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Best Practices in School Mental Health for Attention Deficit/Hyperactivity Disorder

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Abstract

Children with ADHD comprise one of the most common groups requiring supports from school mental health providers, yet current school structures and special education policies are not optimally situated to support and adapt to the inconsistent behaviors that are the hallmark of children with ADHD. The present paper reviews the evidence base for school mental health interventions for children with ADHD across the preschool, elementary, and middle/high school levels. The preponderance of evidence across meta-analyses, systematic reviews, and practice guidelines support classroom contingency management strategies, with emerging evidence supporting adjunctive training in organizational skills and homework supports. Behavioral parent training is also a supported intervention, but relatively few attempts have been made to evaluate it when integrated into school environments. A comprehensive, integrated approach for treating ADHD in school settings across universal, targeted, and indicated tiers is presented, providing an initial outline of a framework for school mental health treatment that could be utilized by school mental health practitioners.

Best Practices in School Mental Health for Attention Deficit/Hyperactivity Disorder

It is estimated that up to 10-12% of children in the general education population (American Psychiatric Association, 2013; Akinbami, Liu, Pastor, & Reuben, 2011; Fabiano et al., 2013; Froehlich et al., 2007) exhibit the symptoms and associated school-based impairment related to attention-deficit/hyperactivity disorder (ADHD). ADHD is one of the most refractory mental health and educational disorders of childhood and adolescence, with serious problems affecting functioning in home, peer, and educational settings. ADHD is associated with the majority of behavior problems in regular education, elementary school settings (Harrison, Vannest, Davis, & Reynolds, 2012), and these problems worsen substantively throughout adolescence. Youth with ADHD are disproportionately likely to have low GPA, be assigned to remedial classes, fail classes, be rated by teachers as underperforming and as having behavior problems, and to drop out of school (Kent et al., 2011). Largely exacerbated by chronic school behavior and discipline problems throughout elementary, middle, and high-school years, young adults with ADHD have significantly lower post high-school educational attainment and poorer job outcomes (Kuriyan et al., 2013) as well as increased substance use and criminal activity (Barkley, Murphy, and Fischer, 2008).

Due to these chronic problems in school behavioral functioning, children with ADHD are well-represented within special education settings as well, with approximately 60% of students in the special education categories of emotional disturbance (ED) and other health impaired (OHI) having ADHD (Schnoes, Reid, Wagner, & Marder, 2006; Wagner & Blackorby, 2002). One reason for this high percentage is that beginning in 1991, children with ADHD became eligible for federally mandated, special education services under the Other Health Impaired (OHI) category (Davila, Williams, & MacDonald, 1991). Although children with ADHD

previously received services in other categories (e.g., Learning Disabled, Emotionally/Behaviorally Disturbed), this policy modification resulted in a dramatic increase in children with ADHD within special education placements. One estimate suggests that when pre-1991 OHI rates are compared to classification rates in the late 1990's, classification in the OHI category had risen 315% (Danielson, Henderson, & Schiller, 2002) to the point where children with ADHD constitute a substantial percentage of children in special education (Schnoes et al, 2006). The problems that children with ADHD exhibit in regular educational settings and these prevalence rates in special education result in considerable costs for school districts that include the costs of teacher professional development, teacher and principal time spent disciplining students, and special education supports including expensive out-of-district placements (Robb et al., 2011). Taken together, these costs are substantial (Pelham, Foster, & Robb, 2007).

Indeed, the true impact, cost, and successful support of these students is difficult to assess, given that there is no explicit special education category for youth with this disorder. Further, while the 1991 policy modification permitted increased classification rates, it provided no guidance on appropriate special education placements, interventions, or supports for youth with ADHD. A recent review of Individual Education Programs (IEPs) for youth with ADHD revealed that few known, effective interventions were included in the content of the documents (Speil, Evans, & Langberg, 2014). Instead of being given effective interventions, children with ADHD are inconsistently supported in schools in a manner influenced by local custom, with the main reason for special education placement being the presence of impairment in academic achievement testing (Fabiano, Pelham, et al., in preparation; Mattison, 2015). While impairments in learning are often comorbid with ADHD, this domain is not proximally related to the disorder's core deficits in social functioning, rule-following, and academic enabling skills (i.e.,

persistence with tasks, organization) which constitute the major concerns in school for children with ADHD.

Rather than treat the peripheral outcomes of ADHD such as poor academic achievement, several evidence-based interventions which address core deficits have been suggested (DuPaul & Stoner, 2003; DuPaul, Weyandt, & Janusis, 2011; Pfiffner et al., 2014; see Fabiano et al., 2009; Pelham & Fabiano, 2008 and Evans et al., 2014 for reviews). Unfortunately, these interventions are rarely explicitly outlined and supported for teacher implementation (Spiel et al., 2014). Given that a large portion of youth with ADHD spend the majority of their day in general education settings (see Schnoes et al., 2006), one way to address this usage gap is to use problem-solving frameworks such as Response to Intervention (RTI; Fuchs & Fuchs, 2006) to outline intervention strategies and supports in a planful manner. RTI is a problem-solving framework that includes tiered interventions representing increasing levels of intervention intensity. Models such as RTI promote the implementation of behavioral interventions within the general education setting prior to referral, helping students with ADHD receive the support they need without waiting for a special education classification (Vujnovic, Fabiano, Holdaway, & Owens, 2013). To date, there has been little exploration into how evidence-based interventions for youth with ADHD can be applied within these tiered, school-based problem-solving models (Ikeda, Tilly, Stumme, Volmer, & Allison, 1996; Kovaleski, Tucker, & Stevens, 1996; Telzrow, McNamara, & Hollinger, 2000). A forward direction within the field is establishing how to appropriately integrate effective interventions for ADHD within a problem-solving framework.

