School Based Assessment Of Attention-Deficit/Hyperactivity Disorder

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Abstract

Attention Deficit/Hyperactivity Disorder (AD/HD) is a neurobehavioral syndrome marked by inattention, hyperactivity, and impulsivity (American Psychiatric Association, 2000). The essential features of the disorder include a persistent pattern of inattention and/or hyperactivity that is more frequent than typically observed in individuals at a comparable development level. In addition, diagnostic criteria require that some symptoms are evident prior to age 7, the symptoms are present in two or more settings, and the symptoms clearly interfere with social, academic, or occupational functioning. There are three subtypes of ADHD: Predominantly Inattentive Type (AD/HD-I), Predominantly Hyperactive – Impulsive Type (AD/HD-HI), and Combined Type (AD/HD-C).

Keywords: Attention Deficit, Hyperactivity Disorder, inattention.
Introduction

While ADHD is not specifically named as a qualifying condition under IDEA, students with ADHD may qualify for services under the categories Other Health Impairment (OHI), Specific Learning Disability (SLD), or Emotional Disturbance (ED) depending upon the educational impact of their disability. Furthermore, the Office of Special Education Programs (OSEP) has clarified that a medical diagnosis is not required for student with ADHD to meet eligibility criteria under the category OHI, only that the evaluation be conducted by a professional competent in ADHD assessment and knowledgeable about the impact ADHD on educational performance (Martin & Zirkel, 2011).

School psychologists are clearly positioned to fill this role. However, the level of training in school based assessment of ADHD varies amongst professionals in the field and in many cases additional training may be needed. For example Handler and DuPaul (2005) found that only 23% of school psychologists surveyed reported to conduct comprehensive ADHD assessments consistent with best practice. The problem, of course, being that a failure to utilize a multi-method assessment approach greatly increases the likelihood of misdiagnosis (Handler & DuPaul, 2005). Leaders in the emerging specialization of school neuropsychology advocate that accurate diagnosis of ADHD requires a careful review of educational records along with a combination of diagnostic interviews, observations, rating scales, and cognitive tests of attention and executive functioning (Hale & Fiorello, 2004).

Diagnostic Interview And Ad/Hd

Clinical interviews are the cornerstone of diagnosis and when assessing ADHD parent and teacher interviews should address symptoms outlined in the Diagnostic and Statistical Manual, 4th Edition, Text Revision (DSM-IV-TR), including the pervasiveness of symptoms over the past 6 months, the presence of symptoms across two or more settings, and the age at which symptoms emerged (Valo & Tannock, 2010). Additionally, parent interviews can provide information regarding prenatal and postnatal history, family history of AD/HD, social functioning, parenting techniques, and psycho-social factors.

Teacher interviews are equally valuable in that they create of picture of the impact of ADHD characteristics on school functioning including the frequency and severity of behaviors, the quality of the student’s relationships with
peers, as well as antecedents and consequences that serve to promote or undermine the student’s use of attention and behavior regulation skills.

**Behavior Rating Scales And Ad/Hd**

Behavior rating scales are an extremely valuable tool when assessing students for AD/HD. While the DSM-IV-TR provides a diagnostic checklist, these characteristics vary in children across gender, age, and social contexts. Rating scales, on the other hand, compare a student to similar age and gender peers across home and school settings and, therefore, assist the school psychologist in determining whether a child’s behavior falls outside of the typical developmental continuum.

Using the Behavior Rating Inventory of Executive Function (BRIEF), Toplak, Bucciarelli, Jain, & Tannock (2009) found adolescents with ADHD received significantly higher ratings than controls on the Inhibit, Shift, Working Memory, and Plan/Organize scales based on reports made by both teachers and parents. Furthermore, the authors found that parent reports on the BRIEF were significantly associated ADHD subtypes. Specifically, parent reports on the Inhibit scale were significantly associated with hyperactive and impulsive characteristics while the Shift, Working Memory, and Plan/Organize scales were associated with inattentive characteristics.

