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ADHD in the Classroom: Effective Intervention Strategies

School-related difficulties are commonly associated with attention deficit hyperactivity disorder (ADHD). This article describes effective school-based intervention strategies including behavioral interventions, modifications to academic instruction, and home-school communication programs. One overlooked aspect of treatment of children with ADHD is the need to form partnerships among school professionals who can work collaboratively on interventions for children with ADHD. Approaches to developing effective collaboration between teachers and school psychol-

ogists are presented. Multiple treatment strategies implemented in a consistent fashion across school years can optimize the school success of students with ADHD.

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ATTENTION DEFICIT HYPERACTIVITY disorder (ADHD) is characterized by pervasive and developmentally inappropriate difficulties with attention, impulsivity, and hyperactivity (American Psychiatric Association, 2000). ADHD symptoms cause significant impairments at home and in school and are associated with a number of behavior difficulties such as aggression and noncompliance (Barkley, 2006). Research also suggests that children with ADHD are more likely than typically developing classmates to be rejected socially and to have greater difficulties with their peers (Hinshaw, 2002). In addition, teachers are more

likely to perceive a child with an ADHD label less favorably with respect to intelligence, personality, and behavior (Batzle, Weyandt, Janusis & Devietti, 2010).

Academically, children with ADHD are more likely to have poorer grades, lower scores on standardized tests, greater likelihood of identification for special education, and an increased use of school-based services, compared to peers without the disorder (Loe & Feldman, 2007). Students with ADHD are also more likely to have a higher absenteeism rate, are three times more likely to be retained during elementary school, and are at a higher risk for dropping out of high school than their peers without ADHD (Barbarelli, Katusic, Colligan, Weaver, & Jacobsen, 2007). Students with ADHD who graduate from high school are less likely than their peers to pursue a post-secondary education (DuPaul & Weyandt, 2009). Interestingly, less research is available concerning methods to remediate academic problems associated with ADHD, compared to studies regarding ways to treat behavioral and social difficulties associated with the disorder (Jitendra, DuPaul, Someki, & Tresco, 2008). Given the less-than-favorable prognosis for children with ADHD, it is imperative that empirically supported interventions are implemented early, particularly during the elementary school years.

The most common interventions for students with ADHD include psychotropic medication and behavioral strategies implemented in home and school settings (Barkley, 2006). Although stimulant medication frequently is used to reduce ADHD symptoms, pharmacological treatment rarely is sufficient in addressing the multiple, chronic difficulties faced by students with ADHD (DuPaul & Stoner, 2003). The purpose of this article is to describe effective school-based intervention strategies for children with ADHD including behavioral interventions, modifications to academic instruction, and home-school communication programs. Also discussed are approaches to developing partnerships among school professionals including methods to facilitate collaborative relationships between teachers and school psychologist consultants.

Behavioral Interventions

Behavioral interventions for students with ADHD include both antecedent- and consequence-based strategies. Impaired delayed responding to the environment is the putative core deficit underlying ADHD (Barkley, 2006). Behavioral interventions involve modifications to the environment that directly address this impairment. A variety of antecedent-based interventions have been used to try to prevent inattentive and disruptive behaviors from occurring. Antecedents are events that precede and may trigger the occurrence of a specific behavior. First, teachers can post and strategically review classroom rules (DuPaul & Weyandt, 2006). Rules should be few in number, phrased in a positive manner (i.e., tell students what to do, not just the behaviors to avoid), and posted in full view of all students. Rules should be clearly explained at the beginning and periodically throughout the year. Further, teachers should frequently praise students who are following the classroom rules. Children with ADHD may need to have rules posted in closer proximity (e.g., printed on an index card affixed to their desk) and should be provided with more frequent praise when following rules (Piffner, Barkley, & DuPaul, 2006).

Another antecedent-based strategy frequently recommended for students with ADHD is to reduce task demands by modifying the length and/or content of assignments (DuPaul & Stoner, 2003). Reducing the length of an assignment to match students' attention spans, may reduce off-task, disruptive behavior. This strategy often is paired with teacher praise contingent on task completion. As students demonstrate success with shorter assignments, the length of assignments can be gradually increased thereby shaping task-related behavior to match classroom norms.

A final example of an antecedent-based strategy is to provide students with task choices when given classwork assignments. Choice-making interventions allow students to choose among two or more concurrently presented options (e.g., assignments to complete, sequence of steps within an assignment, or partners for assigned activ-

ities). The various options should all lead to similar outcomes; for example, students could choose an assignment from a menu of possible assignments all of which involve practice of the same specific academic skill. Dunlap et al. (1994) examined the effects of choice-making for several students with disruptive behavior disorders and ADHD. When students were provided with assignment choices, they showed higher rates of task engagement and lower frequency of disruptive behavior relative to class sessions when teachers chose the specific assignments.