Evidence Base for School-Based Treatment of ADHD

A first step in establishing a problem-solving framework within schools for ADHD is the identification of best practice interventions that can be used across tiers of support. There are a

number of summative resources that document evidence-based treatments for ADHD. These resources include meta-analyses, systematic reviews of the school-based treatment literature, and practice parameters and practice guides that use summaries of research to inform intervention. As will be noted below, school mental health practitioners are often presented with a confusing picture of the best approaches for working with students with ADHD in schools. Therefore, following a review of the evidence base, an overall summary of the existing research literature for school mental health approaches to support ADHD will be discussed. The general, robust findings within the evidence base will be used to inform the recommendations that follow.

There are multiple meta-analyses of the ADHD treatment literature, and a few comments may help to situate the review of these summative papers. First, it is important to carefully consider the type of treatment included in the review. There are numerous treatments used in schools to treat ADHD including psychoactive medication, psychological therapy, and academic interventions. Within these categories of treatment, there are even more fine-grained distinctions. For instance, the category of psychological therapy may include behavioral therapy, individual counseling, social skills training, and cognitive therapy. These treatments are quite different in their hypothesized theory of action, method of implementation, and study within the treatment literature. Thus, combining them all together may mask the effectiveness of some treatments and artificially inflate the effectiveness of others. Second, the research literature on school mental health treatments for ADHD includes a broad array of research designs. The majority of the research literature is made up of single-subject design studies (DuPaul & Eckert, 1997; DuPaul, Eckert, & Vilardo, 2012; Fabiano et al., 2009; Pyle & Fabiano, in press). Cross-over design, uncontrolled group design studies, and randomized controlled trials also contribute to the treatment literature. Focusing on one design exclusively may result in a biased review of the

overall treatment literature, yet traditional meta-analytic approaches have emphasized between group designs (Fabiano, Schatz, Aloe, Chacko, & Chronis-Tuscano, 2015). Third, outcomes vary across studies, and outcomes are at times confounded with design. For instance, the most common outcome measure in between group studies is a teacher rating scale, whereas the most common outcome measure in single-subject design studies is observation of classroom behavior (Fabiano et al., 2009). Thus, to best evaluate the support within the school mental health treatment literature for individuals with ADHD, the type of outcome measure collected must be considered (i.e., academic, behavioral, social).

To illustrate the importance of these factors, a pair of meta-analyses by DuPaul and colleagues are useful to consider; together, DuPaul & Eckert (1997) and DuPaul, Eckert, and Vilardo (2012) comprehensively reviewed the ADHD treatment literature for school-based interventions, including varied designs (between group, cross-over design, and single-subject design) and outcomes (academic, behavioral). The results of these meta-analyses concluded that contingency management strategies and academic interventions were clearly effective across multiple study designs, and that the impact of these interventions was greater than cognitive-behavioral approaches (DuPaul & Eckert, 1997). In a replication of these findings, DuPaul et al. (2012) reviewed studies produced after the initial meta-analysis and the results were partially replicated with an independent sample of studies. In DuPaul et al. (2012) moderate to large effects were found for behavioral and academic outcomes across within-subject and single-subject design studies, but no significant effect of behavioral outcomes was found for between group studies – likely due to only three between group studies being included in the second meta-analysis. In general, cognitive interventions were found to be less effective across the meta-analyses, relative to contingency management and academic interventions. These meta-analyses

illustrate the importance of investigating varied study designs, treatment outcomes, and treatment modalities in efforts to identify the most effective ADHD treatments in schools.

As another example, Fabiano, et al. (2015) completed a systematic review of meta-analyses for ADHD treatment (inclusive of the DuPaul & Eckert, 1997 and DuPaul et al., 2013 meta-analyses described above), and the results indicated that there was little continuity across meta-analyses in the studies included, the parameters addressed (e.g., age of children; types of research design included; treatment modality), and conclusions. This creates considerable difficulty for school mental health providers who are searching for the most effective school-based intervention approaches for children with ADHD. However, when the three meta-analyses that focused on school-based outcomes were considered together, Fabiano et al. (2015) reported that they clearly supported the use of contingency management strategies for intervening to treat ADHD in classroom settings.

A complement to the use of meta-analyses in evidence-based decision-making is the use of systematic reviews or practice guidelines conducted by experts in the field of ADHD treatment. Across the field, the short-term efficacy of stimulant medication for reducing ADHD-related symptoms in educational settings is agreed upon based on a sizable evidence base (Conners, 2002; Faraone, Biederman, Spencer, & Aleardi, 2006). Indeed, professional guidelines recommend medication as a first line intervention based on this research (American Academy of Child and Adolescent Psychiatry [AACAP], 2007; American Academy of Pediatrics [AAP], 2011). Endorsement of psychosocial intervention for ADHD is less clear, and this is also reflected in professional guideline recommendations. For example, the AAP guidelines classify the strength of evidence for stimulant medications as stronger for elementary- and adolescent-aged children with ADHD, relative to psychoeducational treatments. Likewise, the AACAP

