

ABSTRACT

Title of Dissertation: DEVELOPMENT AND PRELIMINARY TESTING OF A BRIEF, BEHAVIORAL INTERVENTION TO ADDRESS THE HOMEWORK-RELATED PROBLEMS OF MIDDLE SCHOOL STUDENTS WITH ADHD

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In contrast to the vast literature on treatments for children with ADHD, there is a relative paucity of research examining the efficacy of psychosocial treatments for adolescents with ADHD (Chronis, Jones, & Raggi, 2006). Furthermore, only a handful of these studies employ educational interventions designed to improve academic functioning, and no study has examined the use of a specific intervention targeting the homework-related difficulties of this group (Raggi & Chronis, 2006). This is despite nearly all parents of adolescents with ADHD reporting school and academic issues as their primary concern (Robin, 1990; Power et al., 2006). Intervening at this critical juncture may be ideal for preparing youth with ADHD to handle the increased academic demands of middle school and high school. In order to address this treatment need and gap in the literature, a behaviorally-based, family-school homework intervention program (HIP) for middle school students with ADHD was developed. This five-session program is integrative and evidence-based, with an emphasis on the functional analysis of homework problems, parent training in homework management principles, goal setting and contingency contracting, organizational and time management skills training, and parent-teacher consultation. Participants included 11 middle school students diagnosed

with ADHD and their mothers. A multiple-baseline (MB) across participants design was used to assess intervention effects. Results from this single-subject design suggest that the HIP is beneficial in improving homework-related problems across multiple indicators of change. Positive effects were also observed on some measures of overall academic progress and ADHD symptoms. This intervention demonstrated high levels of acceptability and satisfaction as perceived by both parents and adolescents. This pilot study would benefit from being followed with well-controlled, group-design studies to provide further evidence of the effectiveness of this novel, behavioral homework intervention for use with middle school students with ADHD. This study was funded by a Division 53 American Psychological Association (APA) Dissertation Award and the Milton Dean Havron Social Sciences Award for Academic Excellence from the University of Maryland, College Park.

Development and Preliminary Testing of a Brief, Behavioral Intervention to Address the
Homework-Related Problems of Middle School Students with ADHD

by

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Introduction

Attention-Deficit Hyperactivity Disorder (ADHD) is a chronic disorder manifesting early in childhood, which is characterized by core symptoms of inattention, hyperactivity and impulsivity and is associated with impairment across multiple domains of functioning (American Psychiatric Association, 2000). A strong link between ADHD and academic underachievement has been documented in childhood, with children with ADHD frequently scoring lower than normal or control groups of children on standardized achievement tests (Barkley, DuPaul, & McMurray, 1990; Hinshaw, 1992a, 1992b, 1994). In addition to being low achievers, there exists a high rate of co-occurring learning problems in this group (Silver, 1992). Compared with normal controls, children with ADHD are more likely to have a history of learning disabilities, have repeated grades, been placed in special education, and received academic tutoring (Faraone et al., 1993). Furthermore, the persistence of ADHD symptoms into adolescence is associated with increased interpersonal and academic difficulties and a higher incidence of delinquency, criminal offending, substance abuse problems, automobile accidents and school dropout (DuPaul & Eckert, 1998; Hinshaw, 1992; Smith, et al., 2000). Prospective follow-up studies of children with ADHD into adolescence and adulthood indicate significantly higher rates of grade retention, placement in special education classrooms, and school dropout and expulsion relative to their peers (Barkley, Fisher, et al., 1990). Therefore, academic impairment is a significant and debilitating aspect of the disorder, which typically increases in severity as the child reaches adolescence.

Executive Functioning Deficits in ADHD and Academic Impairment

The academic difficulties observed in children and adolescents with ADHD are most likely a result of both the behavioral manifestations of the disorder, as well as underlying cognitive deficits. The academic impairment observed in adolescents with ADHD is consistent with research suggesting a core deficit in behavioral inhibition, the ability to delay prepotent responses to an event and filter out competing stimuli (Quay, 1997). This primary deficit is hypothesized to affect executive functioning processes in the brain, including planning, organization, working memory, self-monitoring, persistence, motivation, and emotional regulation. Substantial evidence has been found to confirm the presence of executive functioning problems in children with ADHD. For example, using a neuropsychological battery aimed at assessing executive function deficits (EFDs) in children and adolescents with ADHD, children with ADHD showed significantly worse executive functioning relative to control participants in both referred (Seidman, Biederman, Faraone, Weber, & Ouellette, 1997) and non-referred (Seidman, Biederman, Monuteaux, Weber, & Faraone, 2000) samples. Furthermore, a literature review of 18 studies by Pennington & Ozonoff (1996) concluded that children with ADHD consistently exhibit worse performance on cognitive and EF measures.

EFDs likely have direct implications for the development of academic problems (Barkley, 1997). For example, deficits in working memory in adolescents with ADHD lead to forgetfulness, an impaired ability to organize and execute actions relative to time, and reduced foresight or anticipation of distant events. These deficits may manifest in adolescents with ADHD as difficulty remembering to complete and turn in homework assignments, planning ahead, and prioritizing or organizing long-term homework tasks. As another example, deficits in self-regulation of affect, motivation and arousal in

adolescents with ADHD may lead to greater emotional expression in reactions to events and a diminished ability to induce motivational states in the service of goal-directed behavior. This may result in emotional and behavioral problems within the classroom, low motivation and initiation of academic tasks, student-teacher conflict, and suspensions and other punishments, all of which may reduce student productivity and opportunities for learning.

Indeed, empirical evidence suggests that executive functioning deficits (EFDs) are associated with significant educational impairment in children with ADHD. In a study examining children with ADHD with and without EFDs, those with both ADHD and EFDs (defined as impairment on at least two EF tests) were over 2 times more likely to repeat a grade and almost 3 times more likely to have a learning disability (LD) than those without significant EFDs, even after controlling for socioeconomic status (SES) and IQ (Biederman et al., 2004). In addition, the presence of EFDs in children with ADHD was associated with a statistically significant average decrease of over 10 points on IQ score, controlling for LD and SES, and 4 points on the WRAT-R score, controlling for SES, LD, and IQ. Analyses were replicated with EFDs as a continuous measure, and similar results found that poorer EF functioning significantly predicted worsening academic performance and achievement as measured by repeating a grade, presence of a learning disability, and lower IQ, WRAT-R arithmetic, and WRAT-R reading scores.

These findings confirm the role of EFDs in the development and exacerbation of educational impairment in children with ADHD, and are consistent with the high rates of LDs found in children and adolescents with ADHD. Between 19% and 26% of children with ADHD have a learning disability, when conservatively defined as a significant delay

in reading, arithmetic, or spelling relative to intelligence and achievement in one of these areas at or below the 7th percentile (DuPaul & Stoner, 1994; Mash & Barkley, 2003; Barkley, 1990). Studies suggest that the risk for reading disorders among children with ADHD is 16-39%, while that for spelling disorders is 24-27%, and for math disorders is 13-33% (August & Garfinkel, 1990; Barkley, 1990). The overlap between ADHD and learning difficulties often begins during the preschool years, before the onset of formal schooling (Hinshaw, 1992a, 1992b). This overlap also predicts continuing deficits in achievement during the grade school years, compared to those children without comorbid ADHD (McKinney, 1989). Recommendations for the treatment of children with this comorbidity emphasize multimodal, long-term treatments that specifically target both behavioral and academic problems directly (Hinshaw, 1992b). Therefore, the exacerbation of academic difficulties found in children and adolescents with ADHD whom have a co-occurring learning disability and/or a greater level of executive functioning deficits, suggests that treatment effects may be dampened in this group, especially when administering short-term interventions targeting only one domain.

Behavioral Symptoms of ADHD and Academic Impairment

In addition to the strong support for the impact of executive functioning deficits as a whole on educational impairment of children and adolescents with ADHD, the core behavioral symptoms of ADHD (i.e., inattention, hyperactivity, and impulsivity) may exert an independent influence on these academic outcomes. A recent study found that even when controlling for performance on a measure of executive functioning, severity of ADHD symptoms based on parent report significantly predicted academic underachievement in reading, writing, and mathematics (Barry, Lyman, & Klinger,

2002). Children who had more severe symptoms of ADHD tended to exhibit academic underachievement, whereas children with more impaired performance on EF measures had lower academic discrepancy scores in mathematics only. Therefore, the more severe the behavioral symptomatology of children with ADHD, the more negatively their school performance is likely to be impacted. Importantly, this relationship is not accounted for by differences in EFDs. Furthermore, the relationship between ADHD symptoms and academic underachievement appears specific to the disorder. Comorbid conditions such as Conduct and Oppositional Defiant Disorder have been found to be associated with academic underachievement primarily through their co-occurrence with ADHD in childhood (Rapport, Scanlan, & Denney, 1999).

Therefore, the core symptoms of ADHD as manifested behaviorally according to DSM-IV have significant implications for learning and achievement, and their severity may affect the course of treatment, regardless of the extent to which these symptoms represent underlying EF deficits. Substantial evidence is available to support this association. Symptoms of inattention in children with ADHD are commonly known to result in poor concentrating and listening capabilities, forgetting and losing things, failing to finish tasks and assignments, and changing activities often (Mash & Barkley, 2003). Objective measures of child behavior show more off-task behavior, decreased work productivity, more activity and more errors on tasks over time, frequent distractions from assigned tasks, slower and less likelihood of returning to an activity once interrupted, less attention to the rules governing a task, and decreased ability to shift attention across tasks flexibly, compared to control groups of children without the disorder (Zentall, 1993;

Hoza, Pelham, Washbusch, Kipp, & Owens, 2001; Lorch et al., 2000; Newcorn et al., 2001; Shelton et al., 1998).

Symptoms of hyperactivity or excessive verbal and motor activity in children with ADHD also typically result in problems that may have implications for academic functioning, including difficulty staying seated in the classroom, excessive fidgeting, greater touching of objects, and playing noisily (Mash & Barkley, 2003). All these symptoms may lead to increased discipline and negative teacher attributions in the classroom and lower levels of task completion. Activity patterns may appear disorganized and students with ADHD may fail to repeat specific activity patterns long enough to establish routines (Zentall, 1993). Similar to inattention, problems with hyperactivity can lead to difficulty finding books and homework, and failure to complete tasks.

Finally, symptoms of impulsivity, the child's difficulty in withholding active responses, typically produces academic errors, because the child fails to wait long enough to consider alternative information, consequences, or responses (Zentall, 1993). Failure to inhibit salient or immediate responses results in poor multiple choice performance, which requires carefully attending to multiple items before responding; poor planning skill, which requires holding back overt responses, while making covert responses; and failure to read directions or ask for help, because this requires waiting (Zentall, 1993).

Impulsivity may also lead to difficulty delaying immediate rewards (e.g., playing a video game) in order to focus on long-term goals or projects (e.g., getting an A on a science fair project). As another example, students with ADHD were found to perform worse than controls only when a five-response multiple choice format was used, but not with two choices, which may be a result of difficulty delaying responses long enough to examine

all five options (Hoy, Weiss, Minde, & Cohen (1978). In addition, children with ADHD have been found to have difficulty tolerating instructional delays, which typically consume about 20-30% of math and reading class time (Baker & Zigmond, 1990). Therefore, these children are less likely to ask for help or request additional confirmatory information when it involves delaying action (Whalen, Henker, Collins, McAuliffe, & Vaux, 1979).

Adolescents with ADHD and Academic Impairment

The behavioral symptoms and underlying cognitive deficits associated with ADHD result in significant and debilitating educational impairments for children with ADHD. ADHD symptoms persist in about 30% - 70% of youth into adolescence and adulthood according to longitudinal studies (Hechtman, 2000), although the manifestations of the disorder change over time, with hyperactivity often decreasing in adolescence and inattention becoming more prominent (Barkley, 1990). As described previously, the persistence of ADHD symptoms into adolescence is associated with increased interpersonal and academic difficulties, and a higher incidence of delinquency, criminal offending, substance abuse problems, automobile accidents and school dropout (DuPaul & Eckert, 1998; Hinshaw, 1992; Smith, et al., 2000). Prospective follow-up studies of children with ADHD into adolescence and adulthood indicate significantly higher rates of grade retention, placement in special education classrooms, and school dropout and expulsion relative to their peers (Barkley, Fisher, et al., 1990). Furthermore, due to the increasing school demands adolescents face as they transition into secondary school (e.g., switching classes, using a locker, more lecture-format instruction), it is not surprising that nearly all parents of adolescents with ADHD report school functioning

problems as their primary concern (Robin, 1990). Academic difficulties of adolescents with ADHD typically include failure to complete homework, poor comprehension of material, poor study skills, low test and quiz grades, coming to class unprepared, exhibiting disruptive behavior, peer conflict, and arguing with teachers (Robin, 1998). In particular, problems with homework completion are common in middle school students with ADHD (Power, Werba, Watkins, Angelucci, & Eiraldi, 2006).

Unfortunately, educational systems are often unprepared to provide the level of structure and support these students need (Landrum, Al-Mateen, Ellis, Singh, & Ricketts, 1993), and it becomes increasingly difficult for school systems to maintain added structure and educational accommodations when the child switches classes and sees a number of different teachers throughout the school day, as is typically the case in middle school and high school. Furthermore, as the child grows older, teachers may be more reluctant to provide intensive support, expecting the adolescent to function independently. In addition, parents may not be providing academic support at home for their adolescent. This may be due to the expectation that their adolescent should be independent, a desire to avoid unnecessary conflict at home, or feelings of low self-efficacy in their ability to help their adolescent.

Furthermore, although stimulant medication may be used to improve academic functioning among adolescents with ADHD, it does not normalize behavior and in some cases may result in no improvement or deterioration in functioning. For example, a placebo-controlled, double-blind crossover trial of 3 doses of methylphenidate found clear positive effects on adolescents' classroom behavior and academic performance; however, 9% – 29% of adolescents demonstrated no improvement on small, medium or

large dosages, and an escalating risk of deterioration was found on higher dosages (Evans et al., 2001). Moreover, medication offers only short-term benefit without teaching important skills or habits, many parents and adolescents may be opposed to medication use, and adolescents may resist consistently taking their medication. Therefore, the development of efficacious psychosocial interventions which involve parents and the school system and which demonstrate long-term benefit on the academic functioning of adolescents with ADHD is essential.

Academic Interventions for Adolescents with ADHD

Despite this critical need, there exists a relative paucity of research examining the efficacy of psychosocial treatments for adolescents with ADHD (Chronis, Jones & Raggi, 2006; Raggi & Chronis, 2006). Only a handful of adolescent treatment outcome studies have been published in comparison to the hundreds of studies that exist for the treatment of children with ADHD. This is unfortunate considering that at least half of children diagnosed with ADHD will continue to meet diagnostic criteria into adolescence (Barkley, Fisher, Edelbrock, & Smallish, 1990; Barkley, Murphy & Kwasnik, 1996; Weiss & Hechtman, 1986). Furthermore, despite the obvious need to address academic difficulties in this group, of the handful of published psychosocial treatment studies that target adolescents with ADHD, only a few have directly addressed academic impairment. These studies utilized training in note-taking, study skills, self management, and organization to improve on-task behavior in the classroom, classwork and homework performance, and grades.

For example, Evans, Pelham and Grudberg (1994) tested a directed note-taking activity (DNA) over an 8-week period in a lecture format classroom in order to decrease

off-task behavior and improve the study habits of adolescents with ADHD. In this note-taking activity, originally designed as a model of explicit instruction for non-disordered children by Spires and Stone (1989), students were taught to divide notes into main ideas and supporting details through the use of lectures and models of notes to compare with their own. Gradually, less instruction is given in the note-taking process until students are able to produce accurate notes independent of any prompting. In the Evans et al. (1994) study, results found significant increases in on-task behavior and improvement in scores on daily assignments as a result of taking notes. In addition, high quality notes were associated with better comprehension and higher on-task behavior and assignment scores. Although offering significant improvements in academic performance, this study was conducted in an experimental classroom setting, and therefore, it is unclear whether this intervention would be as successfully implemented by a teacher with a larger class size and more demanding classroom setting. Furthermore, quiz scores were unaffected by the intervention and suggest that long-term comprehension requires not only taking notes but also utilizing them to study (Evans, Pelham, & Grudberg, 1994). Therefore, this notetaking intervention may be most effective when combined with a larger set of educational interventions to address the behavior and academic achievement of adolescents with ADHD.

Two studies examined the use of self-management procedures to address the classroom preparation skills of middle school students with ADHD (Gureasko-Moore, DuPaul, & White, 2006; Gureasko-Moore, DuPaul, & White, 2007). Self-management procedures in these studies involved instruction by the experimenter of several intervention elements including problem identification, goal setting, self-monitoring, self-

evaluation, and self-reinforcement. This training phase was followed by a monitoring phase where the experimenter met with students daily to monitor students' implementation of their skills. The monitoring phase was followed by a fading phase (i.e., students met with the experimenter only every other day) and a maintenance phase (i.e., students met with the experimenter once a week). Classroom preparation skills were defined as pre-academic behaviors that enable students to meet everyday classroom demands, such as arriving on time, being prepared for class, completing teacher-assigned tasks, and handing in work on time. A multiple-baseline design was utilized in both studies. Results found that the percentage of classroom preparation skills increased as a function of self-monitoring for all participants. In the second study, homework completion was also assessed with findings of improvement in the percentage of homework completion as a function of self-monitoring. Despite the small sample size of both of these studies (i.e., $N=3$ and $N=6$, respectively), they provide preliminary indication that self-management practices may be particularly effective for middle school students with ADHD (Gureasko-Moore, DuPaul, & White, 2006; Gureasko-Moore, DuPaul, & White, 2007). No adult-implemented reinforcement procedures were used in these studies.

In a series of studies, a comprehensive treatment approach incorporating a number of academic techniques was utilized in a research-based, after-school treatment program for middle school students with ADHD, the Challenging Horizons Program (CHP) (Evans, Axelrod & Langberg, 2004; Evans, Langberg, Raggi, Allen & Buvinger, 2005; Evans, Serpell, Shultz & Pastor, 2007). Educational interventions included instruction and practice taking notes during lecture-format instruction, organizing materials and

tracking assignments, and using study skills. In addition, parent training in behavior management principles was conducted monthly, with some families developing individualized homework management plans through attendance at these groups. In the first and second pilot studies of the CHP, despite methodological limitations that included a quasi-experimental design and small sample size, moderate to large effect sizes on academic functioning and classroom behavior were found as rated by parents and teachers, whereas the community care group showed either no change or a decline on these measures (Evans, Axelrod & Langberg, 2004; Evans, Langberg, Raggi, Allen & Buvinger, 2005). Furthermore, examination of Grade Point Average (GPA) across semester found that the intervention group had a significantly higher GPA than the community care group during the second semester. In the third of this series of studies (Evans, Serpell, Shultz & Pastor, 2007), an alternate model of the CHP implemented during regular school hours and staffed by educators, school employed mental health professionals, and paraprofessionals was examined. This study found significant improvement on social functioning and ADHD symptom measures, but not academic functioning according to parent and teacher report. Nevertheless, within-year analyses suggested a trend towards improvement in student grade point average.

While these six preliminary studies suggest that educational interventions may be beneficial in remediating the academic impairment of adolescents with ADHD, significant methodological limitations were present, including use of quasi-experimental designs, classroom analogue settings, small sample sizes, and comprehensive programs that cannot tease apart efficacy related to a specific intervention technique. These limitations restrict the conclusions that can be derived from these results and highlight the

need for more research in this area. Future studies would benefit from training parents and teachers to implement educational interventions in an ecologically-valid environment and testing these interventions separately from interventions addressing other domains of functioning.

Homework Interventions for Children and Adolescents with General Academic Problems

A particularly important academic target for the treatment of children and adolescents with ADHD may be homework completion and accuracy. As described previously, symptoms of ADHD lead to problems which have significant implications for homework completion and accuracy, such as difficulty planning ahead and completing tasks, rushing through and not paying careful attention to assignments, forgetting and losing materials, failure to read directions, being disorganized, and lower motivation and productivity. Large-sample educational research has shown that, aside from ability, time spent on homework is the best predictor of student grades and achievement (Keith, 1982; Cooper, Lindsay, Nye, & Greathouse, 1998) and parental involvement in supporting homework activities results in academic gains (Epstein, 1986). Unfortunately, research has been inconsistent and methodologically weak in documenting the effectiveness and best procedures for homework interventions (Rhoades & Kratochwill, 1998).

Furthermore, very few of these studies are specific to children with ADHD, and no study in this area has been conducted on adolescents or middle school students with ADHD.

The transition to middle school is a critical time point through which to intervene, as developmental and environmental changes increasingly challenge the young adolescent.

An examination of the research on homework interventions for students with general academic problems suggests that goal setting and contingency contracting, parent

training in behavioral management techniques and parent-teacher consultation are beneficial in the remediation of homework difficulties (see Raggi & Chronis, 2006, for a review). For example, preliminary support was found for a behavioral parent training intervention utilized with elementary school children experiencing homework difficulties (Anesko & O'Leary, 1982). Parents were taught to identify and target specific behaviors and establish a consistent homework routine. They were also taught behavioral management techniques, use of behavioral contracting, and informal problem solving. In comparison to the waitlist control, the treatment group reported significantly fewer homework issues according to parental report on the Homework Problem Checklist (HPC; Anesko et al., 1987) post-treatment and maintained these treatment gains at 6-month follow-up.

Another intervention designed to target homework difficulties is the use of goal setting procedures with parents and children. Goal setting consists of the comparison of performance goals against present performance level, and may be viewed as a form of self-monitoring in which children evaluate their own performance (Bandura, 1977). Goal setting is typically combined with contingency contracting, in which the addition of performance-contingent rewards are used to increase the efficacy of goal setting. This approach may offer several advantages over other homework interventions (Miller & Kelley, 1994). Goal setting has been identified as an important step in the self-management of behavior (Brownell, et al., 1977) and may be a useful tool for adolescents with ADHD who desire independence, but at the same time require structure within the environment for academic success. Goal setting teaches important skills (i.e., prioritizing, breaking down tasks) that adolescents with ADHD may be deficient in, and which

medication cannot address. Furthermore, the identification of performance goals and reinforcement contingencies provides for external control over the target behavior (Kelley & Stokes, 1984; O'Leary & Dubey, 1979), a method that has proven effective for changing the behavior of children with ADHD. Finally, although many homework programs target only the final homework product, goal setting directly targets intermediate steps within the homework process and provides a framework around which children can complete homework (Miller & Kelley, 1994).

A study by Miller and Kelley (1994) examined training and use of goal setting and contingency contracting with four parents and their children showing substantial homework problems, using multiple baseline and reversal (ABAB) designs. Results found significant improvements in children's homework accuracy for all participants and parent-rated improvements in on-task behavior for two of the four participants. Another study compared parent training and goal setting with contingency contracting and found significant improvements on HPC scores for families in both intervention conditions (Kahle & Kelley, 1994). However, only goal setting resulted in significant increases in homework productivity and accuracy rates, suggesting that use of multiple approaches may most effectively address these issues.

Other studies have attempted to involve the school system in treatment for homework difficulties through parent-teacher consultation. Coordination across home and school is vitally important in identifying and resolving points of breakdown in the homework process, as each setting may influence the other (Robin, 1998; Weiner, Sheridan, & Jenson, 1998). For example, children and adolescents with ADHD often forget to write homework assignments down and collect homework materials at school

and bring them home, making it difficult for parents to help the child complete homework. Conjoint behavioral consultation is a method in which parents and teachers work together to address the academic, social and behavioral needs of an individual child (Weiner, Sheridan & Jenson, 1998). Training in specific homework interventions and behavior management techniques are embedded within behavioral consultation (Bergan & Kratochwill, 1990). In a multiple baseline design, the effects of conjoint behavioral consultation and a structured homework program were examined in middle school students at risk for academic failure (Weiner, Sheridan, & Jenson, 1998). Improved completion rates were found at post-treatment in four of five students and maintenance of gains in three of five students. Accuracy rates increased during treatment to a lesser degree. However, numerous research limitations of this study included the lack of stability at baseline, the small sample size, an unintended non-experimental lag across some of the participants due to scheduling difficulties, and a lack of outcome measures on variables other than homework completion and accuracy.

The studies highlighted above offer preliminary support, mainly through multiple baseline and reversal (ABAB) designs, that behavioral homework intervention components (i.e., parent training, goal setting and reinforcement, and parent-teacher consultation) have positive benefits on homework completion and accuracy rates of children with academic problems. However, these studies are of a preliminary nature and numerous methodological limitations are present, which include small sample sizes and use of a limited range of outcome measures. The effects of treatment on measures of parent-child conflict, parenting stress, problem behaviors, symptoms and impairment and the inclusion of teacher ratings were often not incorporated into these studies and may be

significant and important variables to examine. Homework accuracy rates need to be isolated and examined as a separate dependent variable, because increasing homework completion rates without homework accuracy does not indicate learning. This may be especially true for children with ADHD whom may rush through and complete work carelessly. Furthermore, these studies have not examined specific clinical populations (e.g., middle school students with ADHD) and therefore cannot be generalized or considered effective when used with these groups. As reviewed herein, ADHD symptoms may result in unique challenges for the homework process and therefore necessitate the development of specific treatments and educational accommodations to address the needs of these students. Programs that integrate various behavioral strategies (e.g., goal setting, CBC, parent training, strategy training) to address all areas of academic impairment may be necessary for use with clinical populations and should be tested using well-controlled, single case design studies followed by larger scale, between-group designs. Finally, most of these studies were conducted with children, and developmental modifications to these interventions may be necessary when working with adolescents (Smith et al., 2000).

Homework Interventions for Children with ADHD

The intervention approaches described above have been used with general populations of students with academic problems. In contrast, only two studies to date have specifically addressed the need for a specialized intervention to address the homework problems of children with ADHD. Habboushe and colleagues (2001) developed a comprehensive, family-school intervention program for children with ADHD, ages 7-11. The Homework Success Program (HSP) is a 10-week, 7-session treatment that involves group parent training in cognitive and behavioral principles with

an emphasis on goal setting and parent-teacher consultation to address homework-related problems. Preliminary case studies of five families of children with ADHD demonstrated positive outcomes on parent and teacher reports of homework problems and in homework accuracy and completion rates (Habboushe et al., 2001). No well-controlled treatment outcome study (either single-case or group design) of this program has currently been reported in the literature.