Consequence-based strategies involve manipulating environmental events following a specific behavior to alter the frequency of that behavior. Several consequence-based strategies have been examined for students with ADHD including contingent positive reinforcement, response cost, and self-management interventions (DuPaul & Weyandt, 2006). The most common behavioral intervention for ADHD, at least in the research literature, is the use of contingent positive reinforcement in the form of teacher praise or token reinforcement (DuPaul & Stoner, 2003). In such programs, students gain access to praise or token reinforcement when they exhibit specific target behaviors (e.g., completion of assigned work). Token reinforcers (e.g., poker chips, stickers, points) are exchanged later in the day or week for access to preferred activities (e.g., computer game, running errand for teacher) or other rewards.

Several guidelines should be followed in using reinforcement-based interventions with students with ADHD (DuPaul & Stoner, 2003; Pfiffner et al., 2006). First, reinforcement should be provided as frequently as possible, given that children with this disorder may experience difficulties demonstrating consistent behavior under conditions of partial reward or intermittent reinforcement schedules. Second, rather than assuming that a specific reward will be motivating for a specific child, rewards should be individualized based on student preferences and interests. Further, specific rewards should be rotated or varied over time so that children do not become bored or complacent with the same reinforcers. Finally, reinforcement should be provided as

close as possible in time to the occurrence of a target behavior (i.e., provided as immediately as possible following a desired behavior).

Response cost is an example of a consequence-based intervention in which token reinforcers are removed contingent on disruptive, off-task behavior. Response cost should be used in situations where positive reinforcement alone has not sufficiently ameliorated problem behavior. For example, a token reinforcement program may lead to increases in on-task behavior but there may still be situations when off-task, disruptive behavior is evident or the increases in on-task behavior may not be consistent across time. In most cases, response cost is implemented in conjunction with a token reinforcement program such that students are eligible to receive or lose tokens based on their behavior or work performance. Several studies (e.g., DuPaul, Guevremont, & Barkley, 1992) have demonstrated clinically significant improvements in task-related attention, as well as productivity and accuracy of classwork, when the combination of token reinforcement and response cost is used.

Time-out from positive reinforcement is another strategy sometimes used to reduce problem behaviors (Pfiffner et al., 2006). This procedure involves briefly removing the student to a separate part of the classroom or outside the classroom following disruptive behavior. Of course, the efficacy of time-out is solely dependent on whether the classroom is viewed as a positive environment by the student; otherwise time-out can actually reinforce (or increase the probability of) problematic behaviors. In addition, time-out should be used judiciously and only in combination with a mostly positive behavior support program.

Self-Regulation Interventions

Self-management (or self-regulation) interventions encourage students with ADHD to monitor, evaluate, and/or reinforce their own behaviors, often in conjunction with or following the successful application of teacher-mediated

behavioral approaches. As is the case for behavioral interventions, self-regulation strategies directly address the impaired delayed responding that theory has posited to be the core deficit underlying the disorder. As an example of self-regulation, students with ADHD may be taught to evaluate their classroom behavior and work performance at regular intervals using a Likert scale (ranging from *poor* to *excellent*). Teachers use the same Likert scale to evaluate student performance. Students then receive reinforcement depending on their self-evaluated performance and the degree to which self-evaluation ratings match teacher ratings. As students demonstrate success in matching teacher ratings and improving classroom behavior, the frequency of required matches to teacher ratings is gradually reduced, and eventually only self-ratings are used. A recent meta-analysis showed that self-evaluation and other self-regulation interventions lead to relatively large, positive effects on the on-task behavior and academic performance of students with ADHD (Reid, Trout, & Schartz, 2005).

A particularly effective and feasible strategy is to teach students with ADHD to monitor their own behaviors. Sometimes the act of consistently monitoring behavior results in improvements. For example, Gureasko-Moore, DuPaul, and White (2007) found that training several middle school students with ADHD to monitor their homework and classroom preparedness led to quick and durable improvements in organizational skills. Self-monitoring has been used successfully to promote other behaviors (e.g., on-task, classwork completion) and with a variety of age groups; this is a particularly effective strategy for students with milder levels of ADHD (for review, see Reid et al., 2005).

