NIH Public Access
Author Manuscript
Child Adolesc Psychiatr Clin N Am. Author manuscript; available in PMC 2015 October 01.

Published in final edited form as:
Child Adolesc Psychiatr Clin N Am. 2014 October ; 23(4): 731–746. doi:10.1016/j.chc.2014.05.014.

Behavior Management for School Aged Children with ADHD

Linda J. Pfiffner and **Lauren M. Haack**
University of California, San Francisco

Synopsis

Behavior management treatments are the most commonly used nonpharmacological approaches for treating ADHD and associated impairments. This review focuses on behavioral parent training interventions for school age children in the home setting and adjunctive treatments developed to extend effects across settings. The underlying theoretical basis and content of these interventions are described. Empirical support includes numerous randomized clinical trials, systematic reviews, and meta-analyses showing positive effects of these interventions on child compliance, ADHD symptoms and impairments, parent-child interactions, parenting and parenting stress. These studies support categorization of behavior management treatment as a well-established, evidence-based treatment for ADHD. Factors for consideration in clinical decision-making and future directions for research are provided.

Keywords

ADHD; children; parent training; behavior management; evidence-based treatment

Introduction/Background

Target of treatment

School-aged children with ADHD exhibit a range of inattentive, hyperactivity, and impulsivity symptoms that translate into serious academic and social/interpersonal impairment at home, at school, and in other settings as well (e.g., public places, sporting events, camps). Behavior management interventions primarily target functional impairments rather than ADHD symptoms per se[1]. At home, common problems targeted for behavior management treatment may include:

- Noncompliance and lack of independence in completing daily chores and routines (e.g., getting ready in the morning and going to bed at established times)

© 2014 Elsevier Inc. All rights reserved.

Contact information for authors: Corresponding: Linda Pfiffner, PhD, Professor of Psychiatry, University of California, San Francisco, 401 Parnassus Ave., Box 0984, San Francisco, CA 94143, voice: 415-476-7418, lindap@lppi.ucsf.edu, Lauren Haack, PhD, Clinical Psychology Fellow, University of California, San Francisco, 401 Parnassus Avenue, G06, San Francisco, CA 94143, Ph. 415-476-7857, lauren.haack@ucsf.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

No disclosures to report.

NIH-PA Author Manuscript
NIH-PA Author Manuscript
NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

- Homework problems (e.g., unrecorded assignments, forgotten materials, need for frequent reminders to start and complete homework, disorganization, and lack of attention to details/careless mistakes)
- Co-occurring aggression and defiance toward parents or siblings

Dysfunctional parenting is usually a key target of behavior management interventions. Notably, parents of children with ADHD exhibit more negative and ineffective parenting (e.g., power assertive, punitive, inconsistent) and less positive or warm parenting, relative to parents of children without ADHD[2,3] and family conflict tends to be high. Behavior management inter ventions, such as behavioral parent training, directly target these parenting styles in order to improve child behaviors and family relationships, and to reduce overall family conflict.

At school, students with ADHD are often inattentive, disorganized, off-task and disruptive which often leads to low rates of work completion both in class and at home[4,5]. Children with ADHD also exhibit a variety of peer-related problems including overly intrusive and negative peer interactions[6] which can be further exacerbated by associated aggression, argumentativeness, disruptiveness, and lack of self-control[7]. Behavior management interventions at school target behaviors across all of these domains.

Need for the treatment

The need for treating children with ADHD during the school-age years is crucial. The short-term consequences of ADHD symptoms and organizational impairments include poor scores on class tests, report cards and/or academic achievement tests[8]. The short-term consequences of their social interaction problems include conflicted family relationships and few friendships, as well as frequent rejection or neglect from peer groups[7]. Prospective follow-up studies show children with ADHD are at considerable risk for interpersonal and educational problems as they grow older as evidenced by frequent placement in special education classrooms, grade retention, school failure, early drop-out, and juvenile delinquency[9,10] and girls in particular are at risk for self-harm and suicide[11].

A number of behavioral treatments are available which target the multiple impairments and risk factors for ADHD across settings. This article will focus on behavior management treatments developed for the home setting, known as behavioral parent training (also variously referred to as parent management training, parent training or behavioral family therapy) as well as those home-focused treatments which include additional components to enhance generalization to other settings (e.g., schools). We refer readers to other articles in this issue for coverage on social skills training (Mikami, Jia, Na), summer treatment programs (Fabiano, Schatz), and school-based interventions (Evans, Langberg, Egan, Molitor).

Behavior Management Interventions

Theoretical Overview

The theoretical underpinnings for the practices taught to parents and teachers in behavior management treatment are grounded in contingency theory[12]. Consistent with this theory,

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

child behavior can be increased by following it with rewarding stimuli (i.e., positive reinforcement) or by removing aversive stimuli (i.e., negative reinforcement). Alternatively, behavior can be decreased by following it with aversive stimuli (i.e., punishment) or by removing rewarding stimuli (i.e., extinction). With consistent use of contingency management over time, the child's behavior can be shaped to achieve desired goals. Behavior management treatment also is grounded in social learning theory[13], which considers contingency theory principles alongside other factors including modeling and imitation of observed behaviors (e.g., parent behaviors) as well as cognitive factors (e.g., parental appraisals and attributions of child behavior).

Functional behavioral analysis—The first step in designing a behavior management intervention involves conducting a functional behavior analysis which includes identifying target behaviors to increase (i.e., positive behaviors) or decrease (i.e., negative behaviors) and then identifying factors in the child's environment related to the occurrence of the target behavior. Specifically, factors in the child's environment occurring immediately before and after the behavior (i.e., antecedents and consequences, respectively) that may be precipitating or maintaining the likelihood of the behavior are identified. In this way, the "function" of the behavior can be determined (e.g., to gain attention or avoid work). Target behaviors typically represent areas of functional impairment impacting the child in his/her everyday life and sometimes, but not always, map directly onto the DSM-defined ADHD symptoms[14,15]. Behaviors, as well as their antecedents and consequences are defined so as to be objective and measurable. Based on this analysis, a behavior plan can be developed that changes the antecedents and consequences which have been maintaining the target behavior, thereby modifying the likelihood of the behavior in the desired direction (e.g., increases positive behavior and reduces negative behavior).