In the second study, a comprehensive treatment program, the Child Life and Attention Skills (CLAS) Program, incorporated a homework/academic skills module focused on developing homework routines and organizational and time management strategies. The CLAS Program utilized teacher consultation, parent training and child skills training administered concurrently over 12 weeks to address symptoms of ADHD, functional impairment, and sluggish cognitive tempo (Pfiffner et al., 2007). Sixty-nine children, ages 7 to 11 years old, diagnosed with ADHD, Inattentive subtype, were randomized to either the (CLAS) Program or a control group that did not receive the intervention. Children in the CLAS Program showed improved organizational skills relative to the control group on the Children's Organizational Scale (COSS; Abikoff and Gallagher, 2003), a parent- and teacher-report measure assessing organizational skills and behaviors, the extent to which children remember and effectively manage materials/supplies, and task planning skills. Interestingly, despite the direct targeting of homework routines in this study, no direct assessment of homework completion was reported. Further, due to the comprehensive nature of this program, it is unclear the extent to which their homework module specifically was responsible for the change in organizational skills observed.

Development of a Homework Intervention for Adolescents with ADHD

Similar to the aforementioned studies, an intervention approach that incorporates parent, teacher and teen involvement and integrates a variety of evidence-based techniques may be most effective in addressing the academic impairment of middle school students with ADHD. As mentioned previously, no study has examined the efficacy of a homework intervention in addressing academic difficulties in adolescents with ADHD.

This appears to be a critically important area due to the developmental persistence of the disorder and the exacerbation in academic impairment typically observed as the child transitions into middle school. Indeed, problems with homework completion are common among middle school students with ADHD (Power et al., 2006). For example, when 65 parents of adolescents with ADHD were administered the Home Situations Questionnaire (Barkley, 1997b), a measure assessing the degree of conflict with their adolescent regarding each of 16 situations or topics, results found that parents rated problems with homework and problems at school as the two most frequent and severe problem situations (Robin, 1990). Intervening at this critical juncture may be ideal for preparing youth with ADHD to handle the increased academic demands of middle and high school by helping them develop structured routines and use consistent goal setting, time management and organizational skills. It may also be most effective to intervene early on in the transition to adolescence because hormonal and maturational changes are just beginning to alter the manifestation of the disorder, and parents and teachers still have an influence on work and study habits. This may result in more robust treatment effects than would be observed intervening later on in the developmental progression

(e.g., high school) when the influence of the peer group takes precedence, numerous factors such as substance abuse and delinquency further complicate the clinical picture, and academic difficulties have become increasingly chronic, ingrained and severe. Finally, developmentally-specific intervention within early adolescence would serve as a critically important next step in the course of a long-term comprehensive treatment strategy for effectively managing a chronic disorder such as ADHD. Therefore, this intervention would likely be most effective when utilized as part of a treatment approach that begins in early childhood and has different emphases or goals at various developmental stages. In adolescence, developing improved organizational and time management skills may be ideal for handling the increased academic demands that occur during this developmental transition.

With these goals in mind, a behaviorally-based, family-school homework intervention program (HIP) for middle school students with ADHD was developed. This five-session program is integrative and evidence-based, including strategies that have shown evidence of effectiveness in addressing homework difficulties in non-disordered children with such problems. Session topics included psycho-education about ADHD and its relation to homework problems; a functional analysis of homework problems; parent training in behavior management principles including development of a homework plan and associated privilege/reward system; instruction in organizational and time management skills; goal setting; and parent-teacher consultation. Individual sessions involved instruction, discussion, modeling, in-vivo practice and performance feedback. Use of an individual format was hypothesized to allow for a more in depth and

individualized assessment of problematic behaviors, antecedents and consequences of behavior, and development of individualized treatment goals.

This program is also novel and innovative in its attempt to modify these approaches to address the developmental needs of adolescents with the disorder. Program development and implementation took into consideration the importance of: involving the adolescent in the treatment planning process; adjusting behavioral contingencies to include fewer tangible reinforcers and more opportunities to interact with peers; increasing collaboration and coordination with multiple teachers; increasing focus on organizational and time management issues; and tapering of parental involvement over time (Smith, et al. 2000).

Finally, unlike the comprehensive after-school program for adolescents with ADHD developed by Evans and colleagues (2004), the HIP Program does not comprehensively target multiple domains of functioning (e.g., social skills), and therefore provides a more specific test of the efficacy of an educational intervention in improving academic performance.

Research Hypotheses

The HIP was expected to result in improvement on primary outcome measures which included: 1) homework completion and accuracy rates according to parent logs and teacher grade book data, and 2) homework-related problems according to parent- and adolescent-report. Improvement on secondary outcome measures was also expected. These included 1) ADHD symptoms and impairment according to parent and teacher report, 2) overall academic performance and classroom productivity according to teacher report, 3) parental stress and parent-child conflict according to parent and adolescent report, 4) quiz and test scores according to teacher grade books, and 5) report card grades. The HIP was also predicted to receive high ratings of parent and adolescent consumer satisfaction.

Preliminary Data from Case Study

Treatment development and manualization was guided by an in-depth analysis of the research base on empirically supported treatments for ADHD (Chronis, Jones, & Raggi, 2006; DuPaul & Eckert, 1997; Raggi & Chronis, 2006), as well as ideas generated from clinical experience working in treatment programs for children and adolescents with ADHD. Through these activities, a conceptualization of the treatment approach and rationale for its development was determined and the homework intervention manual designed. Preliminary testing of this manual was conducted with three cases in preparation for this project and with the goal of further refining the intervention package (Raggi, Chronis, Bercaw & Sanchez, 2004). As an example, results from the first case study of a 13-year old adolescent girl with ADHD-Combined Type demonstrated large reductions in maternal-reported homework problems from a pre-treatment score of 33 on

the Homework Problems Checklist (scores on the HPC range from 0 to 60, $M = 10.5$, $SD = 8.04$) to a post-treatment score of 19. Grade reports indicated improvement by at least one letter grade in three classes and no deterioration of grades in the other two classes (GPA of 1.6 at pre-treatment and 2.4 post-treatment). At pre-treatment, homework completion rates ranged from 80-90% in all subject areas and at post-treatment rates ranged from 90-100%. Reductions in parent-reported stress, improvements in parenting self-efficacy and competence, and high ratings of treatment satisfaction were also observed. Thus, results from this single case study lend support for the potential efficacy of this homework intervention.

Method

Participants

Participant Recruitment

Participants were recruited through posted advertisements at, mailings to, and referrals from CHADD groups in the greater Washington, D.C. area, local middle schools, medical and mental health professionals, University of Maryland employees, and the psychology clinic at the University of Maryland, College Park. Participants were middle school students, ages 11 through 13 years-old, diagnosed with DSM-IV ADHD, and a parent. The diagnosis of ADHD was determined at an assessment session at the Maryland ADHD Program by an advanced clinical graduate student therapist under the supervision of Dr. Chronis. Families were asked to designate the parent who interacts most with the child around homework issues and who could be present during the time when the child does homework. This parent was centrally involved in treatment and responsible for completion of all parent-report study measures. The targeted age range is that of a middle school population because: 1) the study goals propose to examine treatment of an adolescent population, taking into consideration their unique developmental needs; and 2) attempting to intervene early in the transition from childhood to adolescence may result in greater positive effects on school/homework habits and skills than later on in the developmental progression (e.g., high school) (see Appendix A, for further design considerations related to the sample to be studied).

Inclusion Criteria

Criteria for inclusion in this study were: 1) IQ of greater than or equal to 80 at initial intake according to subtests of the Wechsler Intelligence Scale for Children, 4th

Edition (WISC-IV; Wechsler, 2003) or from prior individual IQ testing within the past year; 2) a diagnosis of ADHD according to parent interview on the Schedule for Affective Disorders DSM-IV Interview, Fifth Version (K-SADS; Orvaschel & Puig-Antich, 1995) and both teacher and parent report on the Disruptive Behavior Disorders checklist (DBD; Pelham, et al. 1992); 3) scores on the parent-report Homework Problems Checklist (HPC; Anesko, et al., 1987) at least two standard deviations above the mean; and 4) no evidence of pervasive developmental disorder or schizophrenia according to the clinician's behavioral observations and parent report of DSM-IV symptoms.

Due to high rates of comorbid learning disabilities, oppositional defiant disorder, and conduct disorder in adolescents with ADHD, individuals with these disorders were not excluded from this study. Inclusion of a heterogeneous group that reflects real-world characteristics of the population of adolescents with ADHD is consistent with the current trend to examine real-world feasibility and effectiveness of interventions (MTA; Arnold et al., 1997; Chronis, Jones & Raggi, 2006). Furthermore, due to the high rates of medication usage for the treatment of ADHD (Pelham, 1993), participants were not excluded from the study due to medication use, but were instead asked to remain on a steady dose of medication during the study period after conferring with their physician and making planned dosage changes prior to initiation of treatment.

Participant Selection and Characteristics

Of 36 parents who called the ADHD lab interested in the homework program, 27 (75%) were found to be eligible based on the phone screen (see Table 1). Out of those eligible based on the phone screen, 17 (63%) completed the clinic assessment and were eligible based on this assessment. 4 of these participants failed to complete baseline

measures, and 2 participants dropped out of the study due to death or illness in the family. Therefore, 11 of the 17 eligible participants (65%) entered treatment and completed the homework intervention program. 11 participants is consistent with guidelines for establishing empirically supported treatments using well-controlled single case design research, which require a sample size of at least 9 participants (Chambless & Hollon, 1998). 11 participants is also more stringent than previous research using single case designs to test academic or homework-focused interventions, which have typically employed sample sizes ranging from 3 to 6 participants (Gureasko-Moore, DuPaul, & White, 2006; Gureasko-Moore, DuPaul, & White, 2007; Habboushe et al., 2001; Miller & Kelley, 1994; Rhoades & Kratochwill, 1998; Weiner, Sheridan, & Jenson, 1995).

No significant demographic or symptom differences were found between participants who entered treatment and those that dropped out prior to treatment. Those variables that were examined in these analyses included that of adolescent age, grade, sex, race, school placement (i.e., special or regular education), school type (i.e., public or private), past diagnosis of ADHD, number of symptoms of inattention and hyperactivity, use of ADHD medication, and dosage of ADHD medication; maternal and paternal age, highest educational degree, annual income, current psychological diagnosis, and current receipt of treatment for psychological diagnosis; and parent's marital status and number of siblings in the home. Although no significant differences were determined due to the small N within each category, some notable differences in mean and frequency values were apparent. These differences suggest potential characteristics of treatment drop-outs that can be examined in future studies. Of those who turned in client application forms after being found eligible on a preliminary phone screen (N=15), treatment drop-outs

(N=4) were on average slightly older (M=12.75, SD=.50) compared to treatment completers (M=12.0, SD=0.78), and were more often placed in special education classrooms (50%) compared to treatment completers (0%). Although equal percentages were receiving ADHD medication, treatment drop-outs were on lower average dosages of medication (M=17.5, SD=3.5) compared to treatment completers (M=28.7, SD=15.5). On average, mothers of treatment drop-outs had lower annual incomes (\$15-20,000) compared to treatment completers (\$60-65,000). Only 25% of mothers of treatment drop-outs had a bachelor's degree compared to 73% of mothers of treatment completers. No notable differences were observed between groups on all other demographic and symptoms characteristics aforementioned. For two variables, that of father's annual income and father's highest educational degree, mean values could not be calculated as a result of missing data on these variables for 3 of the 4 treatment drop-outs.

Table 2 presents demographic characteristics for each individual participant. Participants ranged in age from 11 to 13. All switched classes and had multiple teachers. All were in 6th through 8th grade, with the exception of one student who was in a 5th grade classroom but was included in the study based on meeting criteria of switching classes, having multiple teachers, and being within the appropriate age range. Three adolescents (27%) attended public school and eight attended private school (73%). All participants attended schools within the state of Maryland (i.e., Montgomery, Prince George, and Howard counties). The majority of adolescents met criteria for ADHD, Inattentive subtype (73%), attended private school (73%), were male (91%), and were taking stimulant medication (73%). Three adolescents (27%) met criteria for a learning disability. Adolescent participants were racially heterogeneous and included five African

American students (45%), four Caucasian students (36%), one Bi-racial student (9%), and one Hispanic student (9%). All WISC-IV and WIAT-II subtest scores for each individual participant were within normal limits, with the exception of a low Block Design score of 6 (9th percentile) for one participant. This particular participant was included in the study because his other subtest scores were within the average range and previous testing by the school system indicated that his overall IQ was within normal limits. The low Block Design score was likely related to his math learning disability.

Mothers of participants were mostly married (82%), with total family incomes ranging from \$40,000 to \$250,000 (median = \$185,000). Maternal age ranged from 38 to 53, with a median of 44 (see Table 3). The majority of mothers were employed, and the number of children in the home ranged from 1 to 3.

Experimental Design

Multiple baseline single subject design

As there are currently no well-established academic interventions for the treatment of adolescents with ADHD, a multiple-baseline (MB) design was felt to be the most appropriate first step for this treatment development project. Single subject designs are often considered useful starting points for developing and disseminating new treatment approaches through scientific publication (Barlow & Hersen, 1984; Morgan & Morgan, 2001). Furthermore, single-subject designs have been used commonly in ADHD treatment outcome research (Pelham, Wheeler, & Chronis, 1998) and have provided considerable support along with between-group studies, for the resulting classification of behavioral classroom and parent training interventions as “well established” treatments

according to APA Task Force criteria (Task Force on Promotion and Dissemination of Psychological Procedures, 1995).

There are many advantages to the use of a multiple baseline design. A MB design is a well-controlled experiment with the ability to demonstrate causality through establishment of a stable baseline, multiple, repeated measurements of the dependent variables, staggering the starting point of treatment across participants, manipulation of an independent variable (i.e., baseline and treatment conditions), and replication across a number of participants (Kazdin, 2003).

This design also has the ability to examine intra-subject variability (i.e., patterns of individual change over time) and therefore takes an idiographic approach to understanding individual, subjective phenomena. In contrast, the nomothetic approach examines averaged data with the goal of generalizing or developing laws to explain objective phenomena. An example of this approach is the between-groups design. While a group design is capable of determining independent variables which account for a given phenomena, this approach is generally probabilistic and incomplete. A between-groups design cannot give an accurate perception of the course of change over time for each individual (Blampied, 1999; Morgan & Morgan, 2001). Depending upon the specific behavior or symptom of interest, change is likely not simple and linear for every participant, and may consist of dips, spikes, plateaus, and valleys across weeks. These complex patterns of change may be indicative of the relative effectiveness of various intervention components as they are administered across weeks, or may be related to individual-level changes in family/school dynamics or other situational events on a given week. Unfortunately, these individual patterns of change cannot be discerned through

collection of behavior and symptoms rating scales during one specific week at post-treatment. In contrast, in a single-subject design, repeated collection of measures allows researchers to examine the relative stability of a variable over time and whether a stable trend and/or incremental change is truly present. Further, while traditional moderator and mediational analyses within group design research attempt to identify factors which contribute to changes over time, they again do so through the use of averaged data, which may mask important individual differences through highlighting only variables which account for the majority of participants. In reality, there may be a vast multitude of factors which influence participants, few of which may reach the significance level to be adequately noticed and taken into account through a group research design.

Therefore, idiographic approaches offer the advantage of understanding the effects of treatment at an individual level, allowing for a more careful and in depth analysis of patterns of change over time. In developing a treatment manual, understanding the individual process is critical to uncovering “exceptions to the rule”. In other words, through use of an idiographic approach, a treatment manual can be developed which is flexible, sensitive and accommodating to the needs of not only the average person, but a variety of unique individuals. This may involve incorporating troubleshooting sections and special modules depending upon individual needs and characteristics.

A MB design is also capable of ruling out internal validity threats including participant maturation or regression towards the mean (Kazdin, 2003). While it is possible that concurrent events experienced during the course of therapy or exposure to assessment measures will have an impact on dependent variables, these extraneous

factors can be carefully tracked and certain conspicuous factors stabilized prior to treatment. Stabilization of baseline prior to treatment bolsters confidence that extraneous factors are not unduly influencing dependent variables. Finally, repeated replication of this design in a number of participants should identify sources of variability and lead to greater generalizability (Barlow & Hersen, 1984; Kratochwill & Williams, 1988). As this was a treatment development project, these methods were felt to be the most appropriate choice for this pilot study. For further explanation of the rationale for use of this research design, please refer to Appendix A: Design Considerations.

Procedures

Screening and Assessment

An initial telephone screen was used to screen participants for significant homework problems, presence of ADHD symptoms or a previous diagnosis of ADHD, and no previous diagnosis of a pervasive developmental disorder. The phone screen was kept for everyone who called the program office and verbally agreed that these data could be used for research purposes (i.e., research that will describe the characteristics of those who expressed interest in the study and those who did or did not qualify).

Participants meeting eligibility criteria based on the initial phone screen participated in a three-hour assessment session after verbal and written informed consent was obtained. The assessment session included: 1) a semi-structured parent interview using the K-SADS; 2) collection of parent and teacher rating scales on DSM-IV symptoms and functional impairment; 3) IQ and achievement testing for children using the WISC-IV: Vocabulary and Block Design, and the Wechsler Individual Achievement Test, 4th Edition: Word Reading, Numerical Operations, and Spelling subtests (WIAT;

The Psychological Corporation, 1994); and 4) a 15-minute parent-child interaction involving completion of a math task appropriate to their adolescent's grade level (which will be examined subsequently).

DSM-IV diagnoses of ADHD, CD, and ODD were determined through parent interview on the K-SADS and both teacher and parent report on the DBD checklist. On the K-SADS, symptoms rated "moderate" or "severe" are considered clinically significant. On the DBD, symptoms rated "pretty much" or "very much" are considered clinically significant. DSM-IV symptoms were considered present if endorsed by either parent or teacher on any of these interview or rating scale measures. A DSM-IV diagnosis of ADHD requires a minimum of 6 symptoms of inattention, 6 symptoms of hyperactivity/impulsivity, or 6 symptoms of both; a DSM-IV diagnosis of CD requires a minimum of 3 symptoms; and a DSM-IV diagnosis of ODD requires a minimum of 4 symptoms (American Psychiatric Association, 2000).

In addition, the DSM-IV requires that cross-situational impairment be established for a diagnosis of ADHD. Impairment must be present in both settings for ADHD and in at least one setting for ODD and CD. In this study, impairment was evaluated using the Children's Impairment Rating Scale (CIRS; Fabiano, et al., 2006). On the CIRS, scores of 2 or more on the parent version and 3 or more on the teacher version indicate clinically significant impairment. Adolescents were considered impaired at home if parents endorse the CIRS family or overall impairment score above the clinical cutoff. Likewise, adolescents were considered impaired at school if the CIRS teacher overall or school impairment score was above the cutoff.

Baseline and Treatment Conditions

Following the assessment, those that met eligibility criteria participated in a multiple baseline across participants design. In this design, the start date of treatment was staggered across participants. Baseline conditions consisted of parents and adolescents maintaining their typical after-school homework routine, with the addition of parents completing weekly homework measures and daily homework monitoring logs. The homework intervention condition consisted of 5 individual treatment sessions which included the following activities: psycho-education and functional analysis of homework problems, parent training in homework management principles, parent-teacher consultation, and time management/organizational strategies. Parents were compensated \$40 for meeting the requirement of attendance at a minimum of 4 out of 5 treatment sessions. The follow-up phase lasted approximately three months during which time parent and adolescent continued to maintain implementation of the homework routine.

Timeline of Cohorts

Participants were enrolled in the study in three cohorts spanning a 1.5 year time period ranging from December 2005 to May 2007 (see Tables 13 and 14). Each cohort contained 3 to 4 participants and was recruited in either the Fall (September-November) or the Winter (December-February). The collection of measures during each participant's assessment session was considered the beginning of baseline for that participant. Participants were informed during the assessment session whether they were assigned to begin treatment in the fall (October through November) or the winter (January through March). For the first year, due to significant delays in receiving IRB approval, all participants were assessed in December/January and participated in treatment in the 2nd

half of the school year. Therefore, only one cohort was run the first year and extended baselines throughout the fall and winter were not utilized due to these IRB issues. However, during the second year, the first four participants that were assessed were assigned to begin treatment in October, and the following four participants assessed were assigned to begin in the winter/spring and participate in an extended baseline phase during the fall semester. This method of non-random assignment was a result of practical time constraints related to the participants' academic schedule (i.e., the need to have fall participants complete treatment before the December holiday season, and the need to have spring participants finish prior to the start of summer break). Please refer to Appendix A: design considerations, for additional details related to the rationale for choices made regarding this specific research design.

Collection of Parent and Adolescent Measures

Those parents and adolescents who were assigned to begin treatment in the spring completed monthly baseline measures beginning on their assessment date and continuing until they began treatment. Monthly measures included the DBD rating scale, Homework Problems Checklist, Parenting Stress Index, and Conflict Behavior Questionnaire. Bi-monthly phone calls to parents were conducted in order to facilitate the collection of measures and ask about any changes in medication or treatment status of parent or adolescent since the previous contact. Measures were sent in a self-addressed, stamped envelope. Compensation of \$5 was sent in the mail for every set of monthly measures returned in order to increase the likelihood that parents would return these measures. Despite these procedures, 4 participants assessed in the fall and assigned to the extended baseline phase did not return their baseline measures, requiring additional assessments to

be completed in November-February in order to have a full cohort for the winter (see Table 1).

Participants who were assigned to receive treatment in October completed weekly baseline measures consisting of the DBD rating scale, Homework Problems Checklist, Parenting Stress Index, and Conflict Behavior Questionnaire for a period of at least 3 weeks prior to receiving treatment.

Once treatment was initiated, weekly measures were collected for the duration of treatment for all parents and adolescents. Parents were not paid for completing weekly measures during treatment due to limitations on the availability of funds to pay participants. Following treatment, monthly measures were collected from parents and adolescents for a period of three months for all participants. Parents were paid \$5 for the completion of each packet of follow-up measures.

Collection of Teacher Measures

The adolescent's core teachers (i.e., Math, English, Science and Social studies) were asked to complete measures at pre-treatment, post-treatment, and one-month post-treatment. Measures were given to teachers to complete either directly by parents or were sent in the mail if this was the parent's preference. In order to encourage the return of measures, teachers were provided \$10 for each completion of measures. Teacher grade book data (i.e., a record of test and quiz grades and homework completion) on the grade quarter before and during/after treatment were also collected from teachers at post-treatment. Grade book data were either sent by mail or the principal investigator visited the school after treatment ended to collect this information at a time established with teachers.

Medication-Related Procedures

Study participants were requested to attend the assessment session at the University of Maryland in whatever medication state they are typically in (i.e., medicated or unmedicated). Pre-, post- and follow-up measures of behavior were also collected in whatever state the adolescent is typically in when completing homework, in order to increase ecological validity and to measure the adolescent's behavior in the state which has been treated throughout the study. However, in order to make an accurate diagnosis of ADHD, parents were asked during the clinical interview (K-SADS) to recall their child's behavior off medication (e.g., before medication takes effect, after medication has worn off, on drug holidays or days when medication was otherwise not administered). In order to avoid taking the child off medication for school hours (due to ethical concerns) and for the purpose of assessing treatment effectiveness, teacher ratings were obtained based on the child's typical school behavior (i.e., medicated, if the child typically attends school medicated).

During baseline, five-week treatment, and 3-month follow-up periods, participants were asked to maintain a steady dose of medication to prevent confounding effects due to medication. These procedures have been used successfully in past research studies at the Maryland ADHD Program. A question on the phone screen was used to determine whether the prescribing physician or parents have considered any medication changes recently. If so, enrollment in the study was postponed until medication was stabilized. Further, no participants were found to need to change medication status during the course of the study as assessed on the medication and treatment changes questionnaire.

Intervention

The homework intervention program (HIP) is a five-session, focused intervention targeting homework completion and accuracy and parent-child conflict regarding homework issues at home. Sessions are held individually with each family. The intervention itself was designed to incorporate the three approaches (parent training in homework management, goal setting and contingency contracting, and parent-teacher consultation) that have shown evidence in addressing homework difficulties in non-clinical populations of children. A treatment manual outlining each session and all handouts to be used was created (see Appendix B). Each session is also briefly described below. All sessions include in-vivo practice, modeling and performance feedback.

The first session was designed to educate parents and adolescents about the nature of ADHD and associated homework problems and about the goals and format of the HIP so that they are better prepared for addressing these problems and understanding their role in the program. Secondly, by identifying individual problem behaviors and examining antecedents and consequences associated with these behaviors, parents and adolescents learn how the environment influences the likelihood of whether or not a specific behavior occurs. Through practicing identifying antecedents and consequences for a given problem behavior, they learn how to analyze the environmental causes of behavior, and are more motivated to change these factors through working to modify antecedents and consequences associated with problematic homework behaviors in the home setting. Both parent and adolescent are involved in all aspects of this session, with the exception of 15 to 20 minutes which is initially spent individually with the adolescent, focused on gaining rapport and engagement and developing a therapeutic

relationship. Discussion of social learning theory (i.e., the ABCs of behavior) included both parent and adolescent, and examples were solicited from both parties.

The goal of the second session was to teach parents and adolescents methods for better managing and organizing the homework process at home. Through modifying antecedents (e.g., schedule, setting, materials, and time) and consequences (e.g., access to privileges) within the home environment, the adolescent should be better able to effectively and efficiently complete homework. Procedures were created and collaboratively agreed upon by the parent, adolescent, and therapist for the schedule and setting for doing homework, a mandatory study time for homework completion, and access to privileges based on completion of the mandatory study time. Other individualized behavioral goals were also established if necessary (e.g., decreasing arguing or complaining behavior during homework). Both the parent and adolescent participated in all parts of this session.

The goal of the third session was to educate teachers about the homework intervention program and the parent's role in this program, review the parent's list of target behaviors with the teacher, and elicit teacher support through the provision of informal educational supports to address some of these target behaviors. As homework success at home is dependent upon the adolescent bringing needed materials home from school and writing assignments down, it becomes increasingly important to involve teachers in the process and elicit their support for helping to improve behaviors at school that otherwise may compromise the parent's ability to effectively manage and support positive homework behavior at home. Adolescents were not present and did not participate in the school session, as the primary focus was on increasing parent-teacher

communication. While ideally the school consultation was the third session, coordination and scheduling with teachers for this session to occur on a specific week was not always possible. Therefore, this session was sometimes the fourth or fifth session as a result of these issues.

