

## CHAPTER 2



# Assessment of ADHD in School Settings



Multiple assessment techniques typically are employed across home and school settings in the comprehensive evaluation of children who may have ADHD (American Academy of Pediatrics, 2000; Barkley, 1998; National Institutes of Health, 1998). Although the diagnostic criteria for this disorder have been developed and published primarily by physicians (i.e., American Psychiatric Association, 2000), school professionals must be knowledgeable regarding appropriate evaluation procedures for a number of reasons. First, problems with attention and behavioral control are two of the most common reasons for referral to school and clinical child psychologists. Thus, school psychologists must be in a position to conduct an assessment of ADHD themselves, or, at least, to be cognizant of community-based professionals who could provide an appropriate evaluation. Second, school psychologists have direct access to sources of information and data (e.g., teachers, observations of child behavior in natural settings) crucial to the differential diagnosis of ADHD. Third, ADHD is prevalent among certain populations (e.g., children with learning disabilities) frequently served by school psychologists (Barkley, 1998). Finally, children with ADHD may be eligible for special education services under the “other health impairment” category of the 1997 federal Individuals with Disabilities Education Act (see Hakola, 1992). Thus, school psychologists will be called upon to help determine

whether referred children are eligible for such services under this category.

The purpose of the present chapter is to describe a school-based assessment approach in the evaluation of ADHD that incorporates those techniques having the greatest empirical support in the literature.<sup>1</sup> Proper use of this evaluation methodology assumes that the professional conducting the assessment will have received appropriate training in the use of the DSM-IV (American Psychiatric Association, 1994) classification system as well as in clinical assessment techniques. First, the DSM-IV criteria for ADHD is reviewed in the context of a school-based assessment paradigm and its limitations for this purpose are delineated. Second, a behavioral assessment approach to the evaluation of ADHD is described, one that incorporates multiple sources of data collected across school and home settings. Finally, the specific steps of the assessment process are detailed in the context of an educational decision-making paradigm based on the model proposed by Salvia and Ysseldyke (1998). The stages of the ADHD evaluation described include screening, multi-method assessment, interpretation of obtained results to reach a diagnostic decision, development of a treatment plan based on assessment data, and ongoing evaluation of the success of the intervention program.

### THE USE OF DIAGNOSTIC CRITERIA IN THE SCHOOL-BASED ASSESSMENT OF ADHD

#### Current Definition of ADHD

ADHD has been defined and conceptualized in a variety of ways over the past several decades, thus leading to confusion among professionals regarding proper diagnosis and evaluation procedures (Barkley, 1998). More recently, there is an emerging consensus that ADHD is characterized by the display of developmentally inappropriate frequencies of inattention and/or hyperactivity-impulsivity (American Psychiatric Association, 2000). These two dimensions of behaviors lead to impairment in functioning wherein the child with ADHD demonstrates difficulties with delaying responding to the environment, developing self-control, and maintaining consistent work performance over the course of time (American Psychiatric Association, 2000; Barkley, 1998).

The behaviors, or “symptoms,” comprising ADHD according to DSM-IV criteria (American Psychiatric Association, 2000) are listed in

---

<sup>1</sup>For a demonstration of the use of our assessment model, readers should consult the video, *Assessing ADHD in the Schools* (DuPaul & Stoner, 1999a).

Table 2.1. To be considered symptoms of ADHD, the behaviors must have been initially exhibited early in childhood (i.e., prior to age 7) and must be chronically displayed across two or more settings (American Psychiatric Association, 2000). A child must be reported to exhibit at least six of the nine inattention symptoms and/or at least six of the nine hyperactive–impulsive behaviors. The ADHD diagnosis is usually determined by establishing the developmental deviance and pervasiveness of symptoms. At the same time, it is equally important to rule out alterna-

**TABLE 2.1. DSM-IV Symptoms of Attention-Deficit/Hyperactivity Disorder**

Inattention symptoms

- (1) six (or more) of the following symptoms of **inattention** have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:
- (a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
  - (b) often has difficulty sustaining attention in tasks or play activities
  - (c) often does not seem to listen when spoken to directly
  - (d) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)
  - (e) often has difficulty organizing tasks and activities
  - (f) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
  - (g) often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)
  - (h) is often easily distracted by extraneous stimuli
  - (i) is often forgetful in daily activities

Hyperactivity–impulsivity symptoms

- (2) six (or more) of the following symptoms of **hyperactivity–impulsivity** have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:
- (a) often fidgets with hands or feet or squirms in seat
  - (b) often leaves seat in classroom or in other situations in which remaining seated is expected
  - (c) often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
  - (d) often has difficulty playing or engaging in leisure activities quietly
  - (e) is often “on the go” or often acts as if “driven by a motor”
  - (f) often talks excessively
  - (g) often blurts out answers to questions before the questions have been completed
  - (h) often has difficulty awaiting turn
  - (i) often interrupts or intrudes on others (e.g., butts into conversations or games)

*Note.* From American Psychiatric Association (1994). Copyright 1994 by the American Psychiatric Association. Reprinted by permission.

tive causes for the child's inattention, impulsivity, and motor restlessness. These may include poor academic instruction and management practices; gross neurological, sensory, motor, or language impairment; mental retardation; or severe emotional disturbance (Barkley, 1998).

There are three subtypes of ADHD. The combined type describes children who exhibit at least six inattention and at least six hyperactive-impulsive symptoms. This is the "classic" variant of ADHD that has been studied widely in the literature and is the most problematic subtype. ADHD predominantly inattentive type (previous terms have included "undifferentiated attention deficit disorder" and "attention deficit disorder without hyperactivity") is diagnosed in those children exhibiting at least six of the nine inattention symptoms and *no more than* five of the hyperactive-impulsive behaviors. Finally, ADHD predominantly hyperactive-impulsive type is diagnosed for those children who display at least six of the nine hyperactive-impulsive symptoms but less than six inattention symptoms. Very little is known about this subtype other than that it may be more prevalent among young children who appear to be at risk for later development of the combined type (Lahey et al., 1994). Furthermore, young children under age 6 may not have had sufficient opportunity to display inattentive symptoms, and therefore may fall into the hyperactive-impulsive group.

### Advantages of the DSM Approach

Although the diagnostic criteria for ADHD have been developed in the context of a medical model for child behavior problems, there are several reasons why these criteria are useful in educational settings. First, the symptom list describes a set of problem behaviors that reliably covary in some children. The diagnosis (i.e., constellation of covarying behaviors) can be used to predict the relative success of possible interventions, to predict the risk for concurrent or future behavioral difficulties, and to suggest possible controlling variables (Barlow, 1981). Second, the use of DSM criteria structures the assessment in a standardized fashion, thus potentially increasing interprofessional agreement regarding diagnostic status. Third, such criteria guide the selection of competing hypotheses (i.e., other disorders or problems) that could potentially account for apparent symptoms of ADHD. Conclusions based on differential diagnosis may increase the chances of planning a successful intervention program in the classroom. For instance, if a child's attention problems were related to an anxiety disorder as opposed to ADHD, initial treatment strategies would be quite different.

Fourth, another advantage of the use of DSM criteria in the assess-

ment protocol is that discussions of these symptom lists may indicate which problem behaviors should serve as targets for intervention. For example, those symptoms that are most frequently endorsed or are deemed most important by parents and teachers might become the initial focus of treatment. Fifth, incorporating agreed-upon diagnostic criteria into the evaluation (i.e., using a common language) will ultimately enhance communication with other mental health (e.g., clinical child psychologists) or medical professionals regarding the child's psychological status, thus fostering a team approach to treatment.

### **Limitations of the DSM Approach**

Although DSM criteria are important components of the evaluation process, several limitations of this approach must be considered. First, the criteria for ADHD were developed in the context of a medical model, thus implying that the location of the "problem" is within the child. The characterization of the child as having a disorder could diminish attempts to assess environmental variables that may play a role in causing or maintaining the problem behaviors. Second, the use of a psychiatric classification system promotes a search for pathology that could, under certain conditions, result in overidentification of children with behavior disorders (i.e., identification of "false positives"). These circumstances suggest the need for a multimethod assessment approach wherein objective measures (e.g., behavioral observations) supplement the use of more subjective assessment techniques, such as a diagnostic interview (Achenbach & McConaughy, 1996). Third, the use of a psychiatric classification system and the resulting receipt of a diagnostic label may compromise a child's self-esteem if others come to view him or her as "disordered." Although frequently a topic of professional discussion, the possible iatrogenic effects of being diagnosed with ADHD have not been empirically investigated to date. A fourth important limitation of the DSM approach is that the psychometric properties (e.g., reliability, validity) of the various diagnostic criteria are not well established (Gresham & Gansle, 1992).

A number of skills are necessary to ensure the proper use of the DSM classification paradigm (adapted from Barlow, 1981). First, the school psychologist should have enough familiarity with child psychopathology to know which problem behaviors typically covary (e.g., inattention, impulsivity, and overactivity). Second, a working knowledge of current DSM criteria for most childhood disorders, not just ADHD, is necessary. This requires not only familiarity with symptom lists, but also criteria with respect to age of onset and minimum duration of problem

behaviors. Finally, the psychologist must have had training in the use of a comprehensive assessment protocol to determine which symptoms are present in a specific student's repertoire.

ADHD is best viewed as a result of a "poor fit" between the biological endowment and characteristics of the child and the environment, such as the structure and prevailing contingencies in the classroom. In this context, diagnostic criteria provide suggestions about problem behavior covariation, controlling variables, and effective interventions based on what is known about ADHD in general (Barlow, 1981). Therefore, discussions of DSM criteria are supplemented with multiple assessment methods conducted across settings to determine the specific problem behaviors, controlling variables, and possible intervention strategies that are applicable for an individual student. The diagnosis of ADHD is but one step in the process of designing and evaluating interventions to promote greater classroom success.

## OVERVIEW OF ASSESSMENT METHODS

Typically, a behavioral assessment approach is employed in the evaluation of ADHD wherein multiple methods of data collection are utilized across informants and settings (see Anastopoulos & Shelton, 2001; Barkley, 1998). In particular, emphasis is placed upon obtaining reliable information regarding a child's behavior from parents and teachers as well as from firsthand observations of student performance. Therefore, the major components of the evaluation include interviews with the child's parent(s) and teacher(s), questionnaires completed by parents and teachers, and observations of child behavior across multiple settings and under varied task conditions. Although many of these same procedures are used when evaluating adolescents, some modifications (e.g., inclusion of self-report measures) are necessary to maintain the reliability and validity of the assessment data (see "Developmental Considerations" section, below).

Each evaluation technique will be discussed in detail in the context of the stages of the assessment process in the next section. Interviews with the parent(s), teacher(s), and child are conducted to determine the presence or absence of various DSM symptoms as well as to identify historical and/or current factors possibly serving to maintain identified problem behaviors. Behavior rating scales completed by the student's parent(s) and teacher(s) provide data that establish the severity of ADHD-related behaviors relative to a normative sample. To supplement parent and teacher report, several direct measures of student behavior are used. The child's behavior is observed across settings (e.g., classroom

and playground) on several occasions to establish the frequency and/or duration of various target behaviors. Behavioral frequencies are usually compared to those displayed by several of the student's classmates to determine the deviance of the referred child's behavior. Finally, the products of the child's behavior (e.g., academic productivity and accuracy, quality of desk organization) can be collected and/or examined. Although each of these techniques is limited in some manner, when used in a multimodal assessment package a system of "checks and balances" develops such that the drawbacks of any single measure are balanced by data obtained through other means (Anastopoulos & Shelton, 2001; Barkley, 1998).

