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EDITORIAL

Assessing, Understanding, and Supporting Students With ADHD at School: Contemporary Science, Practice, and Policy

George J. DuPaul
Lehigh University

Shane R. Jimerson
University of California–Santa Barbara

Students with attention-deficit/hyperactivity disorder (ADHD) exhibit chronic behavior difficulties that deleteriously impact their academic and social functioning in school settings. These difficulties not only impair student performance, but also present significant challenges to teachers, school psychologists, and other school professionals working with this population. Although a voluminous ADHD research literature is available to aid our understanding, studies specifically focused on school-based functioning, assessment, and intervention are underrepresented. The articles in this special topic section directly address this gap by examining (a) the role of contextual factors (e.g., culture, gender) in determining teacher referral, teacher perception of symptoms and impairment, and impact of symptoms on academic performance; (b) the reliability and validity of measures that can be used to conduct school-based screening, identification, and treatment design; and (c) the degree to which school intervention plans are consistent with recommended best practice and research evidence. The results of these studies provide school psychologists with specific directions for advocacy and service delivery that will improve school outcomes for students with ADHD.

Keywords: ADHD, assessment, culture, academic functioning, intervention

Children and adolescents diagnosed with attention-deficit/hyperactivity disorder (ADHD) display developmentally inappropriate levels of inattention and/or hyperactivity-impulsivity that are associated with clinically significant impairment in academic and/or social functioning (American Psychiatric Association, 2013; Barkley, 2015). ADHD is a relatively high-incidence neurodevelopmental disorder that affects approximately 5% to 7% of children worldwide (Willcutt, 2012). Approximately 11% of children in the United States are reported by their parents to have been diagnosed with ADHD at some point in their lifetime (Visser et al., 2014). Thus, in a classroom of 25 to 30 children, between 1 and 3 students may have ADHD. The disorder affects more boys than girls, with the ratio ranging from 2:1 to 5:1 depending on the setting and circumstances (Barkley, 2015). Although it is possible that neurobiological factors could account for gender differences in ADHD prevalence, there are also data to suggest that girls have been less likely to be referred for diagnosis and treatment because they may display lower levels of aggressive and/or defiant behavior than boys with ADHD (Gershon & Gershon, 2002). Thus, there may be more girls with ADHD in classrooms than are currently identified.

Students with ADHD typically exhibit a variety of behaviors that negatively impact their classroom and academic performance. Attention difficulties include being frequently distracted; problems sustaining concentration on teacher instruction and/or independent seatwork; forgetting classroom materials (e.g., textbook, pencil); challenges organizing notebooks, assignment books, desks, and lockers; not completing assigned homework in a timely and/or complete

George J. DuPaul, Department of Education and Human Services, Lehigh University; Shane R. Jimerson, Department of Counseling, Clinical, and School Psychology, University of California–Santa Barbara.

Correspondence concerning this article should be addressed to George J. DuPaul, Department of Education and Human Services, College of Education, Lehigh University, 111 Research Drive, Bethlehem, PA 18015. E-mail: gjd3@lehigh.edu

fashion; procrastinating long-term assignments (e.g., book reports); and not studying for exams in a sufficient or effective fashion (American Psychiatric Association, 2013; Barkley, 2015; DuPaul & Stoner, 2014). Symptoms of hyperactivity-impulsivity can include high levels of fidgeting and out-of-seat behaviors, frequent calling out without permission, breaking classroom rules without considering consequences, rushing through assignments in an inaccurate fashion, making inappropriate noises that disrupt the work of other students, and cutting in line or jumping ahead of turn in group activities (American Psychiatric Association, 2013; DuPaul & Stoner, 2014). Further compromising their performance as well as disrupting classroom decorum, students with ADHD may openly defy teacher commands and classroom rules, act in a verbally or physically aggressive manner toward classmates, and break major school rules (e.g., truancy, cheating on exams; Barkley, 2015).