Academic Interventions

Although stimulant medication and behavioral interventions typically lead to significant reductions in ADHD symptoms and improvements in classroom behavior, these treatments have minimal effect on academic achievement (DuPaul & Stoner, 2003). Thus, interventions

that directly address academic skills are needed for many students with this disorder. One effective academic intervention is to provide teacher-mediated direct instruction in relevant skills that require remediation. For example, Evans, Pelham, and Grudberg (1995) showed that middle school students with ADHD showed improved note-taking and test performance following direct instruction in taking notes during teacher instruction. Academic interventions can also be delivered through computer technology and classroom peers. Several studies have shown that computer-assisted instruction in math (Mautone, DuPaul, & Jitendra, 2005) and reading (Clarfield & Stoner, 2005) leads to significant improvements in on-task behavior and academic performance for students with ADHD relative to written seatwork conditions. Similarly, classwide peer tutoring in math, reading, or spelling can be used to enhance task engagement and test performance for all students, not just those with ADHD (e.g., DuPaul, Ervin, Hook, & McGoey, 1998). The combination of academic intervention and self-regulation strategies may actually promote maintenance and generalization of academic skills gains beyond teacher-, computer-, or peer-mediated interventions, although this premise has yet to be demonstrated empirically.

Home-School Communication Programs

Given that children with ADHD experience significant difficulties across settings, home-school communication programs are important components of a comprehensive treatment plan. A daily report card system is an example of an effective home-school communication program. Daily report cards (DRCs) are one of the most frequently implemented interventions for children with ADHD, and several studies have documented their effectiveness when used as a component in a multimethod intervention (e.g., Owens et al., 2005). DRCs incorporate ongoing feedback to students and parents regarding classroom performance and can target a variety of important behaviors (e.g., work

completion, academic performance, participation in class, getting along with classmates). Typically, a DRC contains a list of 3 to 5 goals (e.g., complete assigned classwork, get along with classmates) on which teachers indicate a student's performance on a Likert scale (e.g., 1 represents *superior performance* and 5 represents *unacceptable performance*). Teacher ratings are provided throughout the day (e.g., by academic class period) and parents then provide home-based reinforcement based on these ratings. As students make progress, goals are increased in complexity. DRC programs have been successful in enhancing classroom behavior and academic performance of students with ADHD, particularly those with milder levels of symptom severity (Murray, Rabiner, Schulte, & Newitt, 2008).

Interventions Addressing Social Relationship Difficulties

Children with ADHD often experience difficulties with peer relationships, including making and keeping friends (DuPaul & Weyandt, 2006; Weyandt, 2007). Further, children with this disorder are more likely than their classmates to respond to interpersonal problems in an aggressive manner. Given the frequent association of ADHD with social relationship difficulties, interventions designed to address peer relations must be implemented for a sufficient duration to counteract the high risk for problematic outcome.

Unfortunately, interventions that target social knowledge and the acquisition of prosocial behaviors in group therapy formats (i.e., traditional social skills training) have not been found to lead to durable changes in interpersonal functioning in real-world environments (Gresham, 2002). The lack of maintenance and generalization of traditional social skills training has led to proposals for a more comprehensive approach to social relationship intervention for children with disruptive behavior disorders (for a review of social skills strategies, see Gresham, 2002).

Relatively few studies of social relationship interventions for children with ADHD have been conducted, especially in school settings. Most

prior investigations of social skills training have been conducted in outpatient clinic settings with minimal school outcome data beyond teacher ratings. Results of these clinic-based studies are equivocal with respect to efficacy (e.g., Pfiffner & McBurnett, 1997). Outcomes of these interventions are enhanced when specific strategies are included to program for maintenance and generalization of effects. For example, peers without ADHD could be involved in all phases of a social relationship intervention to encourage generality of outcomes.

Collaborative Consultation

Developing positive partnerships among school professionals through collaboration can also increase the likelihood of treatment success (DuPaul & Stoner, 2003). Collaborative consultation can improve school functioning outcomes and academic achievement (e.g., DuPaul et al., 2006). Collaborative consultation involves an equal partnership between two partners (e.g., school psychologist and classroom teacher) to define a problem and develop interventions. This model is in contrast to the traditional, expert model of consultation where a school psychologist prescribes interventions based on teacher input (Erchul & Martens, 2002). An example of an effective partnership model is Project PASS (Promoting Academic Success in Students) that uses a collaborative consultation model between teachers and school psychologist consultants to design academic interventions for children with ADHD. DuPaul and colleagues (2006) found that consultation-based academic interventions may enhance reading and math skills for children with ADHD. Academic improvements were noted for students whose teachers received two different intensity levels of consultation.