Several assessment techniques typically employed by school psychologists have limited utility in the diagnostic evaluation of ADHD. Typically, the results of cognitive, neuropsychological, and educational tests are not helpful in determining whether a child has ADHD or not. To date, no individually administered test or group of tests has demonstrated an acceptable degree of ecological validity to be helpful in the diagnostic process (Barkley, 1991). For example, the test most frequently employed by school psychologists (i.e., Wechsler Intelligence Scale for Children-III [WISC-III]) has not been found to reliably discriminate children with ADHD from normal children or students with learning disabilities (Barkley, DuPaul, & McMurray, 1990). More importantly, scores on the Freedom from Distractibility factor (i.e., Arithmetic, Digit Span, and Coding subtests) of the WISC-III are not reliable diagnostic indicators of ADHD (Anastopoulos, Spisto, & Maher, 1994). Poor performance on this factor may be due to a variety of possible causes, including performance anxiety. Furthermore, children with ADHD often display appropriate levels of attention and behavioral control under task conditions that are highly structured and involve one-to-one interaction with a novel adult, as is typically found in most testing situations (Barkley, 1998). Thus, although individually administered tests may be helpful in determining the child's intellectual and educational status, they are not necessary components of the diagnostic evaluation of ADHD.

Standardized measures of sustained attention and impulse control have been incorporated routinely into the diagnostic evaluation of ADHD (Anastopoulos & Shelton, 2001; Barkley, 1998). Purportedly, these tests provide objective data that are less influenced by factors (e.g., parental psychopathology) that may bias parent and teacher reports (Gordon, 1986). One of the more popular standardized measures is the Continuous Performance Test (CPT; Rosvold, Mirsky, Sarason, Bransome, & Beck, 1956) and its variants, including the Gordon Vigilance Task (Gordon, 1983) and the Conners Continuous Performance Test (Conners, 1995).



Although scores on CPTs appear to discriminate between children with ADHD and their normal counterparts at a *group* level, the utility of these measures in assessing *individual* children is limited by several factors. First, several investigations have failed to obtain significant correlations between criterion measures (e.g., teacher ratings) and scores on various CPTs (Halperin, Sharma, Greenblatt, & Schwartz, 1991; Lovejoy & Rasmussen, 1990). Second, when the effects of age, sex, and receptive vocabulary skills are partialled-out, scores on these measures have failed to discriminate among children with ADHD, children with conduct disorder, children with anxiety disorder, and their normal peers (Werry, Elkind, & Reeves, 1987). Even when significant correlations are obtained between CPT scores and criterion measures, these typically are of low magnitude (i.e., between absolute values of .21 to .50), suggesting that the results of clinic-based tasks account for minimal variance of criterion indices (Barkley, 1991). Furthermore, CPT scores, either alone or in combination, have been found to result in classification decisions that are frequently discrepant with a diagnosis of ADHD based on parent interview and behavior rating scale data (DuPaul, Anastopoulos, Shelton, Guevremont, & Metevia, 1992). Finally, even when clinically significant scores are obtained on CPTs, the degree to which these scores are specific to ADHD and aid in differential diagnosis is questionable (e.g., McGee, Clark, & Symons, 2000). Therefore, the most prudent conclusion, at present, is that the use of laboratory-based instruments in the evaluation of ADHD is limited by rather suspect ecological validity (Anastopoulos & Shelton, 2001; Rapport, Chung, Shore, Denney, & Isaacs, 2000).

Measures that typically are used by school psychologists to assess a student's emotional functioning are not useful in evaluating whether a child has ADHD. Projective techniques, such as the Thematic Apperception Test (Murray, 1943) or the Kinetic Family Drawing (Hammer, 1975), are based on a theoretical assumption that problem behaviors are caused by underlying emotional difficulties. This assumption has no empirical support, at least in relation to the behaviors comprising ADHD. Furthermore, projective tests have been criticized for their questionable levels of reliability and validity (Gregory, 1996)

Self-report questionnaires completed by children and adolescents have become increasingly popular in recent years (e.g., Conners et al., 1997). A number of psychometrically sound self-report checklists are available, including the Youth Self-Report (Achenbach, 1991a), the Youth Inventory-4 (Gadow et al., 2002), and the Conners-Wells Adolescent Self-Report of Symptoms (Conners et al., 1997). Although there have been long-standing concerns that children with disruptive behavior disorders are typically poor reporters of their own behavior (Landau,



Milich, & Widiger, 1991), growing evidence suggests adolescents with behavior disorders may be able to provide information that may aid in both diagnostic (Conners et al., 1997) and treatment (Smith, Pelham, Gnagy, Molina, & Evans, 2000) decisions. Also, self-report data are important to collect when evaluating adolescents who may be diagnosed with ADHD to allow assessment of covert areas of functioning (e.g., depressive symptoms) and to engender student cooperation with the evaluation and treatment process (see “Developmental Considerations” section, below).

### STAGES OF ASSESSMENT OF ADHD

Following a teacher referral for attention and behavior control difficulties, the school-based evaluation of ADHD is conducted in five stages (DuPaul, 1992; see Figure 2.1). These stages are based on the educational decision-making model proposed by Salvia and Ysseldyke (1998). First, teacher ratings are obtained and a brief interview is conducted with the teacher to screen for the severity and frequency of possible ADHD symptoms. Second, if the findings of this screening are significant, then multiple assessment methods are used across sources and settings to document the child’s functioning across a number of areas. Third, the evaluation results are interpreted such that classification and diagnostic decisions can be made. Fourth, a treatment plan is developed based on the obtained assessment data. Fifth, the child’s school behavior and academic performance are assessed on an ongoing basis to determine the success of and the need for changes in the intervention program.

These stages of assessment are discussed in detail below. Initially, for each phase of the assessment, a series of questions to be addressed are identified, based in part on guidelines for behavioral assessment provided by Barrios and Hartmann (1986). Next, the process of assessment during each stage of the evaluation is delineated. Finally, the manner in which specific techniques are used to answer the assessment questions at each phase of the evaluation is reviewed.

#### **Stage I: Screening**

##### *Questions to Be Addressed*

The screening process is designed to answer the following questions:

1. Does this student have a problem related to possible ADHD?
2. Is further assessment of ADHD required?

## ADHD IN THE SCHOOLS

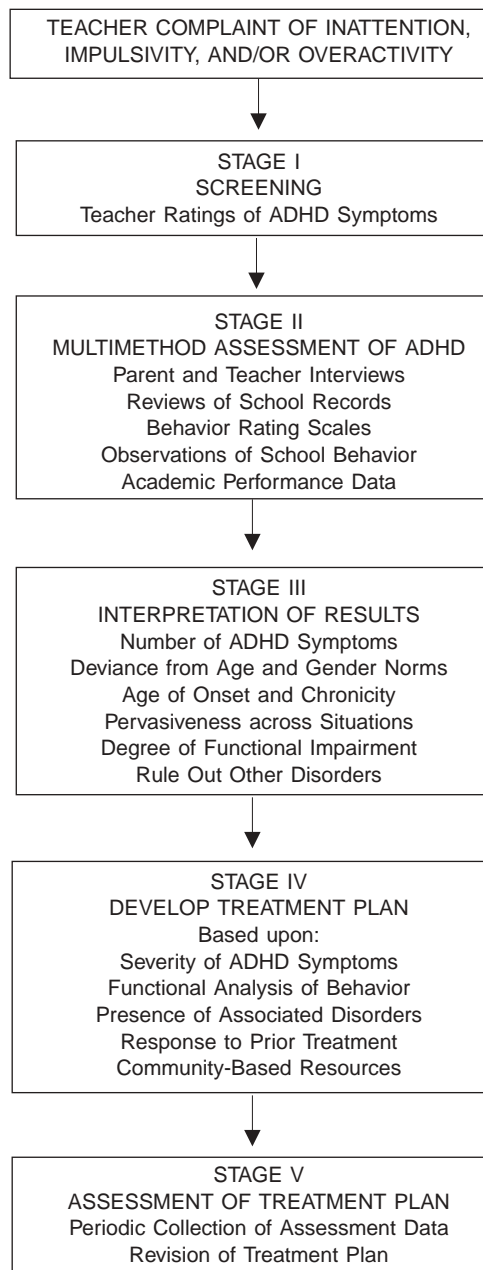


FIGURE 2.1. Five stages of the school-based assessment of attention-deficit/hyperactivity disorder.

### *Screening Process*

Screening for possible ADHD should be conducted whenever a teacher seeks assistance due to a student's difficulties paying attention during instruction, inconsistent completion of independent tasks, inability to remain seated at appropriate times, or display of impulsive disruptive behavior. A brief interview with the teacher is conducted to specify the behavioral concerns and to identify environmental factors that may be eliciting and/or maintaining the child's problem behaviors. Teacher ratings of the frequency of ADHD symptoms are then obtained.

### *Screening Techniques*

The initial interview with the teacher should address the frequency, intensity, and/or duration of specific problem behaviors. The role of various environmental factors (e.g., task parameters, method of instruction, behaviors of classmates) also should be explored to establish antecedent and consequent events for the problem behaviors. To establish whether the problem behaviors may be related to ADHD, both the presence or absence of the 18 DSM-IV symptoms of this disorder should be determined, as should the chronicity of the apparent ADHD-related behaviors. If six or more inattention symptoms and/or six or more hyperactive-impulsive symptoms are reported to occur frequently, then further assessment of ADHD is warranted. Even if fewer than six symptoms in each dimension are reported, further assessment of ADHD may be warranted, especially for students at the secondary level.

The most efficient screening method is for the teacher to complete the ADHD Rating Scale-IV (DuPaul, Power, Anastopoulos, & Reid, 1998) regarding the child's typical behavior over the course of the school year. The teacher indicates on a 4-point Likert scale the frequency of the 18 behavioral symptoms of ADHD directly adapted from the DSM-IV (American Psychiatric Association, 1994). As with the teacher interview, if six or more of the items in either the inattention or hyperactivity-impulsivity domains are rated as occurring "pretty much" or "very much" of the time, then further assessment of possible ADHD is warranted. If a lesser number of items is endorsed in this frequency range, this does not rule out further assessment of ADHD but does necessitate strong consideration of other explanations (e.g., learning disabilities) for teacher concerns.

## **Stage II: Multimethod Assessment of ADHD**

### *Questions to Be Addressed*

Data from multiple assessment techniques are gathered to answer the following questions:

1. What is the extent and nature of the ADHD-related problems?
2. What environmental factors maintain these problems?
3. What are the frequency, duration, and/or intensity of the problem behaviors?
4. In what settings do the ADHD-related behaviors occur and for how long have these been exhibited?

### *Assessment Process*

If the initial screening results are indicative of possible ADHD, then a more comprehensive evaluation of the child's overall functioning is warranted. Initially, the child's parent(s) and teacher(s) are interviewed to specify problem behaviors, to identify possible antecedent and consequent events for these behaviors, and to explore the causal role of various historical variables. A review of archival data (e.g., school records) is completed to provide additional historical data. Thus, the initial phase of the evaluation process is designed to identify specific problem behaviors, environmental factors, and historical variables that require further assessment.

