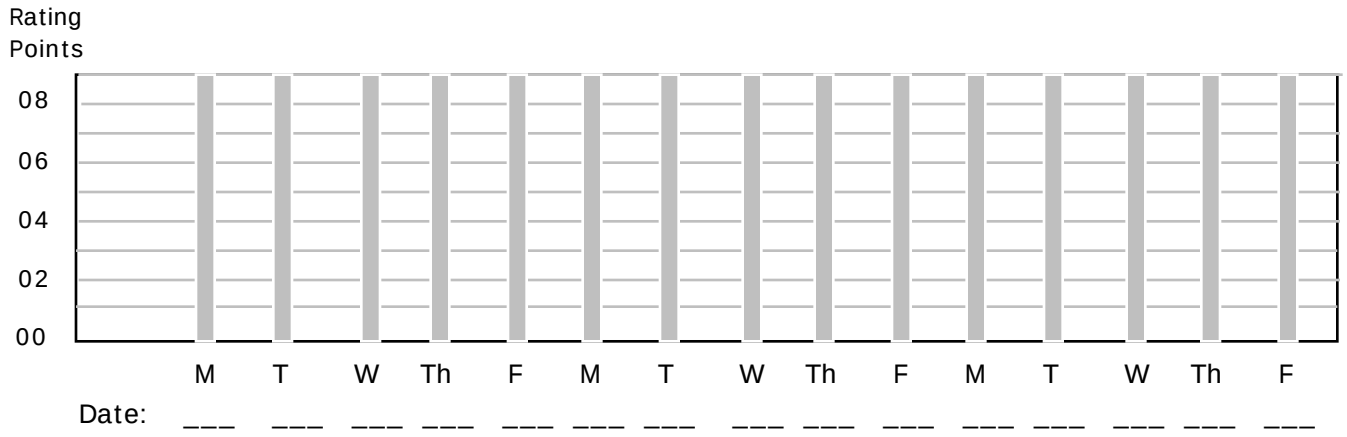
Hyperactivity/Impulsivity (Items 3,4, & 5)

To display an ongoing measure of the child's activity level, sum the values for items 3-5 and chart below.



Inattention (Items 1 & 2)

Combining teacher ratings for items 1and 2 will yield a teacher estimate of student attention and work completion.

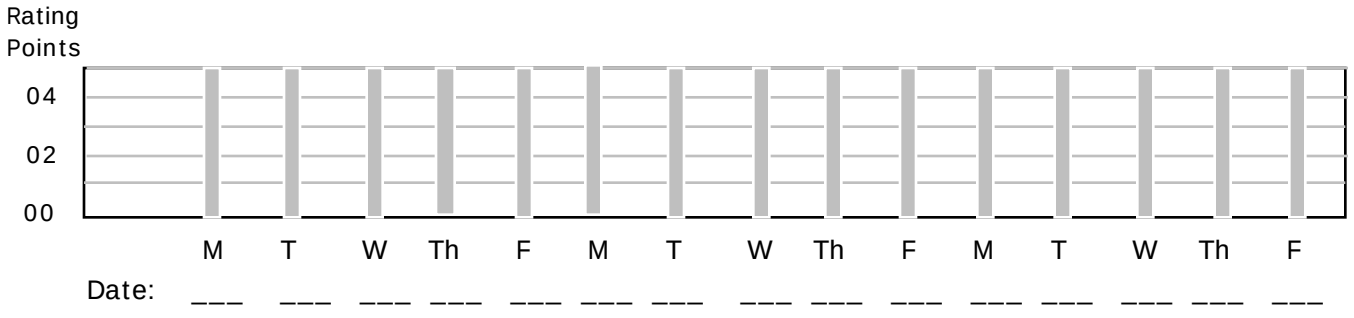


Single Behavioral Item (Any one of items 1-6)

If the student shows particular difficulties on any one behavioral item (e.g., non-compliance) the consultant may wish to chart teacher ratings for that item separately.

__ On-Task (Item 1) __ Work Completion (Item 2) __ Remained seated (Item 3)

__ Calling out (Item 4) __ Repetitive/motor (Item 5 __ Compliance (Item 6)



Appendix E: Decision Rules for Diagnosing Other Health Impairment/Attention-Deficit Hyperactivity Disorder

The following expanded definition of OHI/ADHD, with diagnostic decision rules, was adopted in March 1995 by the Syracuse (NY) City School District ADHD Committee as representing best school-based diagnostic practices:

OHI/ADHD: Decision Rules for Identification

Attention Deficit Hyperactivity Disorder is a childhood disorder presumed to be neurologically based and marked by developmentally inappropriate levels of inattention, hyperactivity, and impulsivity. ADHD may have a variable effect on the education of children or youths with the disorder. This impact may range from minor and relatively unnoticed to quite profound, requiring programming beyond that normally delivered in a regular education setting. In the most extreme cases of the disorder, a student with ADHD may be evaluated by a school-based multi-disciplinary team and designated Other Health Impaired/ADHD under Part 200 of the NYS Regulations of the Commissioner of Education.

In order for a child or youth to be designated OHI/ADHD, the student must (a) be formally diagnosed as having ADHD through a comprehensive **medical and school-based** assessment procedure; (b) display evidence of a significant deficit in at least one academic area; (c) not more appropriately meet the diagnostic criteria for a learning disability, emotional disturbance, or other alternative disability; and (d) have failed to respond to appropriate behavioral and/or academic interventions attempted in the regular-education classroom.

