



Best Practices in School Mental Health for Attention-Deficit/Hyperactivity Disorder: A Framework for Intervention

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Published online: 19 April 2018
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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 and synthesizes contemporary evidence-based reviews for school mental health interventions for children with ADHD across the preschool, elementary, and middle/high school levels to provide an overview of recommendations for best practice for school mental health practitioners. The preponderance of evidence across meta-analyses, systematic reviews, and practice guidelines support classroom contingency management strategies, with emerging evidence supporting 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.

Keywords ADHD · Classroom contingency management · Treatment · Tiered intervention framework

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 general education, elementary school settings (Harrison, Van-nest, 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, & 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 OHI category (Davila, Williams, & MacDonald, 1991). Although children with ADHD previously received services in other categories (e.g., learning disabled, ED), this policy modification resulted in a considerable 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 1990s, classification in the OHI category had risen 315% (Danielson, Henderson, &

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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 general 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). The increased rates of children with ADHD identified as in need of special education underscore the impairment experienced by children with ADHD in school settings, but it is not clear that the increased identification of students as requiring special education supports has resulted in better intervention (e.g., Spiel, Evans, & Langberg, 2014) in spite of substantial costs (Pelham, Foster, & Robb, 2007).

Indeed, the true impact, cost, and successful support of these students are difficult to assess, given that there is no explicit special education category for youth with this disorder. Further, the 1991 policy modification permitted increased classification rates, but 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 middle school youth with ADHD revealed that few known, effective interventions were included in the content of the documents (Spiel et al., 2014). Instead of the provision of 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 (Mattison, 2015). Impairments in learning are often comorbid with ADHD, yet 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.

Fortunately, there are effective interventions for ADHD in school settings (DuPaul & Stoner, 2014; DuPaul, Weyandt, & Janusis, 2011; Pfiffner et al., 2014; see Fabiano et al., 2009; Evans, Owens, & Bunford, 2014, and Evans, Owens, Wymbs, & Ray, 2018; Pelham & Fabiano, 2008 for reviews). Unfortunately, these interventions are rarely explicitly outlined within Individualized Education Plans 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 multi-tiered systems of support such as Response to Intervention (RTI; Fuchs & Fuchs, 2006) or Positive Behavioral Interventions and Supports (PBIS; Horner, Sugai, & Anderson, 2010) to outline intervention strategies and supports in a systematic manner. Models such as RTI and PBIS promote the implementation

of interventions within the general education setting prior to special education referral, potentially helping students with ADHD receive the support needed without waiting for a special education classification (Vujnovic, Holdaway, Owens, & Fabiano, 2014). 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 across developmental levels (e.g., preschool, elementary school, and middle/high school) as well as across intensities of intervention within multi-tiered systems of support (i.e., Tier 1 or universal intervention, Tier 2 or targeted intervention, and Tier 3 or indicated intervention). This analysis is necessary as many schools have moved to a multi-tiered system of support for academic problems and include effective academic assessments and interventions. However, the frameworks are less emphasized in the assessment and intervention of behavioral challenges such as ADHD relative to academic impairments.

Thus, although individuals with ADHD are represented across general and education settings and clearly experience academic impairment across grade levels, the disorder's prevalence suggests an average of one to two students with ADHD in every general education classroom (Fabiano et al., 2013; Froehlich et al., 2007), and there are potential effective school mental health interventions that can be implemented within school-based, problem-solving frameworks; there is no clear outline of interventions and supports for children with ADHD. Indeed, at the most basic level, there is no specific special education category for ADHD, and current guidance on how to handle ADHD in school settings is largely limited to "Dear Colleague" letters that adapt or interpret law for other original purposes rather than specific and targeted approaches for ADHD. This has been the standard operating approach in schools despite consistent findings that school outcomes are poor relative to peers for individuals with ADHD (Kent et al., 2011; Molina et al., 2009). Further, most decisions on special education supports focus on academic achievement deficits; an individual with ADHD may have adequate achievement but poor academic enabling skills (e.g., organization, time management) or social/emotional skills. Possibly due to this lack of precision within the frameworks and guidance for ADHD supports outlined by the Department of Education provided to schools, over 10% of complaints to the Office of Civil Rights "involved allegations of discrimination against a student with ADHD" (p. 2; U.S. Department of Education, Office of Civil Rights, 2016).