The goal of the fourth session was to teach parents and adolescents methods for better organizing the homework process at home (e.g., bringing home necessary materials, organizing the assignment binder, writing assignments down). Procedures were created and collaboratively agreed upon by the parent, adolescent, and therapist for keeping track of assignments, bringing home materials, organizing the assignment binder and homework folders, and turning in assignments. The first part of this session was conducted with both the parent and adolescent. The second part of the session involved psycho-education with the parent regarding behavior management strategies they can apply during the homework process to better manage their adolescent's behavior. These strategies included those of differential attention, positive praise, and effective commands as applied to the homework routine. The adolescent worked on completion of homework at this time in other room.

The final session focused on time management strategies that can be implemented by the adolescent along with parent support, in order to improve productivity during homework time and completion of long-term projects and studying for tests. The goal setting procedure was discussed to be used for assignments that were tedious, overly challenging, or disliked by the adolescent. This procedure makes work manageable and less overwhelming by breaking the assignment down into smaller subunits and setting goals for completion and accuracy for each segment. In addition, incentives for

successful goal attainment were also used to help boost motivation and increase work productivity. Effective use of a monthly calendar was discussed to help plan ahead for long-term projects, prioritize daily activities and break down long term projects into short-term goals that can be tracked weekly. Both parent and adolescent participated in all aspects of this session.

Treatment Integrity and Fidelity

The behavioral treatment program was administered by the primary investigator, an advanced graduate student with five years of experience in teaching academic skills and parent training interventions, under the close supervision of a Ph.D.-level psychologist with expertise in ADHD treatment (Dr. Andrea Chronis). All 27 assessments and 55 treatment sessions were implemented and a treatment integrity checklist completed by the student investigator, in order to maximize treatment integrity and self-monitor adherence to the treatment protocol. In addition, a random sample of 20% of the videotaped sessions were selected and a research assistant who was proficient in behavior management strategies for ADHD watched these sessions and completed a checklist to ensure coverage of all material for that session. Procedural integrity was calculated by summing the number of objectives/discussion points correctly trained, dividing by the total number of objectives/discussion points, and multiplying by 100. Procedural integrity equaled 100% for coverage of main objectives, and 88% for coverage of discussion points during session. Parents were monitored for treatment adherence through the use of daily homework logs and the Homework Process Questionnaire, which tracked their use of treatment techniques. Further, a concerted attempt was made to get all four core teachers (math, english, science, and social

studies/history) to attend the parent-teacher consultation. However, due to the difficulty of coordinating numerous schedules, teachers who were unable to attend received handouts and a phone call from the graduate therapist to detail the purpose and procedures of the study as well as allow them the opportunity to ask questions.

Participants were also asked to refrain from enrolling in additional therapeutic services for themselves or their adolescent during their participation in this study. As starting a new therapy or medication during the homework intervention would likely lead to positive changes on dependent variables that are not due to the homework intervention itself, it was considered important to attempt to rule out this potential confound.

Measures

Treatment outcome was assessed through the use of multiple methods (parent, teacher and adolescent ratings, and objective indices) and across multiple domains of symptoms and impairment. Measures were collected weekly for parents and adolescents, with the exception of the daily homework log, which was completed daily. Measures were collected at baseline, intervention, and follow-up for teachers. See Table 4 for a list of measures according to domain and frequency of data collection.

Primary outcome measures included those assessing homework completion and accuracy rates and severity of homework problems according to parent and teacher report. Secondary outcome measures included ADHD symptoms and impairment according to parent and teacher report, parental stress and parent-adolescent conflict according to parent and adolescent report, classwork, test and quiz scores, and report card grades. Intervention acceptability and satisfaction was assessed post-treatment according to parent and adolescent report.

Measures of Homework and Academic Performance

Homework Problems Checklist (HPC; Anesko et al., 1987). The HPC is a 20-item, parent report checklist designed to assess homework problems. On the HPC, parents rate the frequency with which their child has exhibited each homework problem over the prior two weeks. Items are rated as occurring never, at times, often, or very often in the previous two weeks and receive corresponding scores of 0, 1, 2, or 3 points. Scores are derived by summing the items, with a range of 0 to 60. The overall mean of the HPC is 10.33 (SD = 7.91) and norms have been established for 2nd through 4th grade boys and girls. The HPC is internally consistent ($\alpha = .91$), and has been shown to be sensitive to treatment effects following group intervention that targets parental management of homework problems (Anesko et al., 1987).

Student Homework Questionnaire (SHQ; Rhoades & Kratochwill, 1998). The SHQ is a 10-item questionnaire designed to identify student perspectives and work habits with regard to homework. Items are presented in a yes/no format with nine questions addressing the following: whether students typically understood assignments, preferred greater parental assistance, required a quieter place to work, were putting forth their best effort, were satisfied with their current homework grades, and whether they felt homework time helped them do better on tests. The last item asks students to check up to seven reasons why they did not do homework. This measure was developed by Rhoades & Kratochwill (1998) to assess improvement in children's homework habits and perception following their parent training program for addressing homework difficulties in children with homework completion problems. The SHQ has not been published or used in other studies and has not been evaluated for adequate psychometric properties.

Further, items on this measure must be examined individually as the measure has not been tested as a unified construct and items cannot be summed to produce an overall score. However, as the SHQ is the only measure of student's perception of the homework process and their work habits and understanding the adolescent's perspective on homework is critically important within this study, we chose to use this 10-item questionnaire.

Parent homework and goal setting logs. Parents were asked to complete daily homework logs which included ratings of the percentage of materials needed that were brought home, amount of time spent on homework that evening, % of assignments written down, goals set and achieved, and rewards given. Daily logs also served as a measure of treatment adherence to the mandatory study time and checks of assignment notebook and binder each evening.

Teacher grade book data. Teacher grade book data of classwork, homework, quiz and test scores were collected from the school for the semester the student was in prior to starting treatment through post-treatment. Data were collected by the student investigator who went to each individual school to copy this information at a time specified by teachers, after obtaining consent from the principal of the school and teachers involved.

Report cards. Grade reports were collected from parents at the end of each quarter term as an objective measure of change in academic performance over time.

Academic Performance Rating Scale (APRS; DuPaul et al., 1991). The APRS is a 19-item, teacher-rated questionnaire that assesses academic performance that has been validated for use in children grades 1 through 6. Teachers are asked to estimate a student's rate of home and school work completion and accuracy in the areas of math and

language arts. In addition, teachers rate the child's ability to pay attention, follow instructions, and learn in the classroom environment. The APRS yields scores on three factors according to a principal components analysis: Academic Productivity, Academic Success, and Impulse Control (DuPaul et al., 1991). All subscales have been found to be internally consistent, possess adequate test-retest reliability, and share variance with other criterion measures of children's academic achievement, weekly academic performance, and classroom behavior. Total APRS score and all three subscales have also been found to discriminate between children with and without classroom behavior problems according to teacher ratings.

Measures of ADHD Symptoms and Impairment

Disruptive Behavior Disorders Rating Scale (DBD; Pelham et al., 1992). The DBD is a parent and teacher symptom rating scale that assesses the relative presence of the DSM-IV symptoms of the disruptive behavior disorders (ADHD, CD, ODD). On the DBD, parents and teachers indicate the degree to which each DSM-IV symptom of ADHD, ODD, and CD is present, with symptoms rated "pretty much" or "very much" considered present (Pelham et al., 1992). The DBD was used as a categorical measure of presence versus absence of the symptom for diagnostic purposes during the assessment, and as a continuous measure of ADHD symptoms to assess treatment outcome.

Children's Impairment Rating Scale (CIRS; Fabiano, Pelham, Waschbusch, Gnagy, Lahey, Chronis et al., 2006). On the CIRS, raters designate the severity of a child's problem and the need for treatment in a number of significant functional domains including: relationship with peers and playmates, brothers and sisters, parents, and teachers; classroom behavior, academic achievement, and self-esteem. Ratings are made

on a 7-point scale, with scores above the midpoint indicating clinically significant impairment. A series of studies by Fabiano et al. (2006) have established evidence of concurrent, convergent and discriminant validity, and cross-informant and test-retest reliabilities that were equivalent to or better than frequently used symptom scales. The CIRS was found to effectively discriminate between children with ADHD and a control group. Parent ratings of social and academic functioning were used in the analyses along with teacher ratings of academic functioning and effect of problem behaviors on the classroom. In another study, the parent CIRS was found to discriminate between children ages 7-16 with a mental health diagnosis and/or receiving mental health treatment from those without a diagnosis or not receiving treatment (Raggi, Evans, Hackethorn, & Thompson, 2003). In the current study, the particular item on the parent-rated CIRS assessing “overall academic progress” was examined in visual analyses, as this item was hypothesized to be most highly related to homework completion compared to other domains (e.g., student behavior in the classroom and the teacher-student relationship).

Measures of Parent-Child Conflict and Parental Stress

Parenting Stress Index- Short Form (PSI-SF; Abidin, 1995). The PSI-Short Form is a 36-item questionnaire that uses a 5-point Likert type format and measures parent-reported stress associated with parenting and family variables, as well as child variables. Factor scores are generated in four domains: parental distress, parent-child dysfunctional interactions, difficult child behavior, and defensive responding, as well as an overall score. Psychometric properties including internal consistency, test-retest reliability, and discriminant validity have been demonstrated to be adequate (Kazak & Marvin, 1984; Abidin, 1995). This measure has been validated for use in children up to age 13.

Conflict Behavior Questionnaire (Prinz, Foster, Kent, & O'Leary, 1979). The CBQ (parent and adolescent versions) consist of 20 True or False items assessing communication style and level of conflict in parent-adolescent interactions during the past 2 weeks. Evidence of validity comes from studies showing that distressed families receive significantly poorer scores than non-distressed parent-child dyads (Robin & Foster, 1989). Because these scales are brief and easy to complete, they have been reported to be well suited for repeated use as outcome measures (Power, Karustis, & Habboushe, 2001). The CBQ (Prinz, Foster, Kent, & O'Leary, 1979) has reported an internal consistency of .90. Test-retest reliability over 6-8 weeks for clinically, referred distressed families ranged from .37 for teens' appraisals of their relations with their mothers to .57 for mothers' appraisal of their relationships with their teens. The CBQ has been used in numerous previous studies measuring parent/adolescent interactions in an ADHD sample (Edwards, Barkley, Laneri, Fletcher, & Metevia, 2001; Barkley, Anastopoulos, Guevremont, & Fletcher, 1992; Fletcher, Fischer, Barkley, & Smallish, 1996).

Measures of Treatment Adherence

Attendance at treatment and compliance with homework assignments. Parents attendance at each of the four sessions and their completion and weekly return of homework assignments was tracked. Homework compliance and attendance at sessions were expected to be positively correlated with positive change on dependent measures.

Homework Process Questionnaire. After data for the first cohort was completed in the spring of 2006, it was observed that parents were inconsistent in tracking the amount of time the adolescent spent engaging in mandatory study time, the number of

assignments written down in their assignment notebook each evening, and the number of organization criteria for their binder they met each evening on the daily homework log. Therefore, it was decided a more consistent, easier method for determining treatment adherence was necessary. In response to this issue, the Homework Process Questionnaire (HPQ), developed by Evans and colleagues (S.W. Evans, personal communication, November 2005), was adapted for the current study (see Appendix D). This questionnaire utilizes a forced-choice answer format, asking parents to indicate the frequency of use of a given technique during the past week, according to the following anchors: never, at times, often and always. It was hypothesized that this format would result in more consistent tracking and data collection as it would be easier for parents to complete on a daily basis. The adapted HPQ was utilized during the second and third cohorts of the current study. It was administered weekly during these cohorts after teaching homework routine techniques as part of session 2. The HPQ was not administered prior to teaching these techniques in order to reduce the possibility that being asked if they use a specific technique would encourage parents to use these techniques at home prior to being taught the technique during treatment.

Questions on the HPQ included: 1) how many days of the week did the student complete the mandatory study time (MST); 2) how productive was the student during this time; 3) how often did the student receive reinforcement for completion of MST; 4) how often were reinforcements withheld when the student did not complete MST; 5) how often was the assignment notebook checked for homework assignments written down and reinforcement provided based on the goals met; 6) how often was the binder checked for

organization and reinforcement provided based on the organization goals met; and 7) how often were all necessary materials brought home.

Medication/Treatment Changes Questionnaire. A questionnaire was administered to each parent post-treatment by phone, which was adapted from the Services Use in Children and Adolescents—Parent Interview (SCA-PI; Hoagwood et al., 2004). The SCA-PI gathers parent report data about the services received by the child participant from schools, pediatric health care providers, juvenile justice, mental health, and day treatment across various modalities including psychosocial, medication, and education. Test-retest analyses over a 2-week period of time have indicated high agreement with an overall kappa for all services equal to .97 (Hoagwood et al., 2004).

Measures of Treatment Satisfaction and Acceptability

Parent Satisfaction Survey adapted from the Behavior Intervention Rating Scale (BIRS; Elliott & Von Brock Treuting, 1991). The BIRS is designed to assess the acceptability of a behavioral intervention and has both parent and teacher versions. The BIRS is composed of 24 items which are rated on a scale of 1 (Strongly Disagree) to 6 (Strongly Agree). Alpha coefficients of .97 have been reported for the entire scale, and .97, .92, and .87 for the acceptability, effectiveness, and time factors, respectively (Elliott & Von Brock Treuting, 1991). Pearson coefficients computed between the different factor scores resulted in correlations between .63 and .79, supporting a unique but significant relationship between the constructs. Items from the BIRS were adapted in order to be specific to the homework intervention.

Adolescent Satisfaction Survey. Additional items were written to assess adolescent satisfaction, acceptability and feasibility of our homework intervention. This was done by

adapting items from the BIRS to be relevant to adolescents, specific to the homework intervention, and using language that is appropriate for their developmental level.

Statistical Procedures for Analyzing Data

Visual Analyses of Parent- and Adolescent-Rated Measures

In order to assess for treatment effects, visual analyses of parent- and adolescent-rated data were conducted including an inspection of changes in mean, changes in slope, changes in level, and latency of change (Kazdin, 2003). Changes in mean were evaluated by determining if the mean rate of behavior showed a change from baseline to intervention in the expected direction for each measure. A change in level refers to a shift or discontinuity of performance from the end of one phase to the beginning of the next phase. A change in level was evaluated in this study by looking at the change in behavior from the last day of baseline to the first day of the intervention. A change in slope refers to the tendency for data to show systematic increases or decreases over time. Changes in the direction of slope from baseline to intervention would indicate a trend. Latency of change refers to the period between the onset or termination of one phase and changes in performance. It can be measured by visual inspection of the amount of time it takes before the intervention produces changes in slope or level (Kazdin, 2003). Finally, to further compare data across phases, the number of data points in the treatment phase that fall into the range of the lowest (i.e., least severe) baseline data point was assessed (Kazdin, 1977). No overlapping data points would indicate that the weeks during the treatment phase were never as severe or problematic as any week during the baseline phase.

Analyses of Parent-Rated Daily Homework Logs

The time spent on homework in minutes was tracked daily by parents and adolescents. Due to inconsistency in parents returning and fully completing DHLs, data were unavailable for each and every session. Therefore, means and standard deviations were calculated for data points prior to the second session and after the second session. The rationale for this method was that a mandatory study time plan was implemented during the second session and this study time should be the most direct influence on the amount and consistency of homework time completed. Another issue was that it was difficult to interpret when days were left blank whether no homework was completed or parents just did not write the time down for that day. Due to this ambiguity, it was decided that these blank spaces would be left out of calculations and would not be treated as a zero unless this was specifically written. Inconsistencies in completing this measure also led to an inability to examine some of the other variables of interest, that is, parental report on daily homework logs related to organization of the assignment binder and assignments written down in notebook. Missing data was greater than 50% for these variables, and therefore they could not be examined. The HPQ was added to address these issues during the second and third cohorts, as this measure offered a forced-choice answer format for the same questions as were asked in the daily homework logs.

Analyses of the Parent-Rated Daily HPQ

The adapted HPQ was utilized during the second and third cohorts of the current study. It was administered weekly during these cohorts after teaching homework routine techniques as part of session 2. The HPQ was not administered prior to teaching these techniques in order to reduce the possibility that being asked if they use a specific

technique would encourage parents to use these techniques at home prior to being taught the technique during treatment. Criteria were established for what would be considered effective adherence to the use of treatment techniques. As no research-based data were available on the frequency of technique utilization necessary to observe benefit, participants were considered adhering to the treatment if they used the techniques more often than not, in other words, using techniques on at least 3 of the 5 school nights. Therefore, adherence criteria included: 1) at least 3 days per week completing mandatory study time, 2) reinforcement for completion of mandatory study time at least 3 times per week, 3) at least 3 times per week checking the assignment notebook for accuracy of written assignments and providing reinforcement when meeting these goals, and 4) at least 3 times per week checking the assignment binder for organization and providing reinforcement when meeting these goals.

Analyses of the Adolescent-Rated SHQ

In the current study, each item on this questionnaire will be examined across students at baseline, post-treatment and follow-up. Items on this measure must be examined individually as the measure has not been tested as a unified construct and items cannot be summed to produce an overall score. Further, it would not be feasible to present each item week by week in graphical form, since each item involves a yes/no response and the y-axis would therefore consist of a range from 0 to 1. Therefore, the most reasonable method for analyzing this measure is to compare the percentage of students at each time point that endorsed either response (i.e., yes and no).

Analyses of Teacher-Rated Data

In order to reduce the burden placed on teachers, school-based measures were collected at three time points: pre-treatment, post-treatment, and one-month follow-up. Teacher data were examined individually by participant as this method of examination is most consistent with a single subject analysis. Averaged data present the potential problem of masking important differences in change across participants. For example, teachers may have identified some participants as improving, some as showing no change, and others as deteriorating. If these data are averaged across participants, it would fail to identify these important differences, and may falsely suggest that teachers saw little change in either direction for most participants.

In addition to presenting results by participant, for the APRS, the Academic Productivity subscale (i.e., the amount, quality, speed, attention to, and accuracy of work completed) was used in the following analyses as it was hypothesized to be more highly related to the target of our treatment study (i.e., homework completion), compared to the other two subscales of the APRS, which assess 1) the academic quality of the child's speaking and reading skills and the speed at which the child learns new material, and 2) impulse control.

Teachers' grade books were examined for homework, classwork, test and quiz scores for the marking period before the adolescent began the homework intervention compared to the marking period in which the adolescent completed the homework intervention. This method was used for two main reasons. First, collecting data for the marking period following completion of treatment would have been the following school year for participants who completed treatment in the spring. This was not feasible given the difficulties maintaining contact during follow-up for the majority of participants.

Second, teachers were not consistent in marking the specific date an assignment was collected during a grade quarter. Therefore, it was not feasible to calculate scores before the start date of the intervention compared to after the start date of the intervention. It was however, relatively easy to compare scores collected by grade quarter. Comparing grade quarter scores results in a more conservative estimate of change, as the adolescent may have participated in treatment towards the latter part of a grade quarter.

In addition, since many teachers do not distinguish homework from classwork within their grade books, these two categories were combined for all participants. Therefore, data presented reflect the combined percentage of the targeted outcome variable (i.e., homework completion), and a non-targeted variable (i.e., classwork completion). This also resulted in a more conservative estimate of change. Similarly, test and quiz scores were combined. These issues reflect the numerous real world challenges of collecting data from the school setting, in terms of both attempts to reduce teacher burden by minimizing the number of forms they need to complete, while also facing difficulties with the consistency and accuracy of the information obtained from teacher grade books, and challenges keeping families engaged in participation after treatment has ended.

Visual Analyses of Participant Characteristics and Treatment Processes

Given the high degree of overlap between ADHD and LDs, and the potential for each to contribute uniquely to homework problems, LDs were examined preliminarily as a participant characteristic which may influence treatment effects, through the visual comparison of differences between changes in level, mean, and slope in participants with and without a co-occurring LD. As reviewed previously, learning disabilities are highly

comorbid with ADHD and result in unique and typically more severe educational problems for the child with ADHD. Recommendations for the treatment of children with this comorbidity emphasize multimodal, long-term treatments that specifically target both behavioral and academic problems directly. Therefore, the exacerbation of academic difficulties found in children and adolescents with ADHD whom have a co-occurring learning disability suggests that treatment effects may be dampened in this group (Hinshaw, 1992b), especially when administering short-term interventions targeting only one domain. Therefore, it was expected that the presence of co-occurring LDs would make it more difficult to effectively address current academic problems and will decrease the impact of treatment on DVs.

Similarly, given the fact that at least 75% of children diagnosed with ADHD are medicated with stimulants (Rowland et al., 2002) and that treatment with stimulant medication has proven to have some beneficial effects on the academic behavior of children and adolescents with ADHD (Evans et al., 2001), the use of stimulant medication was also examined as a variable which may influence treatment outcome. Multimodal treatment outcome studies for children with ADHD have generally found greater positive effects when medication is combined with behavioral treatment than when either approach is used alone (Conners et al., 2001; MTA; MTA Cooperative Group, 1999a; Swanson et al., 2001). Therefore, it was expected that adolescents on stimulant medication during the study would experience greater positive effects of treatment than adolescents not currently on stimulant medication. This was examined through visual comparison of graphical data between adolescents currently using stimulant medication and those that are currently un-medicated.

In contrast, within the National Institute of Mental Health (NIMH) Collaborative Multimodal Treatment Study of Children with ADHD (MTA; Arnold et al., 1997), gender was not found to be a moderator of treatment effects. Therefore, differences between males and females were not examined in visual analyses of treatment graphs.

Results

Results are presented sequentially in the following domains: 1) Homework-related performance; 2) Overall academic progress; 3) ADHD symptoms and impairment; and 4) Parenting stress and parent/adolescent conflict. As detailed in the data analyses section, parent-report measures were collected weekly and graphs were examined for changes in mean, slope, level, and latency of change from baseline to treatment phases, and from treatment to follow-up phases. Teacher measures were collected at pre-treatment, post-treatment and one-month follow-up and are examined through an individual analysis of whether or not a participant improved on a given measure. Finally, given inconsistencies in parent completion of daily homework logs and process questionnaires, these data are presented as means and standard deviations before and after treatment for each participant, rather than a graphical analysis of week by week changes.

Treatment Attendance and Measure Completion

All eleven participants (100%) completed all 5 sessions of the homework program. For one participant (i.e., James), the school refused to participate; therefore, an extra clinic session was conducted in place of the school consultation. During this session, parental advocacy within the school setting was discussed that paralleled information that would have been discussed during the school session. Cancellations were rescheduled for later the same week or the following week. This occurred for all participants with the exception of Alex, whose family cancelled a number of times and was often unable to reschedule for the next week. There was only one no-show during any session (i.e., Myron), which was rescheduled. The number of completed sets of measures turned in by each family varied considerably, with a minimum of 5 and a

maximum of 12 ($M = 8.55$, $SD = 1.92$). There was a small but non-significant correlation between the number of completed measures turned in and treatment outcome according to the HPC ($r = .183$, $p = .295$).

A concerted attempt was made to get all three to four core teachers (Math, English, Science, and Social Studies/History) to attend the parent-teacher consultation session; however, due to the difficulty of coordinating numerous schedules, the number of teachers varied at each session from two to seven. Teachers who were unable to attend received handouts from the manual and a phone call from the graduate therapist to detail the purpose and procedures of the study as well as allow them the opportunity to ask questions. Frequent phone calls and letters sent in the mail were typically required for the majority of teachers to obtain measures at pre-, post, and follow-up. The school verbally agreed to provide informal accommodations across all of the adolescent's classes during the school consultation; however, no formal tracking of the frequency with which those accommodations were implemented was collected during this study.

Homework-Related Problems

Homework Problems Checklist (HPC)

Visual analyses of scores on the primary outcome measure demonstrated large, visually observable improvement (i.e., lower scores) from the baseline to treatment phase for 8 of the 11 participants (i.e., Edgar, Emma, Arthur, Jeffrey, James, Tevonte, George, and Bob) (see Figure 1). That is, changes in slope (i.e., presence of a downward trend) and changes in mean from baseline to treatment condition indicated positive change for these participants. At post-treatment, all 8 of these participants were below the clinical cutoff of 26 on the HPC. Based on improvement on this primary outcome measure (i.e.,

visually observable changes in mean and slope and values below clinical severity at post-treatment), these 8 participants were identified as treatment responders. Furthermore, 7 of these 8 participants had no overlapping data points between baseline and treatment conditions, indicating that scores during treatment never reached the severity of scores during baseline for any of these participants. Positive change was also observed in 9 of 11 participants when the last baseline data point was compared to the first treatment data point. Therefore, the latency of change was short and almost immediate after the start of treatment. While the latency of change was short, it was also incremental. In other words, for the majority of participants, improvement was cumulative over time in treatment and after more sessions had been conducted. No change in either direction was observed for 3 of 11 participants from baseline to treatment conditions (i.e., Matthew, Myron, and Alex). These 3 participants were classified as treatment non-responders based on the lack of positive change on the primary outcome measure.

Follow-up data were available on 7 participants (see Figure 1). Visual comparison of treatment and follow-up conditions showed either maintenance of change or further improvement during follow-up for 6 participants. Only one participant demonstrated a large deterioration during follow-up, during one particular week (i.e., George). According to parental report, this adolescent was suspended that week due to poor behavior at school.

Teacher Grade Book Data for Homework and Classwork

Grade book data were collected on 7 of 11 participants (see Table 5). One participant attended a non-traditional school in which narrative descriptions were employed instead of grades, and therefore, quantitative data could not be obtained for this

participant (i.e., Myron). In the other three cases for which data were not obtained, the school either refused to participate (i.e., James) or teachers never sent in grade book data despite frequent reminder phone calls and letters sent in the mail (i.e., Tevonte, Arthur). A stringent criterion of change of a minimum of one letter grade (i.e., 10 points) was utilized. For 2 of the 7 participants in which data were available, 10% or greater improvement was observed when homework/classwork scores from the semester prior to participating in the homework intervention were compared to homework/classwork scores from the semester that ended after they finished participating in the homework intervention (i.e., Edgar and George) (see Table 5). 4 of the 5 participants demonstrated change between 3% and 5% (Matthew, Emma, Jeffrey, and Alex). No change was observed in 1 of the 7 participants.