Parent-Child interaction alterations—In addition to employing functional behavior analysis, behavior management treatment focuses specifically on altering negative parent-child interaction patterns that are often present in families with a child having problem behavior, including ADHD. These interaction patterns, referred to as the "coercive process" are cycles in which parents and children control one another's behavior via negative reinforcement[12]. An example of this process occurs when children exhibit problem behaviors (e.g., noncompliance to a parent request) and parents respond negatively, creating a cycle, each time escalating in severity and/or emotional tone. Eventually, either the child or parent complies with the other's demand, ending the cycle, and reinforcing the escalated negative behavior pattern. Many of the functional impairments and related conduct problems exhibited by children with ADHD become reinforced through this process. Thus, although not a cause of ADHD, the coercive parent-child interaction cycle predicts poor educational outcomes, peer relations, social skills, and aggressive behavior[16,17]. Furthermore, parenting styles associated with the coercive cycle mediate the effects of contextual risk factors such as stress, parental depression, and social disadvantage on child behavior problems[18]. Behavior management training directly targets these dysfunctional parenting practices by teaching families how to modify antecedents and consequences to reduce the likelihood of the coercive process, and improve child behaviors and family relationships.

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

The utility of behavioral approaches with ADHD is supported by studies showing that ADHD is associated with neurally-based motivational systems that respond poorly to the kinds of contingencies commonly used by parents and teachers. Specifically, children with ADHD relative to those without ADHD, are less responsive to inconsistent, delayed and weak reinforcement, and are less responsive to cues of punishment or non-reward[19,20]. Integral to behavior management interventions is a focus on modifying parent- and teacher-delivered rewards and consequences. These practices, together with the additional external structure provided by behavioral interventions, can also help address the executive weaknesses that are a part of ADHD.

Intervention Description How is the treatment delivered?

Behavioral Parent Training (BPT) is the predominant mode of behavior management treatment targeting home-based problems for school-age youth with ADHD[15,21]. BPT typically includes eight to twelve group and/or individual sessions focused on three main objectives:

1. Providing psychoeducation about ADHD and the behavioral framework for treatment
2. Teaching effective parenting skills for improving desired behavior and decreasing problem behavior through altering antecedents and consequences as discussed above
3. Practicing/troubleshooting effective implementation of such skills

To accomplish these goals, each session is usually structured to include a didactic portion in which new material is presented, as well as an interactive portion in which parents discuss the implementation of parenting skills. A crucial aspect of the treatment is the “homework assignments” in which the parents apply the newly learned skills at home and track child improvement for discussion and troubleshooting in the next session.

Parenting skills—BPT programs tend to cover a set of similar topics. Psychoeducation about ADHD and the behavioral model for treatment is often covered first. Thereafter, most BPT programs begin with teaching parents positive attending skills to improve the parent-child relationship and promote a positive family climate, as well as contingent positive consequences (e.g., praise, activity rewards, token economies/point systems) to encourage appropriate child behavior. Positive strategies are discussed first because they can interrupt the coercive cycle often displayed in families of children with ADHD. In addition, parents often find it easier to implement reward rather than punishment programs consistently and effectively, and the initial use of reward programs may result in substantial improvement, reducing the need for negative consequences. BPT also emphasizes setting the stage for child compliance and independence by teaching parents to provide clear, specific commands (e.g., effective vs. ineffective instructions), to establish consistent routines and expectations, and to implement “when/then” contingency systems (e.g., *when* you complete your homework *then* you can have screen time). BPT programs also cover effective use of negative consequences for rule violations (e.g., noncompliance or aggression). For example, Time Out and response cost (e.g., loss of desired activity or tokens) as well as extinction

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

strategies for attention-seeking behavior (e.g., planned ignoring) are commonly taught. Information about school accommodations and advocacy, and troubleshooting future problem behaviors are also a part of BPT.

Teacher involvement—BPT can be expanded to include adjunctive empirically supported behavioral interventions to address a broader range of problem behavior and enhance generalization of treatment gains across settings. Many BPT programs add school-based interventions, such as a Daily Report Card (DRC) system (see, "Middle and High School Based Interventions for Adolescents with ADHD" by Evans and colleagues in this issue for full description of school-based interventions). DRCs are individually designed for each child and include target problem behaviors in academic and/or social domains (e.g., turning in schoolwork, following directions, getting along with others) displayed in the classroom. Teachers provide a rating for each target behavior on the DRC which is sent home daily and the child is provided with home-based rewards based on the ratings at school. This system provides the child frequent and immediate feedback on his or her classroom behavior and facilitates regular communication between the parents and teachers. In BPT programs that include DRCs, parents are taught how to work with teachers to support the program at home. In addition, the clinician may provide support and guidance for establishing, implementing and troubleshooting the DRC through conjoint consultation meetings with the teacher, parent, and child[22–25].

Peer involvement—BPT also has been combined with child treatments including behavioral peer interventions (e.g., Summer Treatment Program, see article "Summer Treatment Programs for Youth with Attention-deficit/hyperactivity Disorder" by Fabiano and Schatz, within this issue) and child skills training. These treatments generally focus on improving social interactions and/or study/organizational skills. For example, Pfiffner and colleagues[24,25] combined BPT and school consultation (including a DRC) with child training in executive/organizational and social interaction skills in an integrated program for the inattentive presentation of ADHD (Child Life and Attention Skills program, CLAS). CLAS utilizes BPT adapted for inattentive-related target behaviors and executive function problems through rehabilitation psychology techniques. Child training modules focus on skills for independence (academic, study, and organizational skills; self-care and daily living skills) and social skills (e.g., good sportsmanship, assertion, conversational skills, dealing with teasing, friendship-making, playdate skills). These skills are taught to children in a group-setting through a combination of didactic instruction, modeling of skills by group leaders, behavioral rehearsal, corrective feedback, and in vivo practice in the context of a reward-based contingency management program. An important feature of the group is that it serves as a vehicle to introduce and support/reinforce behavioral programs at home and school. Crucially, parents and teachers are taught the same skills and coached to effectively reinforce their child's use outside of group in order to promote generalization.