Collaborative consultation can vary in intensity with respect to the amount of data collected to design and evaluate interventions, as well as the degree to which consultants monitor teachers with respect to accuracy of treatment implementation. All models include four core steps

that involve school psychologists and teachers jointly defining the academic problem(s), discussing possible interventions (all of which are empirically supported), choosing an intervention plan that teachers believe to be feasible and effective, and evaluating the success of the plan so that modifications can be made, if necessary. Several studies have demonstrated that regardless of intensity, collaborative consultation leads to effective academic interventions for the majority of students with ADHD (e.g., DuPaul et al., 2006). The most effective outcomes are found when teachers take the lead during the problem identification stage of the collaborative relationship and when consultants lead when possible strategies to address problems are discussed and designed (Erchul et al., 2007; Erchul et al., 2009). Stated differently, in most collaborative consultation relationships, teachers are the experts regarding their classroom, curriculum, and the target student's difficulties, while the consultant typically is the expert regarding empirically-supported interventions to address student difficulties. The most successful outcomes occur when there is reciprocal recognition of these complementary areas of expertise.

Conclusions

School-based interventions are a critical component to a comprehensive treatment plan for students with ADHD. These strategies are useful adjuncts to psychotropic medication and/or home-based behavioral interventions particularly in terms of directly addressing academic and behavioral functioning in classroom settings. In fact, the optimal treatment plan will include the combination of home- and school-based behavioral strategies, possibly in combination with psychotropic medication (Barkley, 2006; DuPaul & Stoner, 2003). There are three important principles to consider when designing and implementing school-based interventions for this population (DuPaul & Weyandt, 2006). First, treatment plans should be balanced by including both proactive (i.e., antecedent-based) and reactive (i.e., consequence-based) behavioral interventions. It

is unlikely that a singular focus on antecedent or consequent events will be sufficient in addressing the behavioral difficulties exhibited by students with this disorder. Further, many antecedent-based strategies have the additional advantage of directly addressing academic functioning. Second, assessment data should be used to design, evaluate, and modify interventions within and across school years. Assessment-based interventions presumably will be more effective and time-efficient than using strategies on a trial-and-error basis. Finally, multiple mediators (e.g., peers, computer technology, and students with ADHD) should be used to deliver treatment so that classroom teachers are not asked to shoulder all of the responsibility for intervention. The use of collaborative consultation in choosing and developing classroom interventions can optimize the implementation of interventions across multiple mediators. Although many effective school-based interventions are available to address the needs of students with ADHD, it is clear that more research is needed particularly with respect to the functioning of secondary school students with this disorder.

References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washington, DC: Author.
- Barbarese, W. J., Katusic, S. K., Colligan, R. C., Weaver, A. L., & Jacobsen, S. J. (2007). Long-term school outcomes for children with attention-deficit/hyperactivity disorder: A population-based perspective. *Journal of Developmental and Behavioral Pediatrics, 28*, 265–273.
- Barkley, R. A. (2006). *Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment* (3rd ed.). New York: Guilford.
- Batzle, C., Weyandt, L., Janusis, G., & Deviett, T. (2010). Potential impact of ADHD with stimulant medication label on teacher expectations. *Journal of Attention Disorders, 14*(2), 157–166.
- Clarfield, J., & Stoner, G. (2005). The effects of computerized reading instruction on the academic performance of students identified with ADHD. *School Psychology Review, 34*, 246–254.