These reasons provide a rationale for re-considering existing school structures, supports, and interventions for

children and adolescents with ADHD. At the present time, there are a number of reviews, meta-analyses, and empirical studies that may be of use to school mental health providers. However, the conclusions of these documents are at times contradictory or unclear (see Fabiano, Schatz, Aloe, Chacko, & Chronis-Tuscano, 2015). Therefore, the purpose of this review is to (1) review and discuss the strength of evidence for ADHD interventions across developmental level; (2) outline the components of an evidence-based, tiered approach to assessment and intervention in the school setting; and (3) describe specific interventions with a strong evidence base for use in schools for children with ADHD within a tiered intervention approach.

Evidence Base for School-Based Treatment of ADHD

A first step in establishing a tiered intervention framework within schools for ADHD is the identification of best practice interventions that can be used within and 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 complex, sometimes contradictory picture of the best approaches for working with students with ADHD in schools. It is also important to note that the preponderance of studies included in evidence-based reviews and meta-analyses represent studies conducted with elementary school-aged students; generalization of summary findings to preschool or middle/high school grade levels should be done with caution. 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, and training interventions. Even within “training interventions” specific modalities might include organizational skills training, social skills training, or training of executive functions

such as working memory. 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, & Vilaro, 2012; Fabiano et al., 2009; Pyle & Fabiano, 2017). Crossover design, uncontrolled group design studies, and randomized controlled trials also contribute to the treatment literature. Although focusing on one design exclusively may result in a biased review of the overall treatment literature, traditional meta-analytic approaches have emphasized between-group designs (Fabiano et al., 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 (i.e., academic, behavioral, social), and its source (observation, teacher rating, parent rating, archival data), must be considered.

To illustrate the importance of these factors, a pair of meta-analyses by DuPaul and colleagues are useful to consider; together, DuPaul and Eckert (1997) and DuPaul et al. (2012) comprehensively reviewed the ADHD treatment literature for school-based interventions, including varied designs (between-group, crossover design, and single-subject design) and outcomes (academic, behavioral) for children between the ages of 5–15 (DuPaul & Eckert, 1997) and up to middle school (DuPaul et al., 2012). 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. Further, both meta-analyses need to be considered together in order to obtain an overall review of the literature, as each independently yielded slightly different conclusions based on the literature reviewed.

As another example, Fabiano et al. (2015) completed a systematic review of meta-analyses for ADHD treatment incorporating preschoolers up until 18 years of age (and including the DuPaul & Eckert, 1997 and DuPaul et al. (2012) 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 if they rely on a single meta-analysis. However, when all meta-analyses that focused on school-based outcomes are 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 for elementary school-aged students 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” (p. 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 and skills training interventions for treating ADHD (Evans et al., 2018; 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 behavior therapy first yielded outcomes that illustrated superior school functioning and lower costs of intervention for children with ADHD when behavior therapy was the initial intervention (Page et al., 2016; Pelham et al., 2016).

Inconsistencies apparent in medical professionals’ practice guidelines can also be found in guidelines aimed at educators. 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 children 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, and there is no evidence that medication improves the academic achievement of children with ADHD (Barnard-Brak & Brak, 2011; Molina et al., 2009; Van der Oord, Prins, Oosterlaan, & Emmelkamp, 2008) or normalizes neurocognitive functioning (Gaultieri & Johnson, 2008). 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 (U.S. Department of Education, 2003) 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, p. 10).

It is an understatement to say that this is not a resounding endorsement of behavioral interventions for children 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.

Summative Evidence Bases by Developmental Level

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, but it should be acknowledged that there are areas where there is no clear evidence base to build upon and this is noted where appropriate.