Nontraditional caregiver adaptations—Recently, BPT has been adapted for use with caregiver populations underrepresented or less responsive to traditional programs, such as single mothers[26], depressed mothers[27], and fathers[28]. These treatments largely follow the structure and topics described above but modify certain aspects of program delivery or

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

content. For example, the Strategies to Enhance Positive Parenting program, designed for single mothers of children with ADHD, utilizes an enhanced intake procedure to increase parental motivation and to troubleshoot potential barriers to treatment adherence, and also utilizes group problem-solving activities to encourage development of social support networks among one another. Integrated Parent Intervention for ADHD is an adaptation of BPT for depressed mothers of children with ADHD that integrates mood monitoring, cognitive restructuring, and behavioral activation through pleasant activities and relaxation into the standard BPT curriculum[27]. BPT also has been adapted for fathers of children with ADHD[28]. The adapted intervention integrates standard BPT with a recreational sports activity (i.e., soccer game) for fathers to practice newly learned parenting skills with their children.

Specific child problems—BPT also has been tailored to specific child profiles and problems. For example, Mikami and colleagues[29] modified the scope of BPT to target friendship problems, a commonly associated impairment domain for children with ADHD. This treatment, called Parental Friendship Coaching, teaches parents strategies for encouraging and reinforcing their children in the practice of successful peer interactions[29]. In another case, Abikoff and colleagues[30] used a modified BPT approach focused on improving children's organizational problems. Treatment involved training parents and teachers to reinforce children contingently for meeting end-point target goals for improving organizational, homework, and school performance and included a daily report card, token economy for achieving home goals, and homework rules and structure. Additionally, Pfiffner and colleagues[24,25] adapted BPT for the inattentive presentation of ADHD (CLAS) as described above.

Improved accessibility—Recent efforts have been made to improve accessibility and feasibility of behavior management interventions by delivering treatment via convenient, trusted, and cost-effective environments and modalities. For example, a more practical alternative to clinic-based BPT has been developed relying on handbooks, videos, and weekly telephone sessions for intervention delivery[31]. The Collaborative Life Skills (CLS) program[32] trains public elementary school social workers to deliver a school-home treatment incorporating BPT with school-based treatment and child skills training entirely within the school setting.

Empirical Support

A number of systematic reviews and meta-analyses of behavioral interventions, based on more than 40 years of research with over 3500 youth, have been published in recent years[33]. In the most comprehensive meta-analysis of behavioral interventions to date, Fabiano and colleagues[34] reported large between-group effect sizes (ES=0.83) for behavioral interventions when collapsed across outcome measures. The largest effects were seen for parent-rated functional impairment, teacher-rated ADHD symptoms and academic productivity. Large effect sizes were also found across pre-post (ES=0.7), within-subject (ES=2.64) and single-subject designs (ES=3.78). These effect sizes are in the same range as those for stimulant medication[35]. Although a different meta-analysis reported smaller effects for behavioral interventions[36], the criteria for study inclusion in the latter review were quite

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

restricted (e.g., only randomized clinical trials with an ADHD symptom outcome) and the review focused exclusively on ADHD symptom outcomes with an emphasis on blinded measures of ADHD. As a result much of the literature supporting behavioral intervention effects on functional impairment, a crucial clinical outcome, was not considered in that review.

Evidence-based treatment validation—Of particular relevance to this discussion, BPT has been confirmed as a well-established treatment based on strict Evidence Based Treatment (EBT) evaluation criteria for evaluating psychosocial treatments in three separate reviews since 1998[1,33,37]. Combined behavioral treatments, which add school and/or child components to BPT, also meet criteria as well-established treatments based on the most recent review[37]. Furthermore, numerous studies of BPT alone and combined with other behavioral treatments meet evidence criteria based on What works Clearinghouse standards (IES), and are categorized as Type 1 and 2 controlled studies which employ rigorous scientific methodology using Nathan and Gorman categorization criteria[33]. Outcomes from these studies include improvements in child compliance, conduct problems and parenting as measured through blinded observations and ratings and improvements in parent-rated ADHD and ODD symptoms, disruptive and aggressive behaviors, homework problems and overall functional impairment in comparison to alternative treatment, waitlist and/or usual care controls. Reduced parenting stress and increased parenting selfconfidence are also reported. Evidence exists for maintenance of treatment gains for several months after treatment ends. Based on these multiple systematic reviews of randomized clinical trials, BPT alone and combined with other behavioral interventions, meet the criteria for Level one (most stringent level) regarding treatment benefits in the levels of evidence framework specified by the Oxford Center for Evidence Based Medicine guidelines.

Benefits of therapy adaptations—The recent adaptations of BPT to reach fathers, single mothers, and depressed mothers all show benefit in terms of better engaging the families in treatment[26–28] and father involvement may enhance treatment maintenance[28]. Adding cognitive behavioral treatment for maternal depression to BPT results in additional reductions in maternal depressive symptoms. Adaptations of BPT to include school-based interventions through home-school partnerships have been successful in improving the quality of family-school relationships and homework relative to psychoeducational support[23]. When BPT and home-school interventions are combined with child skills training for the inattentive presentation of ADHD, greater improvement is found on a broad array of school-based measures (inattention symptoms, organizational and social skills, global impairment) and parent report of organizational skills than BPT alone or usual care[25]. Additional adaptations of BPT focused on specific child problems have been successful in improving children's social skills and friendship quality on playdates[29], as well as organization and academic skills[30]. Initial findings examining interventions designed to be more accessible and feasible show promising effects on ADHD symptom reduction[31], academic and organizational skills, social behavior and classroom engagement[32]; a randomized trial comparing the latter intervention (CLS) to usual school services is currently underway.

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Limitations of therapy—Several important limitations in behavioral treatment effects have been reported.