The student's parent(s) and teacher(s) complete several questionnaires to provide more specific data regarding the frequency and/or severity of problem behaviors. These ratings help to establish the developmental deviance of ADHD-related behaviors relative to normative data, as well as to identify whether such behaviors are evident across settings and caretakers. The specific questionnaires utilized will vary as a function of the target behaviors to be assessed and the age of the child, as discussed below.

The final phase of the formal evaluation of ADHD is comprised of direct observations of child behavior across settings and the collection of academic performance data. These techniques can provide crucial information regarding the frequency and duration of target behaviors, whether specific antecedent and consequent events serve to elicit or maintain the problem behaviors, and the degree to which the ADHD-related behaviors compromise the child's social and academic functioning. From an intervention design perspective, the most critical activity is to gather data in the context of a functional behavioral assessment (DuPaul & Ervin, 1996).

### *Assessment Techniques*

*Teacher Interview.* The teacher should be asked to describe the student's difficulties in specific behavioral terms in the context of a problem identification interview as described by Bergan and Kratochwill (1990).

Furthermore, the current DSM diagnostic criteria for a variety of child behavior disorders should be reviewed with the teacher. In addition to ADHD, the presence or absence of behaviors associated with oppositional defiant disorder, conduct disorder, generalized anxiety disorder, separation anxiety disorder, and depression should be ascertained. It is important to review this set of problems for two reasons. First, apparent symptoms of ADHD may actually be manifestations of another disorder. For instance, a child who is depressed may exhibit problems with concentration. Thus, the diagnosis of ADHD is arrived at by ruling out competing hypotheses (i.e., disorders) for the problem behaviors. A second reason to review these diagnostic criteria is that many children with ADHD also exhibit symptoms of other disorders. The most frequent associated diagnosis is oppositional defiant disorder; approximately 40–65% of children with ADHD exhibit symptoms of this disorder (Barkley, 1998). Furthermore, the combination of ADHD and other behavior or emotional disorders implicates the need for multiple interventions, as discussed below.

While ascertaining the presence or absence of each of the behavioral symptoms, the teacher also is asked to provide specific examples of those behaviors indicated to be present as well as to estimate their frequency. The typical antecedent (e.g., type of instruction) and consequent (e.g., teacher response to child misbehavior) events surrounding each problematic behavior should also be identified because these may be serving to maintain and/or exacerbate behavioral difficulties. Current management techniques and their relative degree of success then should be discussed.

It is imperative that information regarding the quality of the child's academic performance and social status be gathered. Some children with ADHD may exhibit significant academic skills deficits beyond task completion difficulties. Of course, an academic skills assessment (e.g., curriculum-based measurement) would be warranted in such situations. Teacher observations regarding the child's social interaction style and acceptance by peers are helpful in determining whether further assessment (e.g., sociometrics) in this area is necessary. Many children with ADHD will exhibit a controlling, aggressive interaction pattern with others, resulting in low acceptance or overt rejection by their classmates (Stormont, 2001). Teacher interview data are used to identify possible social skills deficits that could be targeted for further assessment and intervention as well as to delineate those settings and/or times of the school day where social relationship difficulties are most likely to be exhibited.

*Review of School Record.* The student's school record should be reviewed to obtain data that may be helpful in pinpointing the onset and

course of classroom ADHD-related difficulties. For instance, teachers often grade the quality of a child's work habits and conduct on report cards. Not surprisingly, most students with ADHD are found to obtain below-average rankings in these areas across grade levels. These below-average grades are often supplemented with teacher comments regarding poor task completion, high degrees of restlessness, or frequent talking to peers without permission. The specific grade level where such grades and comments first appear is important to note so that it can be cross-referenced with the age of onset of ADHD as reported by the parents.

A more structured approach to reviewing school records is provided by the School Archival Records Search (SARS; Walker, Block-Pedego, Todis, & Severson, 1998). The SARS provides a standardized format for gathering information regarding 11 variables that are predictive of behavior disorders and/or school dropout. Variables include number of different schools attended, days absent, low achievement, grades retained, academic/behavioral referrals, current individualized education plan, nonregular classroom placement, receiving Chapter 1 supplemental instruction, referral for outside services, negative narrative comments, and school discipline contacts. These individual variables load on to three factors, Disruption, Needs Assistance, and Low Achievement. Walker and colleagues (1998) have established cutpoints for each individual variable and factor score that are predictive of school difficulties. As might be expected, children with behavior disorders (presumably including ADHD) are more likely to receive positive scores (i.e., below established cutpoints) for Disruption and Low Achievement. The primary advantage of the SARS is that it pinpoints key predictor variables in a standardized structured fashion, thereby providing a reliable account of a student's past academic and behavioral history.

*Parent Interview.* A brief (i.e., 30–45 minutes) interview with the student's parent(s) should be conducted either in person or by telephone. Although discussion of the child's past and current functioning across a variety of areas (e.g., medical history) is possible, the most important lines of questioning are as follows. First, the presence and frequency of behavior control difficulties at home should be identified. This is best accomplished by reviewing the current DSM diagnostic criteria for ADHD and related disruptive behavior disorders (oppositional defiant disorder, conduct disorder) with the parent. In addition, the presence of symptoms associated with internalizing disorders (e.g., anxiety disorders) that could be causally related to a child's inattention and overactivity should be identified. As with the teacher interview, a review of DSM criteria will aid in ruling out the presence of other disorders that may be causally related to the exhibition of ADHD symptoms.

A second area of discussion for the parent interview is information regarding the child's early childhood development. It is important to pinpoint the onset of the ADHD-related behaviors as well as to gather information about their chronicity over time. The early childhood behavior of children with ADHD typically is characterized as highly active and difficult to control (DuPaul, McGoey, Eckert, & VanBrakle, 2001). In some cases, however, the child's behavior is not seen as problematic until school entry, when independent task demands increase. This is particularly the case when the parents have little previous experience with children (e.g., the child being assessed is an only or oldest child) and/or have unrealistic expectations regarding child behavior.

A third area of investigation is the child's family history of behavioral, emotional, and learning problems. Although this may be uncomfortable for a parent and professionals to discuss, it is important for two reasons. First, research indicates that ADHD may have a genetic or familial component (Faraone, 2000), and thus tends to run in families. The presence of ADHD in the family increases the odds that the identified child has ADHD as well. Second, in 27–32% of cases, the child's mother may be depressed or have a history of depression (Biederman et al., 1987). There also is a greater incidence of paternal antisocial behavior in the families of children with ADHD (Lahey et al., 1988). The presence of such difficulties in the family has direct implications for treatment: home-based interventions for ADHD are more likely to be successful when implemented following amelioration of parental psychopathology and problems related to family functioning. For example, depressed mothers of children with behavior disorders evidence a higher failure rate in response to training in behavior modification strategies relative to mothers who are not depressed (Patterson & Chamberlain, 1994).

*Parent Ratings.* One or both parents should complete several questionnaires to determine the developmental deviance of the child's ADHD-related behaviors as well as to establish the pervasiveness of problem behaviors across settings. Several general, or "broad-band," behavior rating scales with adequate normative data and sound psychometric properties (for a review, see Anastopoulos & Shelton, 2001; Barkley, 1998) can serve this purpose well. Chief among these questionnaires are the Child Behavior Checklist (CBCL; Achenbach, 1991b), the Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 1992), and the Conners Parent Rating Scale (CPRS; Conners, 1997).

Each of these behavior rating scales have specific advantages that should be considered when selecting measures. Specifically, the CBCL and the BASC contain large item pools, and hence provide wide cover-



age of both internalizing and externalizing disturbances. This broad coverage facilitates differential diagnosis because competing hypotheses (e.g., presence of other disorders) for the exhibition of ADHD symptoms can be explored. Because the item pool and factor structure of the parent and teacher versions of the CBCL are quite similar, cross-informant agreement can be specifically examined. This information may be invaluable given that parent and teacher agreement (i.e., about the child's cross-situational exhibition of symptoms) is important in making a diagnosis of ADHD. Alternatively, the Conners Rating Scale provides extensive coverage of externalizing symptoms while still being relatively brief. The latter scale is particularly advantageous in situations where parents may be reluctant to spend extensive time completing questionnaires.

In addition to one of the broad-band rating scales, the parent(s) should complete two "narrow-band" questionnaires containing items more specific to ADHD-related behaviors: the ADHD Rating Scale-IV and the Home Situations Questionnaire (HSQ; Barkley, 1990). The ADHD Rating Scale-IV provides information regarding the frequency of occurrence of each of the 18 symptoms of this disorder in the home setting. The number of items rated as occurring "pretty much" or "very much" of the time is tallied. Scores on the Inattention and Hyperactive-Impulsive factors can be compared to normative data to determine the developmental deviance of ADHD symptomatology (DuPaul et al., 1998). Parental responses on the HSQ allow determination of the number of home settings in which behavior problems are exhibited by the child. In addition, the severity of behavior problems within each situation is rated on a 1 (mild) to 9 (severe) Likert scale. The revised version of the HSQ (HSQ-R; DuPaul & Barkley, 1992) provides more specific information regarding the pervasiveness of attention problems across home situations. Thus, the HSQ will be helpful in determining the situational specificity and severity of conduct problems, while the HSQ-R provides data regarding these same variables for attentional difficulties, which may be particularly helpful if the child is suspected of having the inattentive subtype. For example, a child who is reported to display attentional difficulties in one or two situations may be less likely to have ADHD predominantly inattentive type than a child whose attentional difficulties are evident across many situations.

Many children with ADHD symptoms will exhibit significant difficulties with homework completion and study skills. When such problems are reported by the parents or teacher, additional assessment is necessary to determine which homework-related behaviors need to be addressed. Initially, the parent would be asked to complete either the Homework Problem Checklist (Anesko, Shoiok, Ramirez, & Levine,

1987) or the Homework Performance Questionnaire (Power, Karustis, & Habboushe, 2001). These measures provide data regarding the frequency or severity of various problems (e.g., the child denies having homework assignment, fails to complete homework) related to homework. Parent responses on these questionnaires can lead to further inquiry as to the specific problems that may be present at each step of the homework completion process.

The Impairment Rating Scale (IRS; Fabiano et al., 1999) can be used to determine the degree to which parents perceive a child's ADHD symptoms to cause impairment in functioning. The IRS contains seven items related to various areas of functioning (e.g., the child's relationships with siblings) that could be affected by ADHD symptoms.

*Teacher Ratings.* As is the case with parent questionnaires, there are a plethora of well-standardized, broad-band teacher rating scales available. The three most prominent of these questionnaires are the Teacher Report Form (TRF; Achenbach, 1991c), the Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 1992), the Devereux Scales of Mental Disorders (Naglieri, LeBuffe, & Pfeiffer, 1994), and the Conners Teacher Rating Scale (Conners, 1997). As mentioned above, these broad-band measures have many advantages, including a wide coverage of possible problem areas and extensive standardization samples facilitating normative comparisons by gender and age.

In conjunction with one of these broad-band rating scales, inclusion of two or more additional measures should be considered. First, if the teacher has not already done so during the screening process, a narrow-band measure of ADHD symptoms, like the ADHD Rating Scale-IV (DuPaul et al., 1998) should be used to determine the specific frequency of ADHD-related behaviors from the teacher's perspective. Second, the School Situations Questionnaire (SSQ; Barkley, 1990) and/or the School Situations Questionnaire—Revised (SSQ-R; DuPaul & Barkley, 1992) should be completed. The SSQ and the SSQ-R provide information regarding the pervasiveness across situations and severity level of conduct and attention problems, respectively.