Student Homework Questionnaire (SHQ)

Items of the SHQ were each examined individually in the 7 participants for whom data were available at all three time points. (However, all 10 participants for whom data were available at pre- and post-treatment are also presented in Table 7 for comparison). Improvement was observed at post-treatment compared to baseline in the overall percentage of adolescents who reported understanding their homework, not needing help from their parents, paying attention during homework, and being happy with their grades (see Table 7). The percentage of students reporting trying their hardest during homework stayed steady from baseline to post-treatment at 86%; however, at follow-up, 100% of students reported trying their hardest during homework. The percentage of students reporting positive views of homework in helping understand the material taught by the teacher also stayed steady from baseline to treatment conditions at 29%, but improved to

43% at follow-up. Very little change in either direction was observed for whether students need a quiet place to study and views on whether doing homework helps them do better on tests/quizzes.

Daily Homework Logs (DHL)

Prior to intervention, for 9 of the 11 participants, parents reported that time spent on homework was often minimal and not enough to complete assignments due the following day. Therefore, it was hypothesized that use of a mandatory study time in the evening would likely increase the mean amount of homework time completed each evening, in addition to increases in productivity during homework time. Consistent with hypotheses, results on the DHL found that 6 of these 9 participants increased the mean amount of homework time completed each evening. 3 participants (i.e., Matthew, Tevonte and Edgar) showed slightly lower mean amounts of homework time completed each evening during treatment (See Table 6).

Prior to intervention, for 2 of the 11 participants (i.e., Alex and Myron), incredibly long time periods of between 4 and 7 hours were spent doing homework each evening. These time periods were typically unproductive and stressful to both parent and adolescent. Therefore, for these students, a mandatory study time was established which incorporated less time than the average amount of homework time these students were completing prior to treatment, with an opportunity to earn privileges after completion of the MST. It was hypothesized that Alex and Myron would decrease the overall amount of time spent doing homework each evening as a result of the MST (i.e., lower mean), but that this time would likely be more productive. Results on the DHL found that Alex

decreased the mean amount of homework time during treatment, while Myron showed no change.

Prior to intervention, for all 11 participants the amount of homework time completed each evening fluctuated considerably, and was often dependent on how much homework was due the following day or if a large project or test was due. Through implementation of a mandatory study time (MST) each evening, it was hypothesized that the amount of homework completed each evening would become more consistent; in other words, there would be less fluctuation from day to day. If participants did not have homework due the following day, they were instructed to use their MST time to study for an upcoming quiz or test, work on a long-term project, or read from a textbook (see Session 2 of homework manual for additional details). Therefore, it was expected that participants would improve the consistency in the amount of homework time completed each day as a result of treatment (i.e., to lower the standard deviation). Consistent with hypotheses, 3 participants (i.e., Edgar, Alex, and Tevonte) demonstrated a lower standard deviation during treatment on the DHL. Contradictory to hypotheses, 4 participants (i.e., Matthew, Jeffrey, James, and Myron) showed no changes in standard deviation, and 4 participants (i.e., George, Arthur, Bob, and Emma) showed increases in standard deviation during treatment (see Table 6).

Overall Academic Progress

Grade Point Average

GPA data were collected on 8 of the 11 participants. Two of the 11 participants did not submit final report card grades, despite numerous reminder phone calls and letters sent home in the mail (i.e., James and Tevonte). One of the 11 participants was enrolled

in a non-traditional school in which narrative descriptions were used instead of grades, and therefore, quantitative data were unable to be collected on this participant (i.e., Myron). Of the 8 students for which report card grades were available, 7 showed a small improvement in GPA from the grade quarter they were in during baseline to the grade quarter that ended after they completed treatment (see Table 5). Average improvement across students was approximately the difference between a C+ and a B- (Pre $M = 2.36$, Post $M = 2.65$). Only one student did not show change (i.e., James), who started at pre-treatment with a 3.86 GPA (an “A” average).

Academic Performance Rating Scale: Academic Productivity

Results from the AP subscale of the teacher-rated APRS are presented individually by participant and teacher (see Table 10). Missing data are indicated by an asterisk and occurred for a number of reasons. No data were available for James, as the school system did not agree to participate in this study. Therefore, teacher-report data were collected on a total of 10 participants. While all students had at least 3 teachers, not all teachers chose to participate, despite consent provided from the principal of each school. Results indicate that 5 of the 10 participants demonstrated improvement from pre- to post-treatment on the AP subscale of the APRS as rated by all teachers for whom data were available (i.e., Matthew, Edgar, Jeffrey, Arthur, and Tevonte). Two additional participants demonstrated improvement according to the majority of teachers (i.e., Bob and Myron). This was largely consistent with parent-report HPC scores which demonstrate positive change in 6 of the 8 participants that showed improvement on the APRS. Matthew and Myron showed improvement on the APRS despite no improvement on the HPC. For 1 of the 10 participants, teachers were consistent in reporting no change

in either direction from pre- to post-treatment (i.e., George), and for another participant (i.e., Emma), one teacher reported positive change, while the other teacher reported no change. Only 1 participant showed a deterioration in their productivity according to the majority of teachers (i.e., Alex).

Follow-up data were available for 7 participants on the AP subscale of the APRS (see Table 10). Comparison of post- to follow-up data demonstrated that for 5 participants teachers did not agree (i.e., some reported maintenance of change, others deterioration, others continued improvement). For one participant (i.e., Bob) both teachers for which data were available reported deterioration in scores from post- to follow-up. For one participant (i.e., Arthur) improvement was reported on the AP subscale of the APRS but data were available for only one teacher.

Teacher Grade Book Data for Test and Quiz Scores

Grade book data for tests and quiz scores were collected on 7 of 11 participants (see Table 5). Missing data is noted by an asterisk and was present for the same reasons as noted above for grade book data pertaining to homework and classwork scores. A stringent criterion of change of a minimum of one letter grade (i.e., 10 points) was utilized. In the 7 participants for whom data were available, 10% improvement was observed in 2 students (i.e., Edgar and Matthew), improvement of less than 4% was observed in 2 students (i.e., Emma and Bob), and no change or deterioration in test/quiz grades was observed in 3 students (i.e., Jeffrey, Alex and George). There appeared to be no relationship between changes in test/quiz scores and improvement in homework-related problems. That is, students identified as treatment responders according to

improvement on the HPC did not always show improvement in test/quiz grades, and vice versa.

Homework and Classwork Scores, Test and Quiz Scores and Grade Point Average

Participants were also assessed according to whether they showed consistent improvement across all 3 categories: homework and classwork scores, test and quiz scores, and grade point average according to the criteria previously identified as indicating improvement. This is consistent with recommendations for conceptualizing behavioral changes in intervention research, which call for an examination of the consistency by which an intervention brings about change across indicators (De Los Reyes & Kazdin, 2006). Of the 7 participants for which data were available in all three domains, only 2 of the 7 participants demonstrated consistent improvement across domains (i.e., Matthew and Edgar).

Parent Report of Academic Progress on the Children's Impairment Rating Scale (CIRS)

The particular item on the parent-rated CIRS assessing “overall academic progress” was examined in these analyses, as this item was hypothesized to be most highly related to homework completion compared to other domains on the CIRS (e.g., student behavior in the classroom and the teacher-student relationship). Graphical data showed visually observable improvement on this item in 4 of 11 participants (i.e., Edgar, Bob, Jeffrey, and Tevonte) (see Figure 3). These four participants showed changes in mean and slope from baseline to treatment conditions indicative of improvement, and 3 of these 4 participants maintained these changes during follow-up. The fourth participant did not have follow-up data available. However, the clear majority of participants showed

no consistent trend or change on the CIRS academic progress item from baseline to treatment. For many participants, considerable fluctuation in scores was present from week to week during both baseline and treatment, making the assessment of reliable change over time challenging. For other participants, improvement occurred on a given week of treatment and then returned to baseline levels the following week. (see Figure 3).

Teacher Report of Academic Progress on the Children's Impairment Rating Scale (CIRS)

Teachers were asked to make ratings at pre-treatment, post-treatment and one month follow-up on the teacher-report CIRS. Missing data are indicated by an asterisk and occurred for the same reasons as discussed above for the teacher-report APRS scale. There were no consistent trends in improvement across participants on the academic progress item (i.e., some participants showed higher scores and some showed lower scores post-treatment). In addition, there was disagreement across the multiple teachers for a given participant in a number of cases. Therefore, these results should be interpreted with caution. Scores are presented individually by participant and teacher (see Table 9).

Three participants demonstrated improvement from pre to post on all teacher ratings of academic progress on the CIRS (i.e., Edgar, Emma, and Matthew). Five participants however, showed no change in either direction from pre- to post-treatment across teacher ratings. For 2 participants, some teachers rated positive change, while others rated deterioration from pre to post-treatment (i.e., Alex and Bob). For the 2 participants in which some deterioration was observed by teachers, only Alex and not Bob demonstrated no improvement on the HPC. However, Bob and not Alex showed no improvement in GPA.

Similarly, there were no trends across participants from post to follow-up scores on teacher ratings of academic progress on the CIRS (see Table 9). 7 participants had available follow-up data from teachers. Two of these participants showed deterioration for 2 of the 3 teachers from post to follow-up (i.e., Edgar and Matthew) and one participant showed no change (i.e., Emma). 4 participants showed improvement for at least 2 of the 3 teachers or for all teachers in which data were available (i.e., Arthur, Bob, Alex and Myron). Interestingly, two of these participants (i.e., Alex and Myron) had no improvement on the HPC from pre- to post-treatment.

ADHD Symptoms and Impairment

Parent-report Disruptive Behavior Disorders Rating Scale (PDBD)

Graphical data of the PDBD showed a visually observable decrease in frequency of inattentive symptoms from baseline to treatment for 7 of the 11 participants (see Figure 2). That is, changes in slope (i.e., a downward trend during treatment) and changes in mean (i.e., lower mean during treatment than baseline phase) were observed for these participants. Positive change was also observed when the last baseline data point was compared to the first treatment session for 7 of 11 participants. Therefore, the latency of change was short and immediate after the start of treatment for the majority of participants. Furthermore, 5 of the 11 participants had no overlapping data points between baseline and treatment conditions (i.e., Edgar, Bob, Emma, Jeffrey, and Tevonte), and 2 participants had only one overlapping data point (i.e., James and Arthur), indicating that scores during treatment rarely if ever reached the severity of scores during the baseline condition. There was however, significant variability in data with some participants displaying a spike (i.e., increase in inattentive symptoms) during treatment

despite an overall downward slope (e.g., Bob, Emma and Arthur). Other participants displayed a consistent downward trend. There were also a number of participants who demonstrated a downward slope during the baseline condition which makes it difficult to assess whether change observed during the treatment phase was due to the treatment or was occurring prior to the start of treatment. Finally, 4 of the 11 participants demonstrated no overall improvement in inattentive symptoms during the treatment phase (i.e., Alex, Myron, Matthew and George). 3 of these 4 participants were considered treatment non-responders according to the parent-report HPC. Out of the 7 participants for whom follow-up data were available, 5 participants either maintained change or showed further improvement through a downward slope, while 2 participants showed a deterioration or spike in inattentive symptoms (i.e., Matthew and Alex).

For frequency of hyperactive symptoms on the PDBD, data demonstrated considerable variability during both baseline and treatment phases with no clear trend or changes in mean for the majority of participants (Figure 2). Only 3 participants demonstrated a visually observable and consistent downward trend during treatment and no overlapping data points between baseline and treatment phases (i.e., Edgar, Tevonte, and Jeffrey). All other participants showed either no change or highly variable data. 2 participants (i.e., Arthur and Bob) had baseline levels of hyperactivity close to zero; therefore, visually observable change in these two participants was not feasible.

Teacher-Report Disruptive Behavior Disorders Rating Scale (TDBD)

Teacher report data on the TDBD are presented in Table 8. Missing data are indicated by an asterisk and occurred for the same reasons as noted above for the teacher-rated APRS. No consistent trend was observed across participants (i.e., some participants

showed higher TDBD scores and some showed lower scores post-treatment). There was also a lack of consistency between teachers for ratings of each individual student.

Therefore, scores are presented individually by participant and teacher (see Table 8).

Results demonstrate that for 5 of the 10 participants in which teacher data were available, teachers did not agree with each other. Some teachers reported improvement, others no change, and others deterioration for a given participant. For 2 of the 11 participants, data were only available for one teacher. For both these participants, very little change was reported in either direction. For 3 of the 11 participants, improvement was reported from baseline to treatment for all teachers (i.e., Edgar, Emma, and Matthew) and in 1 participant, improvement was reported by 3 of 4 teachers (i.e., Bob). In these 4 participants for whom improvement was observed by all teachers, 3 of the 4 (i.e., Edgar, Emma and Bob) were considered treatment responders according to improvement on the HPC.

Parent-Child Conflict and Parental Stress

Parenting Stress Index (PSI)

Graphical data of the PSI showed no consistent trends and high variability in data points during both baseline and treatment conditions for the majority of participants (see Figure 4). Changes in mean from baseline to treatment phases demonstrated a clear increase (i.e., higher scores) in parent-reported stress in 4 of the 11 participants (i.e., Alex, Matthew, George and Tevonte). Visually observable changes in slope during treatment in the desired direction were apparent in only 3 of the 11 participants (i.e., Edgar, Jeffrey and Arthur). The remaining 4 participants showed no consistent trends in either direction during baseline and treatment conditions. Out of the 8 participants for

whom follow-up data were available, a slope indicative of improvement was observed in 4 participants after treatment (i.e., Alex, Bob, Myron, and Matthew).

Parent and Adolescent Report on the Conflict Behavior Questionnaire (PCBQ and ACBQ)

Graphical data of the parent- and adolescent-report CBQ showed few consistent trends or changes in the parent/adolescent relationship from baseline to treatment for the majority of participants (see Figures 5 and 6). A number of participants had extremely low levels of parent/adolescent conflict at baseline (e.g., Bob, Emma, James and Jeffrey on the PCBQ; Emma, James and Jeffrey on the ACBQ) and therefore were unlikely to show visually observable improvement during treatment. For other participants, significant variability was present from week to week during baseline, treatment and follow-up conditions. Due to the considerable fluctuation in scores from week to week, stability of baseline measurements was not achieved prior to intervention for the majority of participants. Nevertheless, a number of participants showed positive change during the treatment condition compared to baseline (e.g., Tevonte, James, and Edgar on the PCBQ; George, Alex, Emma and Edgar on the ACBQ). However, due to the lack of stability in the baseline condition, these improvements should be interpreted with extreme caution.

Treatment Adherence

Homework Process Questionnaire

The HPQ was utilized for 7 families in this study. These data should be interpreted with caution given the limited number of data points for each participant on each question. Criteria were established for what would be considered effective adherence to the use of treatment techniques (see data analysis section on the HPQ).

Results demonstrated that three treatment responders (i.e., James, Arthur and George) met all of the established criteria: completing the mandatory study time, assignment notebook/binder checks, and providing contingent reinforcement at least 3 out of 5 school nights on average. One treatment non-responder and two treatment responders (i.e., Alex, Tevonte, and Bob) met some of the criteria, utilizing some of these techniques at least 3 of 5 school nights. One treatment non-responder (i.e., Myron) did not meet any of the criteria, utilizing all techniques below the minimum of 3 out of 5 school nights. Table 11 presents means and standard deviations for frequency of use of each technique by family.

Across participants, the most frequently cited reason for not completing the full mandatory study time was the presence of a family outing or extracurricular activity. The second most common reason was that parents were not home to enforce the study time, and the third most common reason was that the child failed to bring home necessary materials. Parents reported productivity ratings on average between a 4 and 5 on a scale from 1 (Least Productive) to 7 (Most Productive) during the HIP Program.

Medication/Treatment Changes Questionnaire

A questionnaire, adapted from the SCAP-I, was administered to each parent post-treatment by a trained research assistant over the telephone. Three participants were unable to be contacted (i.e., Jeffrey, Bob, and James). Of the 8 for which data were available, none of the participants had changed medication dosage or type at the time of contact. Similarly, none of the participants had entered other therapy or mental health treatment. Participants reported no changes in receipt of services from the school other than what was discussed at the parent-teacher consultation. During the follow-up phase, two participants began tutoring. Alex received tutoring monthly for writing and study

skills. Arthur received tutoring weekly for study and organizational skills. No other treatment services were started during the follow-up phase by any participant.

Acceptability and Satisfaction Ratings

The homework intervention demonstrated high levels of both parent and adolescent satisfaction (see Table 12). Means on the parent satisfaction survey ranged from “agree” to “strongly agree”, indicating a high level of satisfaction. Means on the adolescent satisfaction survey ranged from “agree a little” to “agree”, indicating satisfaction, but at a lower level than indicated by parents. The highest ratings of satisfaction for both parents and adolescents were for the session on structuring the home setting to facilitate homework completion.

Discussion

The purpose of this study was to develop and evaluate the effects of a novel behavioral intervention designed to address the homework-related difficulties of middle-school students with ADHD. This study was unique in addressing the treatment needs of an understudied and underserved population (i.e., adolescents with ADHD) at a critical developmental time point, the transition to middle school. It was also unique in being the first study to develop and examine the specific effects of an integrated homework intervention for use in adolescents with the disorder. Intervention techniques were implemented by parents, adolescents and teachers within home and school settings, with the goal of developing a treatment that has real-world clinical utility and feasibility. Utilization of a multiple baseline design allowed for an in-depth examination of individual patterns of change over time, and served to generate hypotheses for future research.

The HIP was hypothesized to result in improvement on primary outcome measures which included: 1) homework-related problems according to parent report; 2) time and consistency of homework routine according to parent-report homework logs; and 3) homework scores according to teacher grade book data. Improvement was also expected on secondary outcome measures including: 1) overall academic productivity and progress according to teacher report; 2) test and quiz scores according to teacher grade book data; 3) overall GPA; 4) ADHD symptoms and impairment according to parent and teacher report; and 4) parental stress and parent-child conflict according to parent and adolescent report. The homework program was also predicted to receive high ratings of parent, teacher and adolescent consumer satisfaction. A multiple baseline

across participants design was utilized in this pilot study to test the effectiveness of this program, with the starting point of treatment staggered across participants.

Overall results indicated that the HIP program was beneficial in improving the homework-related problems of middle school students with ADHD according to parent report and daily homework logs, and to a lesser extent according to teacher grade book data. This is consistent with previous research indicating improvement in homework-related problems and homework accuracy and completion rates after participation in a behavioral, group-format homework intervention in five elementary school children with ADHD (Habboushe et al., 2001). No study to date however, has examined an individualized homework intervention with an adolescent ADHD sample, using a well-controlled research design. Furthermore, main homework effects of the HIP Program translated into overall academic improvement through small but consistent improvements in GPA and teacher-reported academic productivity for the majority of participants. Visually observable improvement was also noted for the majority of participants on parent-reported symptoms of inattention.

Intervention techniques were effectively implemented by parents, adolescents and teachers within home and school settings, demonstrating real-world clinical utility and feasibility for use in these settings. There appeared to be a relationship between parent-reported treatment adherence and outcome, with families who consistently implemented the intervention techniques demonstrating the greatest improvement and families who did not consistently implement techniques on a regular basis showing little change in the main outcome variables. Finally, consumer satisfaction questionnaires indicated high levels of satisfaction among both parents and adolescents.

Not all variables of interest demonstrated change in this study. No improvement or consistent trends were observed on impairment ratings or symptoms of hyperactivity according to parent and teacher report, inattentive symptoms according to teacher report, or parental stress and the parent/adolescent relationship according to both parent and adolescent report. The following section addresses each specific research question that was explored and the salient outcomes for each dependent variable. Subsequently, limitations of this study and suggestions for future research are examined.

Primary Aim: Did the HIP Improve the Homework-Related Problems of Middle School Students with ADHD?

According to De Los Reyes and Kazdin (2006), targeting multidimensional behavioral change in intervention research necessitates the multidimensional conceptualization of intervention change. This conceptualization involves recognizing change as highly variable and existing along a range of possible changes. In the current study, indicators of homework-related problems ranged from showing small and inconsistent changes (i.e., homework and classwork scores) to consistent and large changes in the majority of participants (i.e., parent- and adolescent-reported homework problems and mean amount of homework completed on the daily homework log). This model also suggests that the consistency in which measures of a dimension support improvement suggest the strength of the evidence for change. Using this theoretical and methodological framework as a guide, there appears to be evidence for probable change in homework-related problems based on a simple majority of findings suggesting improvement. In other words, there was observed a clear pattern of improvement in the majority of participants according to parent- and adolescent-report and daily homework logs, but not teacher-submitted grade book data. These findings may indicate that parents

and adolescents most directly observe the behavioral changes in homework-related problems, or alternatively, that teacher grade book data may have been an unreliable or unsystematic indicator of change. Indeed, the aforementioned challenges in collecting complete and accurate teacher grade book data offer support for this second alternative. An examination of change on each individual measure follows.

Data from 8 of the 11 participants indicated that the HIP improved the homework-related problems of these students. Large, visually observable improvement was apparent from baseline to treatment on the parent-report Homework Problems Checklist in these 8 participants. These participants showed considerable changes in mean and slope when comparing baseline to treatment phases, an immediate latency of change from the last baseline data point to the first treatment data point, incremental improvement as treatment progressed, no overlapping data points between baseline and treatment, and scores on the HPC below the clinical cut-off at post-treatment. Furthermore, the majority of these participants maintained change or showed further improvement during the follow-up phase. These participants were classified as treatment responders based on these changes on the HPC.

Further, daily homework logs completed by parents indicated that 6 of the 8 treatment responders increased the mean amount of homework time completed each evening. Treatment responders were also more likely to adhere to treatment techniques, implementing most techniques a minimum of 3 out of 5 school nights per week. As a whole, more students reported being able to pay attention during homework, understanding their homework, needing less help from parents, and being happy with their grades after treatment compared to baseline.

However, on teacher grade book data of homework and classwork scores, change of 10% or greater was observed in only 2 participants, whereas small positive changes of between 3% and 5% were observed in 4 participants, and no change was observed in the remaining 1 participant for whom data were available. This may be a result of challenges in collecting consistent, complete and reliable data from teachers, the pitfalls of merging classroom and homework scores, and the inability to examine grade book data according to when the adolescent started and ended treatment. Rather, grade book data was examined by grade quarter, and did not necessarily correspond exactly with the treatment timeline. For these reasons, grade book data should be interpreted with caution.

In contrast to large visually observable improvement on the HPC in 8 participants, 3 of the 11 participants (i.e., Alex, Myron, and Matthew) did not improve following the HIP Program according to the parent-report HPC. These participants showed little to no change on the HPC from baseline to treatment. These three participants also appeared to demonstrate the lowest levels of treatment adherence. During the first cohort, Matthew's mother informally reported inconsistency in implementing the techniques during treatment. She reported frequent out-of-town work trips which resulted in 2 to 4 days at a time not being present to implement the techniques in the home setting. However, no formal method of assessing adherence had been incorporated into the study during the first cohort. A homework process questionnaire (HPQ) was utilized during the subsequent two cohorts. During these two cohorts, the parents of Alex and Myron reported the lowest levels of treatment adherence according to the HPQ. They implemented mandatory study time and checked assignment notebooks and organization of the binder at a lower frequency than the other participants for whom data were

available. Therefore, improvement in homework-related problems appeared to be highly related to treatment adherence. Those participants that adhered to treatment procedures improved on the parent-report HPC and other homework-related measures, while those participants that did not adhere to treatment procedures did not improve on the majority of these measures. This is consistent with a recent study testing the effectiveness of a homework management plan for adolescents with ADHD, in which preliminary data indicated that the participants who benefited from the intervention were those whom adhered to treatment (S.W. Evans, personal communication, November 2005).

Interestingly, despite no change on the HPC and a lack of adherence to the use of techniques taught during treatment, objective data from Alex indicated some improvement in the amount and consistency of homework time according to daily homework logs, a small improvement in homework and classwork scores according to teacher grade book data, and an improvement in overall GPA. Objective data from Matthew indicated improvement in homework and classwork scores, test and quiz scores, and overall grade point average. Therefore, objective data suggest that both Alex and Matthew showed some improvement that was not endorsed according to parental report on the HPC. It is possible that objective change was too small to be noticed by the parent. Another possible explanation may be that parental attributions and cognitions may have inhibited this parent from noticing the positive change in performance. Both parents of Matthew and Alex made pessimistic statements regarding their adolescent's academic performance. These biases may likely have contributed to difficulties noticing positive change.

Indeed, findings from the MTA study suggest that negative parental cognitions about themselves, their children with ADHD, and their parenting are associated with poorer response to behavioral, pharmacological, and combined treatments for ADHD (Hoza et al., 2000). Further, in a longitudinal study of 2,247 African American families, parental expectations of children's highest educational attainment and parental beliefs in children's academic competency were found to have the most consistent and significant effects on children's reading, math, general knowledge, and science test scores in kindergarten, first and third grade (Wu & Qi, 2006). Therefore, negative parental attributions may not only serve as barriers to treatment, but may have a particular negative impact on children's academic progress, regardless of treatment status.

Attributions about child and adolescent behavior may include judgments about whether the cause of the behavior is seen as residing within the child/adolescent (e.g., personality characteristics) or outside of the child/adolescent in the environment or other people (e.g., parent); the extent to which the behavior is seen as controllable by the child/adolescent (e.g., due to effort) or uncontrollable (e.g., due to illness); and whether the cause of the behavior is viewed as likely to be transient or to be present in the future (De Los Reyes & Kazdin, 2005; Johnston & Ohan, 2005). In summary, the aforementioned studies highlight the critical need to adequately identify and address negative parental cognitions and expectations regarding themselves, their parenting, and their child, in order to both improve treatment outcomes as well as prevent long-term negative trajectories.

Another participant characteristic which was preliminarily examined was stimulant medication status, which appeared to be unrelated to treatment outcome in the current study. Both participants taking stimulant medication as well as those that were not

taking stimulant medication demonstrated improvement that appeared to be a result of the HIP. However, only 3 of the 11 students were not taking stimulant medication and therefore, conclusions based on these data are not feasible given the small number of participants in each category. Overall, large-scale research on effective treatment approaches for ADHD suggests that combined behavioral-pharmacological treatments are most effective in addressing multiple areas of impairment and normalizing child behavior (Hinshaw, Owens, Wells, Kohut & Andrews, 2004; Kraemer, Abikoff, Arnold et al., 2000; Connors, Epstein, March, Angold, Wells, Klaric et al., 2001; Swanson et al., 2001). It is possible that participants taking stimulant medication may demonstrate a larger treatment effect. However, as this study did not compare the effect size of treatment across participants due to use of a single subject design, clinically significant differences between participants could not be assessed. Future research employing group designs with larger sample sizes may better answer this question.