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 compared to parenting interventions, there are fewer school-based studies of interventions for children with ADHD (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 (Chacko, Fabiano, Doctoroff, & Fortson, 2017; Graziano, Slavec, Hart, Garcia, & Pelham, 2014; McGoey, Eckert, & DuPaul, 2002), and they may be better tolerated and potentially more effective than medication treatment (e.g., Vitiello et al., 2007). Yet, the overall evidence base 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. 2012; Fabiano et al., 2009; Pyle & Fabiano, 2017) 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) implemented at Tier 2 or 3, 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, 2018; 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. Organizational skills training, which teaches the child adaptive school-based skills, is also a well-established intervention for elementary school students with ADHD (Evans et al., 2018).

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). The reviews by Evans et al. (2014, 2018) determined that organizational skills training is a well-established intervention for young adolescents. Other systematic reviews of the larger treatment literature on adolescent interventions for ADHD (Sibley, Kuriyan, et al., 2014; Smith, Waschbusch, Willoughby, & Evans, 2000) suggest the promise of behavior therapy and training interventions (e.g., note-taking) in the middle and high school settings, albeit with a more modest evidence base relative to the elementary school level.

Of note for the present review are a series of recent research studies that highlight the promise of school mental health interventions for training adaptive skills to adolescents. Focusing on training becomes more important during middle school and high school as increased responsibility for self-management and academic performance is placed upon the individual with ADHD. One approach is the Challenging Horizons Program (CHP; Schultz & Evans, 2015), which includes a combination of after-school training activities focused on functionally important behaviors (e.g., organization, social skills, note-taking), continued progress monitoring, and feedback. The CHP is typically administered after school throughout the school year. Compared to a school-day program administered by school staff and a community care control condition, the CHP after-school program resulted in improved academic outcomes, some of which persisted into the subsequent school year on a clinically meaningful outcome, grade point average (Evans et al., 2016). Adolescents who had a strong working alliance with the school mental health practitioners and low levels of parent adolescent conflict were most likely to improve and approach normative functioning (Langberg et al., 2016). Schultz, Evans, Langberg, and Schoemann (2017) further reported that adolescents who attended 80% or more of the sessions offered benefited substantially from the program both during CHP and 6 months later at a follow-up assessment. Together, these reports highlight the after-school CHP as a viable and effective approach for middle school students with ADHD. Another effective strategy for adolescents is the Homework, Planning, and Organizational Skills (HOPS) program; a recent study that had school personnel implement the program with middle school students during the school day illustrated its effectiveness. When HOPS was compared to a comparison intervention that emphasized goal setting and contingency management as well as a waitlist control, the HOPS intervention resulted in comparable overall effects to the comparison treatment and superior effects to the waitlist control (Langberg et al., 2018). Within moderator analyses, HOPS outperformed the contingency management approach for the students with the highest rates of psychopathology and executive function dysregulation. Together, these recent studies provide evidence for training interventions within middle school settings.

Overall Strength of Evidence for Outcomes

The articles in Table 1 survey a number of outcomes improved within the broad field of ADHD treatment studies. There are multiple studies that support school-based interventions for children with ADHD in improving 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 may be also 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) as reductions in impairment and improvements in adaptive functioning are typically the outcomes of most proximal concern for parents and educators (Fabiano, Schatz, & Jerome, 2016). It is important to note that the strength of the evidence for all interventions is weighted toward the elementary school level, with fewer studies supporting interventions at the preschool and middle/high school levels.

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 of ADHD (screening); (2) the importance of conducting a functional assessment of the student's behaviors; (3) evidence-based interventions that can be used with all students (Tier 1), small groups/at low intensity (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. This multi-tiered system of support can be applied across developmental levels and will draw upon evidence-based interventions (outlined above) at the preschool, elementary, middle, and high school levels.

Screening

Screening, or the identification of a sub-group of at-risk students, is considered a pillar of most tiered intervention models (Fuchs & Fuchs, 2006; Stoiber, 2014), and it is touted as one of the most important achievements of the last 50 years in the field of disruptive behavior disorders (Walker, 2015). Screening can accomplish many goals including prevention

Table 1 Overview of research reviews focused on interventions for attention-deficit/hyperactivity disorder in schools