However, rating scales are not without their own limitations such as possible negative halo effects (Alloway, et. al., 2009), low inter-rater reliability (McConaughy, Ivanova, Antshel, Eiraldi, & Dumenci, 2009), and overlapping characteristics between ADHD and other disorders (Sullivan & Riccio, 2007). Charach, Chen, Hogg-Johnson, and Schacher (2009) found that students who received low T-Scores (i.e. below 60) on the Conners’ Teacher Rating Scale (CTRS) DSM-IV subscale were unlikely to meet diagnostic criteria for ADHD based on a clinical interview. However, a student receiving mid to high range T-Scores did not necessarily confirm that the child will reach the diagnostic criteria as outlined in the DSM-IV-TR. In other words, the CTRS-R produced a low number of false negatives but at the same time resulted in a high number of false positives.

Part of the reason for this is that while children and adolescents with ADHD receive significantly higher scores on the Conners’ and BRIEF than do non-clinical peers, so do young people with other clinical diagnoses (Sullivan & Riccio, 2007). The Conners’ 3 may have corrected for this shortcoming by including a DSM-IV-TR symptoms count in addition to the normative scales (Conners & Multihealth Systems Staff, 2008).
Nevertheless, additional assessments beyond rating scales are needed in order to make a differential diagnosis and develop appropriate interventions.

**Classroom Observations And Ad/Hd**

In addition to the limitations of rating scales listed above, they also do not account for environmental conditions that either contribute to or curb inattentiveness and hyperactivity (Kofler et al. 2008). Direct observations, on the other hand, provide critical information regarding the antecedents and consequences of behaviors, as well as their frequency, intensity, and duration (Sattler & Hoge, 2006). School psychologists have greater opportunities to observe student in natural environments (e.g. the classroom) than do psychologists working in other settings (Handler, & DuPaul, 2005), and perhaps for this reason observations are the assessment procedure most frequently used by school psychologists (Kofler et al., 2008). Attention or “on-task behavior” is often operationalized as visual orientation towards the expected stimulus such as the teacher, smart board, or text book, and children and adolescents with ADHD are observed to be off task more frequently and for longer periods of time than their typical peers (Kofler et al., 2008).

Time sampling, or interval time sampling, is an ideal method for assessing a student’s ADHD characteristics in the classroom setting. With time sampling, the observation period is divided into equal intervals, anywhere from 5 to 30 seconds, and the school psychologist records whether or not a target behavior (e.g. “off task”) occurs (Sattler & Hoge, 2006). Behaviors can be tallied if they occur at any point during the interval (i.e. partial interval time sampling), if the behavior occurs for the entire interval (i.e. whole interval sampling), or if the behavior is occurring at a specific time within the interval such as at the end (i.e. momentary time interval sampling).

Direct observation of children with ADHD reveals significant discrepancies between their time on task and that of their typical classmates (Kofler et al., 2008; McConaughy et al., 2009). In a meta-analysis of studies examining off task behavior of children and youth with AD/HD, Kofler et al. (2008) found that children with ADHD were off task 25.66% of the time compared to 12.09% of the time for their typical peers. These differences are noted even when children are observed for short periods of time (e.g. 10-15 minutes).

**Cognitive Assessment And Ad/Hd**

While the current diagnostic criteria for ADHD are based on observed behaviors, a growing body of evidence suggests that individuals with ADHD also perform poorly on cognitive
tests of attention and executive functioning. For example, Holmes et al. (2010) found that children with ADHD were distinguishable from their typical peers based on measures of response inhibition, set shifting, planning, card sorting, and working memory. Consistent with these findings, Hale and Fiorello (2004) cite research suggesting that children with AD/HD-I and AD/HD-C subtypes perform poorly on measures of executive functioning, working memory, and processing efficiency while those with AD/HD-HI are distinguishable by their poor performance on measures of response inhibition. Despite their utility as part of a comprehensive ADHD assessment, however, psychologists use cognitive tests far less frequently than other methods such as reviewing school records, interviewing parents, observing in natural setting, and administering behavior rating scales (Handler & DuPaul, 2005).