In contrast, improvement in homework-related problems appeared to be related to the presence of a learning disability based on current data. All of the 3 treatment non-responders (i.e., Alex, Matthew, and Myron) had been previously diagnosed with a learning disability, while none of the 8 treatment responders had been previously diagnosed with a learning disability. While these pilot results are preliminary due to the small sample size of the current project, they suggest that the presence of a learning disability may inhibit the ability of these students to benefit from the HIP intervention. Indeed, parents of these three adolescents indicated that not only did their adolescents often exhibit off-task behavior, but they also had difficulty understanding academic material, required frequent parent support and tutoring in order to complete assignments,

and often worked slowly and methodically. Two of these 3 parents also reported that excessive amounts of homework time were necessary in order for their adolescent to complete all of their daily homework. While the HIP program appears to improve the adolescent's ability to maintain focus through increased parental monitoring and structuring of homework time and contingent incentives and privileges, it may be unable to address barriers to effective homework completion that occur due to difficulties comprehending academic material as a result of a learning disability. This makes intuitive sense, as the behavioral techniques taught during the HIP program were designed to target attention, motivation and organization. Adolescents who have a comorbid diagnosis of ADHD and a learning disability likely would require an adjunct to this treatment, such as tutoring in a specific academic subject to remediate academic skills deficits. Addressing learning deficits through combined academic skills remediation and pharmacological treatment may need to occur concurrently with behavioral interventions designed to improve attention, motivation and organization (Hinshaw, 1992b). Education in study and note-taking skills may also be particularly critical for these adolescents.

Another potential participant characteristic that may influence treatment outcome among participants may be ethnic minority status. Of the 5 African American families in the current study, 3 families were classified as treatment non-responders based on parent-report HPC scores. These families also reported lower levels of adherence to treatment, and showed fewer positive changes on objective data. The 3 treatment non-responders were not of low socioeconomic status, although one parent was a single mother, which did create additional burdens related to time and likely played a role in treatment compliance. The other two non-responders were upper middle class families; their

adolescents attended private school. Of the 8 treatment responders, 5 were Caucasian, 2 were African American, 1 was Hispanic, and 1 was biracial. While it is entirely possible that these differences reflect the presence or absence of a learning disability (which was present in all three treatment non-responders and in none of the treatment responders), another possible explanation is that African American families derived less benefit from the HIP. Differences in perceived acceptability of PT interventions, expectations about children and parenting, and other cultural norms and attitudes towards mental health treatment among ethnic minority groups may influence treatment outcome (Kazdin & Weisz, 2003).

Based on clinical observation and voiced concerns of parents during the course of treatment, it appeared that some of the African American parents did not view techniques such as the reinforcement and privilege system and limitations on the amount of time spent on homework as acceptable forms of parenting. The concerns voiced by a couple of parents in using the current approach to address homework-related problems were that in order to be successful as an ethnic minority their adolescent had to work harder and longer than his peers, in particular because the outside world was “tough on African American males”. Their approach to parenting was one of high expectations and frequent consequences for poor performance. This approach was especially apparent for the parents of Alex and Myron.

Consistent with these informal reports, research has shown that authoritarian parenting practices (which include more focus on control, obedience, and use of physical punishment), are more common among ethnic minorities, while not showing the associated negative child outcomes typically found with European American children

raised within the same parenting style (e.g., García Coll et al., 1995; Jambunathan, Burts, & Pierce, 2000). Despite different expectations and perspectives on parenting, studies of traditional behavioral parent training in ethnic minority groups do indicate that benefit is conferred from these programs in the home environment (e.g., Arnold et al., 2003; Capage, Bennet, & McNeil, 2001; Reid, Webster-Stratton, & Beauchaine, 2002). For example, in the MTA study, Arnold and colleagues (2003) reported more improvement for African American children in the behavioral component than those in the community care arm of the study. Therefore, parent training programs show promise in addressing the needs of ethnic families and shouldn't be discarded; however, more research needs to be devoted to better understanding the needs of ethnic minority families, and in developing culturally-sensitive parenting programs that are highly acceptable and congruent with the cultural values, attitudes and parenting practices of these families.

Finally, other participant characteristics and treatment processes may also play a role. For example, low socioeconomic status has been shown to contribute to poor compliance with and outcome following parent training for noncompliant children (McMahon et al., 1981). This may be another important variable to examine in future studies employing larger sample sizes. Families within the current study were all lower-to-upper middle class based on income, and no clear differences between treatment responders and treatment non-responders were observed on this variable.

Other variables that may play a role include single parent status, parental work schedules, parental psychopathology, and other current familial stressors which affect the ability of the parent and adolescent to adequately devote time and attention to modifying the homework routine and habits at home. In the current study, no clearly discernable

differences were noted between treatment responders and treatment non-responders on these variables. 2 of 3 treatment non-responders had at least 2 siblings in the home, while 2 of 8 treatment responders had at least 2 siblings in the home. 1 of 3 treatment non-responders lived within single-parent households, compared to 2 of 8 treatment responders. 8 of 8 treatment non-responders had mothers who were employed, compared to 6 of 8 treatment responders. These data indicate that treatment non-responders had mothers who were employed, and had either at least 2 siblings in the home or lived in a single parent home. It is possible that these factors may contribute to decreased treatment effectiveness and should be examined in future studies with larger sample sizes.

Secondary Aim: Did the HIP Improve the Overall Academic Progress of Middle School Students with ADHD?

Results showed evidence of overall academic progress on the measures that were most highly related to the goals of the homework intervention program. However, using De Los Reyes and Kazdin's theoretical and methodological framework for conceptualizing change in behavior within intervention research (2006), there appears to be variability and inconsistency of change in academic progress when examining multiple indicators. Overall, indicators ranged from showing negligible change (i.e., parent and teacher-report CIRS and teacher grade book data) to showing small, consistent changes (i.e., GPA), to showing large, visually observable changes (i.e., teacher-report APRS). This wide range of possible changes indicates limited evidence for overall change in academic progress according to this framework. Examination of change on each individual measure follows.

Objective data indicated a small improvement in GPA from the grade quarter prior to starting treatment to the grade quarter during treatment in 7 of the 8 participants

for which school data were available (with no change in the last participant who had a GPA of 3.85 prior to treatment). Change on this measure is particularly striking given that research from studies of middle school students with ADHD suggests that grades and parental ratings of academic progress decline steadily over the course of the school year in the majority of these students (Evans et al., 2006, Langberg et al., 2006). Furthermore, given that many students started the HIP in the middle or later part of the grade quarter during which post-treatment GPA was measured, changes in GPA are likely a conservative estimate of the potential for change in academic progress for many of these students.

In addition, teacher-reported academic productivity on the APRS indicated improvement in 7 of the 10 participants for which data were available, and teachers tended to agree with one another regarding whether or not a given adolescent improved. This is surprising given that teacher inter-rater agreement regarding the symptoms of middle school students with ADHD is typically very low (Evans, Allen, Moore, & Strauss, 2005; Molina, Pelham, Blumenthal, & Galiszewski, 1998). However, no research to date has examined teacher inter-rater agreement in children or adolescents with ADHD on academic indices, such as work productivity and quality. Since teachers are trained in assessing work output and quality, they may be relatively more accurate at identifying change in this area, compared to identifying change in the ADHD symptoms of an individual student.

However, on some measures, results were not consistent with overall academic progress. Objective data collected from teacher grade books indicated improvement of at least 10% in test and quiz grades for only 2 of the 7 participants for whom data were

available. Numerous skills are required to achieve good test and quiz grades, including effective note-taking skills during class and study skills before the test, neither of which were targeted during the HIP. Increasing the amount of time spent completing homework alone may not have a large effect on test and quiz grades. The small but consistent changes observed in GPA and teacher-ratings of academic productivity across students may be a result of improvement in homework performance/scores, whereas other related variables such as quizzes, grades and classwork performance may not have shown significant change in the majority of participants.

Finally, there were no consistent trends observed on the parent or teacher CIRS item assessing global academic progress. Teachers and parents perceived some participants as improving, others as deteriorating and some as showing no change on this measure. There was also considerable disagreement between parents and teachers, and from teacher to teacher on the CIRS. This high level of disagreement may reflect the inherent difficulty involved in making a global rating of a student's academic progress, which is composed of numerous factors including classroom attention and behavior, test and quiz grades, and classwork, homework and project completion and performance (Raggi, Evans, Hackethorn, & Thompson, 2003). It is also possible that increased homework completion does not necessarily translate into the parental or teacher perspective that there are few problems and/or that the adolescent does not need treatment within the domain of academic progress. Despite improved homework completion, the fact that parents and teachers still endorse the need for treatment may reflect the chronic, pervasive and persistent nature of the disorder itself, as well as the conclusion that continued, multimodal treatment approaches which integrate a number of

evidence-based intervention techniques over the long-term are most likely to improve overall impairment. Changes in functional impairment based on a brief intervention targeting a specific variable may not be feasible. Moreover, considering that many adolescents within the current study presented with comorbid psychopathology including diagnoses of a learning disability, depression or oppositional defiant disorder, and that all of these conditions have a large influence on global impairment, change in overall impairment as a result of improved homework completion and study time may not be likely. Therefore, further research is necessary with larger sample sizes to assess the presence of overall impairment-related changes in adolescents with ADHD as a result of brief interventions such as the HIP.

Interestingly, two of the participants identified as treatment non-responders based on no positive change observed on the parent-report HPC (i.e., Alex and Matthew), showed improvements in GPA, and one treatment non-responder (i.e., Matthew) also demonstrated improvement on the teacher-reported APRS. As mentioned previously, Alex also showed improvement on objective data of homework/classwork grades and positive change on daily homework logs. It is possible that despite no change in parent report of homework problems, some positive changes in academic progress were made in these students that were classified as treatment non-responders based on HPC scores. However, there are other possible explanations for positive change on objective measures and teacher-report for these youth. Alex started tutoring after post-treatment, which may be partially responsible for an improvement in GPA at the end of the grade quarter. Lack of parent-reported progress could be related to negative parental cognitions regarding treatment or their child, or a lack of awareness of subtle change over time. Alternatively,

it is also possible that teachers rated adolescents in our study higher at post-treatment and gave them higher grades in the subsequent grade quarter as a result of knowledge that they were participating in treatment. In the current study, teachers were not blind to intervention condition since all students received the treatment and teachers participated in the parent/teacher consultation session. This could have biased teachers' responses on rating scales and their scoring of students' homework, tests, quizzes, etc.

Secondary Aim: Did the HIP Improve ADHD Symptoms of Inattention and Hyperactivity and Ratings of Impairment?

Results suggest that parent-rated symptoms of inattention were improved during the treatment phase as compared to the baseline phase in 7 of the 11 participants. More specifically, visually observable changes in mean and slope, a short latency of change, and few overlapping data points between baseline and treatment conditions indicated improvement in symptoms of inattention for these 7 participants according to the parent-report DBD. This is striking considering that participants were not asked to complete this measure based solely on behavior during homework time, but rather, based on general behavior over the past week. Since numerous factors affect an adolescent's behavior and symptoms of attention, small changes were expected as a result of changes to the homework routine. Nevertheless, parents reported visually observable improvement over time in 7 participants, suggesting that the HIP Program may have an effect on overall behavior and symptoms in the home setting. Further, all 7 of these participants were considered treatment responders according to parent-report on the HPC.

In contrast, few consistent trends were observed when examining parent-rated symptoms of hyperactivity/impulsivity, with only 3 of 11 participants showing changes in slope and mean indicative of improvement. The lack of change on this measure is likely

partially related to the low levels of hyperactivity present at baseline in the majority of this participant sample, given that 8 of the 11 participants were diagnosed with ADHD, Predominantly Inattentive Subtype, during the assessment and therefore did not display clinical levels of hyperactive/impulsive symptoms. Two of these participants had no reported symptoms of hyperactivity/impulsivity at baseline.

In contrast to parent-rated symptoms of ADHD, no consistent trends or changes in ADHD symptoms were observed in the classroom for the majority of participants according to the teacher-report DBD. This pattern of change is consistent with what De Los Reyes and Kazdin (2006) describe as informant-specific evidence for change. As the behavioral techniques utilized in this study were primarily implemented within the home setting, it makes sense that parents as opposed to teachers would be more likely to observe changes in the overt behavior and symptoms of their adolescent. Indeed, research on behavioral interventions for ADHD as well as other disorders indicate that the effects on behavior are typically observed within the setting that the techniques are implemented, and do not often generalize outside of that context (Chronis, Jones, & Raggi, 2006; Pelham, Wheeler, & Chronis, 1998).

Interestingly, findings on the teacher-report academic productivity subscale of the APRS found definite trends of improvement in the majority of participants and significant agreement across teachers. One possible explanation for this discrepancy is that teachers are noticing improved academic productivity due to increased rates of homework completion (i.e., as a result of techniques used in the home setting to better manage the homework routine and increase organization), but are not observing overt changes in ADHD symptoms in the classroom given minimal changes in routine and

structure within the school environment. While there was a school consultation session as part of the HIP Program in which informal accommodations were suggested for use within the classroom (e.g., peer aid in writing assignments down and packing the bookbag, additional prompting and checks by teachers to write down assignments, and frequent parent-teacher communication about assignments), these simple techniques may improve homework completion without directly affecting overall attention and hyperactivity within the classroom. No additional behavioral reinforcement or consequence system was added to the classroom setting that directly targeted variables such as attention or hyperactivity. Finally, teachers showed little to no agreement with each other when rating a specific student's symptoms of ADHD. This is consistent with previous studies indicating very low levels of inter-rater agreement between teachers on the ADHD symptoms of adolescents (Evans, Allen, Moore, & Strauss, 2005; Molina, Pelham, Blumenthal, & Galiszewski, 1998), and suggests that adolescents' presentation of ADHD symptoms may vary widely across contexts or classrooms and may depend upon the behavior management system in place within that context. In summary, DBD data suggest that the HIP program had a positive influence on symptoms of parent-reported inattention in the home setting for the majority of participants, but this positive effect did not generalize to the classroom setting as perceived by teachers.

Finally, as mentioned previously, no consistent trends were observed for the majority of participants in either overall impairment or impairment related to academic progress as reported by parents and teachers on the Children's Impairment Rating Scale (IRS). One possibility for the lack of reported change on impairment ratings is that a brief, targeted intervention designed to affect change in homework completion and

accuracy may not have the power to influence global changes in impairment. Moreover, considering that many adolescents within the current study presented with comorbid psychopathology including diagnosis of a learning disability, depression or oppositional defiant disorder, and that all of these conditions have a large influence on global impairment, change in this domain as a result of improved homework completion and study time may not be likely. In addition, the format of the IRS involves marking an X on a continuum that defines a multi-faceted concept which may be difficult for parents and teachers to assess given the myriad of behaviors involved in an assessment of global impairment (Fabiano et al., 2006; Raggi, Evans, Hackethorn, & Thompson, 2003). Moreover, anchor points on this scale assess the severity of the problem and need for treatment simultaneously, which may be confusing to parents and teacher given that these are two separable, albeit related factors (Fabiano et al., 2006).

Secondary Aim: Did the HIP Improve the Parent-Adolescent Relationship and Reduce Parenting Stress?

The HIP showed no consistent trends or evidence of change in reducing the stress associated with parenting or improving the overall parent-child relationship, according to both the parent-rated Parenting Stress Index and parent- and adolescent-rated Conflict Behavior Questionnaire. In fact, a spike in parental stress on a week during treatment was observed on a number of graphs on the PSI. A number of plausible explanations may exist for the results found. One possibility is that since the HIP Program involved parents taking on added responsibility for structuring and monitoring their adolescent's homework routine, parents may have felt additional stress or burden as a result of this approach. Parents with adolescents often take a more hands-off approach when it comes to homework, allowing the adolescent to take increasing responsibility for academic

demands. However, for adolescents with ADHD who experience difficulties regulating their own behavior, a lack of structure within the home and school may be detrimental to their academic progress. Nevertheless, future studies in this area may benefit from working towards achieving a greater balance between parental and adolescent responsibility during treatment. One possible method for achieving this may be incorporation of a self-monitoring approach that holds the adolescent accountable for tracking his own behavior during the homework routine after a significant period of training and monitoring (Gureasko-Moore, DuPaul & White, 2007).

Another possibility for the lack of effect observed on parenting stress and parent/adolescent relationship measures may be that the instruments used were not specific to the behavior and interactions that occur within the context of homework time. A broad range of variables have an effect on the overall relationship and stress between parent and adolescent, only one of which was targeted during the current intervention (i.e., homework). This may also explain the significant variability in scores on the CBQ from week to week during both baseline and treatment conditions. Weekly incidents and behavior (e.g., suspensions from school, calls home from teachers regarding disruptive behavior, completion of chores, respectfulness in the home setting, etc.) may have a larger effect on CBQ and PSI ratings than behavior and conflict during the homework routine alone.

Finally, the CBQ, unlike the PSI, utilized a yes/no format, and as a result may have been a less effective choice for measuring subtle change in this domain. For example, the first statement on this measure is “My child is easy to get along with”. This allows the parent to endorse either “no, my child is not easy to get along with” or “yes,

my child is easy to get along with”. No intermediate options are available that allow the parent to endorse improvement in their adolescent who is “sometimes” or “more often” easy to get along with compared to the previous week. This black or white definition of change may have been confusing to parents and adolescents and may have created obstacles to accurate reporting of week to week changes. Previous psychometric reports indicate low test-retest reliability of this measure, indicating significant variability in parent-adolescent report of conflict over time. Therefore, the CBQ may not be effective in adequately assessing parent-adolescent conflict over time, or alternatively, it may indicate that parent-adolescent relationships are highly volatile and fluctuate considerably on a regular basis. Either of these explanations may explain the large amount of variability from week to week that was observed on this measure in the majority of participants in the current study. If parent-adolescent relationships are continually in flux, observing consistent trends in the overall parent/adolescent relationship may require much longer and more intensive intervention than a brief, five week homework program can provide. Future studies would benefit from use of a measure of the parent/adolescent relationship that has greater test-retest reliability, as well as one which offers questions related specifically to stress and interactions within the context of the homework routine in the evening. We are currently unaware of any well-validated measures of the adolescent/parent relationship that are specific to conflict surrounding academic issues. Therefore, a first step may be the development of adequate measures in this area.

Secondary Aim: Were Parents and Adolescents Satisfied with the HIP and Specific Intervention Techniques Utilized during the Program?

Results of this study suggest high levels of satisfaction and acceptability among both parents and adolescents. This finding is particularly important as parents and

adolescents are the key individuals implementing the HIP in the home setting; low levels of acceptability and satisfaction could lead to lower treatment adherence or implementation of techniques. The highest levels of satisfaction were reported for the second session, which involved establishing a homework routine and associated privilege/reward system. Parental satisfaction was slightly higher on average than adolescent satisfaction. As parents are most often the ones who initiate treatment for their child or adolescent, this may reflect the lesser interest of adolescents in participating in treatment in general. Nevertheless, on average adolescents indicated agreement with statements that indicated positive perceptions of the intervention.

One factor which may influence adolescent satisfaction and engagement is the level at which they are involved in treatment planning and implementation. Within the current study, challenges were present in implementing a treatment which heavily involves parents, while also successfully engaging the adolescent in the treatment planning and decision making process. This treatment adapts a parent training approach for use with an adolescent population; in other words, parents were asked to provide increased monitoring, prompts and contingencies during the homework routine. Adolescents collaborated with parents in creating the homework routine, reinforcement/privilege system, and organizational goals and contingencies, but it was the parent that was ultimately responsible for monitoring and enforcing these routines in the home setting.

This parent training approach is in contrast to a self-monitoring approach in which the adolescent would be trained in self-monitoring his or her own behavior, evaluating his behavior relative to an objective standard, and rewarding his own behavior contingent on

that behavior reaching a specific goal (Gureasko-Moore, DuPaul & White, 2006; Gureasko-Moore, DuPaul & White, 2007; Shapiro & Cole, 1994). Training in self-management typically involves initial instruction and monitoring, fading procedures, and a maintenance phase. These phases involve daily interaction with the teacher or experimenter to help the adolescent learn how to effectively track and monitor his or her daily performance. Preliminary research suggests that self monitoring as taught by an experimenter and conducted in the school setting may be effective for adolescents with ADHD (Gureasko-Moore, DuPaul & White, 2007). These techniques may serve to better engage adolescents in treatment, and may be more acceptable to parents who want to provide their adolescent with increasing levels of independence and responsibility. One parental concern voiced during the current study was that their support or involvement may serve as a “crutch” for their adolescent, preventing their adolescent from taking responsibility in learning ways to manage their own disorder. Therefore, a balance between parental involvement and adolescent responsibility is likely the most appropriate combination for intervention during this critical and sensitive developmental stage. While the HIP Program involved the adolescent in treatment planning and decision making, it may be of benefit to add a self-monitoring component in which the adolescent is taught to monitor his or her own performance, first with daily checks by parents, then tapering to irregular checks, followed by none (Gureasko-Moore, DuPaul & White, 2007). The integration of these techniques into the HIP may bolster the already high levels of satisfaction endorsed by adolescents within this study. A self-monitoring approach has never been tested as implemented by parents and adolescents in the home setting. If used within the HIP, it likely would require an increased number of sessions designed to

incorporate teaching the adolescent self-monitoring techniques, while simultaneously instructing the parent in how to supervise this process and transfer increasing control to the adolescent over time.

Limitations and Suggestions for Future Research

The current pilot study suggests that a brief, individualized behavioral intervention designed to address the specific developmental needs of middle school students with ADHD is beneficial in improving homework-related problems and inattentive symptoms according to parent report and academic productivity according to teacher report, as well as resulting in small positive changes in overall grades. This intervention demonstrated high levels of acceptability and satisfaction as perceived by both parents and adolescents. Intervention techniques were effectively implemented by parents and adolescents within the home setting, demonstrating real-world clinical utility and feasibility for use in this setting. This single-subject design has also generated hypotheses to test in future studies; for example, questions related to the order, structure and format of treatment sessions, the incorporation of teacher involvement, and what participant characteristics and treatment processes are likely to affect treatment outcome. This pilot study should be followed with well-controlled, group-design studies which utilize large sample sizes to provide confirmatory evidence of the effectiveness of this brief, behavioral homework intervention for use with middle school students with ADHD.

In addition to the need to follow this study with larger studies of between-group effects, another limitation of the current study may be that parents, adolescents, and teachers were not blind to receipt of the intervention. It is possible that parent- and teacher-reported improvement could be related to knowledge that the adolescent was receiving an intervention thought to be helpful, rather than actual objective improvement. Although this is a possibility, the use of objective, functional outcomes such as teacher

grade book data and GPA help to rule out this possibility, as these critically important outcomes are likely less influenced by parent and teacher perceptions (Weisz, 2004). While participant blinding was not possible in the current study given that all participants enrolled received the same intervention and there was significant parent and teacher involvement in implementing intervention components, future studies using randomized group designs may reduce the impact of this confounding variable through comparison of the HIP to other related interventions that do not directly target homework. This can better determine if the homework intervention program has specific efficacy in improving the main outcome variable of interest compared to other programs. In addition, other group comparisons examining relative efficacy compared to treatment as usual, no treatment control groups, and active treatments targeting the same variable will be important (Chambless & Hollon, 1998).

Further, large scale studies are needed to identify specific moderators and mediators of treatment outcome. The single case design approach used in this study allowed for an assessment of individual differences in outcome and the generation of hypotheses. In the current pilot study, the presence of a learning disability in the adolescent and parental adherence to treatment techniques appeared to be related to treatment outcome. Other participant characteristics that may influence treatment outcome include factors such as participant ethnicity, socioeconomic status, single parent status, presence of a comorbid psychological disorder in the adolescent or parent, use of stimulant medication, and level of cognitive functioning. Mediators of interest may include parental cognitions related to treatment techniques taught, rapport or therapeutic alliance with the therapist, and adherence to the use of treatment techniques. Moderators

and mediators are critically important to identify so that intervention techniques can be subsequently modified to effectively address these issues.

Due to the small sample size of this study, we also have limited ability to generalize regarding the effects of this intervention to the middle school population with ADHD. While this study was racially and ethnically diverse, the small sample size limits any definitive conclusions that can be drawn due to differences or similarities in response across these variables. Furthermore, the majority of adolescents in the current study were male, attended private school, used stimulant medication, and were diagnosed as ADHD, Predominantly Inattentive Subtype. Families were primarily lower middle class to upper middle class. Research utilizing large, heterogeneous samples is necessary to test hypotheses regarding the generalizability of these results to the broad population of middle school students with ADHD.

Timeline and Format of Treatment

Other questions that need to be addressed in future research include the most effective format and ordering of sessions, material to be covered within sessions, and optimal number of sessions. This study made use of an individual format for sessions, which allowed for individualized goal setting, attention to individual family issues, concerns and questions, and individual adjustments in the timing and pacing of the presentation of material. In contrast, advantages to a group approach include the interaction, collaboration and support among group participants, and savings in cost and time efficiency. Habboushe and colleagues (2001) demonstrated effectiveness of a group format using a single subject design to address homework issues in an elementary school

sample of children with ADHD. Future research would benefit from further exploring the relative efficacy of both group and individual formats.

The order of sessions is also an important clinical and research question which can impact the relative efficacy of an intervention. In this study, development of a global homework management plan was implemented prior to teaching more specific time management, organizational and priority/goal setting skills. The rationale behind this choice was that an overall structure to the homework routine that involved a consistent privilege system was necessary before other specific techniques during the homework time could be effectively introduced. It was also hypothesized that working first with parents on developing a homework management plan would provide a strong foundation upon which to encourage teachers to participate in the process during the school-based consultation, given the amount of effort and time already invested by parents and adolescents in the home setting prior to the school session. However, there are also disadvantages to this approach, including having a shorter time period for teachers to implement school-based accommodations prior to post-treatment. These hypotheses need further testing through examining the relative efficacy of the HIP Program with various modifications to the order of sessions.