Type ^a	Review	Grade levels	Outcomes addressed	Conclusions
Practice guide	Epstein, Atkins, Cullinan, Kutash, and Weaver (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.” (p. 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.” (p. 5)
Systematic review	McGoey et al. (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.” (p. 24)
Systematic review	Pelham et al. (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” (p. 190)
Systematic review	Pelham and 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” (p. 187, 197)
Systematic review	Evans et al. (2014)	Preschool, elementary, middle/high school	ADHD symptoms ADHD impairment Academic productivity Observations of classroom behavior	“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” (p. 542)

Table 1 (continued)

Type ^a	Review	Grade levels	Outcomes addressed	Conclusions
Systematic review	Evans et al. (2018)	Preschool, elementary, middle/high school	ADHD symptoms ADHD impairment Academic productivity Observations of classroom behavior	“Behavior Management including Behavioral Parent Training (BPT), Behavioral Contingency Management, Behavioral Peer Interventions, and their combination are still well-established for preschool- and elementary-school-age children, but BPT for adolescents met criteria for possibly efficacious... Organization training remained well-established for children and adolescents.” (p. 189)
Systematic review and meta-analysis ^b	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” (p. 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” (p. 258)
Systematic review and meta-analysis	Sibley, Kuriyan, 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” (p. 228).
Systematic Review	Chan, Fogler, and Hammerness (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)” (p. 1998)
Meta-analysis	Bikic, Reichow, McCauley, Ibrahim, and Sukhodolsky (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” (p. 118).

Table 1 (continued)

Type ^a	Review	Grade levels	Outcomes addressed	Conclusions
Meta-analysis	Pyle and Fabiano (2017)	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

^aType could be classified as meta-analysis, practice guide, or systematic review

^bThis 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

of more serious disruptive or emotional problems, permit lower-intensity, preventive interventions to be implemented effectively, and provide decision-makers (i.e., teachers, principals, school psychologists) with actionable information from which to work to create behavior plans for intervention sooner and more systematically. Screening is typically implemented school-wide using brief rating scales, with all students rated by at least one teacher. 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), the Social, Academic, and Behavioral Risk Screener (SAEBRS; Kilgus, Chafouleas, & Riley-Tillman, 2013), and the Behavioral and Emotional Screening System (BESS; Kamphaus & Reynolds, 2007). It is important to note that the majority of research on screening has been done in elementary populations, which limits the following recommendations to students at that school level. Middle school and high school screening approaches are an area in need of additional study, though effective candidate measures for screening at these school levels have been developed (e.g., Brady, Evans, Berlin, Bunford, & Kern, 2012; Evans et al., 2013; Sibley, Altszuler, Morrow, & Merrill, 2014).

Best practice guidelines in the diagnosis of ADHD recommend the evaluation of both symptoms and associated impairments from multiple informants (e.g., teachers, parents, and self; American Academy of Child & Adolescent Psychiatry, 2007; American Academy of Pediatrics, 2011). Though screening instruments do not specifically diagnose the presence of ADHD, elevations on screening measures (e.g., the hyperactivity/inattention subscale of the SDQ) can be a useful first step to identifying students at risk of ADHD in the schools. Following the use of a broad behavioral screener, school mental health professionals may follow up with a more targeted ADHD rating scale, such as the ADHD Rating Scale-5 (ARS-5; DuPaul et al., 2015) or the Disruptive Behavior Disorders Rating scale (Pelham, Gnagy, Greenslade, & Milich, 1992), which will help to accurately identify the group of students at risk of the disorder, compared to students with symptoms that may be similar to ADHD but result from another underlying reason such as substance abuse or anxiety (Power et al., 2017). This systematic use of a screener followed by a more extensive rating form is a recommended approach, as it likely reduces rater fatigue and increases the likelihood of form completion (Walker, Severson, & Feil, 2014).

It is important to note that school mental health providers are often in the position of administering the screening assessments and follow-up ratings of ADHD, which provides necessary but not sufficient information for ADHD diagnosis. At this point, the school mental health provider could refer out for a more extensive diagnostic assessment, but ultimately the diagnosis itself is unlikely to inform the

provider on the best approach for intervention. In fact, in the worst scenario, the referral to an outside assessment will delay the implementation of effective school mental health interventions. Indeed, after the assessment and a diagnosis of ADHD, the recommendations of the assessment are likely to be to work with the school mental health provider to initiate school-based intervention. Thus, although a diagnosis of ADHD may be desired by parents, and may be required to justify outside insurance-funded treatments, it is not necessary for providing school mental health supports for children at risk of ADHD. Thus, in our recommendations that follow, we view them as appropriate for students both at risk of and diagnosed with ADHD. As noted in the Department of Education guidance letter (2016), "... the determination of whether an individual has a disability need not demand extensive analysis" (p. 23; Office of Civil Rights, Department of Education, 2016) and a formal diagnosis of ADHD from an outside provider is not required to provide school-based supports.