guidelines (2007) state: “It seems well established that pharmacological intervention for ADHD is more effective than a behavioral treatment alone” (pp. 903). These findings are inconsistent with systematic reviews and practice guidelines that focus on the strength of evidence for behavior management strategies in schools. For example, criterion-based reviews of the psychosocial treatment literature support the efficacy of contingency management interventions for treating ADHD (Evans, et al., 2014; Pelham & Fabiano, 2008; Pelham, Wheeler, & Chronis, 1998; Sibley, Kuriyan, Evans, Waxmonsky, & Smith, 2014). Indeed, although many of the practice guidelines imply a sequencing preference of medication prior to non-pharmacological treatment, the only sequencing study of medication first versus contingency management first yielded outcomes that illustrated superior school functioning and lower costs of intervention for children with ADHD when behavior management was the initial intervention (Page et al., 2016; Pelham et al., 2016).

This confusion apparent in medical professionals’ practice guidelines spills over into educational guidelines. For instance, the Department of Education released a publication for teachers in 2003 entitled, *Identifying and Treating Attention Deficit Hyperactivity Disorder: A Resource for School and Home* (U.S. Department of Education, 2003). The guide states in a call-out box, “Behavioral strategies are used most commonly when parents do not want to give their child medication;” “Behavioral strategies can be used in conjunction with medicine;” and “Behavioral strategies may be the only options if the child has an adverse reaction to medication” (pp. 9-10). The clear implication of these comments is that medication should be used for youth with ADHD in school settings, a position that seems questionable given that medication use for mental health disorders is outside the purview of an educator or school administrator. One might even question why a practice guide for educators addresses medication

at all, given that the many children with ADHD will not consistently take or use medication (Zuvekas & Vitiello, 2012), and regardless of medication use, teachers must provide a strong educational environment that promotes student learning. Teachers would likely be better served if practice guidelines outlined what teachers can proactively do to support youth with ADHD, rather than discussing a form of intervention over which they have no control (medication use). The publication later goes on to say (**emphasis added**):

> The research **results on the effectiveness** of behavioral techniques **are mixed**. While studies that compare the behavior of children during periods on and off behavior therapy demonstrate the effectiveness of behavior therapy (Pelham & Fabiano, 2001), **it is difficult to isolate its effectiveness**. The multiplicity of interventions and outcome measures makes **careful analysis of the effects** of behavior therapy alone, or in association with medications**, very difficult** (AAP, 2001) . . . Although some research suggests that behavioral methods offer the opportunity for children to work on their strengths and learn self-management, **other research indicates that behavioral interventions are effective but to a lower degree** than treatment with psychostimulants (Jadad, Boyle, & Cunningham, 1999; Pelham, et al., 1998) . . . Indeed, **behavioral strategies can be difficult to implement consistently** across all of the settings necessary for it **to be maximally effective**. Although behavioral management programs have been shown to enhance the academic performance and behavior of children with ADHD, **followup and maintenance of the treatment is often lacking** (Rapport, Stoner, & Jones, 1986). . . (U.S. Department of Education, 2003 pp. 10).

It is an understatement to say that this is not a resounding endorsement of behavioral interventions for youth with ADHD. Further, this fails to provide the educator with specific ideas regarding the approach that should be used with a student who has ADHD, which is presumably why the teacher turned to the practice guide in the first place. Following this disappointing search, an industrious educator might then examine what is best practice for ADHD using the What Works Clearinghouse as a guide, yet they would return a response of "No results found" when ADHD was searched within all the Publication and Product types available. Thus, there is a need for a review of interventions that may be supportive of the comprehensive treatment of a child with ADHD in school settings.

Summary

As outlined above there is inconsistency in the message sent to school mental health providers regarding effective ADHD treatment. Across developmental levels there is even inconsistency in recommended approaches within a single practice guide (see AAP, 2011)! Below, the summative evidence-bases for each developmental level of import for school-mental health practitioners working with children with ADHD are reviewed.

Preschool. General recommendations across sources of evidence suggest a consensus view that behaviorally supportive intervention is the strongest approach for preschool-aged children with ADHD. This comes from practice guidelines (AAP, 2011) as well as meta-analytic analyses of intervention (Charach et al., 2013). However, it is worth noting that there are fewer school-based studies of interventions for children with ADHD with most psychosocial studies focused on parenting interventions (e.g., Murray, Lawrence, & LaForett, 2017). Primary studies typically focused on disruptive behavior disorders in general also indicate that these approaches are promising for young children with ADHD (Graziano, Slavec, Hart, Garcia, & Pelham, 2014;

McGoey. Eckert, & DuPaul, 2002). Yet, the overall evidence-based for school interventions for children with ADHD at the preschool level is an area that needs additional study. This need is especially pressing given the considerable expulsion rates of children with disruptive behavior disorders such as ADHD from preschools (Gilliam, 2010), presumably because of mental health impairments that negatively impact school functioning (interestingly, access to a school mental health professional was one factor that protected against expulsion).