By definition, in order for the diagnosis to be made, the symptomatic behaviors comprising ADHD must be associated with some impairment in academic or social functioning (American Psychiatric Association, 2013). Thus, it is not surprising that students with ADHD typically underachieve academically with a deficit of approximately .60 to .75 *SD* units on achievement tests relative to non-ADHD classmates (Frazier, Youngstrom, Glutting, & Watkins, 2007). In addition, children and adolescents with ADHD are more likely to repeat a grade, to be referred and identified for special education services, suspended, and drop out of school relative to students without disabilities (Barkley, Fischer, Smallish, & Fletcher, 2006; Frazier et al., 2007; Kent et al., 2011). ADHD symptoms are also frequently associated with impairments in social relationships. Specifically, students with ADHD typically have difficulties interacting with peers and adult authority figures as well as struggle to make and keep same-age friends (Hodgens, Cole, & Boldizar, 2000; Stormont, 2001). As a result, children and adolescents with this disorder are more likely to be rejected by peers than are their non-ADHD classmates (Hoza, 2007). Given these chronic and significant impairments, students with ADHD are also at higher than average risk to experience additional emotional and behavioral difficulties, such as depression and anxiety disorder (Barkley, 2015).

The combination of ADHD symptomatic behaviors, concomitant aggression and/or defiance, and functional impairments not only places students with this disorder at high risk for school failure, but it also presents significant challenges to teachers, school psychologists, and other school personnel working with this population. School personnel often are on the "front lines" with respect to recognizing when students may be having difficulties with ADHD and attempting to address behavioral, academic, and social deficits in a comprehensive fashion. As such, educational professionals must not only understand the nature and consequences of the disorder, but also must be equipped to screen, assess, and intervene in a timely and empirically supported manner (Brock, Jimerson, & Hansen, 2009). Although a growing research literature has enhanced our understanding of ADHD, provided reliable and valid assessment measures, and established efficacious school-based interventions, a significant gap remains between research and practice in most school settings (Brock et al., 2009; DuPaul & Stoner, 2014).

The articles in this special section directly address critically relevant issues in support services for students with ADHD that should serve to reduce the gap between research and practice. First, these articles highlight the importance of context in determining when and which children will be referred for evaluation, as well as how assessment data will be interpreted. Factors such as culture, race, gender, age, and socioeconomic status can play a significant role in determining who gets referred, how symptomatic behaviors are expressed and interpreted, and who ultimately receives treatment (Barkley, 2015; Hinshaw & Scheffler, 2014; Miller, Nigg, & Miller, 2009). Second, the articles in this special section go beyond simple consideration of symptoms and focus on the substantial impairment that students with ADHD may experience, particularly with respect to academic performance. Research studies have primarily investigated assessment and treatment of ADHD symptoms with, at best, only secondary attention paid to educational and social impairments. Yet, most students with ADHD come to the attention of school psychologists and other mental health professionals because of impairment rather than individual symptoms (Evans, Owens, Mautone, DuPaul, & Power, 2014). Third, these articles highlight the need for school psychologists to advocate for inclusion of evidence-

based and empirically supported assessment and intervention strategies to be used on a regular basis to support the school performance of students with ADHD. The two articles featuring data from international settings help to further advance knowledge and understanding pertaining to important contextual and cross-cultural considerations relevant to identifying and supporting students with ADHD at school.

Articles Featured in This Special Topic Section

In the first article, Lee (2014, pp. 385–394) examined the degree to which cultural context impacts teacher referral behaviors for students suspected of having ADHD. Teachers from the United States ($n = 235$) and South Korea ($n = 144$) completed several measures to assess their intent to refer students displaying significant ADHD symptoms to a mental health professional, as well as factors (e.g., knowledge about ADHD, stigma associated with ADHD, perceived behavioral control) that may predict referral behaviors. Specifically, Lee collected data to determine the degree to which the Theory of Planned Behavior (TPB; i.e., individuals intent to perform context-specific actions depend on attitudes toward behavior, subjective norms, and perceived behavioral control) accounted for referral behaviors, as well as the extent to which behaviors and attitudes varied across cultures. Significant cross-cultural differences were found with respect to intent to refer, perceived stigma associated with ADHD, knowledge of ADHD, and subjective norms regarding referral, attitudes toward referral, and perceived behavioral control. South Korean teachers were more likely to refer children suspected of ADHD to a mental health professional than were U.S. teachers. This may be attributable, in part, to the more limited availability of special education services in South Korean schools. Furthermore, all components of TPB significantly predicted U.S. teacher intentions to refer, while only perceived public stigma about ADHD and perceived behavior control impacted Korean teacher intentions to refer. Beyond the interesting cross-cultural differences, these findings highlight the need for school psychologists in the United States to not only provide education about ADHD to teachers but also consider factors beyond knowledge (e.g., teacher attitudes) that may impact referral behaviors.