Numerous psychological tests may be used to assess various aspects of attention including continuous performance tests (CPT) and performance based measures of executive functioning. CPTs typically provide measure of vigilance (e.g. sustained attention) and impulse regulation based on measures of response times and error patterns (e.g. omissions and commissions). CPT performance of individuals with ADHD has been shown to lag significantly behind their non-ADHD peers despite relative improvements over time as a result of maturation (Vaughn, et al., 2011). Differences in CPT performance between ADHD and non-ADHD subjects have been found in terms of response time variability, omission errors, and commission errors (Vaughn et al., 2011).

While CPTs have been demonstrated to differentiate individuals with ADHD from “normal” controls, these tests may not be sensitive enough to distinguish those with ADHD from those with non-clinical levels of attention problems as both groups have been shown to perform below the normative mean on such tests (Preston, Fennell, & Bussing, 2005). Given that a referral for evaluation suggests that some level of difficulty with attention, or other learning process, is evident (at least to the referral source) our challenge is often times to distinguish clinically significant from sub-clinical levels of attention problems. Consequently, while a CPT is a valuable tool in the assessment of AD/HD, it should only be used as part of a multifaceted assessment battery.

Performance based measures of executive functioning have also been found to distinguish children and adolescents with ADHD from their non-clinical peers. For example, Wodka et al. (2008) found that children with ADHD performed significantly lower than non-clinical controls in terms of their performance on all 4 measures from the Delis Kaplan Executive Function System (DKEFS) used in the study including Trail
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Making, Verbal Fluency, Color-Word Interference, and Towers. Similarly, Toplak et al. (2009) found that cognitive measures of response inhibition, set shifting, working memory, and planning were significant predictors of ADHD status amongst adolescents.

Despite the fact that numerous differences between individuals with ADHD and non-ADHD controls have been found through neuropsychological tests, these procedures are not sensitive enough to reliably assess ADHD as standalone procedures. For instance, the predictive power of neuropsychological tests in determining ADHD classification are not as great as that of behavior rating scales (Toplak et al., 2009). This may not be surprising however, given the diagnosis is typically made, at least in part, based on rating scale data. Nevertheless, there are additional limitations in the use of neuropsychological tests in assessing ADHD status including the lack of a significant relationship between these performance based measures and ADHD inattentive and hyperactive/impulsive subtypes (Toplak et al., 2009; McConaughy et al., 2009).

Discussion

An estimated 3 - 7% of school age children have AD/HD, and the associated characteristics may significantly impair learning and school performance (APA, 2000). While ADHD is not specifically identified under IDEA, it is nevertheless essential for school psychologists to have a solid foundation in terms of assessing and treating the disorder. Furthermore, the fact that ADHD is not listed under IDEA does not restrict school psychologists from assessing in this area so long as it is within the scope of their professional competence. In fact, requiring that a parent obtain a medical or clinical diagnosis prior to receiving appropriate educational services would likely amount to a denial of their child’s right to a Free Appropriate Public Education (FAPE), particularly for families who do not have the resources to obtain a comprehensive psychological evaluation outside of the school setting.

School psychologists are ideally suited for assessing children and adolescents suspected of having AD/HD. Unlike those in clinical settings, school psychologists have regular access to children in natural settings (e.g. classroom, playground, etc.) as well as a wealth of records pertaining to the child’s health, development, and educational functioning.

Further, school psychologists are well positioned to interview multiple informants (e.g. child, parent, and teacher), are experts in a variety of quantitative observation techniques (e.g. time sampling), and are knowledgeable in the administration and interpretation of behavior...
rating scales (e.g. Conners’ 3 and BRIEF) and
cognitive assessment tools (e.g. CPT II and
DKEFS). Moreover, school psychologists who
conduct comprehensive evaluations of students
with suspected AD/HD, and are grounded in a
solid understanding of the disorder and its
manifestation in individual children, can
knowledgeable assist multidisciplinary problem
solving teams in developing effective
psychological and educational interventions.

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