The number of total sessions may also need adjustment in order to achieve the greatest balance between offering a brief, targeted intervention while also maximizing treatment outcome. Clinical observations during treatment suggested that some parents had difficulty implementing new techniques each week in addition to maintaining previously taught skills. Since skills taught in this program are cumulative, these parents likely would benefit from additional practice both within-session and in the home setting

prior to learning a new technique. In addition, while teacher contact was meant to be limited given the specific focus on homework and the rationale to create a practical, real-world approach that is feasible for implementation in school settings by clinicians or school psychologists, increasing teacher involvement through multiple consultation sessions would likely improve teacher adherence to the use of informal accommodations in the classroom, and may help increase regular communication between parents and teachers. Therefore, the HIP may benefit from increasing the number of sessions to allow for additional practice, addressing parental concerns, increasing teacher contact, and problem solving obstacles experienced by parents, adolescents and teachers during implementation of treatment techniques. A follow-up or booster session may help parents to problem solve obstacles and maintain consistent implementation of the treatment techniques. Alternatively, a competence-based model could be utilized in which families do not progress to the next skill until they have mastered the current skill.

It is equally important to explore the effectiveness of specific material and techniques covered within each session. This intervention incorporated a number of approaches with demonstrated evidence of efficacy in addressing homework-related problems (e.g., goal setting, parent-teacher consultation, development of a structured homework routine, etc.). However, some of these techniques may be more or less efficacious than others when used with middle school students with ADHD. For example, the session on developing a homework management plan (HMP) received the highest level of satisfaction among both parents and adolescents. One future research question would be whether teaching time management and priority/goal setting or organizational skills confers additional benefit above that of the HMP alone. Group comparison of

various combinations of intervention strategies, as well as testing each technique as a stand alone treatment would help explicate the relative efficacy of each technique individually. Alternatively, certain approaches may be found more effective for adolescents with specific characteristics and presenting problems related to homework. A modular approach could be used in which a functional analysis determines which modules (e.g., time management, priority setting, homework routine, organization) are to be implemented for a given adolescent.

Addressing the developmental needs of adolescents is a complex and multi-faceted issue which may also involve a number of modifications to treatment. While the HIP attempted to engage and incorporate the adolescent into treatment sessions through collaboration and involvement in decision making and treatment planning, other aspects of this intervention may need continued development to maximize the sensitivity of this program to the needs of an adolescent population. For example, teaching the adolescent to self-monitor and track his own performance may further increase motivation and engagement in the HIP Program. This would require a greater emphasis on repeated modeling and practice of the use of these techniques both in and out of session, in order to further reinforce techniques and transfer additional responsibility to the adolescent. While teaching self monitoring skills would require additional sessions, this component may be an important developmental modification to treatment which would allow the parent and adolescent to feel increasing comfort with the balance of responsibility between them. Future research examining an expanded version of the HIP Program with self monitoring techniques integrated into treatment may be particularly beneficial. A self-monitoring model has been used in two previous studies with positive effects on

classroom preparation skills (Gureasko-Moore, DuPaul, & White, 2006; Gureasko-Moore, DuPaul, & White, 2007).

Collection of Parent Data and Adherence

Challenges were also experienced collecting multiple, repeated measurements from families. Each week, in addition to implementing treatment techniques, families were requested to complete a packet of measures (which took on average, approximately 20-minutes to complete). Compliance with measure completion was highest during treatment and lowest during the follow-up condition, after payment for attending sessions was received. Future studies would likely benefit from a booster session to provide continued support and encourage continued use of techniques, while also providing a forum for collection of follow-up data. Participants in the extended baseline phase also presented challenges in terms of data collection, and numerous phone calls were made each month to encourage participants to turn in measures. Nevertheless, 2 of the 4 extended baseline participants dropped out of the study, and the other 2 participants did not turn in measures monthly despite repeated phone contact. An extended baseline design may not be a feasible research design for families who are looking for treatment as soon as possible due to imminent clinical need, and whom do not wish to wait months before they are able to adequately address their adolescent's declining academic performance. This may be particularly true for low-income families whose parents are less well-educated which characterized a higher proportion of treatment drop-outs compared to treatment completers. It is likely that these families require active and consistent involvement from the beginning of their initiation of help-seeking behavior, and that preventing them from accessing services immediately may serve to decrease

their persistence and motivation in completing measures and waiting for these treatment services.

Finally, even when measures were collected, parents left open-ended questions blank frequently. This occurred primarily on the daily homework logs (DHLs), in which parents were responsible for marking how many assignments were written down, whether their adolescent brought home all necessary materials, if the binder was organized, the time spent on homework, if mandatory study time was completed, and if rewards were provided. It appeared that many parents would attempt to fill out these forms the day of each clinic session, making it difficult to remember details regarding the past week. Further, many parents would leave spaces blank. When prompted, parents would typically explain the reason for the blank space (e.g., we had karate practice and didn't have time to complete the mandatory study time, Johnny was sick, I got home late from work, etc.). These challenges reflect the reality of working with busy families; however, they created considerable obstacles for data analysis. Due to the significant amount of missing data from week to week on both the DHL and the HPQ, an analysis of incremental change over time was not feasible, and instead, means and standard deviations were examined pre and post-treatment on these measures. Moreover, the significant amount of missing data warrants extreme caution in the interpretation of results based on these particular data. Future studies would benefit from the ability to examine incremental change over time.

With the realization that parents were not giving all information necessary to understand and analyze data from the daily homework logs, a different measure was used to track these variables during the second and third cohorts of this study. This measure,

the HPQ, used a forced-choice answer format which was hypothesized to be easier for parents to complete. A specific question on the HPQ asked parents to choose from a number of options regarding what had happened on the days their adolescent did not complete the full study time. This measure improved completion rates although it is still unclear the extent to which parents tracked this information daily versus using retrospective recall at the end of a week. Future studies may benefit from bi-weekly reminder phone calls to enhance regular tracking and/or the use of internet technology to allow parents online access to all of their forms.

The HPQ itself was adapted from an unpublished measure and may need modification and testing to assess validity and reliability. Interestingly, on the HPQ most moms reported low levels of withholding reinforcements if students did not complete the MST. It is unclear whether this indicates that parents did not follow study procedures, or if reinforcements were not withheld on certain days because of reasons such as extracurricular activities, family outings, days off from school, or parents not being home to enforce the time. It is possible that if parents felt it was not the adolescent's fault that the MST was not completed, they may have chosen not to restrict reinforcement in this case. Further, it appears that some parents misinterpreted this item, recording 5 days of completing mandatory study time, while simultaneously checking "never" to the question, "Was reinforcement withheld on days when MST was not completed?" In this case, the double negative phrasing may have been misleading. If all 5 days of MST were completed, then parents should have checked "always" to the above question.

Finally, another issue related to parent and adolescent report was that ADHD symptom and impairment measures and parenting stress and parent/adolescent conflict

measures were not specific to the homework process itself. Future studies may benefit from an instruction to participants at the top of each form asking them to respond based on observations and behavior during the homework routine alone. This would help tease apart the specific effects of techniques to address homework problems on the homework routine, rather than on general changes in behavior within the home setting.

Collection of Teacher Data and Adherence

Another significant limitation of this study was the challenges present in data collection from schools and teachers. While teachers and principals often consented to participate in the study, the collection of measures was challenging, and often required frequent phone calls and visits to the school. Even given this approach, numerous teachers did not complete measures. One possible explanation may be that teachers are already over-burdened with responsibilities for their classes, and therefore, the completion of measures through a research study may not be considered a priority. In the current study, teachers were provided incentives of \$10 per packet of measures completed, with a total of \$30 if they turned in all three sets of measures. No incentive was provided for participating in the school-based consultation session or turning in teacher grade book data. Personal communication with Dr. Susan Parault, Ph.D., education professor, regarding typical rates of payment to teachers for completion of measures indicated that the above amounts were on the low end (S. Parault, March 2008). Therefore, these limitations may have provided significant restrictions on the motivation and follow through of many teachers. On the other hand, there may be disadvantages to the provision of significant teacher incentives. While encouraging increased teacher participation and adherence in research projects which require the collection of measures,

the provision of incentives in real-world clinical settings is likely not feasible and may even be counter-productive. The determination of techniques which increase teacher participation through practical means that can be implemented in real-world settings is necessary. This may include offering a free in-service training program on ADHD treatment for all participating teachers to increase teachers' rapport and connection with the research investigators. Integration of the program into the school setting, with sessions conducted at the school instead of the clinic, may be another method to increase the presence and collaboration of researchers with school staff. Teacher participation may also improve through offering other incentives, such as participation in a raffle for a larger prize or exemption from other duties such as cafeteria duty, if negotiated in advance with the principal. Minimizing the number of measures completed and the length of those measures would also likely improve compliance. Finally, determining an easier method in which to submit measures (e.g., by fax, email or a web-based program) may increase teacher completion.

Further, teacher participation appeared to vary based on the level of enthusiasm and engagement of the principal in the HIP Program. Schools which had principals who encouraged teacher participation and attended the school consultation also generally had greater teacher response and participation. In contrast, schools which had principals who signed consent forms and had no further involvement often had lower teacher participation. While during the current study, an attempt was made to contact the principal by phone to discuss the proposed intervention, not all principals were available to discuss by phone. Future research may benefit from exploring methods to increase the engagement of principals within the study, as well as the consistency with which these

individuals are contacted. The HIP may be most effective when implemented as a school-wide or school-based intervention that is promoted by the principal and conducted by school staff. This would be consistent with the current call for interventions that are not just efficacious but effective, practical and easily disseminated in practice settings (Weisz, 2004).

Additional difficulties were present during the collection of grade book data. In an effort to reduce teacher burden during the study, it was initially decided that teachers' grade books would be examined at the end of each grade quarter, rather than requesting that teachers complete a separate standardized form asking them to list for each assignment the date it was due, date received, student's score, and the type of assignment (e.g., homework, test, quiz, etc.). However, teachers were found to vary considerably in the format in which they tracked student scores within their grade books. For example, sometimes an assignment was listed but no score was given for the student, other times various symbols such as checks or stars were intermixed with numbered scores on homework, classwork, tests, quizzes and projects. Many teachers did not identify if the assignment fell into the category of homework, classwork, test, quiz or project. For example, "Planets p. 50 – 55, Questions 1-20" could likely be either classwork or homework. "Presidents Assignment" could be a project, classwork, or homework. Finally, some teachers did not indicate the date in which the assignment was turned in, leading to an inability to examine changes in performance immediately following the starting point of treatment for each participant; rather, scores were examined by grade quarter. This leads to a more conservative estimate of change given that successive grade quarters do not overlap exactly with the timeline of baseline and treatment conditions.

Further, because it was very difficult to tease apart the type of assignment in many cases, it became necessary to present means that combined classwork and homework scores, and means that combined test and quiz scores. This also led to a more conservative estimate of change because homework scores were unable to be effectively isolated. Future studies need to provide additional incentives to teachers and make use of standardized tracking forms that will significantly reduce obstacles to accurate and reliable data collection.

Another limitation related to school participation was that no measure of teacher adherence to the intervention was utilized, despite a number of informal accommodations being discussed during the school-based consultation session. Specific accommodations are discussed in detail in the treatment manual in Appendix B. It is therefore unclear how consistently teachers followed through with these suggestions and given their limited involvement of only one session, it is likely that many did not utilize these suggestions on a consistent basis. In a similar study examining a brief, one-session teacher in-service training, results found that while overall knowledge about ADHD increased, teachers' use of behavior modification techniques appeared to change for special education teachers only (Jones & Chronis-Tuscano, in press). This may be related to the increased expertise of special education teachers in applying these principles or the greater percentage of disruptive behavior present within their classrooms due to a higher ratio of students with diagnosable mental health disorders. In either case, it suggests that general education teachers may not apply these strategies consistently after only a one-session training, and additional contact may be necessary. In the current study, parents were encouraged to be advocates for their adolescent within the school and to follow-up

consistently with teachers to assess the consistency within which the agreed upon interventions were being utilized. While teaching and transferring the responsibility for advocacy to the parent may be particularly important during a brief intervention of this nature, modification to treatment which may include multiple school sessions, tracking teacher participation and their use of techniques through an adherence form, and follow-up phone consultation may be additional components that will add to overall treatment efficacy. This may bolster overall treatment effects through increasing teacher involvement and consistent application of strategies within the classroom. However, given challenges obtaining the current level of teacher involvement and measure completion, additional incentives would be critical in order to ensure the successful application of these modifications.

In addition to assessing their adherence to techniques, collecting information on the extent of their overall satisfaction with the parent-teacher consultation session would be important information in helping to determine modifications to the treatment approach in future tests of the intervention. Increasing teacher satisfaction levels would also likely increase compliance with completion of measures. Adding satisfaction and adherence measures to the protocol would likely require additional incentives to ensure successful collection of data and follow-through. While the teacher component of this intervention was meant to be limited given the brief nature of this targeted intervention, determining ways to improve the compliance and satisfaction of teachers is critical to ensuring maximum treatment effects in the domain of homework. Given teachers' already busy schedules, creative brainstorming and focus group research may be necessary to examine methods which will encourage active teacher involvement in the intervention.

Limitations of Baseline Condition

A number of limitations were present related to the collection of baseline measurements during the study. Due to delayed IRB approval, one main limitation was that an extended baseline could not be utilized during the first year of the study, as all participants were assessed in the winter, and only one cohort was run during the spring that year. During the second year, assessments were conducted in September and half of the participants were assigned to the extended baseline phase. However, four of these participants dropped out of the study during the extended baseline phase, whereas none of the participants assigned to the short baseline phase dropped out. Therefore, new participants were assessed in November and February to replace the participants that dropped out, therefore, limiting the length of the extended baseline phase in these new participants. As a result of these issues, treatment was therefore staggered primarily within each cohort (i.e., fall or spring). The extended baseline phase would have allowed for longer baseline phases prior to treatment and a comparison of participants across fall and spring if it had been implemented successfully.

Furthermore, due to the necessity of completing baseline, treatment and follow-up conditions before the end of the middle school semester (i.e., before Christmas and summer breaks when no homework is given), limitations were also present on the number of baseline time points that could be administered, while also successfully staggering the start date of treatment across participants and completing the three phases within the school semester. Ideally, baseline measures would be collected weekly until stability of baseline is irrefutable. However, this was not feasible in many cases due to the above-mentioned time constraints. Baseline measures were administered for a minimum of 3

weeks and a maximum of 5 weeks. Despite this, for a few participants, small changes from week to week during baseline were present on the main outcome measure (i.e., the HPC) which may be indicative of a trend towards improvement during baseline, and therefore weaken the strength of conclusions made regarding intervention effectiveness. Nevertheless, on the HPC, only very small visual changes during baseline were observed compared to the typically large amount of change during treatment. This suggests that treatment effects are indeed present.

One possible explanation for the difficulty in achieving stable baselines and the small trend towards improvement during baseline for some participants could be that participating in the assessment and/or establishing a connection with the researcher served to instill hope that help was on the way and made the problems seem more manageable. Another possibility may be that filling out baseline measures led to a greater awareness and monitoring of the problem, or increased use of problem solving. Any of these mediating variables may have led to the small improvements being witnessed prior to the active treatment phase.

Finally, while the focus was on achieving stability of baseline on the HPC prior to initiation of treatment, it was not feasible to achieve stability of the baseline condition on all outcome measures prior to treatment, as many measures showed considerable variability during baseline. It would be close to impossible to coordinate stability on five different measures simultaneously. Therefore, this also creates potential difficulty during data analysis, as for many measures, the considerable variability during both baseline and treatment phases make the identification of trends or overall changes in these data challenging to discern.

Conclusion

In summary, results from this multiple-baseline, pilot study suggest that a brief, individualized behavioral intervention designed to address the specific developmental needs of middle school students with ADHD is beneficial in improving homework-related problems according to parent report, academic productivity according to teacher report, and resulting in small improvements in overall grades. Positive effects were also observed on parent-rated symptoms of inattention. Moreover, this intervention demonstrated high levels of acceptability and satisfaction as perceived by both parents and adolescents, and intervention techniques were effectively implemented by parents and adolescents within the home setting, demonstrating real-world clinical utility, acceptability and feasibility for use in this setting. This single-subject design has also generated hypotheses to test in future studies. For example, treatment outcome in the current study appeared to be related to the presence of a learning disability and to treatment adherence. Future studies should explore questions related to what moderators and mediators play a role in treatment outcome, the most efficient and effective order, structure and format of treatment sessions, methods to maximize teacher participation and adherence to the intervention, methods to improve the collection of data from parents and teachers, and the most useful combination of treatment outcome measures that effectively and practically assess variables of interest. Finally, this pilot study would benefit from being followed with well-controlled, group-design studies to provide further evidence of the effectiveness of this novel, behavioral homework intervention for use with middle school students with ADHD.

Table 1. Screening and Assessment Flow Chart

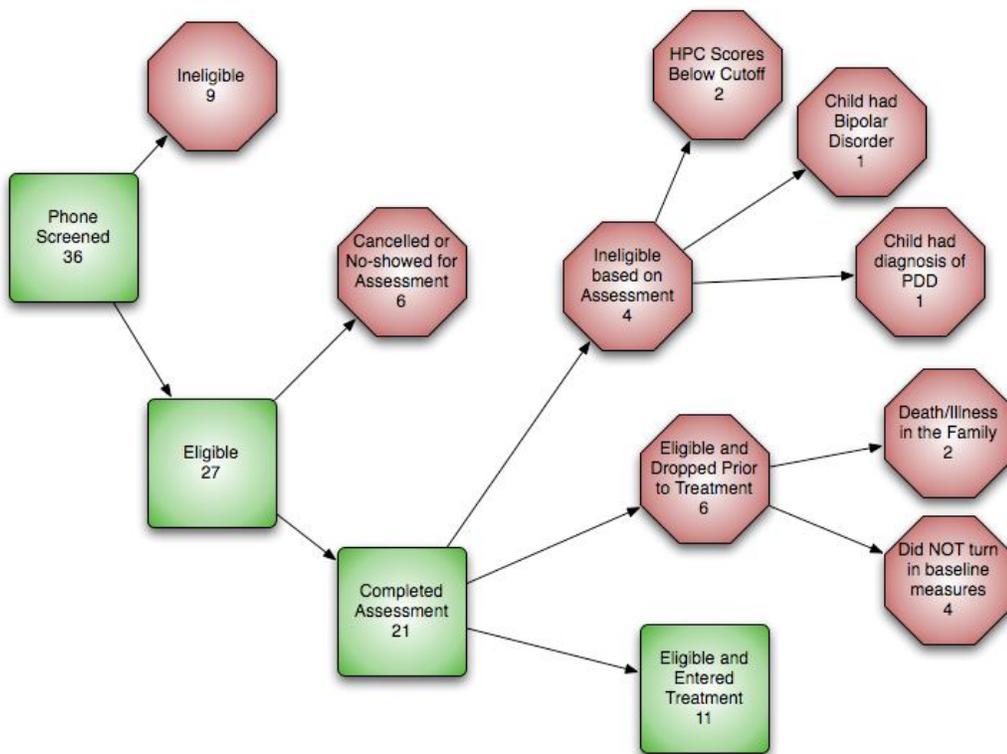


Table 2

Adolescent Participant Characteristics Table

Subject #	Matthew	Edgar	Emma	Jeffrey	Alex	James
Age	13	13	13	12	11	12
Grade	7	7	7	6	7	7
Gender	Male	Male	Female	Male	Male	Male
Ethnicity	African American	Hispanic	Biracial	Caucasian	African American	Caucasian
Education	Private	Private	Private	Private	Private	Public
ADHD Diagnosis	Inattentive subtype	Inattentive subtype	Inattentive subtype	Combined type	Inattentive subtype	Combined type
Other Diagnoses	Learning disability	Depression	none	none	Learning disability	none
Taking ADHD Med	no	yes	no	no	yes	yes
WISC Block Design	6(9)	7(16)	12(75)	13 (84)	10(50)	17(99)
WISC Vocabulary	11(63)	10(50)	14(91)	13 (84)	12(75)	15(95)
WIAT Word Reading	103 (58)	107 (68)	110 (75)	123 (94)	113 (81)	113 (81)
WIAT Spelling	104 (61)	101 (53)	111 (77)	125 (95)	113 (81)	NA
WIAT Num Operations	105 (63)	99 (47)	117 (87)	85 (16)	107 (68)	82(12)

Note. Data presented for the WISC and WIAT are standard scores with the percentile rank in parentheses.

Table 2

Adolescent Participant Characteristics Table continued

Subject #	Bob	Arthur	Myron	George	Tevonte
Age	11	12	11	12	12
Grade	6	7	5	7	7
Gender	Male	Male	Male	Male	Male
Ethnicity	Caucasian	Caucasian	African American	African American	African American
Education	Private	Private	Private	Public	Public
ADHD Diagnosis	Inattentive subtype	Inattentive subtype	Inattentive subtype	Combined type	Inattentive
Other Diagnoses	none	none	Learning disability	none	Oppositional Disorder
Taking ADHD Med	yes	yes	yes	yes	yes
WISC Block Design	13 (84)	11(63)	9 (37)	10(50)	8(25)
WISC Vocabulary	15 (95)	9 (37)	13 (84)	15(95)	6(9)
WIAT Word Reading	124 (95)	107 (68)	116 (86)	108(70)	106(30)
WIAT Spelling	110 (75)	107 (68)	99 (47)	110(75)	99(47)
WIAT Num Operations	127 (96)	97 (42)	89 (23)	119(90)	92(30)

Note. Data presented for the WISC and WIAT are standard scores with the percentile rank in parentheses.

Table 3

Maternal Characteristics Table

Subject #	Mathew	Edgar	Emma	Jeffrey	Alex	James
Maternal Age	53	47	42	41	43	48
Maternal Race	African American	Hispanic	Caucasian	Caucasian	African American	Caucasian
Maternal Highest Educati	Master's	HS Diploma	Bachelor's	Bachelor's	Bachelor's	Master's
Total Family Income	90,000	No information	185,000	90,000	No information	220,000
Marital Status	Divorced	Married	Married	Remarried	Married	Married
Maternal Employment	Yes	Yes	Yes	Yes	No	Yes
Children in Home	1	2	1	1	3	2

Subject #	Bob	Andrew	Myron	George	Tevonte
Maternal Age	46	49	40	38	44
Maternal Race	Caucasian	Caucasian	African American	African American	African American
Maternal Highest Educati	Bachelor's	Some College	Doctoral	Master's	Bachelor's
Total Family Income	110,000	192,000	190,000	250,000	40,000
Marital Status	Married	Married	Married	Married	Divorced
Maternal Employment	No	Yes	Yes	Yes	Yes
Children in Home	3	1	3	3	1

Table 4

Treatment Outcome Measures According to Frequency of Collection and Domain of Interest

Domain	Measures	Collection
ADHD Symptoms and Impairment	DBD Rating Scale for Teachers (Pelham, et al., 1992)	BL, P, F
	DBD Rating Scale for Parents (Pelham, et al., 1992)	Weekly
	Impairment Rating Scale for Teachers (Fabiano, et al., 2003)	BL, P, F
	Impairment Rating Scale for Parents (Fabiano, et al., 2003)	Weekly
Homework And Academic Performance	Academic Performance Rating Scale (DuPaul, et al., 1991)	BL, P, F
	Homework Problems Checklist (Anesko, et al., 1987)	Weekly
	Student Homework Questionnaire (Rhoades & Kratochwill, 1998)	BL, P, F
	Daily goal setting and homework log completed by parents	Daily
	Teacher grade book data (Classwork, homework and test/quiz scores)	BL, P
	Report cards	BL, P
Parent-Child Conflict	The Parenting Stress Index (Abidin, 1995)	Weekly
	Conflict Behavior Questionnaire for Parents and Adolescents (Robin & Foster, 1989)	Weekly
Treatment Satisfaction and Acceptability	Attendance and compliance with tx techniques	Weekly
	Behavior Intervention Rating Scale (Elliott & Von Brock Treuting, 1991)	BL, P
	Children's Intervention Rating Profile (Witt & Elliott, 1985)	BL, P

Note. BL = Baseline, P = Post-Treatment, F = Follow-Up

Table 5

Objective Data Collected from Schools Prior to Treatment and During Treatment for each Participant

Subject	Homework/Classwork Scores		Test/Quiz Scores		Grade Point Average	
	Pre-Treatment	During Treatment	Pre-Treatment	During Treatment	Pre-Treatment	During Treatment
Matthew	79.19%	84.22%	59.56%	69.14%	2.24	2.43
Edgar	45.81%	81.46%	51.15%	71.43%	1.91	2.86
Emma	84.52%	87.41%	84.34%	88.29%	3.39	3.44
Jeffrey	73.25%	77.45%	72.57%	70.64%	2.28	2.67
Alex	77.20%	80.24%	84.97%	78.49%	2.26	2.41
James	*	*	*	*	*	*
Bob	89.80%	85.00%	96.30%	97.50%	3.86	3.86
Arthur	*	*	*	*	1.29	1.71
Myron	*	*	*	*	*	*
George	52.53%	61.98%	65.28%	58.12%	1.67	1.83
Tevonte	*	*	*	*	*	*

Note. * indicates that no data was available

Table 6

*Means and Standard Deviations for Amount of Time in Minutes Spent on Homework
Before and After Instruction in the Use of Mandatory Study Time according to Daily Homework Logs*

Subject	<u>Pre Mandatory Study Time</u>		<u>Post Mandatory Study Time</u>	
	# of Days	Mean(StdDev)	# of Days	Mean(StdDev)
Matthew	10	144(78.86)	17	127.06(78.68)
Edgar	14	109.29(74.96)	26	98.85(56.01)
Emma	10	102(59.30)	15	162(100.94)
Jeffrey	11	56.82(34.55)	20	60(33.46)
Alex	15	194(111.01)	14	173.57(90.81)
James	14	13.06(14.02)	12	27.69(14.45)
Bob	12	39.59(23.72)	20	71.25(52.54)
Arthur	19	38.68(26.11)	22	93.95(50.23)
Myron	13	99.23(56.64)	15	101(56.45)
George	9	141.67(88.59)	15	160(93.66)
Tevonte	6	140.63(84.31)	4	84(35.05)

Note. # of Days = # of Days DHL Completed.

