CHAPTER 3

ADHD and Comorbidity

Practical Considerations for School-Based Professionals

Children and adolescents with ADHD frequently present with significant co-occurring problems, including academic underachievement, conduct problems, anxiety symptoms, and depression, as well as intra- and interpersonal difficulties. The technical term used in psychiatry and psychology to describe the co-occurrence of two or more disorders is *comorbidity*. Comorbidity, or multiple disorders/problems, may be experienced either concurrently or developmentally (e.g., one problem, followed by another, over time). The term *comorbidity* also may be used to describe familial comorbidity, for example, to describe the co-occurrence of a child diagnosed with ADHD, as well as his or her parent being so diagnosed (Pliszka, 2011).

In a review of ADHD and psychiatric comorbidity, Spencer, Biederman, and Mick (2007) reported that oppositional defiant disorder or conduct disorder co-occur in approximately 30–50% of children and adolescents diagnosed with ADHD. They further reported findings of comorbid depression occurring in the range of 29–45% over the lifetime of individuals with ADHD. Jarrett and Ollendick (2008) report that anxiety disorders occur in about 25% of cases of ADHD. Data for two other issues of concern derived from Spencer and colleagues (2007) are that learning disabilities occur in about 25% of cases of ADHD, and that youth with ADHD are at significantly higher risk for substance use and abuse (e.g., tobacco, alcohol, and drugs) as compared with nonidentified peers.

The co-occurrence of problems with ADHD such as those noted previously presents a variety of challenges for education and mental

health professionals, chief among them assessment and diagnostic challenges, and treatment or support challenges. For example, the process of differential diagnosis is complicated by co-occurring problems, and leads to questions such as "Might one of these problems (e.g., ADHD) be causing the other (e.g., learning disabilities) or vice versa, and if so, are the presenting problems the result of one disorder or two?" From a treatment perspective, practitioners are faced with deciding how to sequence interventions, or how to concurrently treat multiple problems. Another reason that treatment becomes more complex with co-occurring problems is that functional impairment typically increases with comorbidity (see, e.g., Crawford, Kaplan, & Dewey, 2006; Connor & Doerfler, 2008).

In this chapter, we present an overview of ADHD and comorbid problems, and discuss issues relevant to professional practice in schools that arise as a function of comorbidity. After examining relationships between ADHD and learning problems, we consider ADHD and other externalizing problems, ADHD and internalizing problems, and ADHD and adjustment problems. We then delineate a number of assessment and treatment issues, and end with a discussion of ADHD and special education in schools.

As already noted, children with ADHD frequently present with significant co-occurring problems. For example, children with ADHD underachieve academically (Barkley, 2006; Forness & Kavale, 2001). Within classroom settings, these children often exhibit significantly lower rates of on-task behavior during instruction and independent work periods than those displayed by their classmates (Abikoff et al., 1977). As a result, children with ADHD have fewer opportunities to respond during academic instruction and complete less independent work relative to their peers (Pfiffner & DuPaul, in press). The latter may, at least partially, account for the association of ADHD with academic underachievement; up to 80% of children with this disorder have been found to exhibit learning and/or achievement problems (e.g., Cantwell & Baker, 1991; Frick et al., 1991; Pastor & Reuben, 2002). Furthermore, the results of prospective follow-up studies of children with ADHD into adolescence (Barkley et al., 2008) indicate some of the greatest risks for this population are chronic academic underachievement and higher rates of dropping out of school.

Given the association between ADHD and academic underachievement, it is important for school psychologists and other education professionals to be aware of the potential for learning difficulties among children diagnosed with or suspected of having ADHD. In addition, where warranted, it is incumbent upon these professionals to design and

implement effective prevention and intervention strategies to enhance academic functioning.

ASSOCIATION OF ADHD WITH ACADEMIC UNDERACHIEVEMENT

One of the most common and potentially debilitating difficulties exhibited by children with ADHD is chronic academic underachievement relative to their intellectual capabilities (Barkley, in press). The clear majority of students with this disorder obtain lower academic grades than expected across one or more subject areas. Furthermore, these children typically obtain significantly lower standardized achievement test scores than do comparable groups of typical children (Barkley, DuPaul, & McMurray, 1990; Cantwell & Satterfield, 1978). Problems with academic performance are differentially associated with ADHD even among groups of children with other psychological disorders. For example, children with ADHD have been found to receive the poorest teacher ratings of academic competence on the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001) among clinic-referred groups of children (McConaughy, Achenbach, & Gent, 1988). This academic underachievement presumably is due to the exhibition of the core symptoms (i.e., inattention, impulsivity, and motor restlessness) of ADHD in classroom settings, although this is a matter of some debate, as discussed in the next section.

The chronic achievement difficulties exhibited by many children with ADHD increase their risk for poor scholastic outcome, as measured by a number of variables. Approximately 40% or more of children with ADHD are placed in special education programs for students with learning disabilities or behavior disorders (Barkley, 2006). Furthermore, about one-third of children with ADHD in research samples have been retained in at least one grade before reaching high school (Barkley et al., 2008). School suspensions and expulsions occur at a higher than average frequency for students with ADHD, although this may be due, at least partially, to the higher rate of conduct disorder among children with attention deficits (Barkley, Fischer, et al., 1990). Moreover, the high school dropout rate is higher (i.e., about 10%) among students with this disorder relative to the general population (Barkley et al., 2008). The academic performance difficulties associated with ADHD may even persist into adulthood, as follow-up studies indicate that only about 20% of adults with a childhood history of the disorder are continuing their education at age 21 as opposed to about 50% of normal samples (Weiss & Hechtman, 1986, 1993). The educational problems and outcomes

associated with this disorder thereby increase the risk of experiencing significant vocational and social difficulties in adulthood (Barkley, Fischer, et al., 1990; Weiss & Hechtman, 1986, 1993; Whalen, Jamner, Henker, Delfino, & Lozano, 2002).

Association between ADHD and Academic Problems: Empirical Evidence

One factor that has obfuscated conclusions about the association between ADHD and learning problems is the confusion between academic *skills* deficits (i.e., learning disabilities) and academic *performance* deficits. The former presumes a lack of *ability* to learn a specific subject matter, at least as the material is currently taught. As such, the student may show deficiencies in the actual skills being taught even under conditions of individual instruction. Alternatively, a deficit in academic *performance* would be defined as an instance where a student possesses the necessary skills but does not demonstrate this knowledge on a consistent basis under typical classroom conditions (e.g., by producing accurate independent seatwork). In the case of the child with ADHD, a lack of attention to academic materials may lead to poor performance on assigned tasks even though the child may possess the requisite skills to complete the assignment correctly. Furthermore, inattention and behavioral control difficulties could compromise the student's *availability* for and engagement in learning activities (e.g., missing important teacher lecture points due to inattention), and thus lead to greater levels of academic underachievement (Silver, 1990). The academic performance of children with ADHD also may be deficient due to their inefficient and inconsistent problem-solving abilities (Douglas, 1980). Unfortunately, much of the work that has investigated the relationship between ADHD and academic problems has not clearly differentiated between academic skills deficits and performance difficulties.

Empirical investigations of the association between ADHD and academic problems primarily have employed correlational designs. Very few studies have been conducted that have used research designs allowing for attributions of causality (e.g., ADHD causes learning disabilities or vice versa). In contrast, much research has examined the prevalence of academic problems in populations of children with ADHD. Most of these studies defined academic problems as learning disabilities, although there have been great inconsistencies in the definition of this construct across studies. Nevertheless, the term *learning disabilities* will be used here when discussing this literature given the preference for this label by the authors of the studies reviewed. Although substantial numbers of children with ADHD have been found to evidence learning

disabilities relative to the normal population, the prevalence rates vary greatly between studies and the association between the two disorders is decidedly less than perfect.