Thus, following the use of a broad behavioral screener and a specific measure of ADHD, additional assessment should focus on informing treatment (McMahon & Frick, 2005; Pelham, Fabiano, & Massetti, 2005), and identifying those factors which contribute to the attentional or behavioral difficulties. For measures that examine impairment and help to inform treatment, the reader is referred to the Integrated Screening and Intervention Rating Form (ITRF; Daniels, Volpe, Fabiano, & Briesch, 2017; 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, et al., 2014) which focuses specifically on the classroom functioning of adolescents. After identifying the problem and associated impairment, along with concomitant skill deficits, a functional behavior assessment can be used to identify those antecedents and consequences that contribute to the problem behavior.

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, McNeil, & Hawkins, 1996). Though 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 a strong assessment approach will identify the antecedents and consequences that may be leading to problem behaviors and that will sustain appropriate behaviors. 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). Although a full review of the mechanisms and applications of functional behavioral assessment lies outside the scope of this paper (see Crone, Hawkins, & Horner, 2015), the pillars of this assessment 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 avoid academic work). Following this analysis, educators can choose and modify interventions to target the specific needs and motivations of the student. While the process of a functional behavioral assessment should help inform intervention at all developmental levels and across all three tiers, there are several hurdles to its widespread use. First, there is a marked absence of research on functional behavioral assessment in secondary settings (Scott et al., 2004), which limits the recommendation for its use to elementary school students. Second, functional behavioral assessments are typically reserved as formal assessments as part of the special education process (e.g., New York State Education Department, 2011), which may fail to realize their full potential to inform intervention at other stages of intervention. One might better support students with ADHD by implementing functional behavioral assessments as formative assessments utilized in an ongoing fashion to inform interventions at all three tiers, rather than as a summative assessment within a process to determine special education status (Fabiano, 2016; Scott et al., 2004).

Evidence-Based Interventions

As outlined above, there are a number of evidence-based interventions that can help children with ADHD experience success in school, including behavioral classroom management (e.g., contingency management), organizational skills training, and behavioral parent training (e.g., Evans et al., 2018). In the sections below, examples of interventions addressing classroom behavior and organizational and functional skills are given by tier (universal, small group, and individual), with specific examples of manualized or well-defined programs provided where available (see Table 2). 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. In practice, the interventions will typically be tailored to the specific developmental level, setting, and child target behaviors.

Table 2 Exemplar evidence-based interventions for students with ADHD, by tier

Intervention	Resource(s)	Who implements?	How long implemented?	Proposed benefits?
Tier 1				
Common strategies				
Labeled praise	Pfiffner and DuPaul (2015)	Any school staff	Across school year	Praise motivates/maintains desirable behavior
Planned ignoring/teacher attention	Pfiffner and DuPaul (2015)	Any school staff	Across school year	Reduce minor attention-seeking behaviors
Posted/regularly reviewed rules; reprimands	Pfiffner and DuPaul (2015)	Classroom teacher	Across school year	Increase rule-following
Class-wide programs				
Good behavior game	Barrish et al. (1969)	Classroom teacher	Across school year	Increase on-task; reduce disruptive
Tier 2				
Individual interventions				
Daily report card	Volpe and Fabiano (2013)	Classroom teacher and parent	As needed	Increase on-task; decrease disruptive
Organizational skills training	Gallagher, Abikoff, & Spira (2014); Langberg (2011); Schultz and Evans (2015)	School mental health provider	8–11 weeks	Increase homework completion, school materials management, and planning
Tier 3				
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 and Fabiano (2008) for ADHD-specific review	Classroom teacher	As needed	Increase on-task; decrease disruptive behavior