Table 7

Percent of Adolescents Reporting Yes to Questions on the SHQ at Pre-treatment, Post-treatment and Follow-up

Question on the SHQ	Pre-treatment N=7	Pre-treatment N=10	Post-treatment N=7	Post-treatment N=10	Follow-up N=7
Do you often have difficulty understanding your HW?	71%	70%	43%	30%	14%
Do you often need help from your parents when doing HW?	71%	70%	29%	30%	43%
Do you often have trouble paying attention during HW?	86%	90%	43%	60%	71%
Do you need a quiet place to do your HW?	57%	70%	57%	60%	43%
Do you think you try your hardest when doing HW?	86%	80%	86%	70%	100%
Are you happy with your current grades?	14%	30%	57%	50%	57%
Do you think HW helps you understand info learned in class?	29%	40%	29%	20%	43%
Do you think that HW helps you do better on tests?	57%	60%	43%	40%	57%

Note. This table includes pre- and post-treatment data for all 10 participants for whom data was available, followed by data for only the 7 participants who turned in follow-up data.

Table 8

Scores on the Disruptive Behavior Disorders Rating Scale by Subject and Teacher

Subject	Teacher	DBD Inattention			DBD Hyperactivity			DBD Total		
		Pre	Post	Follow-Up	Pre	Post	Follow-Up	Pre	Post	Follow-Up
Matthew	A	25	16	18	11	10	10	38	29	35
	B	20	10	18	14	7	13	41	19	37
	C	25	10	15	11	8	10	50	22	36
Edgar	A	16	7	10	4	4	5	23	13	20
	B	12	8	8	3	3	3	16	12	15
	C	13	8	7	3	4	3	22	15	20
Emma	A	16	*	8	1	*	0	21	*	11
	B	19	9	8	2	1	0	24	11	8
	C	12	9	7	4	1	1	18	11	10
Jeff	A	21	23	*	6	15	*	28	45	*
	B	24	25	*	12	13	*	41	40	*
	C	26	21	*	21	24	*	49	51	*
Alex	A	3	13	8	0	1	2	3	17	13
	C	14	12	19	1	1	1	18	13	23
	E	16	16	*	5	4	*	36	34	*

Note. Scores indicate the number of symptoms endorsed by teachers during pre-, post, and follow-up conditions. * indicate missing data.

Table 9

*Teacher Ratings of Impairment in Academic Progress
according to the Impairment Rating Scale (IRS)*

Subject	Teacher	<u>Impairment Rating</u>			Subject	Teacher	<u>Impairment Rating</u>		
		Baseline	Post	Follow-Up			Baseline	Post	Follow-Up
Matthew	A	6	4	6	Bob	A	4	4	*
	B	5	4	6		B	0	2	0
	C	6	5	4		C	*	0	1
Edgar	A	6	3	6	Arthur	D	4	6	4
	B	6	3	3		A	5	5	4
	C	6	4	5		B	*	*	*
Emma	A	6	*	2	Myron	A	*	6	5
	B	5	3	2		B	6	6	5
	C	4	3	3		C	*	6	4
Jeffrey	A	6	6	*	George	A	6	6	*
	B	5	5	*		B	5	*	*
	C	6	3	*		C	6	6	*
Alex	A	1	5	0	Tevonte	A	*	3	*
	C	6	5	1		B	*	*	*
	E	5	0	*		C	*	*	*

Note. Values range from 0 to 6, with 6 indicating an extreme problem and definite need for treatment and 0 indicating no problem and does not need treatment

Table 10

Teacher Ratings of Academic Productivity according to the Academic Performance Rating Scale

Subject	Teacher	Productivity Rating			Subject	Teacher	Productivity Rating		
		Baseline	Post	Follow-Up			Baseline	Post	Follow-Up
Matthew	A	37.5	40.5	39	Bob	A	42.55	45.6	*
	B	33	42	33		B	44	49.2	46.8
	C	37.2	40.8	40.8		C	50.67	49	*
Edgar	A	16	42.67	36	Arthur	D	34.67	45.6	42
	B	21	33	37.5		A	30.67	32.4	37.2
	C	32.4	39.6	39.6		B	31.2	*	*
Emma	A	42	*	51	Myron	A	32.4	38.4	32.4
	B	41	48	49		B	34	33.33	34.8
	C	48	48	46.8		C	28.5	33.6	30.67
Jeffrey	A	42	43.5	*	George	A	27	28.5	*
	B	40.8	43.2	*		B	30	*	*
	C	28	39	*		C	31.2	31.2	*
Alex	A	39.43	34.5	46.5	Tevonte	A	31.5	37.5	*
	C	31.5	42	37.2		B	*	*	*
	E	32.57	28	*		C	*	*	*

Note. Higher scores correspond with positive academic functioning. M(SD) refer to mean and standard deviation.

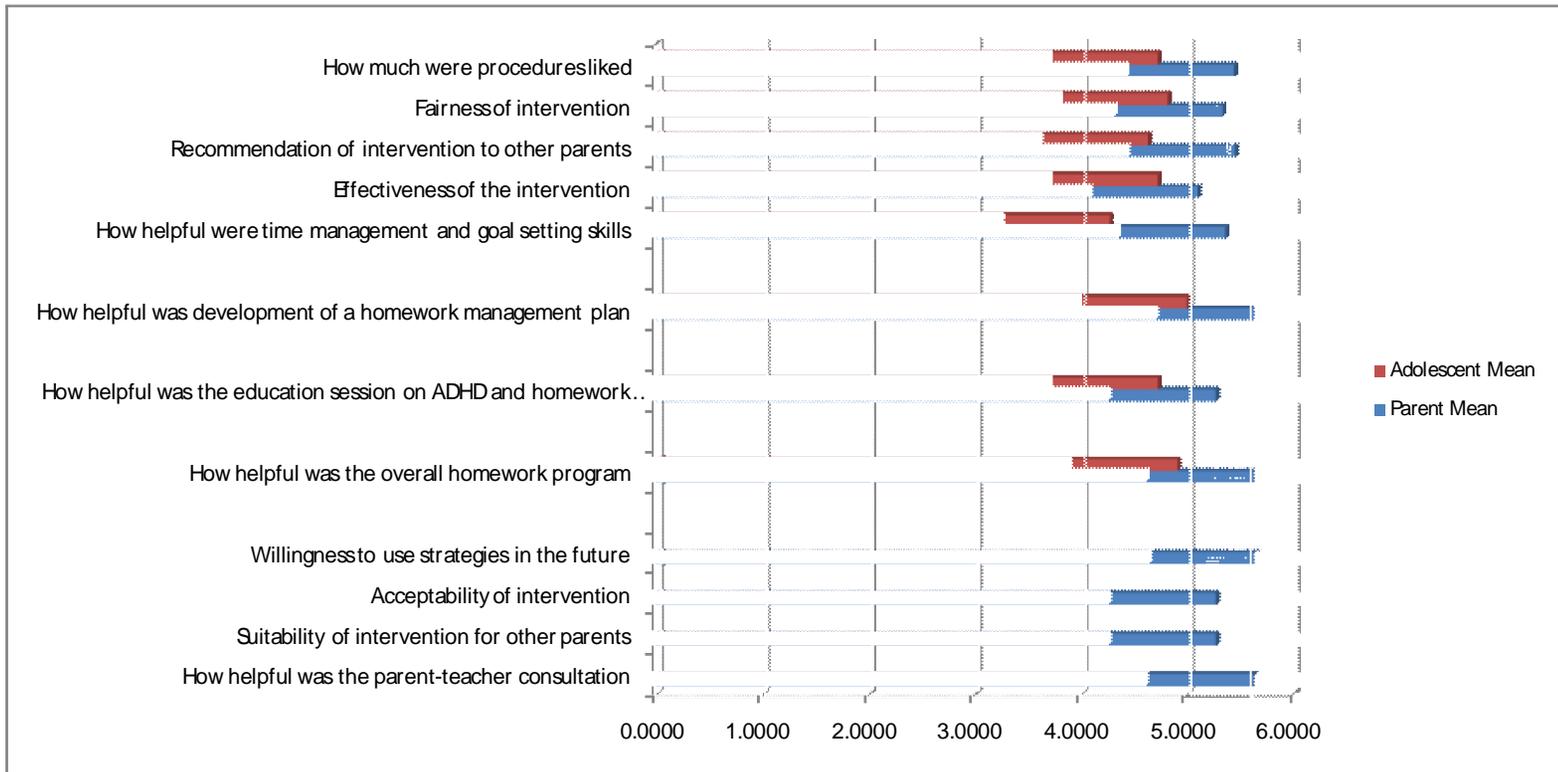
Table 11

Homework Process Questionnaire: Means and Standard Deviations

	Alex	James	Bob	Arthur	Myron	George	Tevonte
How many days of the week did the student complete MST?	2.33(2.52)	5(0)	4.2(.84)	4(0)	3.5(.71)	4(2)	3.67(.58)
On a scale of 1 to 7, how productive was student?	4.33(2.08)	5.5(.71)	5.4(.84)	5(0)	4.5(.71)	4.75(.82)	4.67(.58)
How often did student receive REF for completion of MST?	2.75(1.06)	6(0)	2.2(1.60)	3.5	2.75(1.77)	3.38(.95)	4(0)
How often was REF withheld when student did not complete MST?	5.17(1.44)	*	.50(.87)	.75(1.06)	1.75(.35)	3.88(1.65)	2.67(1.15)
How often was AN checked by parent and REF provided?	3.17(1.04)	5(1.41)	1.88(1.65)	6(0)	1	3.88(1.65)	2
How often was binder checked for organization and REF provided?	4(2)	5(1.41)	1.75(0.29)	6(0)	1	3.88(1.65)	0
How often were all necessary materials brought home?	4(2)	5(1.41)	3.75(0.29)	3.5(0)	6	3.75(1.66)	4(0)

Note. MST = Mandatory Study Time, REF = Reinforcement, AN = Assignment Notebook. Means represent data from after Session 2 through Follow-Up. * = no data available.

Table 12. Parent and Adolescent Satisfaction Survey Means



Note. Scores range from 0 (Strongly Disagree) to 6 (Strongly Agree)

Table 13. Timeline of Baseline, Treatment and Follow-Up Phases for Year 1 (Cohort 1)

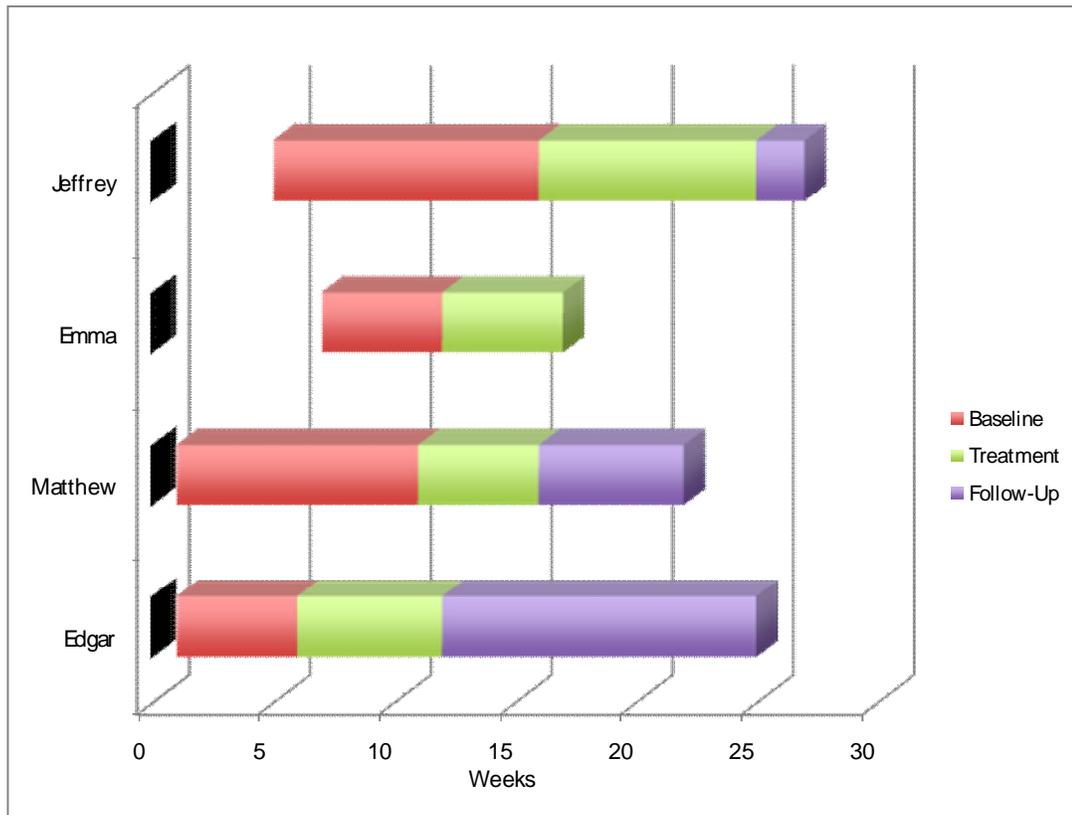


Table 14. Timeline of Baseline, Treatment and Follow-Up Phases for Year 2 (Cohort 2 and 3)

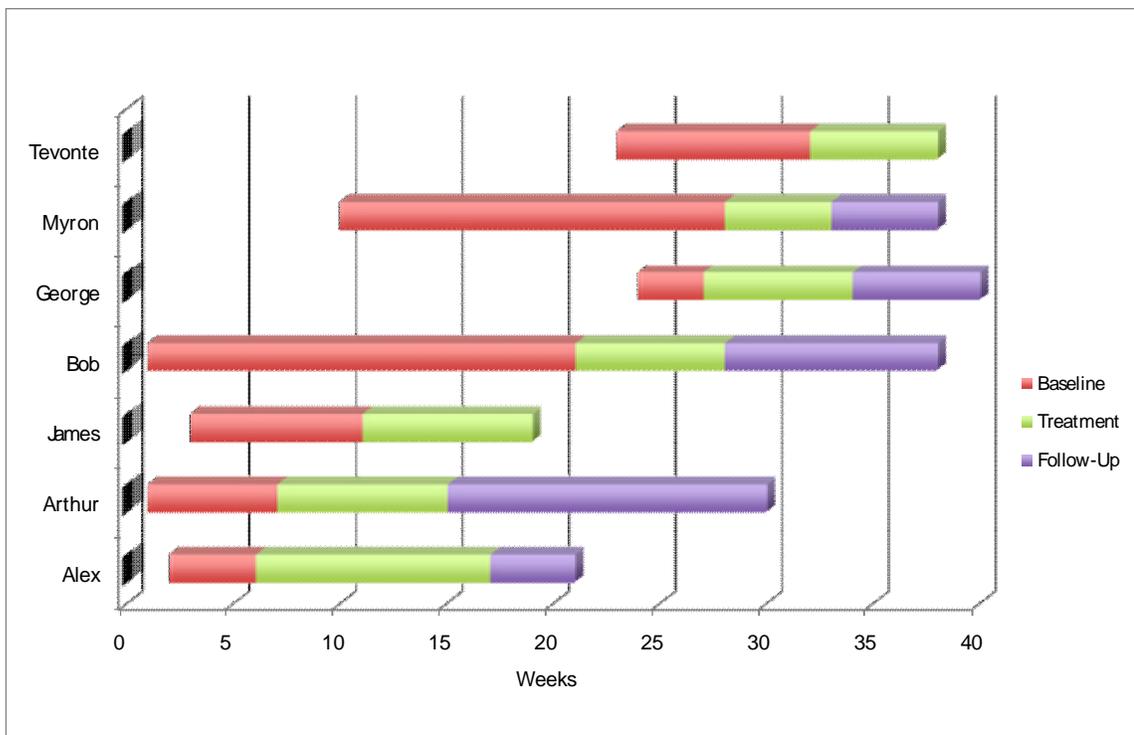


Figure 1. Homework Problems Checklist (HPC)

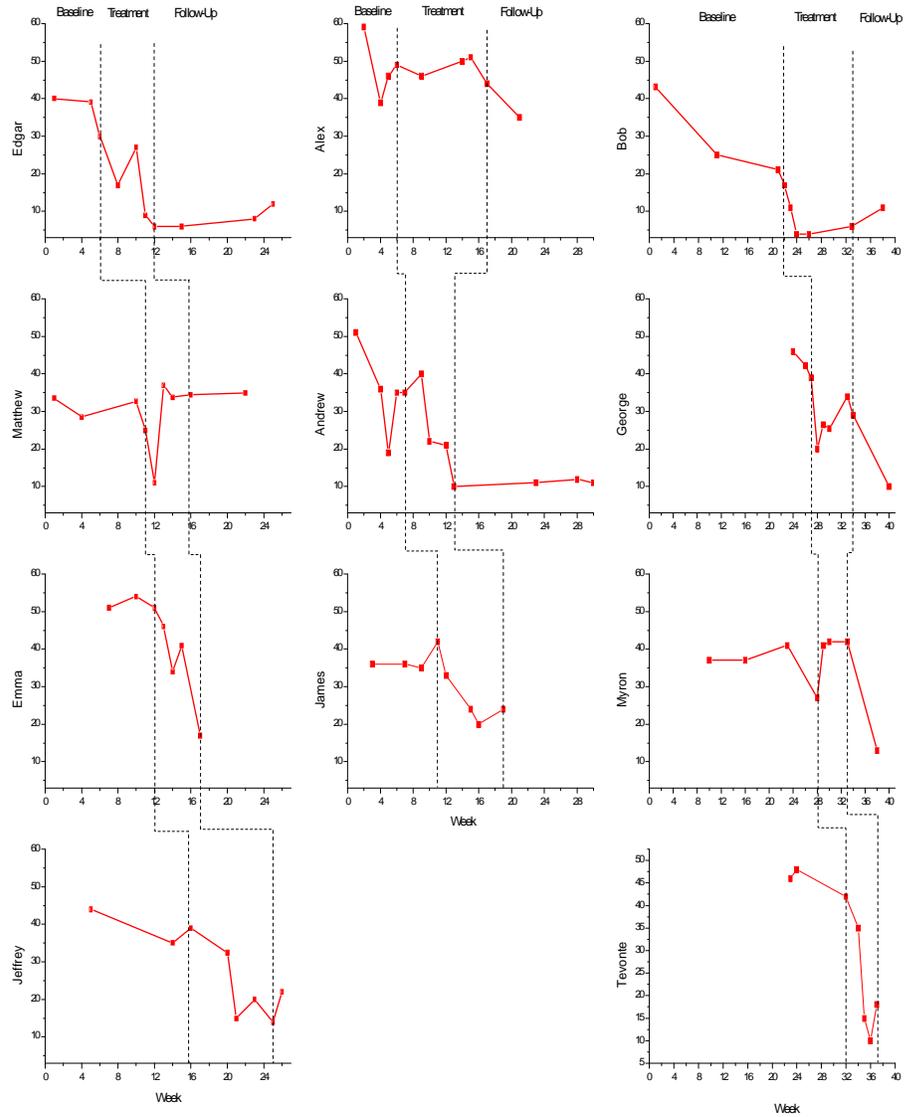


Figure 2. Parent-Report Disruptive Behavior Disorders Rating Scale (DBD)

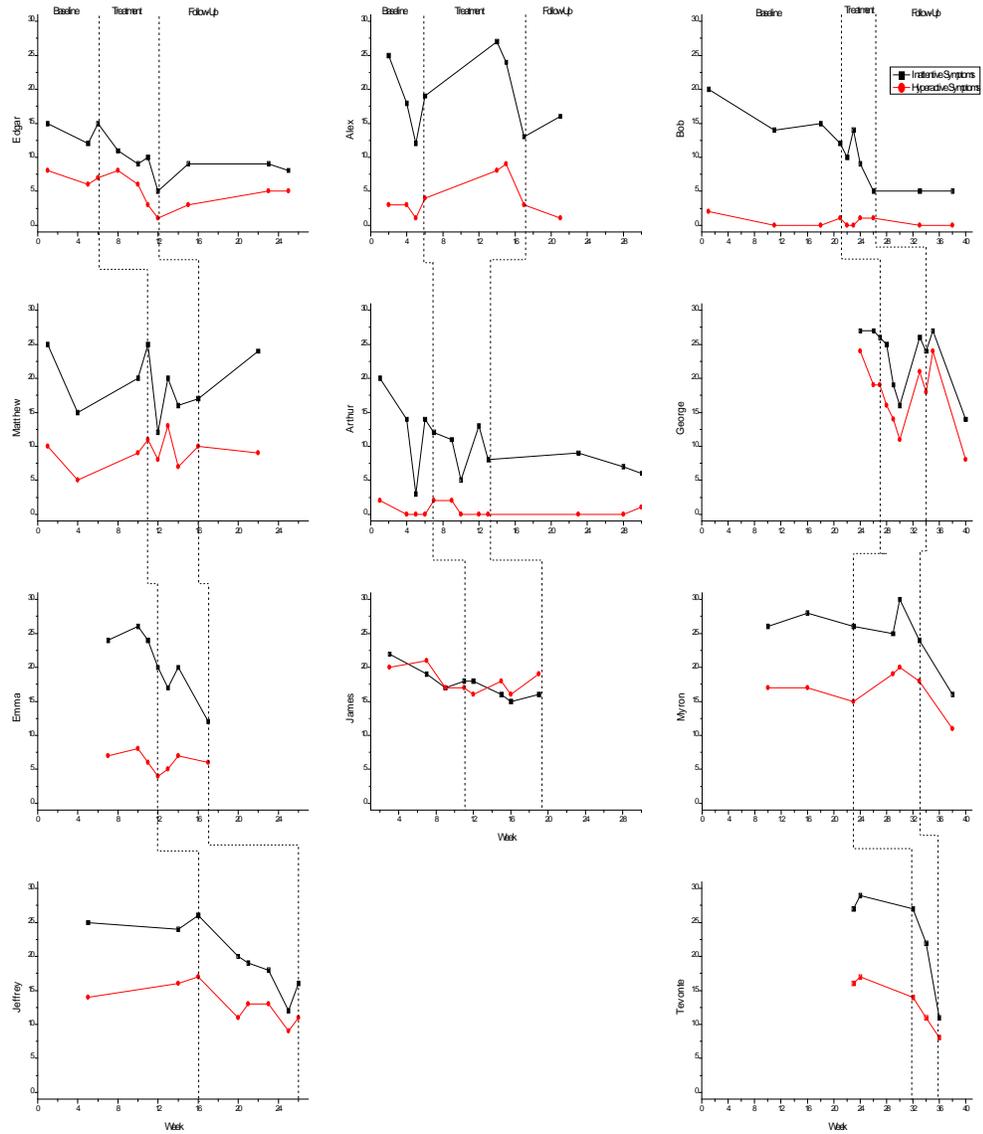


Figure 3. Parent-Report Children's Impairment Rating Scale, Overall Academic Progress

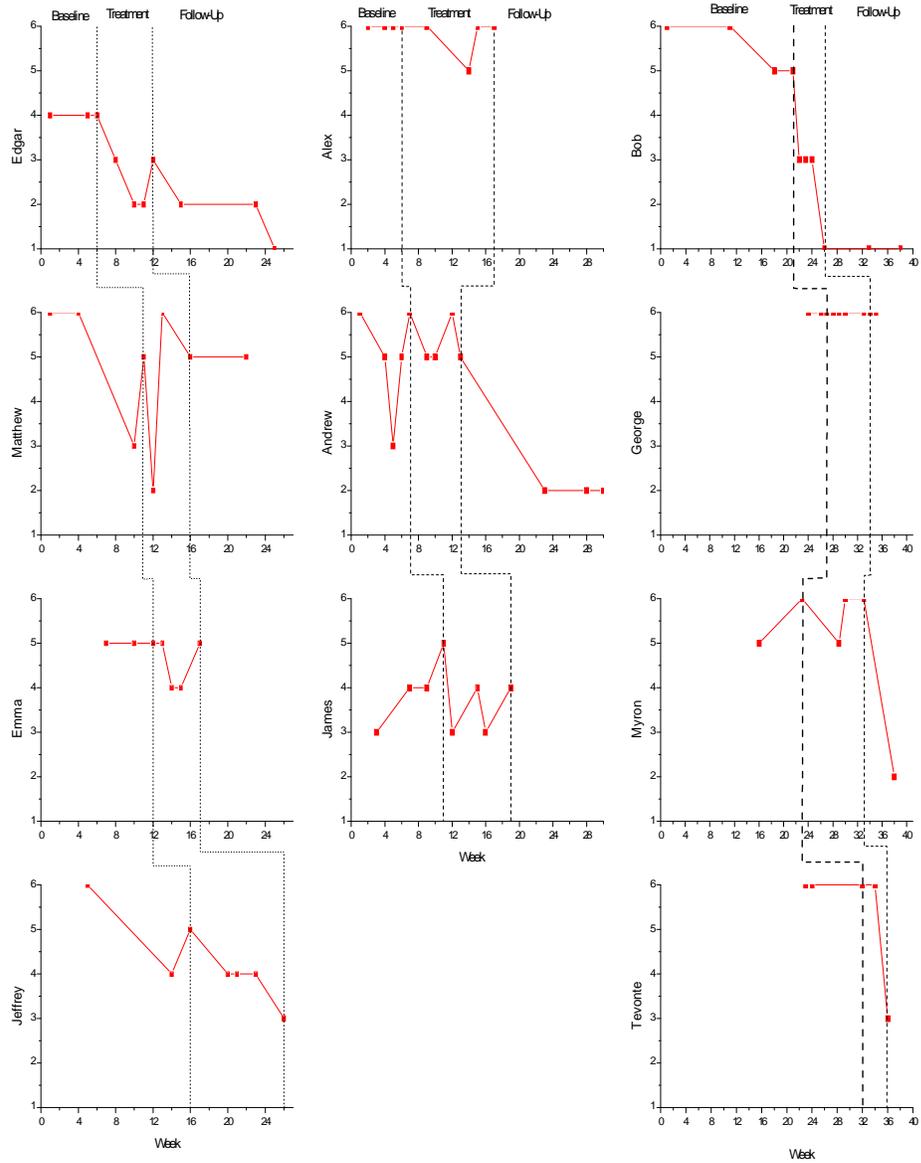


Figure 4. Parenting Stress Index (PSI)