Studies of Causal Relations between ADHD and Learning Disabilities

One informative set of longitudinal studies (Fergusson & Horwood, 1995; Fergusson, Horwood, & Lynskey, 1993; Fergusson, Lynskey, & Horwood, 1997) has been conducted in New Zealand with a sample of over 700 children, and has demonstrated clear linkages between ADHD behaviors in elementary and middle school (based on maternal and teacher ratings) and later levels of academic achievement (middle school through age 18). Specifically, structural equation models demonstrated that early high levels of ADHD behaviors were associated with concurrent and later lower levels of academic achievement.

Rapport, Scanlan, and Denney (1999) attempted to replicate the findings of Fergusson and colleagues (1993) by assessing ADHD symptoms and scholastic achievement in an ethnically diverse sample of 325 Hawaiian schoolchildren. These investigators confirmed the relationship between early ADHD symptoms (based on teacher ratings) and later academic achievement (based on a group-administered achievement test). Further analyses indicated that the influence of ADHD behaviors on scholastic status was mediated by both cognitive (e.g., memory) and behavioral (e.g., classroom deportment) variables.

Although structural equation modeling techniques do not allow direct tests of causality, they do provide measures of relative influence among variables. It is clear from the studies reviewed that ADHD-related behavior (e.g., inattentiveness and impulsivity) directly influences academic achievement in a negative fashion, with higher levels of ADHD symptoms associated with inferior scholastic performance. In fact, inattentiveness may play an even stronger role in influencing reading achievement than do other factors (e.g., family SES) purported to have an effect on reading (Rowe & Rowe, 1992). It is important to note, however, that the relationship between achievement and ADHD is most likely bidirectional, although this assumption was not supported by Fergusson and Horwood's (1993) study.

More Recent Perspectives on the Relationship between ADHD and Learning Difficulties

Researchers continue to investigate, speculate, and write about the relationship between attention deficits and learning difficulties. We discuss

some of this work here, and note from the outset that the basic conclusions to be drawn today remain consistent with those of previous work, as delineated in the following section of this chapter. Pastor and Reuben (2002) conducted the largest study examining the prevalence rates of ADHD and learning disabilities, and their co-occurrence. Here, researchers from the National Center for Health Statistics reported pertinent results from the National Health Interview Survey conducted in 1997–1998. Data were gathered for more than 8,600 children between the ages of 6 and 11 within more than 78,000 households determined to be representative of the U.S. population. From the data collected, the researchers generated national estimates of the prevalence of ADHD, the prevalence of learning disabilities, and the prevalence of the co-occurrence of these childhood disorders. A primary finding of the study was that in 1997–1998 over 2.6 million children 6–11 years of age were reported to have ever had a diagnosis of ADHD or learning disabilities. Three percent of children 6–11 years had been diagnosed with ADHD only, 4% with only learning disabilities, and 4% for children with both conditions. These same researchers reported very similar statistics for a sample of 23,000 children with ADHD who were studied between the years 2004 and 2006 (Pastor & Reuben, 2008).

These estimates are consistent with previous ones for prevalence of ADHD in the population of U.S. children (Barkley, 1990, 1998, 2006). Also consistent with previous research were findings that boys were three times more likely than girls to be diagnosed with ADHD (Pastor & Reuben, 2002, 2008). Of further interest, children with a sole diagnosis of learning disabilities were five times more likely to be participating in special education services relative to children with a sole diagnosis of ADHD. This finding is consistent with our previous discussion suggesting that some, but not all, children diagnosed with ADHD will experience significant learning problems warranting special education services. However, in comparing children with ADHD alone, children with learning disabilities alone, and children with both diagnoses, children with co-occurring ADHD and learning disabilities were reported to have the highest rates of prescription drug use and use of mental health services during the previous year (Pastor & Reuben, 2008). By comparison, usage rates of these two supports were next highest for children with ADHD, and lowest among the three groups for children with learning disabilities alone.

On a related prevalence topic, but with more of an educational service delivery focus, Forness and colleagues (Forness & Kavale, 2001; Forness, Kavale, Sweeney, & Crenshaw, 1999) report that children with ADHD represent more than 40% of children in special education programs in the category of emotional disturbance. Furthermore, children

with ADHD make up approximately 25% of the population of children receiving special education services for learning disabilities. These researchers go on to suggest that careful diagnosis of the presence or absence of comorbidities such as learning disabilities and conduct disorder is a crucial component to determining appropriate service delivery mechanisms and school-based interventions.

In a similar manner, other prominent researchers in the area agree with the importance of careful diagnosis (Barkley, in press; Shaywitz, Fletcher, & Shaywitz, 1995; Shaywitz & Shaywitz, 1991), while making the case that ADHD and learning disabilities are distinct disorders with different underlying causes. In positing ADHD as a disorder of disinhibition and self-control, with neuropsychological underpinnings, Barkley (1997a) suggests from his review of available research that ADHD involves demonstrated inhibitory and executive function deficits not found among children with learning disabilities. Similarly, Shaywitz and colleagues (1995) basically view learning disabilities as having their foundation in cognitive factors, but view ADHD as having behavioral foundations. They too recognize and underscore the importance of determining the occurrence of one, the other, or both in a given child who is struggling in the classroom with problems of learning and attention.

Summary

Despite the limitations noted, available empirical evidence indicates a consistent relationship between ADHD and significant academic skills deficits (i.e., learning disabilities). At least one out of every three or four children with ADHD is likely to have a specific learning disabilities (for a review, see DuPaul, Gormley, & Laracy, 2013). Furthermore, the majority of children with ADHD will be seen as underachieving academically, presumably due to inconsistent completion of assignments and/or low levels of accuracy on seatwork and tests. Nearly 40% of students with learning disabilities will display significant symptoms of ADHD as well. Thus, there is a great deal of overlap between the two disorders. It is important to note, however, that the association between ADHD and learning disability is not perfect and that they are not one and the same disorder. In fact, most children with ADHD do *not* have learning disabilities and most students with learning disabilities do *not* meet diagnostic criteria for ADHD. Nevertheless, the fact that a significant minority of children in each group can be identified with both disorders must be considered when planning school-based assessment and intervention procedures, as discussed later in the chapter.

It is unclear whether ADHD "causes" or leads to learning disabilities in some children or vice versa. No study to date has been conducted that adequately addresses this issue. It is perhaps a task that is nonachievable. Investigations employing structural equation modeling have shed some light on this question, however. These indicate that ADHD-related behaviors, specifically inattentiveness and hyperactivity–impulsivity, exert a strong negative influence on academic achievement. This relationship may be reciprocal (i.e., level of reading achievement may influence classroom inattentiveness); however, the effect of ADHD on achievement appears to be more clear-cut. In fact, the results of one study (Rowe & Rowe, 1992) indicate that inattentiveness is one of the most prominent factors determining reading achievement.