In many cases, students referred for a diagnostic evaluation also are reported to evidence social relationship and academic performance difficulties. Thus, teacher perceptions of student functioning in these areas may need to be assessed as well. There are a number of psychometrically sound social skills questionnaires that are available, including the Social Skills Rating System (Gresham & Elliott, 1990) and the Walker-McConnell Scale of Social Competence and School Adjustment (Walker & McConnell, 1988). Where indicated, teacher ratings of social competence should be supplemented by peer ratings and/or sociometric data.

Teacher ratings of academic achievement difficulties can be obtained through use of the Academic Performance Rating Scale (DuPaul, Rapoport, & Perriello, 1991) or the Academic Competency Evaluation Scale (DiPerna & Elliott, 2000). Ratings on one of the latter questionnaires may indicate the need for further assessment of academic skills deficits. Finally, a teacher version of the Impairment Rating Scale (IRS; Fabiano et al., 1999) is available to determine teacher perceptions of the degree to which ADHD symptoms impair functioning. The IRS contains six items related to potential areas of impairment of school functioning.

*Direct Observations of Behavior.* Interview and rating scale data are subject to a number of limitations, including the inherent biases of those answering the interview questions and completing the questionnaires (Barkley, 1998). Thus, these data should be supplemented with assessment of child behavior that is potentially less subject to such biases. Direct observation of student behavior on several occasions and across settings and situations is one of the best methods to achieve this goal. In many cases, direct observations will provide the most fruitful data when conducted during independent seatwork situations. Typically, observation sessions are 10–30 minutes in length and are repeated across several days to establish a consistent estimate of behavioral frequency. Furthermore, observations are conducted on a repeated basis in several situations (e.g., math work time, language arts instruction) in the classroom, as well as in other school settings such as the playground and cafeteria. The latter provides the opportunity to observe interactions between the referred child and his or her peers.

A number of behavior observation coding systems have been developed for use in determining the frequencies of various ADHD-related behaviors during classroom task periods (for a review, see Barkley, 1998; Platzman et al., 1992). These include the ADHD Behavior Coding System (Barkley, 1998; Barkley, Fischer, Newby, & Breen, 1988), the Hyperactive Behavior Code (Jacob, O'Leary, & Rosenblad, 1978), the Classroom Observation Code (Abikoff et al., 1977), the Behavior Observation of Students in Schools (BOSS; Shapiro, 1996), and the ADHD School Observation Code (ADHD SOC; Gadow, Sprafkin, & Nolan, 1996). Each of these systems requires observers to classify behaviors into a variety of categories (e.g., off-task, fidgets) using interval recording procedures. In our research, we use an observation system (School Hybrid Observation Code for Kids [SHOCK]) that combines aspects of the BOSS and the ADHD SOC. Appendix 2.1 includes a description of coding categories, a sample observation sheet, and a sample observation summary sheet for the SHOCK.

Platzman and colleagues (1992) reviewed the various observational

methods that have been developed to aid in the assessment of ADHD. Several of their findings are noteworthy for practitioners. First, they found that observations conducted in the classroom provided data that were better at discriminating children with ADHD from controls than were observations conducted in clinic analog settings. This finding further attests to the need for school-based practitioners to be involved in ADHD evaluations. Second, three categories of behavior were found to consistently discriminate between ADHD and non-ADHD samples: off-task behavior, excessive gross motor activity, and negative vocalizations (e.g., refusal to obey commands). Thus, observation systems that include these categories of behavior are most likely to provide sensitive diagnostic data. Third, they found very few studies that included female participants. Because a smaller percentage of girls with ADHD are defiant and aggressive (Barkley, 1998), certain observation categories (e.g., negative vocalization) may be less discriminatory between girls with and without ADHD. As a result, practitioners may need to emphasize differences in off-task behavior when evaluating girls suspected of having this disorder.

Because normative data based on large representative samples are lacking for most of these observation codes, the behavior of the referred student should be compared to one or two classmates who have been identified as “typical” or “average” by the classroom teacher. In this fashion, each child would be evaluated relative to a classroom-based standard of behavior. If possible, another person (e.g., classroom aide) should simultaneously conduct these observations every so often to ensure adequate levels of interobserver reliability. Regardless of the coding system used, the two goals of this phase of the assessment process are to (1) establish the frequency of inattentive, impulsive, and/or restless behaviors relative to classmates; and (2) to obtain stable unbiased estimates of these frequencies by conducting observations on several occasions in the same classroom setting.

In addition to coding the child’s behavior during task situations, it is sometimes helpful to collect supplemental observation data. For instance, teacher behaviors (e.g., prompts, reprimands, feedback) could be coded as possible antecedent and/or consequent events for child behavior (Whalen, Henker, & Dotemoto, 1981). Such data are critical to determining the function of the challenging behavior, and therefore are important for treatment planning purposes. The specific teacher or classmate behaviors to be observed might be identified in the course of the teacher interview discussed above. An example of a coding system (adapted from Saudargras & Creed, 1980) that incorporates observation of teacher behavior is included in Appendix 2.2. Usually, teacher behaviors such as positive attention and/or negative reprimands are coded on an interval recording basis simultaneous with observations of child

behavior, as displayed in the sample coding form in Figure 2.2. Such recording makes it possible to determine the percentage of observation intervals where specific teacher and child behaviors have occurred contiguously. For example, one might find that teacher positive attention occurred during a very low percentage of intervals where the child was on-task, while negative reprimands from the teacher were quite frequent when the child was off-task. In such cases, it might be hypothesized that teacher attention is reinforcing off-task rather than on-task behavior. Suggestions for modifications in teacher behavior (e.g., increasing positive attention to on-task behavior) can be generated readily from observations of this type.

If social relationship difficulties are identified, then observations of the child's interpersonal behaviors should be conducted in the settings of concern. An example of an observation system that can be used to determine the frequency of specific social behaviors (e.g., aggressive, negative, and positive) in settings such as the playground and cafeteria is provided in Appendix 2.3. Another observation system that has been found useful for collecting data regarding social behaviors in lunchroom and playground settings is the ADHD SOC (Gadow et al., 1996). Typically, children with ADHD exhibit higher than average frequencies of aggressive and negative behaviors (Barkley, 1998). In most cases, their rates of positive social behavior are not substantially different from their normal counterparts (Stormont, 2001). Results of these types of observations can be used not only to document the type and severity of social relationship difficulties, but also to target specific behaviors for intervention.

*Assessment of Academic Performance.* Although children with ADHD usually perform within the average range on traditional, individually administered achievement tests (e.g., Barkley, DuPaul, & McMurray, 1990), their day-to-day performance on classroom tasks and homework is often inconsistent and inferior relative to that of their classmates (Barkley, 1998). It is helpful to obtain relatively direct measurements of academic behavior prior to intervention, as changes in scholastic status can be considered one of the more socially valid outcomes of treatment. Important academic behaviors to assess include the completion and accuracy of independent classwork, completion and accuracy of homework, acquisition of skills being taught in the curriculum, and organizational skills.

Completion and accuracy rates on assigned work should be calculated. First, the amount of written work (i.e., percentage of items) completed relative to the amount of work assigned (Rapport, DuPaul, Stoner, & Jones, 1986) or relative to "typical" classmates during obser-

Phase \_\_\_\_\_

Day \_\_\_\_\_

CLASSROOM INTERACTIONS  
OBSERVATION SHEET

Observer \_\_\_\_\_ Rel.? Y N

Date \_\_\_\_\_

Classroom \_\_\_\_\_

	1	2	3	4	5	6	7	8	9	10	11	12	Total A	
TA/On	p	n	o	p	n	o	p	n	o	p	n	o		
TA/Off	p	n	o	p	n	o	p	n	o	p	n	o		
C/App	p	n	o	p	n	o	p	n	o	p	n	o		
C/Inapp	p	n	o	p	n	o	p	n	o	p	n	o		

	13	14	15	16	17	18	19	20	21	22	23	24	Total B	
TA/On	p	n	o	p	n	o	p	n	o	p	n	o		
TA/Off	p	n	o	p	n	o	p	n	o	p	n	o		
C/App	p	n	o	p	n	o	p	n	o	p	n	o		
C/Inapp	p	n	o	p	n	o	p	n	o	p	n	o		

	25	26	27	28	29	30	31	32	33	34	35	36	Total C	
TA/On	p	n	o	p	n	o	p	n	o	p	n	o		
TA/Off	p	n	o	p	n	o	p	n	o	p	n	o		
C/App	p	n	o	p	n	o	p	n	o	p	n	o		
C/Inapp	p	n	o	p	n	o	p	n	o	p	n	o		

	37	38	39	40	41	42	43	44	45	46	47	48	Total D	
TA/On	p	n	o	p	n	o	p	n	o	p	n	o		
TA/Off	p	n	o	p	n	o	p	n	o	p	n	o		
C/App	p	n	o	p	n	o	p	n	o	p	n	o		
C/Inapp	p	n	o	p	n	o	p	n	o	p	n	o		

	49	50	51	52	53	54	55	56	57	58	59	60	Total E	
TA/On	p	n	o	p	n	o	p	n	o	p	n	o		
TA/Off	p	n	o	p	n	o	p	n	o	p	n	o		
C/App	p	n	o	p	n	o	p	n	o	p	n	o		
C/Inapp	p	n	o	p	n	o	p	n	o	p	n	o		

	61	62	63	64	65	66	67	68	69	70	71	72	Total F	
TA/On	p	n	o	p	n	o	p	n	o	p	n	o		
TA/Off	p	n	o	p	n	o	p	n	o	p	n	o		
C/App	p	n	o	p	n	o	p	n	o	p	n	o		
C/Inapp	p	n	o	p	n	o	p	n	o	p	n	o		

	73	74	75	76	77	78	79	80	Total G	
TA/On	p	n	o	p	n	o	p	n		
TA/Off	p	n	o	p	n	o	p	n		
C/App	p	n	o	p	n	o	p	n		
C/Inapp	p	n	o	p	n	o	p	n		

Data Summary Chart

Total # of Intervals Observed: \_\_\_\_\_

	A	B	C	D	E	F	G	Total	% Int.
TA/On									
TA/Off									
C/App									
C/Inapp									

FIGURE 2.2. Sample observation coding form for recording teacher–student interactions. From *ADHD in the Schools* (2nd ed.) by George J. DuPaul and Gary Stoner. Copyright 2003 by The Guilford Press. Permission to photocopy this figure is granted to purchasers of this book for personal use only (see copy-right page for details).

vation sessions should be calculated. Second, the percentage of items completed correctly (i.e., academic efficiency score; Rapport et al., 1986) is calculated to determine task accuracy. In many cases students with ADHD will complete significantly less work or complete tasks in a less accurate fashion due to their problems with inattention and/or carelessness. Such data are relatively straightforward to collect in conjunction with observations of the student's classroom behavior, discussed above. Similar data regarding homework completion and accuracy could be collected by the teacher over a short time interval (e.g., 2–3 weeks) contemporaneous with the ADHD evaluation. Parents also can be asked to record the frequency of completion of various steps in the homework process over a similar time period. Furthermore, items indicated to be problematic on the Homework Problem Checklist can be used to generate possible targets for intervention.