HOPS homework, organization, planning skills, *OST* organizational skills training

Universal (Tier 1)

There are many strategies that educators can use to improve outcomes for students with ADHD at the Tier 1 level (e.g., Madsen, Becker, & Thomas, 1968). They include things like using clear commands (e.g., telling a child what to do, rather than what not to do), modifying teacher attention (i.e., planned ignoring), and praising 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 praise relative to corrective feedback (commands, instructions, reprimands; Barkley, Fischer, Edelbrock, & Smallish, 1991; Owens et al., 2017; Reddy, Fabiano, & Dudek, 2013), and need rules and consequences frequently repeated (DuPaul & Weyandt, 2006). Teacher training programs on Tier 1 interventions have been developed to improve use of effective strategies at the preschool and

elementary school levels (Conroy, Sutherland, Vo, Carr, & Ogston, 2014; Conroy et al., 2015; Fabiano et al., 2017). 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 cited as effective 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 designated time-period. The teacher records every time a team breaks a rule. At the end of the period, if the team has fewer than “x” rule violations,

they earn a special privilege of their choosing. This game links an individual behavior (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' attention toward behaviors.

In general, universal (Tier 1) 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 many schools nationwide (e.g., Veenman, Luman, Hoeksma, Pieterse, & Oosterlaan, 2016). However, for some students with ADHD, 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 Intervention (Tier 2)

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 accommodations (e.g., changes to seating, extended time) are often recommended at the Tier 2 level, but there is very little empirical support for the effectiveness of these strategies with students who have ADHD (Harrison, Bunford, Evans, & Owens, 2013; Lewandoski, Lovett, Parolin, Gordon, & Codding, 2007). Indeed, there is some suggestion that accommodations such as extended time may actually result in less academic productivity for students with ADHD (Pariseau, Fabiano, Massetti, Hart, & Pelham, 2010). 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, including sample lists of target behaviors and rewards, 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, 2017), and fits well within both special and general education settings (Fabiano et al., 2010; O'Leary, Pelham, Rosenbaum, & Price,

1976; Owens et al., 2012). These characteristics make the DRC an excellent tool to use with students who need Tier 2 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, 2014; Volpe & Fabiano, 2013).

To increase the DRC's effect, several factors should be considered, including the developmental level of the child, barriers to implementation (e.g., the teacher's beliefs about intervention efficacy; Coles, Owens, Serrano, Slavec, & Evans, 2015), and the role of parents. For instance, it may be important to pair the use of the DRC with behavioral parent training (e.g., Owens et al., 2005; Pfiffner et al., 2016) to equip parents with skills to implement contingencies at home. Additionally, although the DRC can increase desirable behavior by up to 60% in both elementary and middle/high school settings (Pyle & Fabiano, 2017), there are some unique challenges to the use of the DRC in secondary school, where students often move between classrooms, 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, Kuriyan, et al. (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. Although there is a small body of single-case research examining the DRC with middle and high school students (Cottone, 1998; Miller & Kelley, 1994; Weakley, 2012), there continues to be a need for rigorous between-group research to demonstrate the efficacy of the DRC as a stand-alone intervention at the secondary level. Importantly, given the differences in context at the secondary level (e.g., multiple teachers, differing expectations across classrooms and school settings such as the cafeteria and hallway), future research must also address

how to overcome these barriers to allow effective implementation of the intervention.

In addition to behavioral classroom management strategies such as the DRC, there are also several small-group interventions that can be implemented within schools to meet the needs of students with ADHD. One prominent example of this type of Tier 2, small-group intervention, is Langberg's (2011) *Homework, Organization, and Planning Skills* (HOPS) program, which produces improvement in organizational skills and homework problems when used with middle school students (Langberg, Epstein, Becker, Girio-Herrera, & Vaughn, 2012) and is considered well established at the elementary and middle school level (Evans et al., 2018). Programs like HOPS target behaviors and skills that are particularly challenging for students with ADHD, including school material organization, homework recording, and time management. 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 (Langberg, Epstein, & Graham, 2008).