1. Outcomes from behavioral interventions tend to be setting specific so that behavioral interventions implemented in one setting (e.g., home) often do not generalize to another setting (e.g., school) without behavioral intervention in that setting as well[25,38].
2. Although treatment effects can persist for at least several months after treatment ends, beyond that time periodic treatment may be necessary.
3. Although large effects from behavioral treatments may not achieve full normalization of functioning.

Clinical Decision Making

Who is Most Likely to Respond

A number of parent factors affect response to behavioral interventions since parents serve such a critical role in provision of treatment. As might be expected, families who are able to attend treatment sessions regularly and consistently implement the interventions at home tend to have the most favorable outcomes [39,40]. Families with sufficient resources tend to be able to follow-through more consistently. Such resources might include: financial/healthcare resources, transportation, time available to attend sessions, and caretaking for siblings while they attend sessions. Two-parent families, those with social support, and those with low levels of parental stress and psychopathology (e.g., ADHD, depression) tend to have more favorable outcomes[33]. Behavioral interventions tend to be successful across races and ethnicities[41], although there may be a need for some cultural adaptations[42]. In addition positive parental expectations and beliefs about the child's capacity for change can improve engagement in BPT and child outcomes[43] and including a child component can reduce premature termination in BPT[44], suggesting that including the child in treatment may exert a positive effect on parents' motivation for treatment.

The severity of child symptoms and impairments can also influence outcomes. For example, Langberg et al.[45] found that, at 24-month follow-up in the MTA study, the benefits of the combined intervention on homework problems were strongest for children with moderate (rather than severe) parent-rated ADHD symptoms. Behavioral interventions appear to be equally effective for those with or without co-occurring oppositional or conduct problems and/or comorbid anxiety and both boys and girls through the school-age range (age 6 to 12 years) respond well to behavioral interventions [46].

What Outcomes Most Likely Affected by Treatment

Treatment-related gains are found across a number of child, family, and parent outcomes, with the greatest impact occurring in treated settings. For behavioral parent training, effects are reliably observed on parent report of their children's ADHD symptoms, oppositional and conduct problems, homework problems and overall functional impairment[33,34]. Increased compliance and reductions in problem behavior are also observed on blinded observations of child behavior during parent-child interactions in the clinic or home[47]. Changes in child

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

behaviors are often a direct result of improvements in parenting, which is the most immediate target of BPT. Parenting outcomes include increased use of positive parenting strategies (e.g., praise, attending) and effective commands and decreased negative and ineffective discipline as reported by parents and as observed in blinded observations of parent-child interaction[16,47]. Parents also report less stress and depression and an increased confidence in their ability to manage their child's behavior following participation in BPT as well as generalized improvement in parent-child and family relationships and report high satisfaction with treatment[48,49].

When BPT is combined with school or child-focused interventions, a broader range of risk factors and settings contributing to child problems are targeted and as a result, a broader array of improvements would be expected. For example, combined BPT and school-based interventions show improvements that extend to family-school relationships[23] and child outcomes at school as evidenced by reductions in teacher-reported ADHD symptoms and externalizing behaviors[24,25]. When BPT is combined with a child component, improvements occur in outcome domains addressed in the child component such as in organizational and/or social skills and academic performance[25].

Contraindications for Treatment

Behavioral treatments are effective across a broad population of families and children with ADHD. However, traditional behavioral parent training may be contraindicated for those parents unable to meet the varied demands of this intervention, most notably the time and effort to attend weekly sessions and implement behavioral plans between sessions at home. For example, parents with significant psychopathology (such as anger management problems, ADHD, depression, substance abuse), limited cognitive capacity, or those in highly conflicted marital/partner relationships may be unlikely to participate in the treatment[50]. In these cases, alternative formats such as a more graduated and tailored introduction of skills may be successful or adjunctive treatment such as anger management, individual counseling and/or couples therapy may be indicated concurrently or prior to initiation of BPT.

Potential Adverse Effects of the Treatment

Adverse effects from behavioral interventions tend to be low. The most common adverse effects are likely related to frustration children may feel if they are not successful (e.g., in earning the rewards) or parents may feel if the program is not working as well as they would like. Modifying the program in some way (e.g., revising the behavioral requirements or changing rewards) is usually effective in mitigating these problems. More serious complications may occur in the case of a parent who is overly critical or potentially violent and misuses or overuses punishment or a child who is aggressive toward a parent when punished. An errorless learning approach[51] which minimizes child noncompliance by using a success-based gradual introduction of more demanding requests and/or reward-only programs may be beneficial in these cases.

Misuse of rewards may also lead to untoward effects. Studies show that rewarding behaviors that already have intrinsic value will decrease their intrinsic value[52]. Also, as discussed

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

earlier, rewarding the termination of a problem behavior may inadvertently increase that behavior through negative reinforcement (e.g., "if you stop the tantrum, you can have dessert" or in the case of children demanding rewards to complete tasks). In addition, recent studies show that children who receive ability-focused praise are more likely to become discouraged and give up during challenging tasks; whereas effort-focused praise is best for improving motivation and persistence on challenging tasks[53]. These studies highlight the need to carefully design and judiciously use praise and other reward-based programs.

How should the treatment be sequenced and/or integrated with drug therapy and with other non-drug treatments (e.g., stand-alone, combination, etc.)

Behavioral interventions are often applied in tandem with medication treatment for optimal effects. In the large-scale multi-site MTA study comparing the separate and combined effects of behavioral interventions and stimulant medication, combined treatment showed incremental benefit on composite measures of parent and teacher behavior ratings[54]. Consistent with the respective targets of these two treatment modalities, medication appears to have greater impact on ADHD symptom reduction[22] while behavioral intervention appears to have greater impact on some areas of functional impairment including homework success[45] and parenting[47]. Professional practice guidelines often recommend multimodal approaches for school-age youth[55]. The decision about whether to use one or both interventions is based on a variety of factors. Child symptom severity is an important consideration and severe levels of ADHD symptoms and impairment often dictate combined treatment approaches[55].