Brief probes of a child's acquisition of skills being taught in the curriculum (i.e., curriculum-based measurement [CBM]; Shinn, 1998) can be very helpful in at least two ways. First, CBM data can pinpoint the instructional level of a child within a given subject area. It is possible that a child's attention and behavior difficulties may result from the frustration of being asked to do academic work that is beyond the child's capabilities. Stated differently, it is possible that the child is being instructed at a *frustrational* rather than at an *instructional* level. It also could be that a child is consistently being asked to complete work that is too easy (e.g., mastery level material), resulting in attentional problems. Second, because CBM probes are relatively brief (2–3 minutes), these data can be collected periodically once instructional changes are made, thus providing valuable information regarding intervention effects.

Finally, the organization of the child's desk (i.e., neatness and preparedness) can be examined directly on a regular basis over a short time interval (e.g., 2–3 weeks) and compared to classmates' desks (Atkins, Pelham, & Licht, 1985). A frequent complaint of teachers is that children with ADHD have unorganized, messy desks, with a resultant loss of task and text materials. Here too information may be gleaned that helps to pinpoint the source(s) of a student's academic difficulties, as well as to identify potential foci for instructional support.

### **Stage III: Interpretation of Results (Diagnosis/Classification)**

#### *Questions to Be Addressed*

Data from the multimethod assessment are used to determine the diagnostic status of the referred child by reviewing the following questions:



1. Does the child exhibit a significant number of behavioral symptoms of ADHD according to parent and teacher report?
2. Does the child exhibit ADHD symptoms at a frequency that is significantly greater than that demonstrated by children of the same gender and chronological age?
3. At what age did the child begin demonstrating significant ADHD-related behaviors, and are these behaviors chronic and evident across many situations?
4. Is the child's functioning at school, at home, and/or with peers significantly impaired?
5. Are there other possible problems (e.g., learning disabilities) or factors (e.g., teacher intolerance for active behavior) that could account for the reported display of ADHD symptoms?

### *Interpretation Process and Procedures*

The data obtained with the previously described techniques can be used to address the above questions. Although each of the assessment techniques has limitations, the advantage of using a multimethod approach is that each of their strengths and weaknesses will be balanced out as part of the larger evaluation package. The overriding goals are to derive accurate data regarding the frequency and severity of ADHD-related behaviors across caregivers and settings, as well as to determine possible causes for these difficulties. To the extent that these goals are achieved, relative confidence can be placed in conclusions drawn as a result of the assessment. The interpretation of evaluation data is discussed relative to each of the major assessment questions.

*Number of ADHD Symptoms?* The number of ADHD symptoms is determined based on parent and teacher interview data in conjunction with ADHD Rating Scale-IV results. When six or more inattention symptoms or six or more hyperactive-impulsive symptoms are reported by each caregiver (particularly during the interviews), this is considered diagnostically significant for one of the three subtypes of ADHD according to DSM-IV guidelines (American Psychiatric Association, 1994). Specifically, to receive a diagnosis of ADHD combined type, the child should be reported to evidence at least six of the nine inattention symptoms *and* six of the nine hyperactive-impulsive behaviors (see Table 2.1). For a diagnosis of ADHD predominantly inattentive type, six of the nine inattention symptoms must be reported combined with a *maximum* of five hyperactive-impulsive behaviors. Finally, a diagnosis of ADHD predominantly hyperactive-impulsive type would be warranted for children

who are reported to exhibit at least six hyperactive-impulsive symptoms and a *maximum* of five inattention symptoms.

*Frequency of ADHD-Related Behaviors?* The parent and teacher questionnaires discussed above all contain at least one factor related to ADHD (e.g., labeled “Hyperactivity,” “Attention Problems,” “Overactive-Restless”). When a child’s score on factors related to ADHD is greater than 2 standard deviations above the mean for his or her gender and chronological age, this result is considered significant for ADHD (Barkley, 1998). Scores on these same factors that are between 1.5 and 2 standard deviations above the mean are considered to be in the borderline significant (i.e., mild) range for ADHD. Thus, children receiving scores in the upper 2–7% of ADHD symptoms for their age and gender may be identified as having ADHD (depending upon other assessment findings).

When determining whether scores are diagnostically significant, it also is important to consider the child’s ethnicity. Parent and teacher ratings of ADHD symptoms may vary across ethnic groups, with African American children receiving significantly higher scores than white and Hispanic children (DuPaul et al., 1998; Reid, DuPaul, Power, Anastopoulos, & Riccio, 1998). Although ethnic group differences are partially accounted for by socioeconomic status, even when the effects of the latter are removed systematic differences remain. These group differences could potentially result in overidentification of ADHD among African American children. Thus, practitioners must be especially cautious when evaluating children from different cultural backgrounds and should rely on multiple measures when assessing ADHD symptoms. Furthermore, it is imperative to use rating scales that include normative data that are representative of the U.S. population in terms of ethnic diversity.

Behavioral observation data are used to determine the frequencies of ADHD-related behaviors displayed by the referred student as compared to his or her classmates. If a large enough sample of observations is collected, the difference in behavioral frequencies between the referred and the nonreferred students could be tested statistically using a *t*-test, for example. The child with ADHD should be exhibiting inattentive, impulsive, and/or restless behaviors at a significantly higher frequency than classmates. When similar rates of behavior are observed across referred and nonreferred students, then other lines of investigation (e.g., inadequate methods of behavior management) may need to be pursued.

*Age of Onset and Chronicity of Problem Behaviors?* Parent report of the onset of ADHD symptoms is obtained during the interview. Typically, the age of onset is reported to be when the child begins formal

schooling (i.e., kindergarten or first grade) or earlier. The consistency of ADHD-related behaviors across grades or time can be confirmed through inspection of the child's previous report cards in the school record. The onset of ADHD symptoms should be reported to be prior to age 7 (American Psychiatric Association, 2000) and must be occurring on a daily basis for at least 1 year (Barkley, 1998). It should be noted that the age cutoff of 7 years old is not empirically based and that it may be more appropriate to use childhood onset (i.e., prior to 18 years old), as is the practice with conduct disorder (Barkley & Biederman, 1997). Longitudinal investigations consistently have found that ADHD symptoms typically begin early in life and, in many cases, are present throughout the life span (Barkley, Fischer, et al., 1990; Biederman et al., 1996).

Under some circumstances, the child's ADHD symptoms will not be problematic until the fourth or fifth grade. This may be the case when a child is bright enough to "compensate" for his or her behavior regulation difficulties during the earlier grades and encounters more problems when demands for independent task completion increase. Alternatively, students with academic problems may develop ADHD-like "symptoms" as a function of continued frustrations in educational settings. In the latter situation, a student would not be diagnosed and treated as a child with "true" ADHD, as the academic skills deficit or learning disability would be the primary focus of intervention (Barkley, 1998).

*Are Problem Behaviors Occurring Across Situations?* At a general level, if both the parent(s) and teacher(s) are reporting significant display of ADHD-related behaviors across home and school environments, then this criterion is met. The pervasiveness of inattentive behaviors and/or conduct problems across situations *within* home and school environments can be determined using the original and revised versions of the HSQ and the SSQ. A finding of attention or conduct problems being reported in 50% or more of identified situations is considered significant (Barkley, 1990). In addition, if scores on these rating scales are 1.5–2 standard deviations above the mean using normative data (see Barkley, 1990), a more stringent criterion is reached.

To the degree that significant ADHD-related behaviors are reported to occur across home and school settings, relative confidence can be placed in the conclusion that within-child variables (i.e., presence of ADHD) account for the behavioral control difficulties to a large degree. When inconsistencies between parent and teacher report are obtained, confidence in the diagnosis of ADHD is reduced. In general, teacher ratings are given more credence because the school is the more problematic setting for most children with ADHD and teachers have greater exposure to children within a specific age range.

*Functional Impairment?* The degree to which the child's academic, social, and emotional functioning is impaired is determined through examination of all of the measures discussed above. The most frequently encountered signs of impairment associated with ADHD are academic achievement below expectations for the child and poor acceptance by peers (American Psychiatric Association, 2000; Barkley, 1998). Thus, a child with ADHD would be expected to produce less complete and less accurate schoolwork than classmates based on observational data and teacher ratings. Furthermore, ratings for the child on scales of social competence and peer relationships would be below average for his or her age and gender. Observational data may confirm the latter, as the child may exhibit high rates of aggressive behavior on the playground or may be ignored by classmates during free-play periods.

*Other Factors Accounting for ADHD-Like Behavior?* The ADHD diagnosis is usually arrived at by establishing the developmental deviance and pervasiveness of symptoms by addressing the previous questions. At the same time, it is crucial to consider alternative causes for the child's inattention, impulsivity, and motor restlessness. One possibility is that these behaviors are secondary to the frustrations encountered due to a child's academic difficulties, as discussed above. If, for instance, the child begins to exhibit ADHD symptoms later in childhood after several years of learning difficulties or only exhibits problem behaviors during academic instruction in his or her weaker subjects, then this possibility must be entertained strongly. Alternatively, if ADHD symptoms began early in life and are pervasive across settings, then a more plausible conclusion is that the child has both ADHD and a learning disability (see Chapter 3 for additional details).

A second possibility is that the child is encountering emotional and/or adjustment difficulties that have led to inattentive, impulsive, and/or restless behaviors. If this were the case, then interview and questionnaire data would indicate significant symptoms of an alternative disorder (e.g., anxiety disorder, conduct disorder) or a difficult situation (e.g., recent parental divorce) in addition to or in lieu of ADHD symptoms. Furthermore, the symptoms of emotional disturbance would predate the onset of ADHD-related behaviors. The latter would be of relatively recent onset and would probably not be exhibited on a chronic and cross-situational basis. In the case of adjustment problems, there typically will be a clear onset of symptoms in relation to an identifiable event or set of events of importance to the child/family. The practitioner should carefully consider differential diagnostic guidelines as per the DSM-IV (also see Anastopoulos & Shelton, 2001).

Poor or inconsistent academic instruction and/or behavior manage-

ment practices are other possible causes of apparent ADHD symptoms. This hypothesis should be explored whenever assessment data are inconsistent across sources and settings—for example, parents and teachers disagree about the severity and frequency of ADHD symptoms. This is particularly true when there are discrepancies among several teachers regarding the presence or absence of ADHD symptoms. If the latter are reported by a single teacher in the absence of a developmental history of ADHD-related difficulties and other data supporting the diagnosis of ADHD, then closer inspection of instructional and management variables is necessary. Rather than classifying the problem behaviors as resulting from “within-child” variables (i.e., ADHD), it may be that faulty teaching practices warrant modification.

Once a diagnostic decision is reached, the findings and resultant treatment recommendations must be communicated to the student’s teachers and parents, as well as to any community-based professionals (e.g., pediatrician) who may be working with the child. Typically, a written report is generated and results and recommendations are orally reviewed with pertinent school personnel and parents. Issues and procedures related to communication of assessment results are discussed in greater detail in Chapter 8.

#### **Stage IV: Designing the Treatment Plan**

##### *Questions to Be Addressed*

The following questions should be addressed when designing an intervention program for students with ADHD:

1. What are the possible functions for the child’s ADHD-related behaviors?
2. What are the student’s strengths and weaknesses (e.g., motivation and skills)?
3. What are the behavioral objectives for intervention?
4. What are the optimum intervention strategies?
5. What additional resources are available to address the child’s ADHD-related problems?