Although the direction of causality is presently unknown, it is clear that many children with ADHD have academic skills deficits that must be addressed. It has been speculated that certain ADHD presentations may be associated with a greater likelihood of learning problems. For instance, some studies have investigated whether children with ADHD, predominately inattentive presentation, are at higher risk for learning disabilities than children with ADHD, combined presentation. In general, these studies have not found significant differences in the prevalence of learning disabilities between ADHD presentations (Lahey & Carlson, 1992). Conversely, certain subtypes of children with learning disabilities may be at higher risk for behavior control problems, including ADHD. Specifically, Rourke (1988) has identified children with nonverbal learning deficits to be at higher risk for such difficulties. In fact, future research into the association between ADHD and learning disabilities should divide samples into known presentations or subtypes of each disorder rather than grouping children into two heterogeneous samples. The former procedure may provide the best opportunity to identify which children with ADHD are at greatest risk for learning deficits and vice versa.

ASSESSMENT GUIDELINES: ADHD AND ACADEMIC PERFORMANCE DEFICITS

As previously noted, the academic achievement difficulties of children with ADHD can be divided into two categories: academic performance deficits and academic skills deficits. Thus, the school-based assessment of students referred for attention problems must include measures of academic achievement that tap potential performance and skills deficits. The assessment of ADHD is detailed in Chapter 2. The following section

is intended to delineate evaluation procedures relevant to the academic functioning of referred children. First, methods to screen for academic skills deficits among children who might have ADHD are discussed. In similar fashion, procedures to screen students with academic skills difficulties (i.e., learning disabilities) for ADHD are covered. Next, because the most frequent achievement problem exhibited by children with ADHD is inconsistent academic performance (e.g., work completion), techniques to assess possible performance deficits are detailed. Finally, methods to determine whether a child's attention problems are due to a lack of academic skills, ADHD, or both are delineated. A case study is presented to further explicate this challenging discrimination.

Screening Procedures

Whenever a child is referred due to attention and behavior control problems possibly related to ADHD, several procedures should be incorporated into the evaluation to screen for academic skills deficits. First, questions related to academic difficulties should be incorporated into the parent and teacher interviews (see Chapter 2; see also Barkley, 1990, 1998, 2006, in press). In particular, the child's teacher should be asked to provide information regarding possible difficulties in each subject matter area. Second, teacher ratings of academic achievement difficulties should be obtained through use of the Academic Performance Rating Scale (APRS; DuPaul, Rapport, & Perriello, 1991) or the Academic Competence Evaluate Scale (ACES; DiPerna & Elliott, 2000). Scores that are greater than or equal to 1.5 standard deviations below the mean for the child's age and gender for the APRS Total Score and Academic Success subscale are considered significant for screening purposes. The child's teacher should be queried about responses to specific APRS items to clarify the specific nature of possible academic difficulties.

In most cases, children with ADHD will be reported to be at or near grade level across all subject areas with no question of academic skills deficits. Ratings on the Academic Success subscale of the APRS would be expected to be within 1.5 standard deviations of the mean. These same children are typically reported to evidence problems with academic performance (e.g., poor completion and/or accuracy on independent seatwork) with below-average ratings for the APRS Total Score and Academic Productivity subscale. Further assessment of academic performance difficulties should be conducted, as discussed below.

If interview and rating scale data indicate potential academic skills deficits, further assessment of learning abilities will be necessary. Although typically a psychoeducational evaluation incorporating IQ and achievement measures is conducted, we prefer a behavioral assessment

of academic skills deficits for a number of reasons (e.g., greater relevance to teaching strategies, stronger ecological validity). A behavioral assessment usually will include curriculum-based measurement probes (Shinn, 1989, 1998, 2010), direct observations of task-related behavior, review of written products, and problem-focused interviews with the teacher (for details, see Shapiro, 2011a; Shapiro & Kratochwill, 2000). The assessment of academic functioning should be conducted contemporaneously with further evaluation of ADHD in the context of an RTI framework, as discussed in Chapter 2.

Children referred for an evaluation of possible learning disabilities also should be screened for possible ADHD given that they are at higher risk for the latter disorder relative to their peers. This screening should be conducted even if the referral agent did not specify attention and/or behavior problems as part of the reason for the evaluation request. Screening procedures for ADHD are discussed in detail in Chapter 2. These include questioning the teacher(s) about the presence of possible ADHD-related behaviors. This is most easily accomplished by having the teacher complete the ADHD Rating Scale–IV (DuPaul, Power, et al., 1998). Using DSM criteria, 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 symptoms is reported, further assessment of ADHD would be pursued in cases where other assessment information warranted it.

Assessing Academic Performance Deficits

Even when children with ADHD do not demonstrate significant weaknesses in specific academic skills, they often have difficulty completing independent work in a timely fashion, obtaining accurate scores on classroom tests, studying for exams, taking notes on classroom lectures, and following through on homework assignments. In fact, behaviors related to academic performance are among the most important targets for change in any intervention program devised to address ADHD. Therefore, assessment of academic behaviors should be a standard component of an evaluation concerned with ADHD.

Some of the more important academic behaviors to assess include the completion and accuracy of independent seatwork, completion and accuracy of homework, and organizational skills (e.g., neatness of desk, accuracy of lecture notes). Methods for obtaining these data include direct observations of classroom behavior, teacher ratings, and collection of products (e.g., homework assignments, seatwork) completed by the student. These methods are discussed in greater detail in Chapter

2. It is expected that children with ADHD will complete significantly less work and/or complete tasks in a less accurate fashion than their classmates.

Differentiating between ADHD and Academic Skills Deficits

As reviewed previously, there is a great deal of overlap between ADHD and academic skills deficits or learning disabilities. Thus, many youngsters referred for an evaluation concerning ADHD will be found to exhibit symptoms of both ADHD and academic skills deficits. The vast majority of children with ADHD, however, do not have problems with academic skills per se. Rather, their problems with inattention and impulsivity lead to difficulties following directions; completing tasks in a consistent, accurate fashion; and obtaining test scores that accurately represent their knowledge. Thus, one of the goals of an evaluation where ADHD is evident, is to determine whether a student's academic problems are due to ADHD, learning disabilities, or both. What makes this discrimination particularly difficult is the ambiguity of the many definitions of learning disabilities, as well as the inconsistencies in learning disability definitions across school districts. Regardless of the definition of learning disability employed, the goals relative to an evaluation of ADHD are twofold. The first is to assess whether a child's apparent symptoms of ADHD meet criteria for this disorder. The second is to gather information to help judge the extent to which a student's academic problems are accounted for by difficulties with inattention, impulsivity, and overactivity.

Several factors should be considered in determining whether a child's problems with attention in school, impulse control, and activity level are due to ADHD or are secondary to academic skills deficits. These considerations are listed in the context of three possible scenarios:

1. If the data collected in the course of the evaluation, as described in Chapter 2, indicate clinically significant levels of ADHD symptoms evident across settings on a chronic basis, it is likely that the child's academic problems are secondary to ADHD. In this case, parent and teacher interview data, parent and teacher ratings, and the results of direct observations are consistent in placing the child's ADHD-related behavior in the extreme range for his or her gender and age. Further assessment of possible learning disabilities is warranted only if there is some question of below-average *ability* in one or more academic areas.

2. A second scenario is one in which the assessment data consistently indicate that few symptoms of ADHD are present and those

that are observed are exhibited primarily in academic situations (e.g., classroom instruction, independent seatwork). In such cases, parent and teacher interview data, parent and teacher ratings, and direct observation data will be in the normal range for ADHD symptoms. If academic problems are present, then hypotheses other than ADHD must be explored, including the possibility of academic skills deficits.