Parent preferences and cultural factors are also important to take into account, since adherence to treatment regimens is a requirement for the success of either approach. The majority of parents favor the use of behavioral interventions over medication and an initial trial of behavior modification prior to medication use is supported by the literature. For example, the MTA study found that in approximately 75% of children assigned to the behavior modification alone condition were successfully treated without medication and nearly two-thirds of this group were maintained without medication for the 1 and 2 year followups[1]. In addition, prior use of behavior modification has been shown to reduce the optimal dose needed for medication[56,57].

In general, optimal sequencing and integration of behavior management and medication requires taking into account the dose or intensity of each treatment. Based on recent studies of varying doses/intensities of behavioral and medication treatments, fewer benefits of combined treatments are observed when the dosage of either treatment is high[56,57]. Therefore the optimal dose needed for medication is less when behavioral interventions are in place and the combination of low doses of each intervention is equivalent to a high dose of either treatment alone. Given the interactive effects of behavioral interventions and medication, it is imperative that treatment providers closely collaborate in order to optimize outcomes[8].

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Clinical Vignette

The following case vignette illustrates processes involved in behavior management treatment including the application of functional behavior analysis, description of treatment strategies and common outcomes associated with implementation.

Behavior Management Treatment Processes

Mr. and Ms. Jones brought Ethan, their eight-year-old son, to an outpatient child mental health clinic due to concerns about their son's behavior at home. During the initial assessment, Mr. and Ms. Jones described that their primary concern was getting Ethan to school on time each morning. According to the family, Ms. Jones typically needed to wake Ethan multiple times before he actually got out of bed, and often his parents had to physically go in his room to get him up. Once up, Ethan would become easily distracted from what he was supposed to be doing and required frequent parental reminders to brush his teeth, get dressed, and pack his backpack. In addition, Mr. and Ms. Jones reported that they were getting into daily power struggles with Ethan about taking healthy food in his lunch. As a result of these behaviors, Ethan had been arriving late to school almost every day. In addition, Mr. and Ms. Jones felt extremely frustrated and deflated, describing the climate of their house in the morning as "an angry circus." At the end of the interview, Mr. Jones disclosed, "Sometimes I wonder if Ethan even has the capability of being independent and I worry that I will be getting him out of bed until he's forty. Other times it's like he's doing these things on purpose to drive us crazy!"

A functional behavior analysis identified the following problem behaviors:

- Daily noncompliance to parental instructions to get out of bed
- Frequent distraction during task completion
- Daily arguing/negotiating with parents about his lunch

The lack of a structured morning routine was identified as an antecedent reinforcing the problem behaviors. Ethan's staying in bed despite multiple warnings, parental attention/assistance given to Ethan in the form of constant reminders to stay on task, and Ethan's failing to take recommended food for lunch all were identified as consequences unintentionally increasing the likelihood of the problem behaviors. A coercive cycle in which Ethan and his parents were reinforcing this pattern also was identified. Specifically, the more noncompliance, distraction, and negotiation Ethan displayed, the more nagging, supervision, and "giving-in" his parents displayed. Thus, Ethan had learned that he could wait through his parent's multiple instructions, and if he avoided and complained long enough, he could get out of tasks altogether. Mr. and Ms. Jones learned that they either needed to give multiple instructions/reminders for Ethan to comply with requests, or they needed to give in and forget about the tasks altogether in order to get out of the house on time.

Following this analysis, Ethan's independent compliance with a structured morning routine program was set as the main treatment goal. Ethan's parents altered their antecedents and consequences by creating a structured morning routine incentive program in which Ethan

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

was rewarded for independently getting out of bed, getting dressed, brushing his teeth, and packing a healthy lunch without whining or arguing (described on a checklist displayed in his bedroom). If Ethan completed all steps of his morning routine with two or fewer parental reminders, he was allowed to play on Ms. Jones' tablet or build with Legos until they left the house at 7:45 - rewards which he chose to maximize motivation. Mr. and Ms. Jones made a concerted effort to ignore all whining/negotiating and praise Ethan each time a task was completed. Within a few days of consistently implementing the new system, Mr. and Ms. Jones reported that Ethan was completing all steps of his routine by 7:15 with one or no reminders. They also noticed a dramatic decrease in his whining/negotiating and an improvement in their parent-child relationships and overall family climate. By the end of the treatment, Mr. Jones proclaimed, "Now I know he can do it. It's just a little harder for him to be independent and we as his parents need to work a little harder to be organized and structured, but it's much more manageable than I ever thought it would be!"

Future Directions

Strong support exists for the efficacy of behavior management interventions for ADHD during the school-age years. Despite this, not all families and youth show a similarly positive response. Continued research on mechanisms of change and moderators of response is needed to inform treatment adaptations tailored to individual family needs. Strategies to improve parent's and teacher's implementation of behavior management approaches are especially important given the association between these factors and treatment outcome[39,40]. In addition, questions persist about optimal methods for combining and sequencing various behavioral treatment components as well as behavioral treatments and medication for individual children and families. These areas of study are especially crucial given the limitations of each approach in addressing the long-term adverse outcomes for ADHD.

There is a pressing need to improve accessibility, feasibility, and acceptability of empirically-supported behavioral treatments, especially for broad, high risk populations. Interventions are seldom implemented in other settings such as schools or community clinics and are therefore not reaching many of those in greatest need[58]. The extent to which these interventions can be directly exported to the community is not known, although recent efforts suggest that with some relatively minor modifications and focused training for providers this should be possible[31,32]. Issues of training requirements and intervention cost-effectiveness are critical for successful translation and dissemination into community settings. To this end, innovative approaches may include greater use of existing community resources and emerging technologies (e.g., interactive web-based treatment and training). Finally, culturally-modified treatment programs may be necessary to encourage participation, engagement, and optimal treatment outcomes across diverse ethnicities and cultures[42,59].

Conclusions

Behavior management treatments in the form of behavioral parent training for school age children with ADHD are well-established, evidence-based treatments meeting rigorous criteria for Level one in the levels of evidence framework specified by the Oxford Center for

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Evidence Based Medicine guidelines. These approaches can be combined with empirically-supported school-based and child treatments to enhance potency and generalization of effects.