##### *Intervention Planning Process and Procedures*

The assessment process does not conclude with a diagnosis, for the diagnosis is just one step in the process of determining which intervention strategies are most likely to be successful. Thus, the assessment data are used to generate an appropriate treatment plan. The intervention strate-

gies that have the greatest research support in the treatment of ADHD are the prescription of psychostimulant medication (e.g., Ritalin) and behavior modification procedures (Barkley, 1998; MTA Cooperative Group, 1999; Pelham, Wheeler, & Chronis, 1998). The specifics of these interventions are reviewed in greater detail in Chapters 5, 6, and 7; further information regarding these interventions can be obtained through several recent reviews (e.g., Barkley, 1998; Goldstein & Goldstein, 1998; Pelham et al., 1998).

Interventions for ADHD typically are designed to impact target behaviors across academic and social domains. Because ADHD symptoms are, by definition, exhibited across settings, then treatment strategies must be outlined for multiple caretakers (e.g., parents and teachers) to be used across a number of situations. Although an explicit goal of the intervention program is to decrease the frequency of various ADHD-related behaviors (e.g., inattention to task materials), the primary emphasis is on enhancing competencies in a number of areas, and improving behavioral, academic, and social adjustment. Thus, treatment targets are behaviors that should increase in frequency as a function of treatment, such as completion of independent work, compliance with teacher directives, accuracy of academic responding, and positive interactions with peers. Behavioral objectives must be designed on an individual basis using data from direct observations of classroom behavior, as well as the results of parent and teacher ratings. Assessment results also will identify behavioral competencies (e.g., adequate peer relations) that possibly could aid in the amelioration of the child's deficits. Those behaviors occurring at the lowest frequencies and/or deemed most crucial to classroom functioning by the teacher usually serve as initial intervention targets.

A number of factors are considered in the process of choosing appropriate interventions for an individual child with ADHD. First, the severity of the child's ADHD should be categorized into one of four levels (i.e., borderline, mild, moderate, severe) based upon the number of symptoms reported on the ADHD Rating Scale-IV and the degree of functional impairment evidenced (American Psychiatric Association, 2000). The greater the severity of ADHD symptoms, the more likely a referral to a physician for a medication assessment will be warranted.

In general, the treatment of first resort will be the implementation of a behaviorally based intervention involving changes in antecedent conditions and/or application of positive reinforcement techniques designed to increase task-related attention and completion of assigned work (DuPaul & Stoner, 2002; DuPaul, Stoner, & O'Reilly, 2002). Observation results will aid in this process by providing baseline data and helping to identify antecedent and consequent events that could be manipulated as part of the intervention.

In fact, a second important factor to consider in designing psychosocial interventions for children with ADHD is the function that their ADHD-related behaviors serve (DuPaul & Ervin, 1996; also see Chapter 5 for more details). The most likely function for ADHD-related behavior is to avoid or escape effortful tasks, such as independent seatwork or homework. A second possible function is to gain adult or peer attention. A frequent consequent event for ADHD-related behavior is a verbal reprimand from the teacher as well as nonverbal (e.g., smiles) and verbal reactions (e.g., laughter) from the student's classmates. An additional possible function is for ADHD-related behavior to result in access to an object or activity that appears more reinforcing than the stimuli that the child is expected to attend to. For example, when presented with a set of written math problems to complete, the student begins playing with a toy that he keeps in his desk. Finally, ADHD-related behavior may result in sensory stimulation, such as accessing pleasant thoughts (e.g., daydreaming).

The specific function that is operational for a child's behavior in the classroom setting can be determined through descriptive assessment, experimental analysis, or both (Gresham, Watson, & Skinner, 2001; Nelson, Roberts, & Smith, 1998). Most typically, teacher interview and behavior observation data are used to develop a working hypothesis as to the function(s) of a particular behavior. Rarely are full-scale experimental analyses conducted in classroom settings (Ervin, Ehrhardt, & Poling, 2001). Interventions are then designed to promote functionally equivalent behavior (e.g., *vis-à-vis* the hypothesized function) through changes in antecedent and/or consequent conditions (see Chapter 5).

In addition to behavioral function, the specific settings where intervention procedures are to be implemented are identified based on observation data or the use of a scatter plot (Touchette, MacDonald, & Langer, 1985). For example, a student with ADHD may be found to exhibit the lowest frequencies of desired behaviors in classroom rather than in playground settings. Furthermore, task-related attention and work completion rates may be different across academic subject areas. Initial interventions may be designed to increase attention and work completion frequencies during instruction in those academic areas where the child exhibits the greatest ADHD-related difficulties and in the classroom setting only. As progress is achieved, target behaviors in other academic settings may be addressed.

A third factor to consider in developing treatment strategies is the presence of additional behavior or learning disorders. For example, many children with ADHD also are oppositional and defiant in response to authority figure commands (American Psychiatric Association, 2000). Noncompliant and aggressive behaviors would then become additional



targets of the classroom intervention program. A referral to a community-based professional (e.g., clinical child psychologist) may be necessary so that parents could receive training in appropriate behavior management strategies at home.

An additional consideration in designing the treatment plan is a child's response to previous interventions. If, for example, a behavioral program has been implemented in a general education classroom, yet the child continues to exhibit a high frequency of ADHD-related behaviors, then other treatment modalities (e.g., prescription of stimulant medication or provision of special education services) may need to be recommended. As is the case for most children with special needs, the preference is for placement and treatments considered to be least restrictive. In fact, most children with ADHD are placed primarily within regular classroom settings (Pastor & Reuben, 2002; Pfiffner & Barkley, 1998). Thus, resistance to previous intervention should be the major criterion in determining whether a child's behavior control problems are severe enough to warrant special education eligibility (Gresham, 1991; see Chapter 3 for further discussion of this issue).

A final factor to consider is the availability of treatment resources in the community. For instance, this availability will determine whether the child and his or her family are referred to a community-based professional such as a clinical child psychologist or whether home-based interventions are to be designed by the school psychologist. When both parents and teachers are actively involved in the treatment process (e.g., through implementation of behavior modification strategies), there is a greater probability of success. Thus, in most cases, parents will be referred for training in behavior management strategies when such services are available.

## **Stage V: Program/Intervention Evaluation**

### *Questions to Be Addressed*

Once the intervention program is designed and implemented, ongoing assessment is conducted to answer the following questions:

1. Are changes occurring in the target and collateral behaviors?
2. Are the treatment changes socially valid and clinically significant?
3. Are target behaviors normalized?

### *Intervention Evaluation Process*

The assessment of the child with ADHD does not conclude with the diagnosis, but continues on an ongoing basis as intervention procedures

are implemented. In this context, the initial evaluation data not only contribute to diagnostic decisions but also serve as baseline or preintervention measures. If outcome assessment data are not collected once treatment begins, one can never be sure that the intervention is successful or whether it requires adjustments. Single-subject design methodology should be employed to evaluate treatment-related changes in target behaviors (DuPaul & Stoner, 2002; Morgan & Morgan, 2001). More details regarding the use of single-subject methodology to evaluate behavioral change can be obtained by consulting several excellent texts on this topic (e.g., Hersen & Barlow, 1982; Kazdin, 1992).

Throughout the treatment process, the student serves as his or her own “control,” and behavioral change is evaluated in comparison to baseline or nonintervention conditions. This process requires the repeated acquisition of assessment data across settings and caretakers at various points in the intervention program. In addition, treatment integrity is evaluated to ensure the accurate application (e.g., treatment compliance) of the prescribed intervention. If the intervention is implemented as designed and reliable behavior change occurs, then one can assume that the treatment is working as planned. If not, then changes to either the intervention or the manner in which it is implemented by teachers or parents must be made. Thus, ongoing assessment is crucial to the treatment process and the two are inexorably linked.

### *Intervention Evaluation Techniques*

In most cases, narrow-band assessment techniques such as direct observations of behavior and academic performance data, discussed above, are used to evaluate treatment-related change. Such data contribute to addressing whether behavioral changes are occurring as planned in association with intervention. For example, direct observations and performance data are collected on a daily or weekly basis in the context of a reversal (i.e., ABA) or multiple baseline across settings design. Changes in the mean, intercept, and trend of the data are used to determine whether the intervention has led to increases in task-related attention, compliance with classroom rules, and academic productivity and accuracy (see Chapter 5 for a specific example of the evaluation of a classroom intervention program). Occasionally, interobserver agreement is assessed by having a classroom aide, teacher, or other observer present when data are collected. Interobserver agreement should be assessed at least several times per treatment phase to ensure that observation and performance data are reliable.

Several additional assessment techniques are used to determine whether reliable behavior change has occurred as a function of the inter-

vention. First, teacher ratings on the CBCL, BASC, or Conners Rating Scales are collected at several points, including prior to the intervention, during the treatment phase, following the return to baseline phase (if applicable), and approximately 1 month after the formal intervention has ceased. Thus, general behavior ratings are obtained at least once per treatment phase. Even though these ratings were collected during the initial evaluation, it is important to obtain them on an additional occasion prior to treatment implementation, as “practice effects” on these measures have been found (Barkley, 1998). A second administration of teacher ratings during baseline would reduce the possibility of attributing change to the treatment when it was actually due to a regression to the mean artifact. Teacher ratings that contain fewer items, such as the ADHD Rating Scale–IV or the APRS, can be collected on a weekly basis throughout all treatment phases. Typically, the means of the various teacher ratings are compared across phases to determine whether the teacher perceives any treatment-induced improvements in performance and behavior control.

A second assessment component necessary to document treatment-related change is a method to determine whether the intervention has been implemented as prescribed (Gresham, 1989; Hayes, Barlow, & Nelson-Gray, 1999; Peterson, Homer, & Wonderlich, 1982). If medication effects are being assessed, then pill counts are conducted on a regular basis (e.g., weekly) to ensure that the medicine has been administered. Alternatively, when a parent or teacher is carrying out the intervention (e.g., classroom-based token reinforcement program), treatment integrity is more difficult to determine. Ideally, direct observations of teacher behavior would be conducted occasionally throughout treatment to assess whether the intervention steps are being carried out as planned. Of course, there would then be no way to ensure that treatment integrity was intact during intervention sessions where an observer was not present. In such cases, observations of teacher behavior would be supplemented by checklists outlining the intervention steps. The teacher or treatment agent would be expected to complete the checklist every time the intervention was being implemented in an effort to promote compliance. Such checklists also could be completed by someone other than the treatment agent (e.g., classroom aide) on a regular basis. Another option is to audiotape intervention sessions for later review regarding implementation integrity (Power, DuPaul, Shapiro, & Kazak, 2003). Without at least occasional treatment integrity checks, one cannot be sure that the intervention is being applied as designed.

Although it is important to demonstrate that an intervention has led to reliable changes in the student’s behavior and performance, it is crucial to determine whether such changes are socially valid and clinically

meaningful. For example, a mean increase in the percentage of on-task behavior from 50% to 65% during independent work may be statistically significant, but the end result is that the student still spends too much time off-task and is not any more productive academically. Interventions that lead to behavior changes that do not meaningfully impact on the student's classroom performance are usually abandoned quite readily by the child's teacher.

The clinical significance and social validity of behavioral change can be assessed in a variety of ways (for details, see Kazdin, 2000; Schwarz & Baer, 1991). First, consumer satisfaction ratings could be completed by the student, teacher, and/or parents at the conclusion of treatment or at various points during the intervention. Each participant's views on specific components of the intervention could be obtained in this manner. A second related technique is to have the teacher complete treatment acceptability ratings of various possible intervention strategies (for a review, see Finn & Sladeczek, 2001). The acceptability of interventions may actually be assessed prior to treatment as an aid in the consultation and treatment design process (Bergan & Kratochwill, 1990).