Elementary. The strongest evidence-base for school mental health treatment for ADHD is at the elementary school level. Meta-analyses (e.g., DuPaul & Eckert, 1997; DuPaul et al., 2013; Fabiano et al., 2009; Pyle & Fabiano, in press) indicate classroom contingency management approaches result in meaningful, positive effects. Classroom contingency management includes behavior therapy strategies such as daily report cards (Kelley, 1990; Volpe & Fabiano, 2013), token economies (Trout, Lienemann, Reid, & Epstein, 2007), time out from positive reinforcement (Fabiano et al., 2004), and other Tier 1 strategies such as labeled praise, effective commands and requests, and planned ignoring (Fabiano, Reddy, & Dudek, 2017; Walker & Eaton-Walker, 1991). The support from meta-analyses is buttressed by the conclusions from systematic reviews that utilize specific criteria for weighing the evidence for particular treatments (Evans et al., 2014; Pelham & Fabiano, 2008; Pelham et al., 1998). These three reviews across three decades all returned the conclusion that for elementary-aged students contingency management strategies implemented in classrooms have a well-established evidence base, the most rigorous level of evidentiary standards.

Middle/High School. The systematic reviews of the strength of evidence for ADHD classroom contingency management all note that the evidence is consolidated within the elementary school level, and the degree to which these findings generalize to middle and high

school settings is in need of additional study and support (Evans et al., 2014; Pelham & Fabiano, 2008; Pelham et al., 1998). One exception to this is the review by Evans et al. (2014) that determined that organizational skills training is a well-established intervention, and one of the studies conducted that supported this approach was implemented with middle-school aged students with ADHD (Langberg et al., 2012). Sibley et al. (2014) and Smith et al. (2000) provide systematic review support for classroom behavior management in the middle and high school settings, albeit with a more modest evidence base relative to the elementary school level. Both reviews concluded that contingency management strategies are effective for middle school students with ADHD, with there being little study at the high school level.

Overall Strength of Evidence for Outcomes. The articles in Table 1 survey a number of outcome measures within the broad field of ADHD treatment studies. A few general conclusions on outcomes can be noted. First, ADHD Diagnostic and Statistical Manual of Mental Disorders (DSM; APA, 2013) symptoms are typically not robustly improved by contingency management interventions. This is not surprising as the target of these interventions is not to reduce symptoms, but rather to reduce impairments in classroom functioning (relationships with peers and adults; functioning within group settings such as the classroom; producing academic work) and build competencies in specific functional domains (e.g., note-taking; organizational skills; following school rules). These areas are improved through contingency management and organizational skills training interventions. In the recommendations that follow, emphasis will be placed on school mental health supports that improve functional outcomes, rather than specific ADHD symptoms or diagnostic status.

Outline of an Evidence-Based, School Mental Health Plan for Children with ADHD

To provide educators with clear guidance on specific strategies and techniques that are effective for students with ADHD, the following section will discuss screening, intervention, and progress monitoring within a tiered problem-solving model. This model will specifically outline: (1) best practices for finding students at risk for ADHD (screening); (2) how to conduct a functional analysis of the student's behaviors; (3) evidence-based interventions that can be used with all students (Tier 1), small groups (Tier 2), and at the individual level (Tier 3); and (4) methods to monitor the progress of these students to determine when treatment should be changed or terminated. Emphasis within this review will center around intervention, with exemplars of evidence-based programs and treatment manuals provided throughout.

Screening

Screening, or the identification of a sub-group of at-risk students, is considered a pillar of most tiered problem-solving models (Fuchs & Fuchs, 2006; Stoiber, 2014). Screening is typically implemented school-wide using brief rating scales, with all students rated by at least one teacher. These scales identify students at-risk for academic and behavioral problems, including ADHD. Several assessments have been proposed to fill this role, including the Direct Behavior Rating (DBR; Chafouleas et al., 2013), the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) and the Behavioral and Emotional Screening System (BESS; Kamphaus & Reynolds, 2007).

While these approaches do not specifically assess for ADHD, several provide subscale scores (such as the hyperactivity subscale on the SDQ), which may identify those students at-risk for ADHD. In schools, where the primary focus is typically on alleviating impairment (e.g., poor work completion) rather than symptoms (e.g., fidgeting; Angold, Costello, Farmer, Burns, & Erklani, 1999; Evans, Owens, Mautone, DuPaul, & Power, 2014), additional diagnostic

assessment with ADHD rating scales is not recommended (McMahon & Frick, 2005; Pelham, Fabiano, & Massetti, 2005). Rather, following the identification of students at risk, any further assessment should focus on informing treatment, rather than continuing to gather symptom counts which are likely to be redundant with the screening information (c.f. Pelham, et al., 2005). For measures that examine impairment and help to inform treatment, the reader is referred to the Integrated Screening and Intervention Rating Form (ITRF; Volpe & Fabiano, 2013) which gathers data on targets that can be directly linked to a daily report card, or the Adolescent Academic Problems Checklist (AAPC; Sibley, Altszuler, Morrow, & Merrill, 2014) which focuses specifically on the classroom functioning of adolescents. Following identification, educators should endeavor to define and analyze a student's specific impairments before creating a comprehensive treatment plan.