Acknowledgments

DISCLOSURES

Work on this chapter was supported, in part, by grants from the National Institute of Mental Health R01 MH077671 (Linda J. Pfiffner) and F32MH101971 (Lauren M. Haack) and Institute of Education Sciences, US Department of Education, R324A120358 (Linda J. Pfiffner).

Glossary

BPT	Behavioral Parent Training
CLAS	Child Life and Attention Skills
CLS	Collaborative Life Skills
DRC	Daily Report Card
EBT	Evidence Based Treatment

References

1. Pelham WE Jr, Fabiano GA. Evidence-based psychosocial treatments for Attention-Deficit/Hyperactivity Disorder. Journal of Clinical Child Adolescent Psychology. 2008; 37(1):184–214. [PubMed: 18444058]
2. Gerdes AC, Hoza B, Pelham WE. Attention-deficit/hyperactivity disordered boys' relationships with their mothers and fathers: Child, mother, and father perceptions. Development and Psychopathology. 2003; 15(02):363–382. [PubMed: 12931833]
3. Johnston C, Mash EJ. Families of children with attention-deficit/hyperactivity disorder: Review and recommendations for future research. Clinical Child and Family Psychology Review. 2001; 4(3): 183–207. [PubMed: 11783738]
4. Langberg JM, Molina BS, Arnold LE, et al. Patterns and predictors of adolescent academic achievement and performance in a sample of children with attention-deficit/hyperactivity disorder; Journal of Clinical Child &. Adolescent Psychology. 2011; 40(4):519–531.
5. Power TJ, Werba BE, Watkins MW, Angelucci JG, Eiraldi RB. Patterns of parent-reported homework problems among ADHD-referred and non-referred children. School Psychology Quarterly. 2006; 21(1):13–33.
6. Mikami AY. The importance of friendship for youth with attention-deficit/hyperactivity disorder. Clinical Child and Family Psychology Review. 2010; 13(2):181–198. [PubMed: 20490677]
7. Pfiffner LJ, Calzada E, McBurnett K. Interventions to enhance social competence. Child and Adolescent Psychiatric Clinics of North America. 2000:689–709. [PubMed: 10944663]
8. DuPaul, GJ. Stoner GD; ADHD in the schools. 3 ed. New York, NY: Guilford Press; in press
9. Barkley RA, Fischer M, Edelbrock CS, Smallish L. The adolescent outcome of hyperactive children diagnosed by research criteria: I An 8-year prospective follow-up study. Journal of the American Academy of Child & Adolescent Psychiatry. 1990; 29(4):546–557. [PubMed: 2387789]
10. Fischer M, Barkley RA, Fletcher KE, Smallish L. The stability of dimensions of behavior in ADHD and normal children over an 8-year followup. Journal of Abnormal Child & Psychology. 1993; 21(3):315–337.
11. Hinshaw SP, Owens EB, Zalecki C, et al. Prospective follow-up of girls with attention-deficit/hyperactivity disorder into early adulthood: continuing impairment includes elevated risk for

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

suicide attempts and selfinjury. Journal of Consulting and Clinical Psychology. 2012; 80(6):1041–1051. [PubMed: 22889337]

12. Patterson, GR. Coercive Family Process. Eugene: OR: Castalia Publishing Company; 1982.
13. Bandura, A.; McClelland, DC. Social learning theory. New York, NY: General Learning Press; 1977.
14. Pelham J, William E, Fabiano GA, Massetti GM. Evidence-based assessment of attention deficit hyperactivity disorder in children and adolescents. Journal of Clinical Child and Adolescent Psychology. 2005; 34(3):449–476. [PubMed: 16026214]
15. Pfiffner L, Kaiser N. Behavioral parent training. Dulcan's textbook of child and adolescent psychiatry Am Psychiatric Assoc. 2010:845–868.
16. Hinshaw SP, Owens EB, Wells KC, et al. Family processes and treatment outcome in the MTA: Negative/ineffective parenting practices in relation to multimodal treatment. Journal of Abnormal Child Psychology. 2000; 28(6):555–568. [PubMed: 11104317]
17. Kaiser NM, McBurnett K, Pfiffner LJ. Child ADHD severity and positive and negative parenting as predictors of child social functioning: Evaluation of three theoretical models. Journal of Attention Disorders. 2011; 15(3):193–203. [PubMed: 20424006]
18. Patterson, CJ.; Griesler, PC. Family Economic Circumstances, Life Transitions, and Children's Peer Relationships. In: RD, Parke; GW, Ladd, editors. Family-peer relationships: Modes of linkage. Hillsdale: NJ: Lawrence Erlbaum Associates Inc; 1992.
19. Pfiffner, LJ. More rewards or more punishment?. In: K, McBurnett; LJ, Pfiffner, editors. Attention Deficit/Hyperactivity Disorder: Concepts, controversies, new directions. New York: Informa Health Care; 2008.
20. Sonuga-Barke EJ. Causal models of Attention-Deficit/Hyperactivity Disorder: From common simple deficits to multiple developmental pathways. Biological Psychiatry. 2005; 57(11):1231–1238. [PubMed: 15949993]
21. Anastopoulos, AD.; Farley, SE. A cognitive-behavioral training program for parents of children with attention-deficit/hyperactivity disorder. In: AE, Kazdin; JR, Weisz, editors. Evidence-based psychotherapies for children and adolescents. New York, NY: Guilford Press; 2003.
22. MTA, Cooperative Group. A 14-month randomized clinical trial of treatment strategies for attention-deficit/hyperactivity disorder. Archives of General Psychiatry. 1999; 56(12):1073–1086. [PubMed: 10591283]
23. Power TJ, Mautone JA, Soffer SL, et al. A family-school intervention for children with ADHD: Results of a randomized clinical trial. Journal of Consulting and Clinical Psychology. 2012; 80(4): 611–623. [PubMed: 22506793]
24. Pfiffner LJ, Yee Mikami A, Huang-Pollock C, Easterlin B, Zalecki C, McBurnett K. A randomized, controlled trial of integrated home-school behavioral treatment for ADHD, predominantly inattentive type; Journal of the American Academy of Child &. Adolescent Psychiatry. 2007; 46(8):1041–1050.
25. Pfiffner LJ, Hinshaw S, Owens E, Zalecki C, Kaiser N, Villodas M, McBurnett KA. two-site randomized clinical trial of integrated psychosocial treatment for ADHD-Inattentive Type. Journal of Consulting and Clinical Psychology. in press.
26. Chacko A, Wymbs BT, Wymbs FA, et al. Enhancing traditional behavioral parent training for single mothers of children with ADHD. ; Journal of Clinical Child & Adolescent Psychology. 2009; 38(2):206–218.
27. Chronis-Tuscano A, Clarke TL, O'Brien KA, et al. Development and preliminary evaluation of an integrated treatment targeting parenting and depressive symptoms in mothers of children with attention-deficit/hyperactivity disorder. Journal of consulting and clinical psychology. 2013; 81(5): 918–925. [PubMed: 23477479]
28. Fabiano GA, Pelham WE, Cunningham CE, et al. A waitlist-controlled trial of behavioral parent training for fathers of children with ADHD. Journal of Clinical Child & Adolescent Psychology. 2012; 41(3):337–345. [PubMed: 22397639]
29. Mikami AY, Lerner MD, Griggs MS, McGrath A, Calhoun CD. Parental influence on children with attention-deficit/hyperactivity disorder: II Results of a pilot intervention training parents as