- Dunlap, G., dePerczel, M., Clarke, S., Wilson, D., Wright, S., White, R., et al. (1994). Choice making to promote adaptive behavior for students with emotional and behavioral challenges. *Journal of Applied Behavior Analysis, 27*, 505–518.
- DuPaul, G. J., Ervin, R. A., Hook, C. L., & McGoey, K. E. (1998). Peer tutoring for children with attention deficit hyperactivity disorder: Effects on classroom behavior and academic performance. *Journal of Applied Behavior Analysis, 31*, 579–592.
- DuPaul, G. J., Guevremont, D. C., & Barkley, R. A. (1992). Behavioral treatment of attention deficit hyperactivity disorder in the classroom: The use of the Attention Training System. *Behavior Modification, 16*, 204–225.
- DuPaul, G. J., Jitendra, A. K., Volpe, R. J., Tresco, K. E., Lutz, J. G., Junod, R. E. V., et al. (2006). Consultation-based academic interventions for children with ADHD: Effects on reading and mathematics achievement. *Journal of Abnormal Child Psychology, 34*, 635–648.
- DuPaul, G. J., & Stoner, G. (2003). *ADHD in the schools*. New York: Guilford.
- DuPaul, G. J., & Weyandt, L. L. (2006). School-based intervention for children with attention deficit hyperactivity disorder: Effects on academic, social, and behavioural functioning. *International Journal of Disability, Development, and Education, 53*, 161–176.
- DuPaul, G. J., & Weyandt, L. L. (2009). Behavioral interventions with externalizing disorders. In A. Akin-Little, S. Little, M. Bray, & T. Kehle (Eds.), *Behavioral intervention in schools: Evidence-based positive strategies* (pp. 265–280). Washington, DC: American Psychological Association.
- Erchul, W. P., DuPaul, G. J., Grissom, P. F., Vile Junod, R., Jitendra, A. K., Mannella, M. C., et al. (2007). Relationships among relational communication processes and consultation outcomes for students with ADHD. *School Psychology Review, 36*, 111–129.
- Erchul, W. P., DuPaul, G. J., Bennett, M. S., Grissom, P. F., Jitendra, A. K., Tresco, K. E., et al. (2009). A follow-up study of relational processes and consultation outcomes for students with ADHD. *School Psychology Review, 38*, 28–37.
- Erchul, W. P., & Martens, B. K. (2002). *School consultation: Conceptual and empirical bases of practice* (2nd ed.). New York: Kluwer Academic/Plenum.
- Evans, S. W., Pelham, W. E., & Grudberg, M. V. (1995). The efficacy of note taking to improve behavior and comprehension of adolescents with attention-deficit hyperactivity disorder. *Exceptionality, 5*, 1–17.
- Gresham, F. M. (2002). Teaching social skills to high-risk children and youth: Preventive and remedial strategies. In M. R. Shinn, H. M. Walker, & G. Stoner (Eds.), *Interventions for academic and behavior problems II: Preventive and remedial approaches* (2nd ed.; pp. 403–432). Washington, DC: National Association of School Psychologists.
- Gureasko-Moore, S., DuPaul, G. J., & White, G. P. (2007). Self-management of classroom preparedness and homework: Effects on school functioning of adolescents with attention-deficit/hyperactivity disorder. *School Psychology Review, 36*, 647–664.
- Hinshaw, S. P. (2002). Preadolescent girls with attention-deficit/hyperactivity disorder: Background characteristics, comorbidity, cognitive and social functioning, and parenting practices. *Journal of Consulting and Clinical Psychology, 70*, 1086–98.
- Jitendra, A. K., DuPaul, G. J., Someki, F., & Tresco, K. E. (2008). Enhancing academic achievement for children with attention-deficit/hyperactivity disorder: Evidence from school-based intervention research. *Developmental Disability Research Review, 14*, 325–330.
- Loe, I. M., & Feldman, H. M. (2007). Academic and educational outcomes of children with ADHD. *Journal of Pediatric Psychology, 32*, 643–654.
- Mautone, J. A., DuPaul, G. J., & Jitendra, A. K. (2005). The effects of computer-assisted instruction on the mathematics performance and classroom behavior of children with attention-deficit/hyperactivity disorder. *Journal of Attention Disorders, 8*, 301–312.
- Murray, D. W., Rabiner, D., Schulte, A., & Newitt, K. (2008). Feasibility and integrity of a parent-teacher consultation intervention for ADHD students. *Child Youth Care Forum, 37*, 111–126.
- Owens, J. S., Richerson, L., Beilstein, E. A., Crane, A., Murphy, C. E., & Vancouver, J. B. (2005). School-based mental health programming for children with inattentive and disruptive behavior problems: First-year treatment outcome. *Journal of Attention Disorders, 9*, 261–274.
- Pfiffner, L. J., Barkley, R. A., & DuPaul, G. J. (2006). Treatment of ADHD in school settings. In R. A. Barkley (Ed.), *Attention-deficit hyperactivity disorder: A handbook for diagnosis and*

- treatment* (3rd ed.; pp. 547–589). New York: Guilford.
- Pfiffner, L. J., & McBurnett, K. (1997). Social skills training with parent generalization: Treatment effects for children with attention deficit disorder. *Journal of Consulting and Clinical Psychology, 65*, 749–757.
- Reid, R., Trout, A. L., & Schartz, M. (2005). Self-regulation interventions for children with attention deficit/hyperactivity disorder. *Exceptional Children, 71*, 361–377.
- Weyandt, L. L. (2007). *An ADHD primer* (2nd ed). Boston: Pearson, Allyn & Bacon.