3. Conclusions based on the above two scenarios are relatively straightforward. More difficult professional judgments must be made in cases where assessment data are inconsistent relative to the frequency, severity, and cross-situational pervasiveness of possible ADHD symptomatology. For instance, a child's teachers may report significant ADHD symptoms, while his or her parents report few, if any, attention and behavior control problems. Although the general problem of interpreting inconsistent assessment data is discussed in Chapter 2, the specific discrimination between ADHD and academic skills deficits will be aided by considering the following:

a. Children with ADHD typically obtain clinically significant ratings on parent and teacher ratings of disruptive behavior problems in addition to ADHD (e.g., Aggression subscale on the CBCL). Children with learning disabilities in the absence of ADHD usually do not obtain high scores in these dimensions (Barkley, DuPaul, & McMurray, 1990). Furthermore, children with learning disabilities rarely are impulsive, disinhibited, and aggressive, whereas children with ADHD are more likely to display such difficulties (Barkley, in press).

b. Children with learning disabilities obtain average-range scores on measures that tap the situational pervasiveness of behavior (e.g., Home Situations Questionnaire [HSQ], Barkley, 1990; School Situations Questionnaire [SSQ], Barkley, 1990) and attention (e.g., HSQ-R, DuPaul & Barkley, 1992; SSQ-R, DuPaul & Barkley, 1992) problems, while those with ADHD usually receive high scores for the number of problem situations and the mean severity of behavior problems on these measures (Barkley, DuPaul, & McMurray, 1990).

c. Children with learning disabilities who do not have ADHD usually are observed to exhibit rates of on-task behavior and work completion that are no different from their normal counterparts when observations of independent seatwork are conducted (Barkley, DuPaul, & McMurray, 1990).

d. Students with learning disabilities also differ from those with ADHD with respect to the onset and pervasiveness of apparent ADHD symptoms. Usually, children who are exhibiting problems

with attention and behavior control due to academic skills deficits lack an early childhood history of hyperactivity and problem behavior. The latter is a hallmark of ADHD as it is typically a disorder with an early onset. In contrast, the attention problems of students with learning disabilities usually arise in middle childhood (i.e., third or fourth grade) and are exhibited only in specific situations. Usually, attention problems are reported to occur only when they are receiving academic instruction and/or completing work in their most problematic subject areas. Alternatively, children with ADHD are likely to exhibit ADHD symptoms across most, if not all, school and home situations.

e. Children with ADHD alone are likely to obtain scores on individual academic achievement tests that are similar to their peers, in contrast to the below-average scores usually obtained by students with learning disabilities.

Overall, children with academic skills deficits can be differentiated from those with ADHD on the basis of the onset, severity, and situational pervasiveness of observed ADHD symptoms. In particular, the more specific the attention and behavior problems are to academic situations and tasks, the more likely it is that these difficulties are secondary to academic skills deficits rather than to ADHD.

CASE EXAMPLE

David was an 8-year-old boy referred by his second-grade teacher. Concerns were raised regarding problems with inattention and difficulties of an academic nature. David was reported to exhibit significant difficulties completing assigned work within a reasonable time period and to daydream frequently during classroom instruction. He displayed these problems on an inconsistent basis across school days. The teacher was particularly concerned that David was making very slow progress with reading skills and had difficulties comprehending material he had just finished reading.

An interview with David's mother indicated his birth, early development, and medical histories were unremarkable. His activity level as a toddler and preschooler was described as "normal for a boy." His father was reported to have evidenced learning problems and possible ADHD as a child, but no other significant problems were reported for family members. His mother reported no significant problems handling David's behavior at home and described his peer relationships as "excellent." David was not involved in special services or professional therapy at the

time of the evaluation, although his mother did report recently placing him on a modified "sugar-free and food-additive-free" diet with resultant mild changes in behavior control. No formal behavior management strategies were being used in either home or school settings.

Initially the school team suggested several instructional modifications for implementation in the general education classroom. Although some improvement was noted, David's response to intervention was below goals set by the team. A subsequent psychoeducational evaluation was conducted by the school psychologist, which included intelligence testing and several individual achievement tests. Results suggested David was of average intelligence with a relative weakness in verbal abilities. Achievement testing indicated a number of deficits in language and reading functioning. Based on these results, the school team suggested that David receive academic support in reading and language arts skills several times per week with a resource room teacher.

Several measures were employed to evaluate whether David might have ADHD. A diagnostic interview with David's mother was conducted wherein only six of the 18 DSM-5 (American Psychiatric Association, 2013) symptoms of ADHD were reported as present on a frequent basis. These included distractibility and often shifting from one uncompleted activity to another. Notably, David was reported to evidence inattention only on tasks that were school related (e.g., reading), but was able to complete assigned household chores in a reliable fashion. No problems with impulsivity or overactivity were reported. Further reports indicated that David did not exhibit behaviors related to any other behavior disorder including oppositional defiant disorder, conduct disorder, depression, or anxiety disorder.

David's mother completed several rating scales to document the severity of his behavior control problems relative to other boys his age. Her responses on the CBCL resulted in a normal range profile (i.e., T-scores < 65) across all clinical scales including those related to ADHD. On the ADHD Rating Scale–IV, only five of the 18 symptoms of ADHD were reported to occur on a frequent basis. Ratings on the HSQ-R indicated mild attention problems were present only in selected home settings (e.g., when asked to complete homework). Scores on the Social Skills Improvement System (SSIS; Gresham & Elliott, 2008) were in the normal range. Thus, parent ratings did not indicate ADHD symptoms to be problematic, nor were these seen as pervasive across settings.

David's second-grade teacher completed similar questionnaires. Her responses on the Teacher Report Form of the CBCL resulted in borderline significant ratings (i.e., T-score = 66, or greater than the 93rd percentile) on the Attention Problems subscale. Remaining scales, including those related to other disruptive behavior disorders, were in the normal

range. Scores on the SSIS did not indicate clinically significant levels of peer relationship difficulties. On the ADHD Rating Scale–IV, five of the 18 symptoms of ADHD were reported to occur on a frequent basis. On the SSQ-R, mild attention problems were reported to occur across most structured classroom settings. The most significant problems related to ADHD that were reported were with respect to concentration and completion of tasks, not with impulse control or hyperactivity. Thus, the symptoms reported by David's teacher were more consistent with ADHD, predominantly inattentive presentation.

David was observed in his regular classroom on several occasions using the Behavioral Observation of Students in Schools (BOSS; Shapiro, 2011b). Each observation took place during a time when David was assigned independent seatwork related to reading and language arts. Averaged over three 20-minute observations, David was observed to be actively or passively engaged approximately 80% of the time, although these percentages ranged from a low of 53% to a high of 90%. Thus, his task-related attention was quite variable across days. David exhibited off-task motor (e.g., fidgety restless) behavior during an average of only 28% of the observation intervals. David completed an average of 80% of the work assigned to him at a relatively low accuracy level (i.e., 74%). Although he did evidence some behaviors related to ADHD, his main problems were related to his understanding and accurate completion of assigned tasks.

In summary, most of the data collected in the course of this evaluation were not consistent with the conclusion that David met the criteria for a diagnosis of ADHD. In fact, only one piece of information, teacher ratings on the CBCL, was in the clinically significant range for this disorder. The remaining measures were in the normal range, including parent interview data, parent and teacher ratings on the ADHD Rating Scale–IV, parent ratings on the CBCL, and behavioral observation data. Behaviors related to ADHD were strictly in the realm of inattention and, more specifically, attention during academic tasks only. According to his parents, David was quite attentive to household chores and other nonacademic tasks assigned to him. Thus, David's problems with inattention were seen to be a reflection of his frustration in attempting tasks that were quite difficult for him rather than representing ADHD. Recommendations included further behavioral assessment of possible academic skills deficits to determine appropriate goals and procedures to increase his scholastic competencies. Although it was assumed that improving his academic skills would enhance his task-related behavior, the latter was directly targeted for change using a classroom-based contingency management program combined with a daily report card system (see Chapter 5).