For students who continue to display off-task or disruptive behaviors following the implementation of Tier 2 strategies, behavioral teams must consider more intense forms of treatment. Though there tend to be clear delineations between Tiers 2 and 3 for academic interventions (e.g., small-group reading instruction versus individual phonics training), the boundaries between these tiers become less clear for behavioral interventions. For instance, in their outline of tiered behavioral supports within PBIS, Sugai and Horner (2009) describe interventions at Tier 2 as "more structured...with more frequent behavior feedback, and more active supervision and monitoring," and interventions at Tier 3 as "specialized, intensive, and individualized." Given these definitions, many of the interventions that show positive outcomes for students with ADHD may occupy multiple tiers at different intensities. For instance, some teachers may opt to use a simple DRC (e.g., a good news note) across their entire class (Tier 1), while some opt to use it on a case-by-case basis with individual students for specific problem behaviors (Tier 3; Vujnovic et al., 2014). For the purposes of this article, Tier 2 consists of intervention approaches that are characterized by moderate staff demand (e.g., interventions given in small-group format to allow more students to receive treatment with fewer staff resources) and moderate intensity (e.g., DRC rated only twice per day), while Tier 3 approaches are characterized by high staff demand (e.g., a one-on-one aide) and high intensity (e.g., a DRC with monitoring and feedback occurring every 15 min).

Individual (Tier 3)

In general, Tier 3 should be a continuation of Tier 2, but with interventions modified for greater intensity. Although

they have applications at all three tiers, functional behavioral assessments can be especially useful in determining which modifications or supplements are needed to enhance treatment outcomes at Tier 3 (Fairbanks, Sugai, Guardino, & Lathrop, 2007). For instance, if an assessment reveals that the student's behavior only improves in the afternoon in anticipation of his reward, teachers might decide to decrease the latency of reward (e.g., opportunities to earn a reward before lunch and at the end of the day), to give the student more motivation to behave throughout the entire day. Other modifications for Tier 3 might include increasing the number of times the student is rated throughout the day, allowing for rewards in multiple locations (e.g., home and school), or adding consequences such as time out. While these enhancements may require some additional resources (e.g., teaching assistant time dedicated to administering time-out procedures), they can typically be delivered in the general education setting and may save districts money as the student is supported without being moved into a more expensive placement (Pelham et al., 2007).

Two exemplar techniques that can enhance Tier 2 strategies at the elementary school level 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 DRC can be viewed as a low-intensity token economy on Tier 2, whereas the token economy on Tier 3 may involve tangible tokens, frequent rewards administered throughout the day, and more frequent feedback on performance. School staff administer the token economy by labeling behaviors and assigning token or point values to them. Points are then exchanged at a later point for rewards. These intensive strategies can be added to Tier 1 or 2 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. These brief assessments help gather quantitative information on the child's progress and allow staff to determine whether the child is getting better. By regularly collecting data, school-based teams can assess whether 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., 1–10, 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 the 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. A model of intervention is outlined above, but to make real progress in addressing the impairment experienced by children with ADHD, the field needs to continue to move forward in a direction dedicated toward reducing the impairment experienced by children with ADHD.

1. First, there needs to be an acknowledgement that although ADHD is among the most common and the most impairing conditions within school settings, there has never been a specific effort to address how to support children and adolescents with ADHD in school. It is absurd that this condition with enormous financial (Pelham et al., 2007) and personal (Kent et al., 2011) costs does not even have its own special education designation. Rather, the current approaches are delegated by brief memorandum designating ADHD as an allowable disability for classification under the American with Disabilities Act or Other Health Impairment category for special education (Davila et al., 1991). Due to this, it is perhaps not surprising that *1 in 9* complaints to the Office of Civil Rights “involved allegations of discrimination against a student with ADHD” (p. 2; U.S. Department of Education, Office of Civil Rights, 2016). The lack of an ADHD category for services weakens the ability to implement consistent and effective assessment and intervention procedures within and across school settings and districts. In addition, the lack of a specific
2. Further, the current approaches to school supports for learning and behavior problems are not optimally structured to support children with ADHD. Innovative approaches within multi-tiered systems of support 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 those that integrate adequate training and supports for educators and school professionals are urgently needed. Such study is sorely needed as it is not clear at this point to what degree students with ADHD can be fluidly moved across tiers, how long they may need to be exhibiting appropriate and consistent behavior at a tier, how many tiers are present in an optimal framework, and what maintenance procedures should be put into place to ensure reductions in treatment intensity do not result in worsening of behavior. In addition, there needs to be greater attention to these questions across the preschool and middle/high school settings, as there is relatively less research on effective intervention at these developmental levels. 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.
3. A focus on ADHD interventions should emphasize evidence-based treatment. As noted in Table 2, there are multiple potential options that can be situated within a multi-tiered system of support. These interventions should be emphasized within ADHD intervention plans, and non-evidence-based interventions de-emphasized such as individual counseling or cognitive trainings that are not empirically supported (Pelham & Fabiano, 2008). One means of achieving this goal is to leverage existing multi-tiered systems of support now deployed in school to focus on proactive, preventive strategies (e.g., whole classroom contingencies; school-wide recognition and discipline programs) as well as consequent