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

friendship coaches for children. Journal of Abnormal Child Psychology. 2010; 38(6):737–749. [PubMed: 20339911]

30. Abikoff H, Gallagher R, Wells KC, et al. Remediating organizational functioning in children with ADHD: Immediate and long-term effects from a randomized controlled trial. Journal of Consulting and Clinical Psychology. 2013; 81(1):113–128. [PubMed: 22889336]
31. McGrath PJ, Lingley-Pottie P, Thurston C, et al. Telephone-based mental health interventions for child disruptive behavior or anxiety disorders: randomized trials and overall analysis. Journal of the American Academy of Child & Adolescent Psychiatry. 2011; 50(11):1162–1172. [PubMed: 22024004]
32. Pfiffner LJ, Villodas M, Kaiser N, Rooney M, McBurnett K. Educational outcomes of a collaborative school-home behavioral intervention for ADHD. School Psychology Quarterly. 2013; 28(1):25. [PubMed: 23506023]
33. Pfiffner, LJ.; Haack, LM. Nonpharmacological treatments for childhood ADHD and their combination with medication. In: PE, Nathan; JM, Gordon, editors. A Guide to treatments that work. 4 ed. New York: Oxford University Press; 2014.
34. Fabiano GA, Pelham WE Jr, Coles EK, Gnagy EM, Chronis-Tuscano A, O'Connor BC. A meta-analysis of behavioral treatments for attention-deficit/hyperactivity disorder. Clinical Psychology Review. 2009; 29(2):129–140. [PubMed: 19131150]
35. Wolraich ML. SW, Evans; B, HozaPharmacological interventions for individuals with Atteniton Deficit Hyperactivity Disorder. Treating ADHD: Assessment and intervention in developmental context. 2011; 8-1:8–28.
36. Sonuga-Barke EJ, Brandeis D, Cortese S, et al. Nonpharmacological interventions for ADHD: Systematic review and meta-analyses of randomized controlled trials of dietary and psychological treatments. American Journal of Psychiatry. 2013; 170(3):275–289. [PubMed: 23360949]
37. Evans SW, Owens JS, Bunford N. Evidence-based psychosocial treatments for children and adolescents with Attention-Deficit/Hyperactivity Disorder. Journal of Clinical Child & Adolescent Psychology. 2013:1–25. in press.
38. Owens JS, Murphy CE, Richerson L, Girio EL, Himawan LK. Science to practice in underserved communities: The effectiveness of school mental health programming. Journal of Clinical Child & Adolescent Psychology. 2008; 37(2):434–447. [PubMed: 18470779]
39. Clarke AT, Marshall SA, Mautone JA, et al. Parent attendance and homework adherence predict response to a family–school intervention for children with ADHD. Journal of Clinical Child & Adolescent Psychology. 2013; (ahead-of-print):1–10.
40. Villodas MT, McBurnett K, Kaiser N, Rooney M, Pfiffner LJ. Additive effects of parent adherence on social and behavioral outcomes of a collaborative school-home behavioral intervention for ADHD. Child Psychiatry & Human Development. 2013:1–13. [PubMed: 22581270]
41. Jones HA, Epstein JN, Hinshaw SP, et al. Ethnicity as a moderator of treatment effects on parent—child interaction for children with ADHD. Journal of Attention Disorders. 2010; 13(6):592–600. [PubMed: 19531810]
42. Lee, SS.; Humphreys, KL. Assessment of Attention Deficit Hyperactivity Disorder in young children. In: SW, Evans; B, Hoza, editors. Treating Attention Deficit Hyperactivity Disorder. Kingston, NJ: Civic Research Institute, Inc; 2011. p. 2-24.
43. Kaiser NM, Hinshaw SP, Pfiffner LJ. Parent cognitions and behavioral parent training: Engagement and outcomes. The ADHD Report. 2010; 18(1):6–12.
44. Miller GE, Prinz RJ. Enhancement of social learning family interventions for childhood conduct disorder. Psychological Bulletin. 1990; 108(2):291–307. [PubMed: 2236385]
45. Langberg JM, Arnold LE, Flowers AM, et al. Parent-reported homework problems in the MTA study: evidence for sustained improvement with behavioral treatment. Journal of Clinical Child & Adolescent Psychology. 2010; 39(2):220–233. [PubMed: 20390813]
46. MTA, Cooperative Group. Moderators and mediators of treatment response for children with attention-deficit/hyperactivity disorder: the Multimodal Treatment Study of children with Attention-deficit/hyperactivity disorder. Archives of General Psychiatry. 1999; 56(12):1088–1096. [PubMed: 10591284]