Clearly, problems of learning and achievement will be high priorities for school-based personnel tasked with supporting students with ADHD. In addition, school-based professionals in these roles must also remain cognizant of co-occurring externalizing problems such as conduct disorder and oppositional defiant disorder.

ADHD AND OTHER EXTERNALIZING DISORDERS

As noted earlier in this chapter, oppositional defiant disorder and conduct disorder co-occur in approximately 30 to 50% of children and adolescents diagnosed with ADHD (Spencer et al., 2007). Conduct disorder involves serious misbehavior, that being usually aggressive or destructive, and is oriented toward people, animals, or property that may be characterized as belligerent, destructive, threatening, physically cruel, deceitful, disobedient, or dishonest (American Psychiatric Association, 2013). Often, behavior associated with conduct disorder also is illegal (e.g., stealing). In contrast, oppositional defiant disorder may be diagnosed when children or adolescents display consistent patterns of tantrums, arguing, and angry or disruptive behavior toward parents and/or other authority figures (American Psychiatric Association, 2013).

Connor and Doerfler (2008) studied 200 clinic-referred children and adolescents who were diagnosed with ADHD, with the intent of examining the extent to which clinical and/or functional impairment differences might be found between three groups: children with ADHD, children with ADHD and comorbid oppositional defiant disorder, and children with ADHD and comorbid conduct disorder. Their findings indicated, based on obtained parent ratings, that the combined ADHD + conduct disorder group was rated the highest of the three groups on levels of aggression and delinquency, followed by the ADHD/ODD group in the middle of these ratings, and the ADHD alone group having the lowest rated levels of aggression and delinquency. The combined ADHD/CD group also was found to have significantly higher scores, relative to the other two groups, on a measure of functional impairment. Connor and Doerfler suggested their findings indicate the need to consider child psychiatric diagnoses separately, and that the three groups reported on should receive differential treatment considerations, such as more aggressive treatments, higher doses of intervention, and more careful monitoring with the ADHD comorbid groups.

Similarly, Booster and colleagues (2012), in a study of 416 children with ADHD, found significantly more functional impairment among those with a comorbid disorder relative to ADHD alone. Specifically, these researchers found that children for whom ADHD was

accompanied by a comorbid externalizing disorder (with or without a concomitant internalizing comorbidity) displayed poorer social skills than those with ADHD alone. They also found that children experiencing concomitant problems with ADHD and both an externalizing and internalizing comorbidity exhibited greater homework problems than their ADHD peers with fewer than two types of comorbidity. Finally, they reported that older children displayed significantly poorer social skills and greater homework problems as compared with younger children. These results formed the basis for concluding that practitioners need to pay careful attention to addressing both social skills and homework problems among children with ADHD and comorbid behavior disorders.

ADHD AND INTERNALIZING DISORDERS

Internalizing disorders of childhood include both depression and anxiety disorders. As noted previously, Spencer and colleagues (2007) reported that depression is likely to occur in every one out of two or three children with ADHD (e.g., 29–45%). Similarly, anxiety disorders occur in about 25% of cases of ADHD (Jarrett & Ollendick, 2008).

In an effort to elucidate comorbid ADHD and depression, Blackman, Ostrander, and Herman (2005) conducted a study to compare the clinical, social, and academic functioning children with co-occurring depression with ADHD (ADHD + depression), relative to children with ADHD alone, and children without ADHD. Their participants consisted of 130 children who were not experiencing problems, another 130 children were identified as experiencing ADHD related problems alone, and an additional 26 children were diagnosed with ADHD + depression. Consistent with many prior studies, children in both ADHD groups were significantly more impaired than typically developing controls. Furthermore, children in the ADHD + depression group were more impaired with respect to social competence than were children in the ADHD alone group; however, both ADHD groups were equally impaired regarding academic performance. These findings imply the need for caregivers to be cognizant of the potential need for greater supports in the area of social functioning for children and adolescents presenting with ADHD and depression.

Understanding the intersections of ADHD and depression may also require a further look at parenting, as clarified by Ostrander and Herman (2006). Here, these researchers examined the roles of parent behavior management and child locus of control in mediating the relationship between ADHD and depression. Their study involved a sample of 232

children with ADHD and 130 community controls. Results indicated that for older subjects (10 years and older), cognitive locus of control partially mediated the relationships between ADHD and parent management and depression. Findings also indicated that parent management partially mediated the relationships of ADHD with locus of control and depression. For children under 8 years of age, however, locus of control did not mediate the effects of parent management and ADHD on depression. Rather, for the younger group, only parent management—an environmental variable—explained the relationship between ADHD and depression. Finally, the results indicated that for children 8–9 years old, both locus of control and parent management partially were responsible for the ADHD–depression relationship; however, similar to the younger children, locus of control did not mediate the parent management–depression relationships.

On the basis of these findings, Ostrander and Herman (2006) suggest that effective interventions to treat and prevent depression in children with ADHD may vary depending on the child's age. For example, interventions to treat comorbid depression in younger children should target altering problematic parenting style, because they found that parenting marked by inconsistent expectations and unpredictable consequences was associated with symptoms of depression in children with ADHD. The researchers went on to say that "Parent management training to promote consistency, structure, and monitoring—either alone or in combination with cognitive interventions for the child—may help alleviate some of the internalizing symptoms in younger children with ADHD. For older children with ADHD who are also depressed, interventions need to expand beyond a focus on parenting practices and include altering negative cognitions around lack of perceived control" (Ostrander & Herman, 2006, p. 96).

ADHD WITH COMORBID ANXIETY

Anxiety disorders in children and adolescents can take several forms. The most common is generalized anxiety disorder in which children worry excessively about things such as family issues, school performance, and peer acceptance/relationship, for example. Separation anxiety disorder is a condition involving significant difficulties separating from or being away from parents. Children may also experience obsessive–compulsive disorder, which is characterized by thoughts (obsessions) that are unwanted and intrusive, as well as by feeling obligated to repeatedly perform rituals and routines (compulsions) in efforts to ease anxiety.

Two recent reviews can help further our understanding of both conceptual and practical issues in working with children presenting with comorbid ADHD and anxiety disorders. Schatz and Rostain (2006) reviewed available research from 1998 to 2005 on this particular comorbidity, with an eye toward explicating various cognitive and neurological explanatory models. The more practical findings of their review are summarized briefly here. First, their review suggested that anxiety in ADHD may partially ameliorate response inhibition deficits as well as impulsivity (i.e., anxiety symptoms may serve a protective role). Alternatively, there is evidence that anxiety in children with ADHD may further impair working memory deficits. Schatz and Rostain speculate that anxiety may help regulate impulsive behaviors associated with ADHD because of deficits in typical inhibitory mechanisms. Clearly, more research is needed to examine the degree to which anxiety symptoms diminish impulsivity associated with ADHD.