strategies (clear procedures for in-class and out-of-class discipline; individual rewards and incentives for appropriate behavior). By integrating interventions into a multi-tiered system of support for ADHD, consistency, accountability, and sustainability of intervention, all critical for the effective treatment for a chronic condition, may be more effectively realized.

4. Research on assessment approaches is also needed. This is because the triennial screenings typically used to determine academic interventions are likely to be too infrequent for ADHD behaviors, where inconsistency is a hallmark of the disorder. Assessment approaches that are frequent yet feasible are needed. In addition, progress monitoring measures are also needed that will inform intervention initiation, modification, and fading. DBRs are one possible candidate for this ongoing assessment (Miller & Fabiano, 2017), but additional study is needed. An additional area in need of study is the development of measures to effectively screen and identify child at risk of and with ADHD. Effective assessments are likely to be those that are integrated into the multi-tiered systems of support noted above and are also likely to need to be amenable to multiple administrations both within and across school years. This is different that the prevailing diagnostic approach that is one event (e.g., an assessment to determine whether a child has ADHD or not), which is less relevant for most school mental health providers. Assessment approaches that identify functional impairments and skills that need to be developed are likely to be more useful and aligned with current school assessment practices (e.g., functional behavior assessments).
5. In addition to focusing on improved classroom behavior and productivity, strategies to engage and retain parents within school-based interventions are needed (e.g., Owens, Murphy, Richerson, Girio, & Himawan, 2008; Pelham et al., 2016; Piffner, Villodas, Kaiser, Rooney, & McBurnett, 2013; Power et al., 2012). For a chronic disorder such as ADHD, interventions are likely to need to span across school years and across school buildings (e.g., elementary to middle school). The child's parent(s) are a potential consistent agent across these settings to promote effective intervention and maintain gains. Researchers should continue to work to identify how educators and parents can partner together in effective ways to promote school success (Sheridan & Kratochwill, 2007).
6. As outlined above, the research literature supporting interventions is concentrated heavily within the elementary school level. Although there are evidence-based interventions available for alternative grade levels (e.g., organizational skills training for middle schoolers; Evans et al., 2018; Langberg et al., 2012), there is an

urgent need to investigate effective ADHD interventions at different school levels. Further, school mental health researchers should increasingly study college and career readiness strategies that support youth with ADHD, given the sobering outcomes that are now clear (Kuriyan et al., 2013).

Together, these points outline some areas that need additional research in order to inform school mental health practitioners on the best practices for helping children with ADHD succeed in school. As new approaches and models of intervention are developed, it will be important to continue to implement these innovations in a systematic manner to improve upon successful approaches, and inform modifications across individual settings, developmental levels, and targets of intervention.

Funding During the writing of this manuscript, Dr. Fabiano was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R324A160133 to University of Buffalo. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.

Compliance with Ethical Standards

Conflict of interest Dr. Fabiano receives royalties from Guilford Press, has equity interest and is eligible to receive royalties from FastBridge Learning, and has active research grants from the Institute of Education Sciences, Administration for Children and Families, and Shire Pharmaceuticals.

Ethical Approval This article does not contain any studies with human participants performed by any of the authors.

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