Functional Behavior Analysis

Once a district identifies students with characteristics of ADHD, it is crucial that educators take time to observe, define, and analyze the problematic behaviors the student is exhibiting (DuPaul & Ervin, 1996; Scotti, Morris, McNeal & Hawkins, 1996). While it may be tempting to see a label like "ADHD" and choose a treatment that is marketed for that category, the reality is that students with ADHD may display disruptive, off-task, or disrespectful behaviors for a number of reasons, and no intervention can solve every problem. Identifying the function of a specific behavior before creating an intervention plan will likely lead to greater success for the student, and less frustration and disengagement from the staff who implement the plan (Fabiano, 2016). While a full review of the mechanisms and applications of functional behavior analysis lies outside the scope of this paper (see Crone, Hawkins, & Horner, 2015), the pillars of functional behavior analysis include: (a) identifying and operationally defining the

target behaviors (e.g., "off-task"); (b) identifying environmental triggers, antecedents, and consequences for those behaviors; and (c) forming global and specific hypotheses as to the functions of the behaviors (e.g., displaying off-task behavior to gain negative peer attention). Following this analysis, educators can choose and modify interventions to target the specific needs and motivations of the student. Although functional behavioral assessments are typically reserved as formal assessments as part of the special education process, one might better support students with ADHD by implementing them as formative assessments utilized in an ongoing fashion to inform interventions, even within general education settings.

Evidence-Based Interventions

As outlined above, there are a number of evidence-based interventions that can help children with ADHD experience success in school. Behavioral classroom management (including contingency management and organizational skills training) and behavioral parent training have been identified as efficacious non-pharmacological approaches for this population (e.g., Evans et al., 2014). Due to the infrequency with which behavioral parent training is implemented in schools, the following section will focus on behavioral classroom management and organizational skills training, which are likely more familiar to educators, and have support for implementation within schools. In the sections below, examples of interventions addressing classroom behavior and organizational skills are given by tier (universal, small-group, and individual), with specific examples of manualized or well-defined programs provided where available (see Table 3). It is important to note that this section is not a comprehensive list of all evidence-based interventions for students with ADHD, but rather includes exemplars of the types of interventions and programs that are effective for these students.

Universal (Tier I). There are many strategies that educators can use to improve outcomes for students with ADHD even before these students are identified. They include things like using good commands (e.g., telling a child what to do, rather than what not to do), modifying teacher attention (i.e., planned ignoring), and catching a child being good (i.e., labeled praise). These strategies are commonly used in classrooms, but are not often seen as "interventions." One possible reason for this is that although these strategies can be equally applied across all students, they likely need to be intensified for students with ADHD, who typically run on a deficit of corrective feedback (commands, instructions, reprimands) to praise (Barkley, Fischer, Edelbrock, & Smallish, 1991), and need rules and consequences frequently repeated (DuPaul & Weyandt, 2006). For a list of common strategies that can be effective for students with ADHD, see Table 2.

In addition to these universal strategies, there are also several class-wide programs that can increase desirable behavior in students with ADHD. One exemplar class-wide program is the Good Behavior Game (GBG; Barrish, Saunders, & Wolf, 1969), which has been called a "universal behavioral vaccine" due to its support in preventing a host of negative outcomes (Embry, 2002). The GBG uses a simple paradigm, based on applied behavior analysis. A classroom is divided into two (or more) teams, with each team choosing their own name. The teacher reviews the classroom rules with both teams, and rules are posted clearly in the classroom for everyone to see. The teacher informs the students that they may earn special privileges (extra recess, free time, etc.) for having fewer than "x" rule violations at the end of the day. The teacher records every time a team breaks a rule. At the end of the day, if the team has fewer than "x" rule violations, they earn a special privilege of their choosing. This game links an individual contingency (rule following) with a group consequence (loss or earning of a

privilege), and thus leverages one of the most effective classroom motivators against poor behavior: a student's peers.

In general, universal (Tier I) programs emphasize antecedent control (e.g., regularly posting and reminding students of the rules) and consequences (e.g., short, neutral reprimands when students break the rules) to modify both on-task and disruptive behaviors. When widely implemented, these programs can have lasting benefits for students with ADHD (Embry, 2002; van Lier, Muthen, van der Sar, & Crijnen, 2004). Indeed, some countries have fully embraced this model of widespread dissemination, utilizing comprehensive behavioral programs across dozens of schools nationwide (e.g., Druk in de Klas; Veenman, Luman, Hoeksma, Pieterse, & Oosterlaan, 2016). However, for some students, the support of universal interventions may still be insufficient to produce the amount of behavior change desired. For these students, a gradually increasing level of support is warranted. The next section will discuss how to choose and modify interventions to address students who need additional support.

Small-group and targeted (Tier II). For students who continue to struggle behaviorally or academically despite the presence of strong universal supports, a small-group or targeted intervention may be necessary. It should be noted that while accommodations (e.g., changes to seating, extended time) are often recommended at the Tier II level, there is very little empirical support for the effectiveness of these strategies with students who have ADHD (Harrison, Bunford, Evans, & Owens, 2013). Thus, the following section will focus on exemplar interventions which have empirical support, rather than potentially beneficial academic accommodations.

One exemplar intervention that is often used for students who need additional support is the daily report card (DRC), also known as the daily behavior report card or home-school note

(for a comprehensive guide, see Volpe & Fabiano, 2013). The DRC is one of the most widely studied behavioral interventions for students (U.S Department of Education, 2008), is familiar to most educators (Chafouleas, Riley-Tillman, & Sassu. 2006), can be flexibly applied to both on-task and disruptive behaviors (Pyle & Fabiano, in press), and fits well within both special and general education settings (Fabiano et al., 2010; Owens et al., 2012). These characteristics make the DRC an excellent tool to use with at-risk students who need Tier II intervention.