Jarrett and Ollendick (2008) also reviewed the literature on comorbid ADHD and anxiety, with the intent of both improving our understanding of this specific comorbidity, and informing future research and practice. Their efforts first framed available research around a set of contexts for informing explanations of the ADHD–anxiety relationship. These related contexts included genetics, temperament, neurological functioning, family influences, and temporal relationships (e.g., relative onset) between the two. Several conclusions follow from their review. First, ADHD and anxiety appear to have independent genetic transmission. Next, potential mechanisms for ADHD–anxiety comorbidity are postulated indicating a role for both neurological factors (e.g., interaction of both cortical and subcortical brain malfunction) and family influences (e.g., high levels of parent anxiety and overprotective approaches to parenting). Third, evidence supports that there are multiple pathways relating the two areas of functioning (e.g., evidence for both anxiety occurring first during development, and for ADHD occurring first). Finally, the primary and abundantly clear conclusion Jarrett and Ollendick draw from their review is that ADHD–anxiety comorbidity is not clearly understood as a function of extant literature; likely, the safest conclusion is that there are multiple viable explanations for the relationship.

From a practical point of view, Jarrett and Ollendick (2008) discussed the potential value of cognitive-behavioral therapy in treating comorbid ADHD–anxiety. Here the authors noted the work of Nigg, Goldsmith, and Sachek (2004) who discussed two potential pathways for the ADHD–anxiety relationship including early regulatory difficulties leading to problems managing anxiety, and another pathway wherein higher anxiety produces cognitive or regulatory dysfunction. The latter

pathway involves intact executive functioning that is compromised by high levels of anxiety (Jarrett & Ollendick, 2008). They further suggest that future work on behavioral and cognitive-behavioral interventions might best focus on distinguishing (e.g., subtyping) based on these two pathways, and would likely be more successful with the latter pathway.

These same researchers have begun to explore intervention strategies for comorbid ADHD + anxiety. Jarrett and Ollendick (2012) designed and evaluated what they term an integrative treatment protocol for ADHD, comorbid with anxiety. The intervention consisted of a 10-week program combining parent training in behavior management and family based cognitive-behavioral therapy—targeting ADHD and anxiety, respectively. Working with eight children between the ages of 8 and 12, diagnosed with ADHD–anxiety disorders, the researchers found significant treatment effects on both ADHD and anxiety-related symptoms between pretreatment and posttreatment measures. This work is interesting in documenting concurrently delivered intervention strategies, for two different problems, to be effective simultaneously.

While Jarrett and Ollendick (2012) focused concurrently on both ADHD and anxiety-related symptoms, another recent treatment study has focused solely on the anxiety portion of comorbid ADHD–anxiety. Here, Houghton, Alsalmi, Tan, Taylor, and Durkin (in press) used a cognitive-behavioral approach to treating anxiety in nine 13- to 16-year-old adolescents with ADHD–anxiety. The weekly treatment protocol had each of the adolescent participants focus on four individualized anxiety-inducing events/times in their daily lives, and learn to use strategies intended to reduce their anxiousness. Outcome measures consisted of both self-recorded anxiety and self-report ratings of anxiety symptoms. Results indicated the cognitive-behavioral treatment approach produced significant decreases in anxiety across participants.

ADHD AND ADJUSTMENT PROBLEMS

In addition to experiencing comorbid learning and psychiatric disorders, children and adolescents with ADHD evince a wide range of adjustment problems and problems of daily living. As the following studies document, these problems vary by age and gender, and range from problems of adjustment and mood to educational problems, substance use, and risk for eating disorders.

Barkley, Fischer, Smallish, and Fletcher (2006) reported on a follow-up study of 19- to 25-year-old participants, originally seen a minimum of 13 years previously. Participants included those in a "hyperactive" group and a control group. The authors noted that 32% of the

hyperactive group failed to complete high school. They were rated lower in job performance by employers relative to control group members, as well as had been fired from more jobs. In addition, by comparison with the controls, they had fewer close friends and more social problems. Also of note, more participants in the hyperactive group become parents (38% vs. 4%) as young adults, and had been treated for sexually transmitted disease (16% vs. 4%). These findings raise concerns about adaptive functioning in early adulthood that are similar to those of previously reported research, and add to the list of concerns, those of precocious sexual activity and early parenthood.

Another descriptive study focused on the experiences of adolescents with low, medium, and high levels of ADHD characteristics (Whalen et al., 2002). These researchers used unique methods of inquiry they refer to as "experience sampling." More than 150 participants kept a log of their behaviors, moods, and social contexts, two times per hour across two separate 4-day time periods. Adolescents with high levels of ADHD characteristics reported more negative affect/moods including anger, anxiety, stress, and sadness, as well as lower amounts of happiness and well-being. Additionally, participants with moderate levels of ADHD symptoms reported similar patterns of mood/affect relative to the low-level-ADHD characteristics group. Furthermore, male participants in the middle- and high-ADHD groups demonstrated higher levels of anxiety relative to low-ADHD males, but the low-ADHD females reported higher rates of anxiety relative to the other groups. Finally, the researchers reported elevated rates of nonacademic pursuits, and alcohol and tobacco use among the adolescents with ADHD characteristics, as well as more exposure to peers and less exposure to family members. These findings provide further evidence of the need to be concerned with the developmental trajectories, adjustment, and health/outcome risks of teens with ADHD, while also suggesting there may be gender differences in these risks.

Other researchers have also begun to explicate gender-related issues in the development of children and adolescents with ADHD. For example, Hinshaw, Owens, Sami, and Fargeon (2006) reported the results of a 5-year prospective study of girls with ADHD, ages 11–18, who had been diagnosed in childhood with ADHD. The study included a matched comparison group without ADHD. Girls with ADHD were found to be at risk for developing and/or displaying higher rates of both internalizing and externalizing symptoms. In addition, girls with ADHD scored significantly higher with respect to symptoms of eating disorders, and significantly lower with respect to social skills and academic performance. These results suggest the need to monitor adolescent girls with ADHD

for a range of adjustment problems, including both academic and social skills problems, as well as eating problems/disorders.

It is clear that children and adolescents with ADHD are at risk for, and will present with, a wide range of behavior and adjustment problems across social, academic, employment, and daily living domains. The intervention and support needs indicated by these problems are the focus of the final sections of this chapter.

IMPLICATIONS OF COMORBIDITY FOR ASSESSMENT, MONITORING, AND INTERVENTION

High rates of comorbid academic, adjustment, and social problems in children and adolescents with ADHD create the need for a heightened level of attention and consideration of such co-occurring problems in school and mental health settings. For example, as already detailed in the assessment chapter of this book, diagnostic evaluations should always include broadband rating scales and broad-ranging informant interviews that can help screen for co-occurring problems. In addition, children and adolescents diagnosed with ADHD should be periodically screened and monitored for adjustment problems, especially throughout their adolescent years. The focus of such screening might include overall functioning in the areas of adjustment and mood, substance use, sexual activity, eating and body image (especially for females), and academics. With familial ADHD comorbidity in mind, initial evaluations and treatment planning should also include brief interview-based screening for ADHD and adjustment problems with parents.

IMPLICATIONS OF COMORBIDITY FOR TREATMENT

In keeping with the zeitgeist of contemporary treatment for ADHD and related problems, the first implication of comorbidity for treatment is that of relying on evidence-based treatments. As Pelham and Fabiano (2008) and Evans, Owens, and Bunford (in press) have concluded in their reviews of the ADHD treatment literature, behavioral intervention is the main evidence-based psychological treatment available, and it should be delivered with a focus on functional outcomes/impairments. As discussed in Chapter 2, functional analyses should be used to design interventions in the selection of target behaviors and identification of environmental factors (e.g., antecedents and consequences) maintaining these behaviors.