The second article highlights the significant impact that ADHD symptoms have on academic functioning. Martin (2014, pp. 395–408) surveyed 136 students with ADHD and 3,779 students without ADHD attending junior high or high schools in Australia regarding experiences of academic adversity (e.g., grade repetition, schoolwork noncompletion, academic failure) and various personal (e.g., sociodemographic characteristics, prior achievement) and contextual (i.e., school) factors that could predict academic adversity. When controlling for personal and contextual variables, ADHD status significantly predicted four of the eight indicators of academic adversity including noncompletion of schoolwork, changing schools, school suspensions, and school expulsions. Alternatively, ADHD was not a significant predictor of grade repetition, academic failure, changing classes, and school refusal because the latter indicators of academic adversity were more significantly accounted for by prior achievement and presence of a learning disability diagnosis. Martin concludes that school psychologists must recognize that academic adversity is accounted for by multiple, complex factors including, but not exclusively, ADHD. Thus, multidimensional interventions should be designed to target ADHD-related behaviors as well as salient personal and contextual factors to comprehensively address academic impairment.

Three articles focus on assessment of ADHD symptoms and related impairments for screening, diagnostic, and treatment development/evaluation purposes. DuPaul, Reid, Anastopoulos, and Power (2014, pp. 409–421) surveyed a nationally representative sample of 1,070 teachers regarding the prevalence of *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition* (*DSM-5*; American Psychiatric Association, 2013) symptoms of ADHD and related impairment in 2,140 5-to-17-year-old students randomly selected from classroom rosters. The purpose of this study was to identify the prevalence of teacher-reported ADHD based on symptoms, impairment, and their combination, as well as to determine whether symptom and impairment ratings varied as a function of student and teacher demographic characteristics. High rates of ADHD prevalence were evident when considering either symptoms (19%) or impairment (31%) alone; when both significant

symptoms and impairment were present, the prevalence rate was 7%. This finding highlights the need to assess the combination of symptoms and impairment to reach diagnostic decisions consistent with *DSM-5* criteria. Younger children, males, students from Black, non-Hispanic backgrounds, and students receiving special education services received higher ratings of symptoms and impairment. More experienced teachers provided lower ADHD symptom ratings than did less experienced teachers. Thus, contextual factors impact teacher report of ADHD symptoms and impairment; these contextual factors must be accounted for in some way (e.g., using separate norms by age and gender) to reach reliable and valid diagnostic conclusions.

A comprehensive assessment of students suspected of having ADHD must include measures of school-based impairment. Although several measures of academic (e.g., *Academic Competence Evaluation Scale*; DiPerna & Elliott, 2000) and social (e.g., *Social Skills Improvement System*; Gresham & Elliott, 2008) functioning are available, few instruments specifically focus on classroom functioning of adolescents. Sibley, Altszuler, Morrow, and Merrill (2014, pp. 422–437) addressed this gap in assessment technology by developing and evaluating the utility of the *Adolescent Academic Problems Checklist* (AAPC). The AAPC contains items tapping typical ADHD-related behaviors (e.g., careless mistakes on work) and behaviors secondary to ADHD that may be displayed by adolescents (e.g., failing to take class notes, leaving long-term projects to last minute). A sample of 324 adolescents with ADHD along with their parents and teachers completed the AAPC. Consistent with the conceptual structure of the scale, two factors were identified including academic skills and disruptive behavior. Index scores along with the total score were found to have adequate levels of reliability and validity for parent and teacher ratings. Alternatively, as has been found in prior investigations, self-report ratings on the AAPC were less psychometrically sound and should be used with caution. It is interesting that although the sample was homogenous with respect to ADHD diagnosis, Sibley and colleagues found substantial variability in the presence and severity of academic behavior problems, thus indicating that a detailed assessment of functional impairments (beyond symptoms) is necessary. Furthermore, the integration of parent and teacher reports regarding academic functioning is very important because some problems (e.g., homework completion) may be present in only one setting and all problems (regardless of setting) are ultimately associated with student grades.