A typical DRC has several components, including: (a) an operationalized list of a child's target behaviors (e.g., interrupting, noncompliance, academic productivity); (b) specific criteria for meeting each behavioral goal (e.g., interrupts three or fewer times during math instruction); and (c) an overall target or daily goal for obtaining a reward or privilege (e.g., must earn at least 10 points to earn a reward). Teachers provide immediate feedback to the child regarding target behaviors, and consequences are given contingent on the child's ability to meet his or her goals. Consequences are typically positive (earning rewards, tokens, praise), but can be combined with response-cost (the loss of points, tokens, or privileges in response to off-task or disruptive behavior), if positive reinforcement is insufficient. Consequences should be specific to the student (rewards that he or she will find particularly motivating), provided as soon after the occurrence of the behavior as possible, and varied, so that the student does not become bored or unmotivated by a single reward (DuPaul & Stoner, 2003; Volpe & Fabiano, 2013).

While the DRC can increase desirable behavior by up to 60% in both elementary and middle/high school settings (Pyle & Fabiano, in press), there are some unique challenges to the use of the DRC in secondary school, where students often move between classrooms every hour, and no one teacher can rate the DRC consistently across the day. In their systematic review of evidence-based interventions for adolescents with ADHD, Sibley and colleagues (2014) noted

that behavioral interventions such as the DRC must be modified for the secondary school setting, emphasizing age-appropriate contingencies (e.g., cell-phone use), teen autonomy (e.g., self-monitoring), and a collaborative relationship between the teen and a trusted adult.

Using the DRC in isolation can benefit students greatly, but it has also shown promise in combination with other small group or targeted interventions. One prominent example of this is the use of the DRC in combination with organizational skills training, such as Langberg's (2011) *Homework, Organization, and Planning Skills* (HOPS) program. Programs like HOPS target behaviors and skills that are particularly challenging for students with ADHD, including note-taking, desk and locker organization, and keeping an assignment notebook. Students in these programs are given direct instruction in organizational skills, and rewarded at home or school based on their success in using the skills.

For students who continue to display off-task or disruptive behaviors following the implementation of Tier II strategies, behavioral teams must consider more intense forms of treatment. While there tend to be clear delineations between Tiers II and III for academic interventions (e.g., small-group reading instruction versus individual phonics training), the boundaries between these tiers become less clear for behavioral interventions. Many of the interventions that show positive outcomes for students with ADHD may occupy multiple tiers at different intensities, with some teachers opting to use strategies such as time-out from positive reinforcement across their entire class (Tier I), and some opting to use it on a case-by-case basis with individual students (Tier III). Therefore, while the following section will give recommendations for some exemplar techniques or strategies to use on Tier III, they should be considered as enhancements, rather than stand-alone interventions.

Individual (Tier III). In general, Tier III should be a continuation of Tier II, but with interventions modified for greater intensity. For instance, the DRC can be modified for Tier III by increasing the number of times the student is rated throughout the day, decreasing the latency of reward (e.g., opportunities to earn a reward before lunch and at the end of the day), allowing for rewards in multiple locations (e.g., home and school), or adding consequences such as time-out. This model of adaptive treatment has shown marked benefits for students with ADHD, and will likely save districts money as the student is helped without being moved into a more expensive placement (Pelham et al., 2016).

Two exemplar techniques that can enhance Tier II strategies are time-out (Fabiano et al., 2004) and the use of token economies (Pelham & Fabiano, 2008). Time-out from positive reinforcement involves removing a child from the classroom, or to a separate location, following negative behavior. Time-outs have been shown to effectively reduce negative behaviors in children with ADHD when compared to a no time-out condition (Fabiano et al., 2004). If a child is seeking to escape the classroom, work, or direction being given, time-out is not recommended as this technique will likely serve to reinforce the negative behaviors. Token economies involve defining a set of behaviors for which the student can earn or lose tokens or points. The student is given continuous feedback on his or her behavior, with teachers or other school staff labeling behaviors and assigning token or point values to them. Points are then exchanged at a later point (end of the day or end of the week) for rewards. These intensive strategies can be added to Tier I or II techniques to help create a comprehensive treatment package suited to the individual needs of the student.

Progress Monitoring

Throughout treatment, it is imperative that teachers and other staff monitor the student's behaviors. Like regularly checking a child's temperature, these brief assessments help gather numerical information on the child's progress, and allow staff to determine if the child is getting better. By regularly collecting data, school-based teams can assess if the interventions they chose are working, and make decisions on continuing or changing the intervention as needed. Although there have been many tools proposed for progress-monitoring, (e.g., curriculum-based measurements; Hosp, Hosp, & Howell, 2007), the Direct Behavior Rating (DBR; Miller, Patwa, & Chafouleas, 2014) will be discussed here as an exemplar tool for monitoring behavioral change.

The DBR is a flexible tool that involves rating a behavior (e.g., academic engagement) on a numeric scale (e.g., 1 to 10, where 10 is the most academically engaged), following a specified observation period (e.g., the first half of the day). The DBR has shown sensitivity to behavior change in students with disruptive behaviors characteristic of ADHD (Chafouleas, Sanetti, Kilgus, & Maggin, 2012), requires little training, and can be flexibly applied to an unlimited number of presenting concerns. By collecting numerical ratings on the DBR and regularly graphing the results, teachers can see the results of their interventions and make informed decisions about when to fade or intensify their intervention package.