Using a functional impairment framework then, implies that supports for children and adolescents with ADHD will need to variously assess, monitor, and target for treatment the following areas of functioning: behaviors related to ADHD such as impulsive behavior and decision making; academic achievement and behaviors that enable it, such as work completion and accuracy, and academic organization; intrapersonal adjustment, including affect, mood, and emotion regulation; interpersonal relationships including those with peers and adults; and family adjustment relative to parenting and living with a child with ADHD. Further considerations of the severity, chronicity, and prioritization of current presenting problems can also be useful to creating a treatment/support plan. Attention to these factors will help the practitioner to avoid the problems inherent in a one-size-fits-all approach to the treatment of ADHD.

The determination of whether a student's academic, behavioral, and adjustment difficulties are due to ADHD, an academic skills problem, another disorder or adjustment problem, or some combination of all of these issues has direct implications for classroom intervention (Cantwell & Baker, 1991). The behaviors targeted for change, the treatment settings, and the specific interventions employed will vary as a function of assessment decisions. As discussed in Chapter 5, the usual treatment targets for a student with ADHD are behaviors related to classroom deportment, such as paying attention to instruction, staying seated, and following classroom rules. To the extent that academic performance difficulties are present, then certain scholastic behaviors will be targeted as well, including timely completion of seatwork and/or accuracy of written work. For those children with academic skills deficits, achievement-related behaviors and academic skill development are the primary targets for intervention. These would include not only behaviors related to independent seatwork but other academic survival skills as well, such as correct responding during reading group, accurate note taking during lectures, and providing correct answers to written test items. When a child is found to have both ADHD and an academic skills deficit, scholastic behaviors typically serve as the primary targets for intervention. This is due to the frequent finding that when academic performance is enhanced, classroom deportment often improves as well (DuPaul & Eckert, 1997; Hinshaw, 1992; McGee & Share, 1988). It is not unusual, however, to find circumstances where both academic and deportment behaviors must be targeted for change to obtain consistent and durable effects. Furthermore, for those youngsters who have ADHD and learning deficits, extrinsic motivational programming must be combined with academic interventions regardless of the specific behaviors targeted for change (Hinshaw, 1992).

Intervention programs designed to treat children with ADHD commonly are applied across a variety of settings given the cross-situational pervasiveness of symptoms of this disorder (Barkley, in press). For instance, token reinforcement systems may be applied across a variety of situations (e.g., playground, classroom, cafeteria) in both school and home settings in an attempt to enhance compliance with rules and attention to assigned tasks. In contrast, the primary intervention setting for children with academic skills deficits is the classroom. Although a number of classroom settings may be involved, treatment of academic difficulties rarely takes place outside of the classroom, yet strong arguments for adjunctive, home–school interventions have been made (Kelley, 1990). Those children with both ADHD and academic skills deficits will require treatment in multiple settings implemented by a number of professionals. In such cases, the need for effective communication and collaboration among the individuals involved in the child's treatment is obvious (see Chapters 5 and 9).

As discussed in subsequent chapters, the two most effective interventions for ADHD are stimulant medication (e.g., MPH) and contingency management procedures. Although the latter can involve changes to both antecedent conditions (e.g., more frequent prompts to pay attention) and consequences (e.g., positive reinforcement for task completion), motivational programming has received most of the emphasis in the ADHD treatment literature (DuPaul, Eckert, & Vilardo, 2012; Evans et al., in press; Pfiffner & DuPaul, in press). Thus, behaviorally based classroom interventions for ADHD usually include token reinforcement systems combined with response cost, wherein contingencies are available at school, at home, or in both settings in order to motivate the child to attend to assigned tasks and classroom rules (see Chapter 5 for details). In contrast, academic skills deficits are not directly enhanced by pharmacotherapy and are usually treated with psychoeducational programming designed to ameliorate presumed processing deficits that underlie the child's learning problems (Semrud-Clikeman et al., 1992; see also Crenshaw, Kavale, Forness, & Reeve, 1999, for a meta-analytic review of psychostimulant effects on behavioral and academic outcomes). The psychoeducational programming approach remains quite prevalent in this country despite a lack of evidence for its efficacy (e.g., Kavale & Mattson, 1983). Behaviorally and instructionally based interventions for academic skills deficits that have received empirical support include modifications to both antecedent and consequent conditions (see Shinn & Walker, 2010). Although motivational programming similar to that employed for ADHD has been found helpful in addressing academic skills deficits, there is an equivalent emphasis in the literature on changing antecedent stimulus conditions (e.g., rate of presentation of academic

material). Thus, even though both ADHD and academic skills deficits can be treated behaviorally, the specific parameters of the intervention program will vary as a function of diagnostic status.

When children and adolescents present with comorbid ADHD and internalizing disorders, it appears that combinations of either behavioral and cognitive-behavioral treatment strategies are warranted, as seen with the Jarrett and Ollendick (2012) study discussed in an earlier section. Their combined treatment strategy was based on concurrently delivering two evidence-based treatments originally designed to target only one of the presenting problems (e.g., ADHD or anxiety problems). Programs and strategies that may be useful to consider in the presence of comorbid conditions could include, for example, the Coping Cat program for the treatment of child/adolescent anxiety (Kendall & Hedtke, 2006), the Adolescents Coping with Depression and Coping with Stress courses for the treatment and prevention of depression, respectively (free download available from the Kaiser Permanente Center for Health Research, 2013). For problems of comorbid ADHD and other externalizing behavior problems, parent- and teacher-delivered behavior management programs, such as those associated with the Incredible Years programs (see Webster-Stratton & Reid, 2014) and the Defiant Children/Defiant Teens programs (Barkley, 2013a; Barkley, Edwards, & Robin, 1999), will likely be helpful.

The intervention programs noted may be delivered in school-based settings by appropriately trained professionals or be delivered in community-based treatment settings. Furthermore, these programs could also be supplemented with appropriate individualized school-based counseling to help support the individual development and adjustment of students with ADHD (see Plotts & Lasser, 2013, for a thorough treatment of school-based counseling applications relevant to this discussion).

ADHD AND SPECIAL EDUCATION

Prior to 1991, students with ADHD were not eligible to receive special education services unless they qualified for such services on the basis of existing classification categories (e.g., specific learning disability, seriously emotionally disturbed). Thus, the vast majority of children with ADHD were placed in general education classrooms and minimal alterations were made to their instruction. Due to the intense lobbying efforts of a variety of professional and parent groups, a change in the interpretation of federal guidelines was issued by the U.S. Department of Education in 1991 (see Hakola, 1992). In this section, we provide suggestions

to school psychologists on how to determine whether a specific child with ADHD requires special education services.

Presently, students classified as having ADHD may qualify for special education services in one of three ways. First, a child with both ADHD and another disability (e.g., learning disability) could qualify for special education services under one of the existing disability categories defined in the 2004 Individuals with Disabilities Education Act (IDEA).

A second possibility for special education eligibility is under the other health impaired (OHI) category. OHI includes chronic or acute health problems that result in limited alertness, which adversely affects educational performance. Thus, students with ADHD should be classified as eligible for services under the OHI category in instances where the ADHD is a chronic or acute health problem that results in limited alertness that adversely affects educational performance to the extent that special education services are needed.