Although assessment data are important for screening and diagnostic purposes, these data are also critically important for the design and evaluation of school-based interventions. The connection between assessment and treatment is enhanced if evaluation measures include items that are directly tied to specific intervention strategies. Daniels, Volpe, Briesch, and Fabiano (2014, pp. 438–451) evaluated the factor structure and psychometric properties of the *Integrated Screening and Intervention System Teacher Rating Form* (ITRF; Volpe & Fabiano, 2013) in a sample of 39 classroom teachers who rated 390 students from kindergarten through sixth grade. The ITRF was specifically designed to include items that represent common target behaviors on daily behavior report cards, an empirically supported intervention for students with ADHD (Evans, Owens, & Bunford, 2014; Volpe & Fabiano, 2013). Factor analyses indicated a two-factor structure remarkably similar to what was derived for the AAPC, including oppositional/disruptive and academic productivity/disorganization factors. The ITRF was found to have adequate levels of internal consistency, temporal stability, and convergent validity. Daniels and colleagues conclude that it is feasible for teachers to use the ITRF to identify specific behaviors as targets in a daily behavior report card intervention for students with or at-risk for ADHD. Furthermore, ITRF ratings can be collected periodically to evaluate the relative success of an intervention and make modifications to treatment strategies as necessary.

School-based intervention strategies (e.g., contingency management, organizational skill support, daily report card) have demonstrated efficacy across multiple between-groups and single-subject design studies (for meta-analyses, see DuPaul & Eckert, 1997; DuPaul, Eckert, & Vilardo, 2012). In addition, review articles (e.g., Evans et al., 2014), websites (What Works Clearinghouse; http://ies.ed.gov/ncee/wwc/), and governmental agencies (U.S. Department of Education, Office of Special Education Programs, 2008) have recommended effective behavioral and instructional support practices for use in classroom settings. The degree to which research-supported and rec-

ommended strategies are used in schools is virtually unknown. In the final article in this special topic section, Spiel, Evans, and Langberg (2014, pp. 452–468) addressed this gap in the literature by evaluating the degree to which individualized education plans (IEPs) and Section 504 plans for middle school students with ADHD were consistent with recommended best practices, including evidence-based services. The IEPs and 504 plans of 97 middle school students with ADHD were examined with most plans identifying behavior problems as a primary concern. However, less than 50% of these plans actually targeted the identified problems in the context of goals for intervention. Furthermore, although prescribed interventions and accommodations were generally consistent with U.S. Department of Education recommendations, these same support services were much less likely to include strategies that are supported by the empirical literature. The findings of Spiel et al. clearly demonstrate at least two critical gaps in existing support services for middle school students with ADHD: (a) lack of prescribed intervention focus on primary behavioral concerns, and (b) underutilization of evidence-based strategies in "real world" settings.

Conclusions

The articles in this special section significantly advance our understanding of how ADHD impacts student functioning in school settings. In particular, three major themes can be derived. First, contextual factors (e.g., culture, gender, race, presence of other disabilities) play an important role in (a) determining whether teachers refer students to mental health professionals for suspected ADHD, (b) predicting the degree to which ADHD-related behaviors impact academic performance, and (c) how ADHD symptoms and related impairment are perceived by teachers. Second, reliable and valid assessment measures are available for school psychologists to identify students who may have ADHD, determine the degree to which symptomatic behaviors impact academic and social functioning, and prioritize target behaviors for intervention. The measures used in these investigations advance the field by focusing on impairment, as well as symptoms and by specifically examining utility of measurement in secondary schools. Third, there is a significant gap between the services for students with ADHD that have been documented as efficacious for students with ADHD and the actual services that these students receive in schools. This oft-lamented research to practice gap presents a significant challenge to the field and will require a multifaceted approach including (a) closer collaboration between researchers and practitioners in the design, implementation, and interpretation of school-based studies (i.e., adoption of community-based participatory research model), (b) advocacy for educational agency publication of service recommendations that are evidence-based, (c) completion of school-based studies consistent with tenets of translational science, and (d) advocacy at the local level for school use of evidence-based practices. Given the chronic and ubiquitous behavioral, educational, and social challenges experienced by students with ADHD, scientifically sound investigations as reported in these articles will be needed to meet these challenges in a comprehensive and effective way.

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