Future Directions

As we have outlined ADHD is a childhood mental health disorder that is prevalent, pervasive across educational levels, and results in serious school impairments that need to be addressed by school mental health providers. Further, the current approaches to school supports for learning and behavior problems are not optimally structured to support children with ADHD. Innovative, tiered approaches are likely to be required to comprehensively treat and educate

children with ADHD in schools. Future studies of comprehensive interventions implemented across grade levels, over sustained periods of time, and that integrate adequate training and supports for educators and school professionals are urgently needed. The results of these investigations should ultimately inform meaningful changes in school policy and practice to help children with ADHD, among the most frequently in need of school mental health support.

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Table 1.

Overview of research reviews focused on interventions for attention-deficit/hyperactivity disorder in schools.

Type[1]	Review	Grade Levels	Outcomes Addressed	Conclusions
Practice guide	Epstein et al. (2008)	Elementary	Disruptive behavior	Strong evidence for: (1) Modifying classroom environment to reduce disruptive behavior; (2) Teach and reinforce development of new skills/positive behaviors
Practice guide	U.S. Department of Education, Office of Special Education and Rehabilitative Services (2003)	Elementary	ADHD symptoms	"Effective strategies include behavioral, pharmacological, and multimodal treatments." (pp. 9)
Practice guide	U.S. Department of Education, Office of Special Education and Rehabilitative Services (2008)	Elementary	Academic performance Organization Classroom behavior	"Successful programs for children with ADHD integrate the following three components: Academic Instruction; Behavioral Interventions; and Classroom Accommodations." (pp. 5)
Systematic Review	McGoey, Eckert, & DuPaul (2002)	Preschool	Observations of On-task and Disruptive Behavior Academic Productivity	"Behavior management in the classroom setting for children with ADHD should be an important research priority, given

				the dearth of current studies." (pp. 24)
Systematic Review	Pelham, Wheeler, & Chronis (1998)	Elementary (few studies of adolescents were included in the review)	ADHD Symptoms ADHD Impairment Academic Productivity Observations of Classroom Behavior	"It is concluded that behavioral parent training and behavioral interventions in the classroom meet criteria for well-established treatments. Cognitive interventions do not meet criteria for well-established or probably efficacious treatments" (pp. 190).
Systematic Review	Pelham & Fabiano (2008)	Elementary (few studies of adolescents were included in the review)	ADHD Symptoms ADHD Impairment Academic Productivity Observations of Classroom Behavior	BPT interventions now clearly meet task force criteria for a well-established treatment . . . Behavioral Classroom Management is a well-established treatment for ADHD . . . Behavioral intervention implemented in peer group/recreational settings (e.g., summer treatment programs) meets criteria for a well-established treatment" (pp. 187, 197).
Systematic Review	Evans, Owens, & Bunford (2014)	Preschool, Elementary, Middle/High School	ADHD Symptoms ADHD Impairment	"Overall, two studies of Behavioral Contingency Management that met

				Evidence-Based Treatment Criteria increase the support for Behavioral Contingency Management as a well-established treatment for ADHD" (pp. 542).
Systematic Review and Meta-analysis[2]	Fabiano et al. (2015)	Preschool, Elementary, Middle/High School	ADHD Symptoms ADHD Impairment Academic Productivity Academic Achievement Related Issues/ Comorbidity	"The results of these . . . meta-analyses support the use of school-based contingency management as an intervention for ADHD, consistent with systematic review conclusions" (pp. 88).
Systematic Review and Meta-analysis	Smith et al. (2000)	Middle/High School	ADHD Symptoms	Note-taking training probably efficacious (ES = .74); Classroom behavior modification "promising, but not validated" (pp. 258)
Systematic Review and Meta-analysis	Sibley, et al. (2014)	Middle/High School	ADHD Symptoms ODD/CD Symptoms Academic Impairment Social Impairment Family Impairment	". . . our results suggested that both pharmacological and behavior therapy produced a similar range of effects on symptoms and impairment" (pp. 228).
Systematic Review	Chan et al. (2016)	Middle/High School	ADHD Symptoms Functional Impairments	"Psychosocial treatments are associated with greatest

				effect on the functional outcomes, such as homework completion, organizational skills, and parent-reported symptoms of ADHD, and co-occurring psychopathology (in that order)" (pp. 1998).
Meta-analysis	Bikic, et al. (2017)	Elementary, Middle/High	Parent-rated organizational skills Teacher-rated organizational skills Parent-rated attention Teacher-rated attention Teacher-rated academic performance Student GPA	"Results showed significant effects of [Organizational Skills Training] across all outcomes. . . the effect sizes were highest for the domain of parent-rated organizational skills" (pp. 118).
Meta-analysis	Pyle & Fabiano (in press)	Elementary	Observations of on-task behavior Observations of disruptive behavior	The daily report card is an effective intervention for children with ADHD in classroom settings.
Meta-analysis	Trout et al. (2007)	Elementary, Middle/High	Academic Productivity Academic Achievement	Consequent strategies (e.g., token economy, response cost) effective for improving academic productivity

Notes: [1] Type could be classified as meta-analysis, practice guide, or systematic review. [2]This systematic review of meta-analyses reviewed and integrated findings from 12 different meta-analyses of ADHD intervention, see text for additional description of included meta-analyses and results.