The inclusion of ADHD as an OHI has been reaffirmed with the 2004 reauthorization of IDEIA (hereafter referred to as "IDEIA 2004"; Public Law 108-446). Furthermore, the OHI provision has been the most commonly applied criterion to judge a student's eligibility for special education services on the basis of having ADHD; the OHI category has been the fastest growing category over that past two decades. This provision clearly states that if the child's alertness is limited by chronic ADHD to the extent that his or her educational performance suffers, then the child may require special education services. The previous sentence describes most, if not all, children diagnosed with ADHD, as, by definition, it is a chronic disorder wherein they exhibit limited alertness and their academic performance is deleteriously affected. The difficult decision, therefore, is whether the child actually *needs* special education programming (i.e., the second criterion for determining special education eligibility, the first being the presence of a disability) to address these difficulties and/or academic competencies or whether interventions in the general education classroom will be sufficient.

A final criterion that could be used to determine a child's eligibility for instructional modifications on the basis of having ADHD is contained in Section 504 of the Federal Rehabilitation Act of 1973. Such modifications may or may not require the provision of special education services. This is a civil rights law that states that schools must address the needs of children with disabilities as competently as the needs of typically developing students are met. In order to qualify for Section 504 consideration, a student must have a mental or physical impairment that substantially limits a major life activity (e.g., learning, concentration, social interaction). Substantial limitations are evaluated with respect to the average student in the general population without the effects of

mitigating measures (e.g., medication). Thus, even children with ADHD who are not eligible for special services under IDEIA 2004 (Public Law 108-446) could be considered in need of individualized intervention on the basis of Section 504.

If the above regulations are interpreted loosely, one could make a case that most children with ADHD are eligible to receive some degree of special education services. Given the high percentage of children already receiving such services and the limited database supporting the overall efficacy of special education, however, this may not be a prudent course of action. Rather, as is the case for children with other behavior disorders, one of the main criteria for receipt of special education services should be the child's response to interventions in the general education classroom (Gresham, 1991). Thus, the diagnosis of ADHD does not necessarily warrant the receipt of special education services, unless the child's behavior has not changed as a function of regular classroom interventions (Jimerson, Burns, & VanDerHeyden, 2007; National Association of School Psychologists, 2011).

From the standpoint of practice, a child diagnosed with ADHD who also is experiencing learning and/or achievement problems would likely be evaluated for special education eligibility purposes following a lack of responsiveness to interventions delivered within general education settings (see Telzrow & Tankersley, 2000). If that child is found eligible for special education services, a team of professionals would then design, implement, and evaluate an individualized educational program. If that child is found not eligible for special education services, school personnel would remain responsible for removing barriers to learning in the general education classroom/instruction. This removal of barriers has been referred to commonly as creating a 504 accommodation plan (see Zirkel & Aleman, 2000, for a thorough treatment of Section 504 and students with disabilities).

In designing accommodations, educators should consider both the potential accommodation itself and the barrier to learning that is being removed. For example, in providing a student with task modifications (TMs) in the form of allowing a choice of assignments, the barrier to learning of having one and only one assignment to work on is being removed. Similarly, allowing a student with ADHD to complete fewer items on an independent seatwork task (at the same level of accuracy expected of peers) is removing aspects of the assigned tasks known to exacerbate ADHD-related problems in the classroom—namely, repetitive work items. It should be noted, however, that there is scant empirical evidence supporting the use of educational accommodations (for a review, see Harrison, Bunford, Evans, & Owens, 2013). Thus, although typically recommended accommodations may have face validity,

practitioners should be aware that these are not evidence based, for the most part.

Zirkel (2013) has designed a checklist for determining the legal eligibility for special education services in accordance with the regulations enumerated previously (see Appendix 3.1). Using this checklist as a guide, the following steps should be followed in determining whether a specific child will require special education services for ADHD:

1. Conduct an evaluation of ADHD and related difficulties, as discussed in Chapter 2. If the child is found to meet the criteria for ADHD, then, by definition, he or she has a chronic condition that significantly limits alertness, thus satisfying two components of the eligibility criteria for special education services under the OHI category.

2. If the child is found to exhibit behaviors related to one of the existing classification categories of IDEIA 2004 (e.g., learning disability; Public Law 108-446), then special education services may be warranted.

3. If the child does not qualify for special education services under one of the existing categories, then two more determinations must be made. First, does the child's ADHD-related behavior in the classroom significantly limit his or her educational performance? This can be determined using academic performance data, as discussed in Chapter 2. Usually, some aspect of a child's academic achievement is deleteriously affected by his or her ADHD symptomatology. Thus, some form of intervention will be necessary as Section 504 stipulates such action given that the disability substantially impairs a major life activity (i.e., learning). The typical initial step is to design and implement an intervention program in the general education classroom (see Chapter 5). Such programs will include modifications to the child's instructional program based on behavioral principles. Second, the child also may be referred to his or her physician for consideration of a trial of psychotropic medication, as discussed in Chapter 7.

4. The last, and most critical, criterion for special education eligibility is whether the child *needs* such services because of his or her ADHD. This criterion could be interpreted in a variety of ambiguous ways. Therefore, the most objective way to reach a decision regarding this criterion is through evaluating the efficacy of general education classroom interventions (Gresham, 1991; Jimerson et al., 2007). Baseline data should be collected on a number of target behaviors prior to implementing a specific intervention (including medication). After implementing the recommended treatment(s), data are collected again on the same variables to assess behavioral change. If the child does not exhibit significant improvement following a trial of general education classroom

intervention(s), one of three possible courses of action is followed. First, changes could be made to the intervention program in the general education classroom. Second, the child could receive some form of special education programming. Third, changes could be made in general education interventions and special education programming could be provided.

5. Whether special education services are provided or not, interventions addressing the child's ADHD will be necessary. The efficacy of both general and special education interventions should be evaluated on a continuous basis to determine when changes in programming and/or placement are necessary.

SUMMARY

Most children with ADHD will exhibit significant problems with academic performance, such as slow or insufficient work completion, inconsistent accuracy on seatwork and homework, and poor study skills. Furthermore, about 25 to 40% of these children will display academic skills that are significantly below average, and therefore will be characterized as having a learning disability. The fact that academic problems are consistently associated with ADHD has direct implications for the assessment and treatment of these students. The evaluation of ADHD must not only be directed toward behavior control difficulties but should include measures of academic performance as well. Furthermore, such children should routinely be screened for academic skills deficits, with additional assessment of academic functioning conducted as necessary. In similar fashion, intervention programs designed to treat ADHD must include target behaviors related to academic performance. In the case of children who have both ADHD and academic skills deficits, treatment must be directed toward ameliorating both conditions simultaneously.

Many students with ADHD will present with comorbid problems of adjustment, including learning deficits, anxiety, depression, other conduct problems, and difficulties of interpersonal adjustment. Such comorbidity may occur either simultaneously or developmentally. Typically, functional impairment will increase with comorbidity (Crawford et al., 2006), and may become more intense over the course of development from childhood to adolescence (Harrison, Vannest, & Reynolds, 2011). It is incumbent upon school-based professionals to be aware of these issues and problems, and to work together with families and community-based professionals to provide appropriate information, screening, monitoring, and supports, as necessary to maximize the likelihood of school success for students with ADHD.

Finally, federal guidelines allow for the provision of special education services to children with ADHD when they meet the criteria for learning disabilities, emotional disturbance, or OHI limiting their educational performance. Special education eligibility decisions should be made on the basis of a reliable assessment of ADHD, the degree to which the child's ADHD impacts academic and social functioning, and the success of general education classroom interventions in ameliorating academic and behavioral difficulties related to ADHD.

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