Evidence of Academic Deficit(s) As with any impairment, the detrimental educational impact of ADHD must be clearly demonstrated before the disorder can be considered an educational disability. If formal cognitive and academic achievement measures are administered, a student must demonstrate at least a significant discrepancy between intellectual potential and academic achievement in basic- or content-area skills as a criterion of OHI/ADHD. Alternative measures of academic deficit can include (but are not limited to:

- significant discrepancies between group achievement or content tests (e.g., Degrees of Reading Power; New York State Regents Competency Tests) and intellectual potential;
- chronic failing or near-failing grades across multiple school years in spite of evidence of adequate achievement in basic skill areas.

Rule-outs of Alternative Learning Disorders. Children and youth with ADHD are at greater risk than their non-identified peers of having coexisting learning-related disorders, such as learning disabilities or emotional disturbance. Furthermore, it is sometimes difficult to distinguish the behavioral symptoms of ADHD from other childhood disorders

without careful assessment. For example, ADHD may resemble some forms of emotional disturbance, except that inappropriate classroom behavior of students with ADHD can be explained by an underlying health condition (i.e., ADHD). It is the responsibility of the examiner to specifically rule out alternative disorders for which the student may be eligible for special education. If an alternative disability is diagnosed, either alone or in combination with ADHD, the alternative disability is usually determined to be the primary handicap.

Medical and School-based Diagnosis of ADHD. The ADHD diagnosis is based upon current commonly accepted diagnostic criteria as outlined in DSM-IV. While diagnoses by professionals in private practice (e.g., physicians, clinical psychologists) may be accepted as evidence of the disorder, no ADHD evaluation will be considered complete until a school-based multidisciplinary team has completed a comprehensive evaluation to corroborate the outside diagnosis and to determine the degree to which the disorder impacts the child's education. An acceptable school-based ADHD evaluation makes use of multiple methods of assessment, incorporating information from several sources and across multiple settings. The diagnosis of ADHD is necessary, but not sufficient, in attaining the designation of OHI/ADHD.

Documentation of General-Education Interventions. Symptoms associated with ADHD, including inattention, hyperactivity, and impulsivity, fall along a continuum of severity. The response of a child with ADHD to a well-implemented general-education intervention cannot be predicted before the fact. Therefore, before a child can be designated OHI/ADHD, appropriate interventions must be implemented, documented, and monitored in the regular classroom. The major school-based treatments available include academic and behavioral interventions. If the student fails to make expected progress despite these interventions, the Committee on Special Education may infer that ADHD as an underlying disorder is contributing to the student's resistance to intervention. In such cases, special education services may be indicated.

In summary, students who are candidates for the designation OHI/ADHD are those who:

- demonstrate significant academic deficit(s);
- do not show evidence of alternative educational disabilities;
- have been diagnosed with ADHD through a comprehensive assessment process; and
- have proven resistant to the range of interventions typically available in general education.

Committee on Special Education OHI/ADHD Checklist

Student Name_____

The following document is intended to be used by the Committee on Special Education as a brief "checklist" of the elements that should be addressed in the school-based ADHD evaluation. Please note that the full evaluation represented below is mandated only when the evaluator has diagnosed a student as Other Health Impaired / ADHD. (For a more complete treatment of the school-based ADHD evaluation, please review *ADHD: A School-Based Evaluation Manual*.)

Part I: ADHD Battery: Evaluation Instruments and Sources

☐ Behavior Rating Scales. At least one (1) general behavior rating scale (e.g., BASC, Achenbach CBCL) and one (1) ADHD rating scale (e.g., ACTeRS) should be administered to both the teacher(s) and the parent(s). The purpose is to establish the presence of inattention and / or hyperactivity across settings.

☐ Interviews. Interviews relating to ADHD symptomatology should be completed with both the teacher(s) and parent(s) of the student under evaluation. The purpose is to establish the presence of inattention and / or hyperactivity across settings and to meet other key criteria for the ADHD diagnosis as outlined in DSM-IV. Interviews also document past efforts to address the student's behavioral or academic needs in the general education setting.

☐ Direct Observation. Two or more observations of the student should be completed in the classroom, ideally during study or instructional periods. Some form of a structured observational system should be used (e.g., SECOS, A-DOS). Data should be collected on both target student and peer behaviors to provide a normative standard of comparison.

☐ Cognitive and Achievement Testing. Measures of cognitive potential (e.g., WISC-III, Stanford-Binet, 4th Edition) and academic achievement (e.g, KTEA, Woodcock-Johnson Tests of Achievement) should be administered. Results of these tests are required to rule out alternative explanations for the student's attentional or behavioral problems, including mental retardation and learning disabilities.

Part II: Rationale for OHI / ADHD Diagnosis

The report should present a coherent rationale to support a diagnosis of OHI / ADHD; it should also explicitly rule out alternative educational disorders and environmental explanations for the student's observed behavioral and / or academic difficulties.

☐ Demonstration of Significant Academic Deficits. The evaluator must demonstrate that the student shows evidence of significant academic deficits relative to his or her potential. This evidence may take several forms, including a significant discrepancy between student cognitive potential and academic achievement on formal testing or a pattern of chronic failing or near-failing across multiple school years in spite of evidence of adequate mastery of basic skills.

☐ Documentation of General Education Interventions. Information should be presented about interventions attempted in the general education setting prior to the evaluation to address attentional and / or behavioral concerns. Specific data must be included about (1) the type of intervention(s) tried, (2) length of time implemented, and (3) student response to the treatment.

☐ Rule-out of Alternative Disabilities. Using Part 200 of the NYS educational regulations as a guideline, the evaluator should explicitly rule out alternative disorders (e.g., learning disabilities) that might account for the observed symptoms.

☐ Medical and School-Based Diagnosis of ADHD. In addition to a diagnosis of ADHD from a school-based evaluation team, the student must also have been diagnosed with ADHD by a physician. Note: A prescription for psychostimulant medication (e.g., Ritalin) is not considered a medical diagnosis for ADHD in the absence of additional medical documentation.