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

47. Wells KC, Chi TC, Hinshaw SP, et al. Treatment-related changes in objectively measured parenting behaviors in the multimodal treatment study of children with Attention-Deficit/ Hyperactivity Disorder. Journal of Consulting and Clinical Psychology. 2006; 74(4):649–657. [PubMed: 16881772]
48. Gerdes AC, Haack LM, Schneider BW. Parental functioning in families of children with ADHD: Evidence for behavioral parent training and importance of clinically meaningful change. Journal of Attention Disorders. 2012; 16(2):147–156. [PubMed: 20837977]
49. Karpenko V, Owens JS, Evangelista NM, Dodds C. Clinically significant symptom change in children with attention-deficit/hyperactivity disorder: Does it correspond with reliable improvement in functioning? Journal of Clinical Psychology. 2009; 65(1):76–93. [PubMed: 19051273]
50. Chronis AM, Chacko A, Fabiano GA, Wymbs BT, Pelham WE Jr. Enhancements to the behavioral parent training paradigm for families of children with ADHD: Review and future directions. Clinical Child and Family Psychology Review. 2004; 7(1):1–27. [PubMed: 15119686]
51. Ducharme JM, Atkinson L, Poulton L. Success-based, noncoercive treatment of oppositional behavior in children from violent homes. Journal of the American Academy of Child & Adolescent Psychiatry. 2000; 39:995–1004. [PubMed: 10939227]
52. Deci EL, Koestner R, Ryan RM. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. Psychological bulletin. 1999; 125(6):627–668. [PubMed: 10589297]
53. Dweck, CMindset. The new psychology of success. United States: Random House LLC. 2006
54. Swanson J, Arnold LE, Kraemer H, et al. Evidence, interpretation, and qualification from multiple reports of long-term outcomes in the Multimodal Treatment Study of Children with ADHD (MTA) Part II: Supporting details. Journal of Attention Disorders. 2008; 12(1):15–43. [PubMed: 18573924]
55. American Academy of Pediatrics (AAP). Subcommittee on Attention-Deficit/Hyperactivity Disorder steering committee on quality improvement and management ADHD: clinical practice guideline for the diagnosis, evaluation and treatment of Attention Deficit/Hyperactivity Disorder in children and adolescents. Pediatrics. 2011; 128(5):1007–1022. [PubMed: 22003063]
56. Fabiano GA, Pelham WE Jr, Gnagy EM, et al. The single and combined effects of multiple intensities of behavior modification and methylphenidate for children with attention deficit hyperactivity disorder in a classroom setting. School Psychology Review. 2007; 36(2):195–216.
57. Pelham WE, Burrows-MacLean L, Gnagy EM, et al. A Dose-ranging study of behavioral and pharmacological treatment in social settings for children with ADHD. Journal of Abnormal Child Psychology. 2014:1–13. [PubMed: 24272365]
58. Hoagwood K, Kelleher KJ, Feil M, Comer DM. Treatment services for children with ADHD: a national perspective. Journal of the American Academy of Child & Adolescent Psychiatry. 2000; 39(2):198–206. [PubMed: 10673831]
59. Huey SJ Jr, Polo AJ. Evidence-based psychosocial treatments for ethnic minority youth; Journal of Clinical Child &. Adolescent Psychology. 2008; 37(1):262–301.
60. Barkley, RA. Defiant children: A clinician's manual for assessment and parent training. New York, NY: Guilford Press; 1997.
61. Kazdin AE. Parent management training: Evidence, outcomes, and issues. Journal of the American Academy of Child & Adolescent Psychiatry. 1997; 36(10):1349–1356. [PubMed: 9334547]
62. Sanders MR, Turner KM, Markie-Dadds C. The development and dissemination of the Triple P—Positive Parenting Program: A multilevel, evidence-based system of parenting and family support. Prevention Science. 2002; 3(3):173–189. [PubMed: 12387553]
63. Webster-Stratton, C.; Reid, MJ. The Incredible Years parents, teachers, and children training series: A multifaceted treatment approach for young children with conduct disorders. New York, NY: Guilford Press; 2010.

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Key Points

- Behavior management treatments are well-established, evidence-based treatments for school age children with ADHD and should be widely recommended to families.
- Behavioral parent training can be augmented with classroom-based intervention and/or child components to extend results across home, school, and social settings.
- Combined behavior management and stimulant medication often produce the most potent outcomes and when used in combination may reduce the dose needed for each, although family/cultural preferences for treatment modalities also should be considered.
- Continued research is needed to better tailor treatment to families with multiple stressors, parent mental health concerns (e.g., ADHD, depression), and those from varied family structures and cultures.
- Translation and dissemination of evidence-based behavioral treatments to school and community settings are sorely needed to increase accessibility. Feasible, cost-effective models for treatment and training of school and community-based providers are crucial.

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Summary: Recommendations for Clinicians

- Behavior management treatments are recommended for most caregivers of children with ADHD. Many parent training programs are available for school-age youth with ADHD or related conduct problems[60–63].
- Families with multiple stressors, including parent mental health problems, may be less responsive to BPT and require adjunctive treatment (e.g., stress management, cognitive behavioral therapy for depression, couples therapy) either prior to or concurrent with BPT.
- When both home and school impairments are present, clinicians should partner with school personnel to implement home-school interventions (e.g., daily report card) since generalization of child gains from BPT to school settings should not be expected without direct intervention in the school.
- Multi-component treatments, which include parents, teachers and child components, provide the most comprehensive approach and likely result in the greatest yield across all domains of difficulty for youth with ADHD.
- Combined behavior management and medication often produce the most potent outcomes and may be especially important for cases with more severe ADHD symptoms and related problems. However, it is important to note that when behavioral interventions are sufficiently intensive, there may be less need for medication or lower doses of medication may be sufficient. Similarly, the intensity of the behavioral intervention needed is less when medication is simultaneously delivered[56,57].
- Parent preferences should also be considered when making decisions about medication use and sequencing with behavioral interventions to maximize treatment engagement and adherence.
- Periodically reinitiating treatment during school age years and adolescence may be needed, especially during periods of developmental transitions, given the chronic and pervasive nature of ADHD.