A third way of determining the clinical significance of an intervention is to assess whether it has led to the "normalization" of behavior. Stated differently, does the intervention enhance the student's attention span, academic productivity, and social behaviors to the point where his or her performance and behavior in the classroom is indistinguishable from those of his or her peers? This particular outcome can be evaluated by collecting concurrent assessment data on one or more classmates during various points in the intervention. In this way, the treated child's performance can be compared directly to that of his or her normal counterparts. If ethical or practical considerations preclude the assessment of normal classmates, several statistical procedures can be used to determine whether clinically meaningful change has occurred. For example, if normative data are available for a specific measure, then a reliable change index (Jacobsen & Truax, 1991) can be calculated to evaluate whether the treatment has led to statistically reliable improvements in behavior. Furthermore, Jacobsen and Truax (1991) have provided several formulas for determining whether an intervention has led to normalization of performance. For example, methylphenidate (Ritalin) has been found to "normalize" the task-related attention and academic productivity of a large percentage of children with ADHD who participated in a 6-week medication trial (DuPaul & Rapport, 1993; see Chapter 6 for details). Although normalization of classroom performance is not always possible, it is one of the more important considerations in determining the value of obtained treatment effects.

### DEVELOPMENTAL CONSIDERATIONS IN THE ASSESSMENT OF ADHD

Developmental factors may alter the content and, to some degree, the process of conducting an ADHD evaluation, especially when the referred student is a preschooler or an adolescent (Anastopoulos & Shelton, 2001). We will address issues related to the identification of young children at risk for ADHD in Chapter 4. With regards to assessing ADHD in adolescents, there are several reasons why evaluation procedures may differ relative to assessment of children. First, the overall functioning of the teenager with ADHD can be more impaired than during the childhood years, given a higher risk for conduct disturbance or antisocial behavior (Barkley, Fischer, et al., 1990; Biederman et al., 1996), and academic underachievement (Barkley, Fischer, et al., 1990; Mannuzza, Gittelman-Klein, Bessler, Malloy, & LaPadula, 1993). In addition, several empirical investigations have indicated a higher frequency of substance abuse (Biederman et al., 1997) among adolescents with ADHD, especially when antisocial behavior problems (e.g., stealing, vandalism) are present. Thus, in addition to the core deficits of ADHD, teenagers with this disorder may exhibit a variety of behavioral and/or emotional disturbances, and therefore procedures designed to screen for these associated difficulties must be incorporated into the evaluation of adolescents with ADHD.

When evaluating an adolescent referred for ADHD-related difficulties, it is very important that a reliable history of the problem behaviors is obtained because, by definition, ADHD symptoms should be evident prior to the age of 7. Because the reliability of historical information provided by parents is often quite low, even for younger children, care should be taken to obtain "reliability checks" of parental verbal reports (Cantwell, 1986). A possible source of such information would be the student's school record, including report cards, previous psychological evaluations, and disciplinary history.

A third factor to consider in the assessment of adolescents suspected of having ADHD is the input of the students themselves. The teenager's perception of current adjustment difficulties must be obtained in addition to parent and teacher reports. Adolescent self-report of ADHD symptoms has been found to correlate highly with parental report (Gittelman et al., 1985), although this is equivocal across studies (see Barkley, Fischer, et al., 2002). Regardless of the relationship between self-report and other measures, the former may provide critical information (e.g., presence of depressive symptoms) not available from other sources. Moreover, adolescents are likely to agree more fully with the results of evaluations in which their own opinions were given greater

attention, and hence may be more willing to participate with treatment recommendations (DuPaul, Guevremont, & Barkley, 1991). Thus, the major change to the ADHD evaluation when assessing an adolescent is the inclusion of several self-report measures, such as a diagnostic interview with the student and the completion of behavior rating scales, in the multimethod assessment stage. The student may also play a more active role in the formulation, implementation, and assessment of the treatment plan. At the very least, self-report and consumer satisfaction data should be obtained from the student during the treatment evaluation stage on an ongoing basis.

The content of the ADHD evaluation is somewhat different when assessing an adolescent, relative to assessment of younger children. First, as mentioned above, a diagnostic interview with the student should be conducted that incorporates DSM criteria for the same disorders reviewed with the adolescent's parent and teacher. Second, various self-report questionnaires are completed by the student including the Youth Self-Report (YSR) version of the Child Behavior Checklist (Achenbach, 1991c), the Youth Inventory-4 (Gadow et al., 2002), and/or the Conners-Wells Adolescent Self-Report of Symptoms (Conners et al., 2000). Normative data are available for both measures. Given the higher risk of affective or emotional disturbance among adolescents with ADHD relative to their normal counterparts, it is often necessary to include questionnaires tapping internalizing symptomatology such as the Reynolds Adolescent Depression Scale (Reynolds, 1987).

A final change in the ADHD evaluation is the inclusion of behavior ratings from multiple teachers. The interpretation of the resultant ratings can be problematic given the limited sample of student behavior that each teacher observes. It is often helpful to obtain ratings from several individuals, including nonteachers (e.g., guidance counselor) with whom the teenager has the greatest amount of contact. Rather than relying on the analysis of any single teacher rating (as with younger children), consistencies among the resultant profiles (e.g., elevations on factors related to ADHD) are used to document the pervasiveness or lack thereof of behavioral control difficulties across settings. Further details regarding the content of ADHD evaluations with adolescents are available in several recent texts (Anastopoulos & Shelton, 2001; Barkley, 1998).

## **IMPLEMENTATION OF THE ASSESSMENT MODEL**

The assessment model proposed in this chapter represents what we believe to be a state-of-the-art evaluation process for identifying students with ADHD and designing classroom interventions for this population.

As such, it is an idealized model that must be adapted for practical application at the local level. Some assessment components or processes (e.g., parent interview) may be less feasible for some school personnel. Therefore, changes to the assessment model will be necessary.

As an example of a local adaptation of this assessment model, the Carroll County (MD) Public Schools have developed ADHD procedural guidelines for teachers and school psychologists (Carroll County Public Schools, 1997). These guidelines structure the ADHD identification and treatment process into four, rather than five, stages: screening, multimodal assessment of ADHD, interpretation of results, and treatment. Although the screening stage is virtually identical to the content and process of this stage as described in this chapter, some adaptations have been made to the multimethod assessment protocol. For example, parents are asked to complete a questionnaire rather than an interview that outlines current behavioral concerns as well as developmental, medical, and family histories. Nevertheless, this second stage of the Carroll County guidelines includes the core components of the multimethod protocol proposed in this chapter such as parent and teacher behavior questionnaires, direct observation, and review of school records.

Although our assessment model may include some components that are impractical for some school districts, it is possible to adapt this process to meet the needs and practical limitations of a local school district. The overall objective would be to retain core features of this model. First, the assessment process should utilize a data-based problem-solving model wherein psychometrically sound measures are used to make identification and treatment decisions. Second, a triage system should be used wherein students are screened to determine who will require more involved assessment and/or treatment. Third, the input of multiple respondents using more than one type of measure should be sought to obtain a comprehensive picture of a child's home and school functioning. As is the case for evaluating learning disabilities, practitioners should never rely on a single instrument or questionnaire to make ADHD identification decisions. Fourth, assessment data (e.g., functional behavioral assessment and/or curriculum-based assessment) that are useful for treatment planning should be collected routinely. Fifth, some subset of assessment measures should be collected periodically to determine the success of intervention plans and to guide ongoing changes in treatment.

## CASE EXAMPLES

### Case Example 1

Arthur was a 7-year-old second grader referred to the school psychologist by his regular classroom teacher due to problems completing inde-



pendent seatwork, talking without permission, and noncompliance with school rules. The teacher indicated that the quality of Arthur's academic work was similar to that of his classmates when she worked with him individually. Alternatively, due to his inconsistent completion of assigned work and frequent inattention during tests, Arthur was reported to achieve below his presumed potential.

After briefly discussing the case, the school psychologist asked the teacher to complete a screening instrument (i.e., the ADHD Rating Scale-IV). Arthur's ratings were beyond the 93rd percentile for the total score as well as the Inattention and Hyperactivity-Impulsivity factor scores. Also, six inattention and six hyperactivity-impulsivity symptoms (using DSM-IV criteria) were reported to be present at least "pretty much" of the time. Based on this screening information and the nature of the referral, a multimethod assessment of ADHD appeared warranted.

As a first step in the assessment process, an interview with Arthur's classroom teacher was conducted. In the course of the interview, it was reported that he displayed frequent problems with inattention, impulsivity, overactivity, and noncompliance across most school settings and classroom activities. These problems were most evident when independent seatwork was assigned and when the teacher was instructing the whole class or small groups. There did not appear to be any differences in this behavior across academic subject areas. Arthur was reported to evidence six of the nine inattention symptoms and seven of the nine hyperactivity-impulsivity symptoms of ADHD on a frequent basis. These symptoms had been exhibited on a daily basis over the past 6 months (i.e., since the beginning of the school year). Furthermore, a significant number (i.e., five out of nine) of symptoms of oppositional defiant disorder were reported to occur on a frequent basis. The latter included noncompliance with teacher commands, frequent losses of temper, and deliberate annoyance of others. Problems associated with other disorders (e.g., conduct disorder, depression) were not reported to occur frequently.

As a result of his attention and behavior problems, Arthur was not achieving at a level commensurate with his classmates in either mathematics or reading skills. Nevertheless, his teacher did not feel that he had learning problems in either subject area. She reported that when she worked with him on an individual basis, he was able to demonstrate adequate knowledge in both skill areas (e.g., he was able to read high-interest material). When he was asked to complete independent work, particularly material that did not capture his interest, he was not able to demonstrate his abilities due to a lack of work completion.

Arthur had few friends in the classroom and was rejected by many of his peers. He did not follow the rules of games and frequently was

verbally and physically aggressive in unstructured settings (e.g., on the playground). His teacher felt that many of his disruptive behaviors (e.g., talking out in the classroom) were an attempt to elicit attention from his peers. Unfortunately, these efforts to promote peer interaction resulted in further ostracism by his classmates.

The teacher reported a great deal of frustration in trying to manage Arthur's behavior. Her interventions had included ignoring his disruptive behavior, making public reprimands to get back on task, sending notes to his parents following misbehavior, giving him a reward (e.g., access to classroom computer) for a week of appropriate behavior, and reducing the number of items he is expected to complete for seatwork. None of these strategies resulted in consistent behavioral improvement.

Arthur's report cards from previous school years were reviewed. The written comments of his kindergarten and first-grade teachers indicated that he displayed similar problems with behavior control, albeit less severe, as reported by his current teacher. A pattern of attention and behavior control problems beginning at an early age and occurring across school years was evident.

Arthur's mother was interviewed briefly by telephone. She corroborated the teacher's report of significant problems with inattention, impulsivity, and overactivity. In fact, nearly all of the symptoms of ADHD were reported to occur on a frequent basis at home. These had been evident since he was 3 years old and attended a nursery school program. She reported that Arthur was very defiant and uncooperative at home, especially in response to maternal commands. He did not sustain his attention to most household chores unless he was interested in completing them. A majority of the symptoms of oppositional defiant disorder were indicated to be present. No further DSM-IV symptomatology was reported. He did not have a history of significant medical difficulties or developmental delays. Arthur's father was reported to have had similar attention and behavior problems as a child, but was now a successful businessman. No other significant problems were reported for immediate family members. Finally, she stated that she was very interested in receiving help in managing Arthur's behavior as the stress level in the household was directly related to the degree to which he behaved in an appropriate manner. Previous attempts at intervention, including family therapy, had failed.