Table 2
Exemplar Evidence-Based Interventions for Students with ADHD, by Tier

Intervention	Resource(s)	Who Implements?	How Long Implemented?	Proposed Benefits?
Tier I				
Common Strategies				
Labeled Praise	Pfiffner & DuPaul, 2015	Any School Staff	Across School Year	Praise motivates/maintains desirable behavior
Planned Ignoring/Teacher Attention	Pfiffner & DuPaul, 2015	Any School Staff	Across School Year	Reduce minor attention-seeking behaviors
Posted/Regularly Reviewed Rules Reprimands	Pfiffner & DuPaul, 2015	Classroom Teacher	Across School Year	Increase rule-following
Class-wide Programs				
Good Behavior Game	Barrish, Saunders, & Wolf, 1969	Classroom Teacher	Across School Year	Increase on-task; Reduce disruptive
Tier II				
Individual Interventions				
Daily Report Card	Volpe & Fabiano, 2013	Classroom Teacher and Parent	As needed; benefits may decrease after first month (Owens et al., 2012)	Increase on-task; decrease disruptive
HOPS Program	Langberg, 2011	School Mental Health Provider	8-11 weeks	Increase homework completion, school materials management, and planning
OST Program	Gallagher, Abikoff, & Spira, 2014	School Mental Health Provider, Classroom Teacher and Parent	10-12 weeks	Increase organization, time management, and planning skills
Tier III				
Individual Interventions				
Time Out	Fabiano et al., 2004	Classroom Teacher	As needed	Reduce intentional aggression, intentional destruction of property, and repeated noncompliance
Token Economy	Kazdin, 1977 for a detailed guide; Pelham & Fabiano, 2008 for ADHD-specific review	Classroom Teacher	As needed	Increase on-task; decrease disruptive

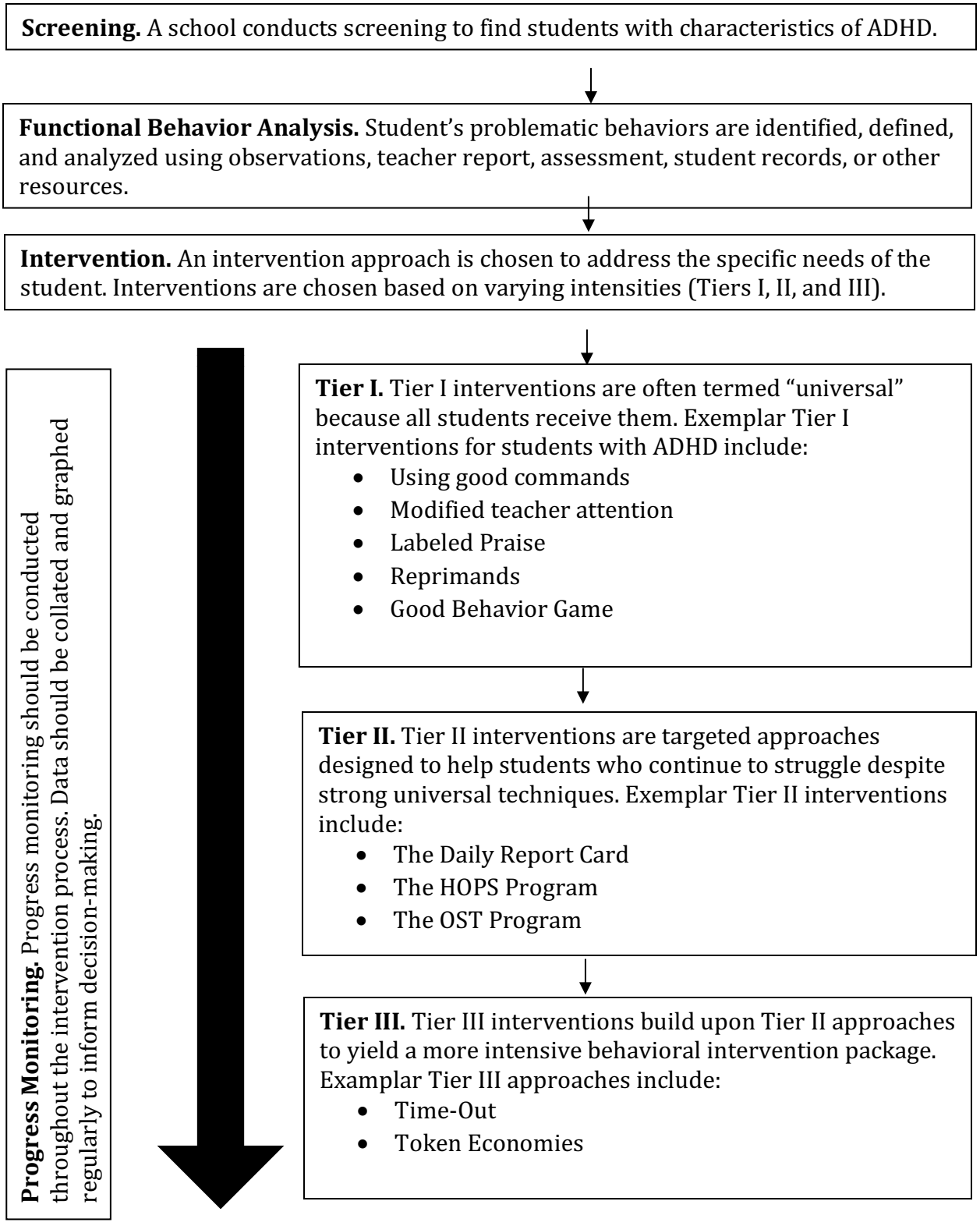

Figure 1. Outline of a plan for treating students with ADHD in schools.