Maternal responses on the Child Behavior Checklist resulted in significant elevations on three subscales: Attention Problems, Aggression, and Delinquent. T-scores on these scales were above 67, or greater than the 95th percentile. All remaining subscales were below the 93rd percentile (i.e., in the normal range). Ratings on the ADHD Rating Scale-IV were two standard deviations above the mean for the total score and

both subscales. Arthur's attention problems were reported to occur in almost all home situations identified on the HSQ-R and their average severity was 2 standard deviations above the mean.

Teacher ratings were consistent with those provided by Arthur's mother. On the Teacher Report Form of the Child Behavior Checklist, significant elevations were obtained on the Attention Problems and Aggression subscales. T-scores were above 70, or greater than the 98th percentile for both dimensions. Remaining subscale scores were in the normal range. On the SSQ-R, Arthur was reported to exhibit attention problems in every school setting at a severity level that was 2 standard deviations above the mean. Teacher ratings on the SSRS resulted in a below-average score (T-score of 85) for social skills. Finally, ratings on the Academic Performance Rating Scale were in the clinically significant range (i.e., 1.5 standard deviations below the mean) for the Academic Productivity factor only.

Arthur's behavior was observed on several occasions in both the classroom and on the playground. Classroom observations (using the coding system described in Appendix 2.1) were conducted for 20 minutes on three occasions (once during math seatwork, twice while working on a phonics worksheet). Arthur was noted to display high rates of off-task verbal and motor behaviors. Specifically, he displayed off-task verbal behavior during an average of 20% of the observation intervals, while exhibiting off-task motor behavior approximately 15% of the time. In contrast, randomly selected classmates were observed to exhibit off-task verbal behavior only 4% of the time and were engaged in off-task motor behavior during less than 8% of the observation intervals. Arthur's playground behavior was observed on two occasions using the SOC. He was noted to be more verbally and physically aggressive than randomly selected classmates. Thus, direct observations were consistent with both parent and teacher report of significant behavior control difficulties.

Academic performance data were collected in conjunction with observations of Arthur's behavior during independent seatwork. He completed an average of 60% of the work assigned over these three occasions. This is in contrast to an average completion rate of 95% for his classmates. On a positive note, the accuracy of his work was uniformly high (i.e.,  $M = 93\%$  correct). This corroborates the teacher's contention that Arthur's abilities were commensurate with those of his classmates, but that he simply did not finish the assigned work.

The next step in the evaluation process was to interpret the results. Arthur's teacher and mother independently reported at least six inattention and six hyperactivity-impulsivity symptoms to be evident on a frequent basis. According to his mother, he began exhibiting ADHD-related

difficulties at the age of 3 with no diminishment of severity. Thus, these symptoms were evident at an early age and were chronic. Maternal and teacher ratings indicated Arthur's problems with inattention, impulsivity, and overactivity were more frequent and severe than those of the vast majority of other boys his age. This was corroborated by direct observations of his classroom behavior. Furthermore, attention problems were reported to be pervasive across numerous school and home situations. Finally, Arthur's ADHD-related behaviors had compromised his peer relationships and academic performance to a significant degree.

Although Arthur also was reported to display a significant number of oppositional defiant disorder symptoms, the presence of the latter could not fully account for his attention difficulties. It was particularly noteworthy that his symptoms of ADHD predated the onset of his problems with noncompliance and defiance. Specifically, the former were reported to occur as early as age 3, while the latter were not evident until Arthur was 6 years old. There were no indications of any emotional or learning difficulties that could account for his ADHD symptoms. Thus, he was determined to have both ADHD and oppositional defiant disorder.

Arthur's teacher was interviewed regarding the antecedents and consequences surrounding his off-task disruptive behavior in the classroom. In addition, the school psychologist recorded the frequency of antecedent (e.g., task presentation) and consequent (e.g., peer laughter) events during various classroom situations. Interview and observation data indicated that Arthur's disruptive behavior was most likely to occur when he was asked to complete independent seatwork and that this behavior was followed by frequent teacher reminders for him to focus on his work. It appeared that the function of his off-task behavior was to avoid and escape classwork.

Several interventions were implemented based on this evaluation. First, the school psychologist and teacher designed a classroom intervention program that included modifying task demands, token reinforcement, response cost, and a home-school communication program (see Chapter 5 for details of classroom programming). These interventions were designed to reduce Arthur's desire to avoid work by enhancing the positive aspects of the latter while providing greater motivation for him to complete assigned tasks. Second, referrals were made to a clinical child psychologist and Arthur's pediatrician for provision of parent training and a medication assessment, respectively. Parent training was necessary due to his high level of defiance and inattention at home. A medication assessment was recommended due to the severity of Arthur's ADHD and the high likelihood of continued impairment in functioning in a number of key areas. The chronicity and severity of his behavior

problems may require special education programming, which Arthur's family would like to avoid if possible. The probability of special education placement may be reduced if Arthur is a positive responder to medication. Finally, a social skills intervention was designed to address Arthur's playground behavior. Specifically, a peer-mediated procedure was used wherein several of his classmates were trained to prompt and reinforce appropriate social behavior. It was felt that this combination of interventions would be necessary over the long term given the chronicity and severity of Arthur's ADHD.

Continued assessment of Arthur's classroom performance was conducted by the school psychologist to evaluate his progress and to determine whether changes were warranted in his intervention program. Teacher ratings and classroom observations were obtained on at least a weekly basis during the initial stages of implementing the multicomponent behavioral intervention. Adjustments were made to the timing and frequency of reinforcement as a result. These same measures were used on a daily basis over several weeks of evaluating three different doses of Ritalin (i.e., 5 mg, 10 mg, 15 mg). Over the course of the school year, these measures were periodically readministered to ascertain whether further adjustments in behavioral procedures or medication dosage were necessary.

## **Case Example 2**

Keesha was a 10-year-old African American girl participating in a fifth-grade general education classroom in an urban school setting. She had experienced some difficulties with reading and math throughout her school years, although she had never been referred for special education services. Her current teachers became concerned that she might have ADHD because she frequently had difficulties concentrating on her work, often forgot class materials and assignments, and frequently appeared distracted. Teacher ratings on the Inattention subscale of the ADHD Rating Scale-IV were above the 85th percentile, indicating a need for further assessment of possible ADHD.

Parent and teacher ratings on the BASC resulted in clinically significant scores in the Inattention and Anxiety domains, with only borderline ratings of hyperactivity-impulsivity and conduct problems. Her mother's and teacher's responses to diagnostic interview questions revealed that although Keesha exhibited seven of the nine inattention symptoms of ADHD, she did not evidence many hyperactive-impulsive symptoms. Furthermore, her inattention problems were relatively recent (i.e., began occurring at the beginning of the school year). Keesha also was reported by both her mother and her teacher to exhibit symptoms of generalized

anxiety disorder (e.g., excessive concerns regarding the quality of her social and academic performance) that appeared to be worsening as the school year went on. Significant symptoms of oppositional defiant disorders or conduct disorder were not reported by Keesha's mother or teacher.

The school psychologist observed Keesha's behavior during reading and math class activities (e.g., teacher-led instruction, independent seatwork, small-group work). Keesha displayed off-task behavior (e.g., looking away from task or activity, talking with classmates) during approximately 15% of the observation intervals, whereas her classmates exhibited similar behavior during only 6% of those intervals. Keesha also was noted to complete far less written seatwork than her peers.

An interview with Keesha revealed that she "felt stupid" and frequently felt frustrated by her inability to read material at the same pace as her classmates. She recognized that she often did not get her work done and stated that she was worried that she would not pass fifth grade. She also indicated a concern about her mother's welfare as the latter had been ill frequently during the present school year. Finally, Keesha reported that she did not have many friends and that she felt embarrassed when she had to speak in front of a group of her peers. Self-report ratings on the RCMAS also were elevated.

Given that Keesha's attention problems were relatively recent, were not associated with hyperactivity-impulsivity symptoms, and appeared to be associated with significant anxiety disorder symptoms, the school assessment team concluded that she probably did not have ADHD. The school psychologist suggested that she receive individual counseling at school for her anxiety symptoms and that further evaluation by a clinical psychologist might be necessary. Furthermore, because of her chronic academic difficulties, assessment of possible learning disabilities should be conducted by the school team.

### INVOLVEMENT OF SCHOOL PROFESSIONALS IN THE ASSESSMENT PROCESS

In recent years, there has been controversy as to the role of school professionals in the diagnostic assessment of ADHD. For example, legislation in several states have limited school-based identification of students with ADHD, particularly for the purpose of referring them for possible medication treatment. Opponents of schools being involved in the diagnostic process point out that ADHD is a "medical diagnosis" given its inclusion in the DSM-IV, and therefore evaluations of this disorder should be conducted by medical professionals. Yet when one examines

the assessment methods that are empirically supported for identification of ADHD, it is clear that school psychologists and other educational professionals have the training and expertise to be involved in this process. In fact, recent survey data indicate that school psychologists were as likely to use empirically supported assessment methods as clinical psychologists (Handler & DuPaul, 2002). School psychologists also have more opportunities—to conduct observations in classroom and playground settings than do other professionals. Furthermore, very few medical professionals have that same background, expertise, and opportunities—at least as far as administration of rating scales and behavioral observations is concerned. Also, the mere inclusion of ADHD in the DSM-IV does not delegate this diagnosis solely to medical professionals, as diagnostic criteria for mental retardation and learning disabilities (entities that are assessed routinely by school psychologists) also are included in the DSM. Finally, because children with ADHD arguably experience their greatest difficulties in school settings, for school professionals to not be involved in identification is tantamount to malpractice.

To be clear, we are not advocating for school psychologists and other educators to be the only professionals identifying children with ADHD. On the contrary, we strongly believe that the diagnosis and treatment of students with this disorder requires collaboration among parents, school professionals, physicians, and other community-based professionals (e.g., clinical psychologists). A comprehensive assessment of ADHD requires the collection of reliable and valid data regarding child functioning across settings. All too often, community-based evaluations of children suspected of having ADHD do not include detailed information from the school. Alternatively, school-based evaluations may neglect parental input. Thus, school-based professionals should seek to collaborate with others, such that school-based data can be communicated in a systematic fashion to physicians and clinical psychologists so that informed diagnostic decisions are made (see Chapter 8).

## SUMMARY

The school-based evaluation of ADHD is comprised of multiple assessment techniques utilized across a variety of settings and sources of information. Following a teacher referral for possible ADHD, five stages of assessment are conducted: (1) screening for ADHD symptoms, (2) multimethod assessment, (3) interpretation of results to reach a classification decision, (4) development of the treatment plan, and (5) ongoing assessment of the intervention program. The goal of the evaluation is not simply to arrive at a diagnosis of ADHD, but to determine an interven-



tion plan that is likely to succeed based upon the information gathered. The use of a behavioral assessment approach incorporating parent and teacher interviews, parent and teacher rating scales, direct observations of behavior, and academic performance data is the optimal methodology for addressing both goals of the evaluation process. Importantly, assessment data are collected on an ongoing basis throughout treatment to determine the efficacy and/or limitations of the intervention program.