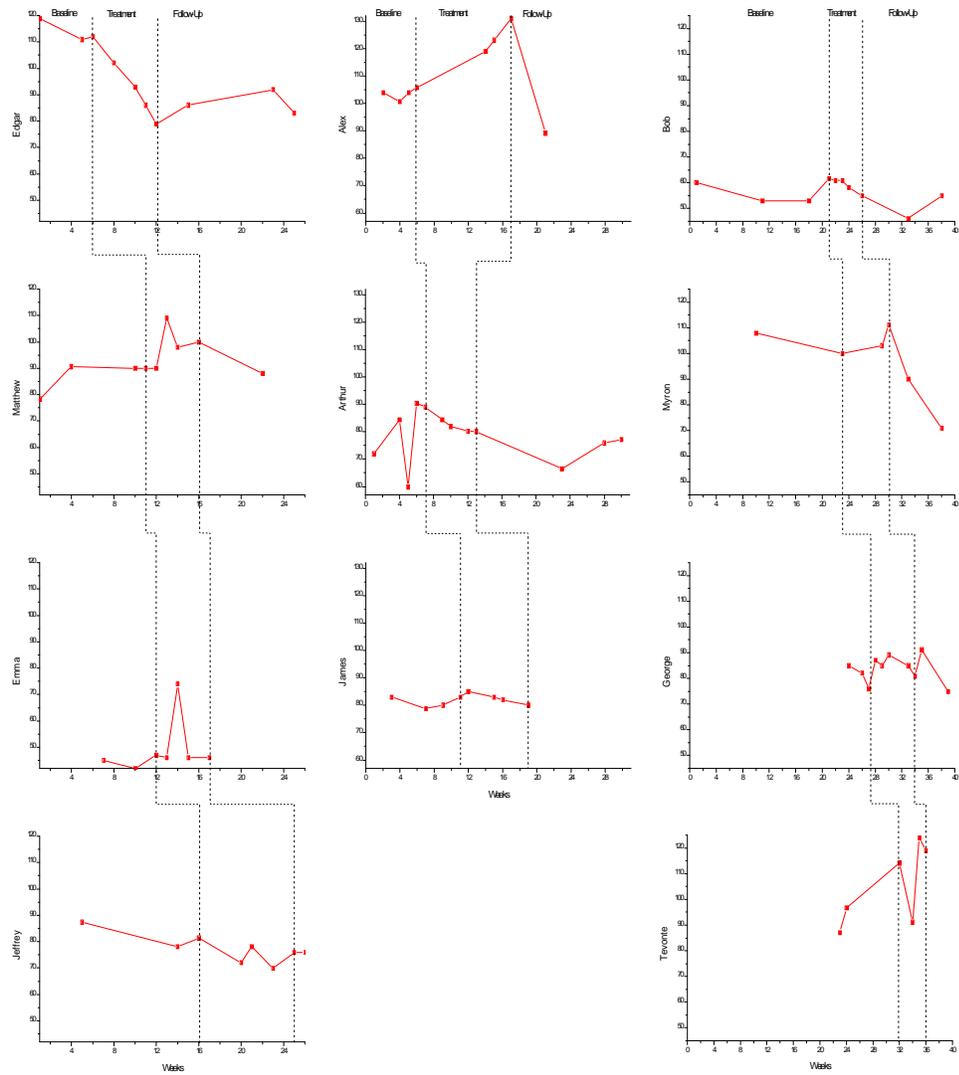


Figure 5. Parent-Report Conflict Behavior Questionnaire (CBQ)

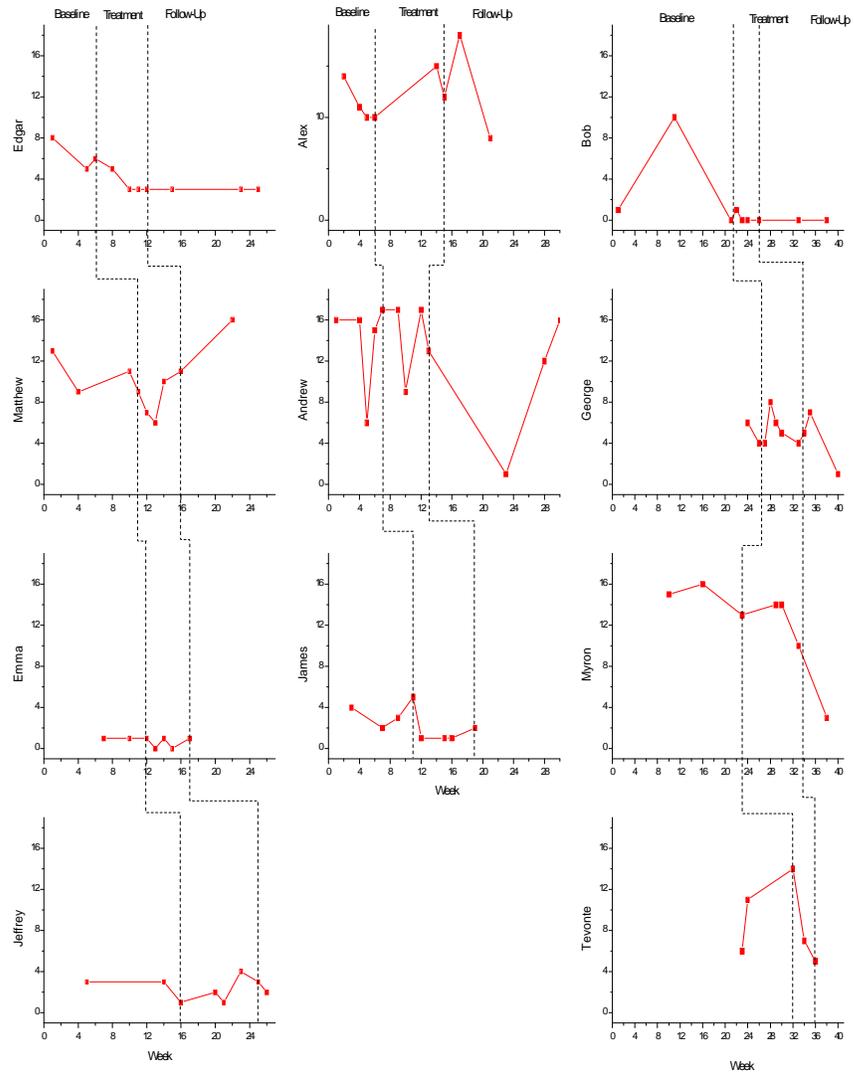
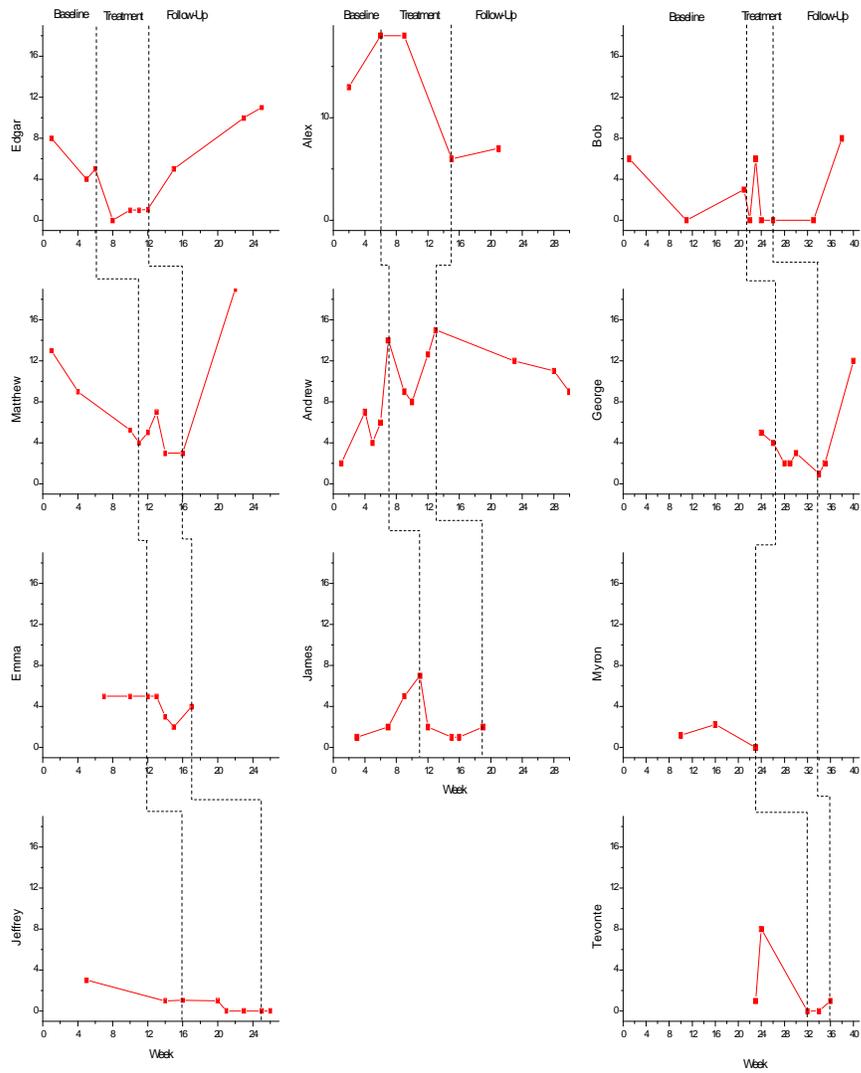


Figure 6. Child-Report Conflict Behavior Questionnaire (CBQ)



Appendix A: Design Considerations

Multiple baseline single subject design

As there are currently no well-established academic interventions for the treatment of adolescents with ADHD, a multiple-baseline (MB) design was felt to be the most appropriate first step for this pilot study. Single subject designs are often considered useful starting points for developing and disseminating new treatment approaches through scientific publication (Barlow & Hersen, 1984; Morgan & Morgan, 2001). Furthermore, single-subject designs have been used commonly in ADHD treatment outcome research (Pelham, Wheeler, & Chronis, 1998) and have provided considerable support along with between-group studies, for the resulting classification of behavioral classroom and parent training interventions as “well established” treatments according to APA Task Force criteria (Task Force on Promotion and Dissemination of Psychological Procedures, 1995). For example, most of the studies that contribute to the well-established treatment categorization for classroom interventions are single-subject case design studies of contingency management (Pelham, Wheeler, & Chronis, 1998). Therefore, there exists a long history of the use of the single-subject case design in ADHD treatment outcome research studies.

Furthermore, there are many advantages to the use of a multiple baseline design. This design is a controlled experiment capable of demonstrating causality due to its manipulation of an independent variable (IV) (i.e., treatment vs. baseline), its continuous assessment of multiple dependent variables (DVs), the staggering across time of the starting point of treatment across subjects, and its use of replication as the key to making reliable causal inferences (Hersen & Barlow, 1976; Kazdin, 2003). A multiple baseline

design also attempts to control for conspicuous extraneous variables through careful assessment and exclusionary criteria. Therefore, change in a dependent variable should occur for the participant receiving treatment at a given time point, and not for those who are not currently receiving treatment.

This design also rules out multiple threats to internal validity or other plausible explanations for observed changes in the DV. These include the possibility that the participant matured over time or statistically regressed towards the mean. Because this design determines individual responses to treatment, it may be more meaningful than using a between-groups approach because it applies to actual individuals in treatment, rather than an aggregate of differences. No single treatment, even if designated as evidence-based or empirically-supported, will be effective for all clients. “In reducing subject matter to single aggregate measures, we end up neglecting the one irreducible property of all natural phenomena, variability” (Gould, 1996). Therefore, examining real life cases of treatment success and failure through the single subject design offers the advantage of examining variables which may be considered nuisance factors in a group design, but may be of unparalleled importance in the participant’s natural setting (Morgan & Morgan, 2001). Furthermore, averaging varied data as is done in a typical group design may give the spurious appearance of orderly and regular change, which may be quite unrepresentative of any actual individual’s experience (Blampied, 1999). Therefore, a group design may be subject to false inferences about patterns of change over time, and result in misleading theories of underlying processes (Blampied, 1999). In contrast, through the use of multiple assessment time points, the MB design allows for an

examination of intra-subject variability or the pattern of change in a given individual over time.

Limitations of the Multiple Baseline Design

However, the MB design also has some potential limitations. This approach cannot completely control for certain threats to internal validity such as the possibility that concurrent events experienced during the course of therapy (e.g., increases in medication dose, introduction of a new teacher, parent spending more time at home than in the past) had an impact on the DVs. A concerted attempt was therefore made to control specific conspicuous factors prior to the initiation of treatment (i.e., medication and therapy status). This involved asking families to refrain from making any medication changes for their adolescent or enrolling in other treatment services for themselves or their adolescents during the course of participation in this study. In addition, other important changes which may have an impact on homework outcomes were carefully documented through use of a medication/treatment changes questionnaire. Treatment changes that were tracked include tutoring in specific academic subjects or in study skills, individualized education plans through the school system, and other group or individual therapy.

A second potential threat to internal validity is the possibility that exposure to the assessment measures themselves may result in positive changes on the DVs, which may result through an increased self-awareness of parents and/or adolescents upon filling out these questionnaires. While it may be difficult to completely rule out this possibility, the stability of baseline measurements would be a positive indicator that exposure to filling out measures is not acting as an intervention itself. Therefore, multiple baseline

measurements will be taken with the goal of achieving stability on the main outcome measures prior to administering the intervention for each participant.

In addition, because of the focus of a MB design on actual individuals, there may be limited external validity, or the ability to generalize results to a larger group of individuals or settings. Although it is true that a single $N = 1$ design has limited generalizability, a series of $N = 1$ designs should identify sources of variability and lead to greater generalizability (Barlow & Hersen, 1984; Kratochwill & Williams, 1988). Through replication across independent variable parameters, stimulus conditions, and participant variables, a thorough evaluation of generality can be made (Morgan & Morgan, 2001).

Finally, another important consideration is the lack of statistical significance tests within an MB design. While some researchers suggest that the use of visual inspection required for an analysis of treatment effects in an MB design is arbitrary, others argue that the creation and use of a p -value is also an arbitrary distinction which allows you to consider even small differences across groups relevant, whereas the MB design results in a more conservative estimate of treatment effects due to the use of a visual analysis and therefore the need to demonstrate large effects (Barlow & Hersen, 1984; Morgan & Morgan, 2001).

Therefore, despite some considerable limitations, an MB design has significant advantages which make this design an appropriate choice for this pilot study. As described previously, an MB design is a well-controlled experiment with the ability to demonstrate causality through establishment of a stable baseline, multiple, repeated measurements of the DVs, staggering the starting point of treatment across participants,

manipulation of an IV, and replication across a number of participants. This design has the ability to examine intra-subject variability (i.e., patterns of individual change over time) as opposed to examining averaged data in a between-groups design, which may not give an accurate perception of the course of change over time for each individual. This design is also capable of ruling out internal validity threats including participant maturation or regression towards the mean. While it is possible that concurrent events experienced during the course of therapy or exposure to assessment measures will have an impact on DVs, these extraneous factors can be carefully tracked and certain conspicuous factors stabilized prior to treatment. Stabilization of baseline prior to treatment will bolster confidence that extraneous factors are not unduly influencing DVs. Finally, the generalizability of results can be increased through repeated replication. As this is a treatment development project, these methods were felt to be the most appropriate choice for this pilot study.

Sample Studied

A number of choices were made regarding the sample to be studied. We chose to restrict participation in this study to young adolescents with ADHD, who are currently in middle school (grades 6 through 8). As mentioned previously, the transition to adolescence appears to be a critically important developmental time point due to the persistence of ADHD into adolescence and the exacerbation in academic impairment typically observed as the child transitions into middle school. Intervening at this critical juncture may be ideal for preparing youth with ADHD to handle the increased academic demands of middle and high school by helping them develop structured routines and use consistent goal setting and rewards. It may also be most effective to intervene early on in

the transition to adolescence because hormonal and maturational changes are just beginning to alter the manifestation of the disorder, and parents and teachers still have an influence on work and study habits. In the State of Maryland, adolescents in middle school can range from ages 10 to 14 (children can enter kindergarten if they will turn age 5 by December 31st). Therefore, we chose to use this age range within our study, in addition to the requirement that the adolescent be in 6th, 7th or 8th grade. Furthermore, because male children are between 2.5 and 5.6 times more likely than female children to be diagnosed with ADHD in clinic referred samples, the majority of children in our sample were male. The ethnic/minority composition of our sample was similar, as expected, to the metropolitan Washington, D.C. area, which is racially diverse and heterogeneous. Current clinic intake rates at the Maryland ADHD Program suggested that of the families we recruited, approximately 7% would be Hispanic and 39% African American. This was relatively consistent with our sample which was composed of 9% Hispanic and 45% African American participants.

The next consideration with regard to participant selection was whether or not to exclude based on the presence of other comorbid disorders. It was decided that individuals with low IQ or pervasive developmental disorders would be excluded from the study due to the severity of these conditions and the likelihood that their presence would result in extremely different needs for treatment. However, due to the high rates of comorbid learning disabilities (LDs), oppositional defiant disorder (ODD), and conduct disorder (CD) in adolescents with ADHD (Angold, Costello, & Erkanli, 1999; Barkley, 1990), individuals with these disorders were not excluded from the current study.

Inclusion of a heterogeneous group that reflects real-world characteristics of the population of adolescents with ADHD is also consistent with the current trend to examine the real-world feasibility and effectiveness of interventions. Within the ADHD treatment literature, the general trend has been to use a heterogeneous group in which comorbidities are rarely excluded and participants are more highly representative of the population of interest (Pelham, Wheeler, & Chronis, 1998). In the National Institute of Mental Health (NIMH) Collaborative Multimodal Treatment Study of Children with ADHD (MTA; Arnold et al., 1997), a large clinical trial of psychosocial and pharmacological treatment for ADHD, a widely heterogeneous sample with only ADHD diagnosis in common was selected in order to investigate the generalizability of treatment to the broader population of children with ADHD (Pelham, Wheeler, & Chronis, 1998). While the ability to examine the generality of treatment gains to the population of middle school students with ADHD will be limited in the current study due to the use of a single subject design, through replication of this design in a number of participants, sources of variability in treatment response across participants can be identified and an evaluation of generality made (e.g., Morgan & Morgan, 2001). Hypotheses to be used in future research can be made by examining differences in treatment response patterns across adolescents with differences in comorbidity, medication use, ethnicity, etc.

Specifics of the Research Design

The following section provides the rationale for specific choices made regarding baseline, intervention and follow-up conditions for the multiple baseline design. The first consideration was the utilization of an extended baseline phase for half of the participants. Instead of completing assessments and implementing baseline conditions for

3 to 4 participants each fall and 3 to 4 participants each winter, in the proposed extended baseline design, all participants for a given year would be assessed in the fall (i.e., September/October), with their baseline phase beginning on the date of their assessment. This would allow for half of the participants (i.e., those receiving treatment in the winter/spring) to have an extended baseline that overlaps with the treatment and follow-up phases for participants scheduled in the fall. It was hypothesized that this method would increase the strength of the MB design due to enhanced evidence of causality created by 3 to 4 participants receiving treatment while 3 to 4 participants are in the baseline phase. Improvement would be expected for those participants receiving the intervention and not for those currently within the baseline phase.

Since half of participants would participate in an extended time period within baseline during which no treatment would be provided, participant attrition was considered a potential problem. To attempt to control for this confound, it was proposed that baseline measures would be collected monthly instead of weekly for those participants starting in the winter/spring in order to reduce respondent burden, that participants would receive \$5 for each completion of monthly measures to provide a small incentive, and that monthly phone calls would be made to these participants in order to maintain interest in the study while in the baseline phase. Finally, as explained in the consent form, participants would have the option of choosing to pursue other treatment and discontinuing the study at any point if they felt the need to receive additional services during the baseline or treatment phase of this study.

Furthermore, limitations are present in the use of an alternative design in which half of the participants are assessed in September/October and complete treatment in the

fall, while the other half are assessed in January/February and complete treatment in the winter or spring. In this particular design, a maximum of 3 or 4 baseline measurements would be feasible given the necessity of completing the assessment, baseline, treatment and follow-up conditions within a given school semester (i.e., prior to winter holiday or summer breaks when no homework is given). Typically, a baseline of at least 2 measurements is considered a minimum; however, more measurements can provide a clearer demonstration of differences between treatment and baseline conditions (Kazdin, 2003). It is also recommended that measurements are taken until a stable baseline is reached, in order to reduce the possibility that other factors are responsible for positive change during the intervention phase (Kazdin, 2003). Within this hypothetical research design of assessing and running through treatment 3 to 4 participants per semester, short baseline conditions would make it more difficult to achieve stability prior to the start of treatment. Further, fewer participants would be in baseline while others are in treatment due to the shorter baseline conditions. Therefore, with shorter baseline periods and fewer participants in baseline during the treatment of other participants, it would become more challenging to provide irrefutable evidence that changes in the dependent variables are due to the HW intervention itself and not due to other confounding variables or extraneous events that occurred during treatment.

In consideration of these factors, it was decided that an extended baseline would be used for half of the participants in this study. However, an extended baseline was not implemented as intended due to two major limitations. For the first year, significant delays were present in receiving IRB approval. As a result, all participants for this year were assessed in December/January and participated in treatment in the 2nd half of the

school year. Therefore, only one cohort was run the first year and extended baselines throughout the fall and winter were not utilized due to these IRB delays.

During the second year, the first four participants that were assessed were assigned to begin treatment in the fall, and the following four participants assessed were assigned to begin treatment in the winter/spring and participate in an extended baseline phase during the fall. This method of non-random assignment was a result of practical time constraints related to the participants' academic schedule (i.e., the need to have fall participants complete treatment before the December holiday season, and the need to have spring participants finish prior to the start of summer break). Those parents and adolescents who were assigned to begin treatment in the spring were asked to complete monthly baseline measures beginning on their assessment date and continuing until they began treatment. Bi-monthly phone calls to parents were conducted in order to facilitate the collection of measures and ask about any changes in medication or treatment status of parent or adolescent since the previous contact. Measures were sent in a self-addressed, stamped envelope. Compensation of \$5 was sent in the mail for every set of monthly measures returned in order to increase the likelihood that parents would return these measures. Despite these procedures, 2 of the 4 participants assigned to the extended baseline phase did not return their baseline measures, requiring additional assessments to be completed in November/January in order to have a full cohort for the winter. Therefore, only 2 participants had extended baseline phases in the current study.

For participants assigned to short baseline time periods, it was necessary to have participants start the baseline phase no later than October or March, in order to avoid treatment during the December holiday season or summer break, when students are not

likely to be getting any homework. During baseline and treatment phases, weekly measures were collected. Every attempt was made to have participants start treatment on different weeks, consistent with the multiple baseline design. Therefore, for some participants, baseline was extended an additional 1 to 2 weeks in order to effectively stagger treatment across participants. This was also attempted if baseline had not stabilized for an individual participant. However, again due to practical time constraints, limitations were present on the maximum length possible of the baseline period.

Another important time period that had to be taken into consideration in planning a research timeline was the Maryland State Assessment Testing, which occurs during the month of March for Montgomery and Prince George's County public school systems. Private schools also have standardized testing which typically occurs in the month of April. During testing times and preparation for testing, middle school students will likely not be given any homework by their classroom teachers. Due to the need to stagger participants across time, it was not feasible to avoid the entire months of March or April for a given participant. Instead, on the given week of testing, parents and adolescents were allowed to skip a week of completing measures, since no homework would be given on this week. They would return to treatment and completion of measures the following week. This method avoided potential difficulties related to standardized testing.

Furthermore, it was decided that follow-up measures would be collected from parents and adolescents once a month for a period of 3 months. Since treatment adherence and use of the HIP techniques over time may be an important aspect of whether or not improvement in homework problems is observed (Evans, personal communication, August 18, 2005), it seemed logical and beneficial to extend the follow-

up phase to a period of 3 months in order to assess continued improvement over time. In order to encourage parent compliance with follow-up measures and to reduce respondent burden, completion of measures was requested monthly, as opposed to weekly collection in the treatment phase.

Considering past research and clinical experience involving difficulty in obtaining teacher compliance in completing study measures, it was decided that collecting measures from teachers once prior to treatment, immediately post-treatment, and at 3-month follow-up would both reduce respondent burden as well as increase compliance. In addition, in order to encourage the return of measures, teachers were provided \$10 for each packet of measures completed. Similarly, grade book data from teachers were collected only one time, either through mail or during a visit to the school system by the principal investigator at a time convenient to teachers, which was scheduled in advance. This last collection was done at the end of the grading period, in order for all past and current grade book information to be collected from teachers.

Intervention Design

A number of choices were made regarding the content of sessions, strategies to be incorporated, length and total number of sessions, ordering of sessions, and amount of parent, teacher and teen involvement. Homework was targeted as a critically important area of intervention considering that time spent on homework has been found in a number of studies to be the best predictor of student grades and achievement and parental involvement in supporting homework activities has been found to result in academic gains (Keith, 1982; Cooper, Lindsay, Nye, & Greathouse, 1998). The intervention itself was designed to incorporate the three approaches (i.e., parent training in homework

management principles, goal setting and contingency contracting, and parent-teacher consultation), that have shown evidence in addressing homework difficulties in non-clinical populations of children. Each of these approaches is a more specifically-focused version of general treatment approaches that have been empirically validated for use in children with ADHD. Therefore, these homework-focused approaches are likely to be of benefit when applied to this specific population. For example, behavioral parent training has a long, successful history as a treatment for children with ADHD (Pelham et al., 1998). Through this approach, parents are taught to identify and manipulate the antecedents and consequences of child behavior, target and monitor problematic behaviors, reward prosocial behavior through praise, positive attention, and tangible rewards, and decrease unwanted behavior through planned ignoring, time out, and other non-physical discipline techniques (Chronis, Jones, & Raggi, 2006). Similarly, parent training in homework management principles involves the identification and manipulation of antecedents and consequences of behavior specific to the homework process, monitoring problematic-homework related behaviors, and providing privileges and rewards for successful completion of homework-related goals. The HIP program did not involve a broad focus on teaching parents general behavioral management strategies (e.g., giving effective commands, grounding and time-out, providing positive attention, etc.), but in contrast, utilized a couple of key components from behavioral parent training (e.g., provision of rewards/privileges contingent upon behavior, modification of environmental context) in order to improve the homework process. Therefore, parent training in homework management principles incorporates similar techniques as behavioral parent training for ADHD, with a much narrower focus.

As another example, behavioral classroom interventions have also been established as an empirically validated treatment for ADHD. This intervention generally involves regular consultation with the child's teacher regarding the use of behavior modification strategies (Chronis, Jones, & Raggi, 2006). Consultation usually begins with psycho-education about ADHD and the identification of specific target behaviors, based upon a functional analysis of behavior. Teachers are then instructed regarding the use of specific behavioral techniques, including praise, planned ignoring, effective commands, and time out, as well as the daily report card (DRC) and/or more extensive individualized or classroom-wide contingency management programs (Chronis, Jones, & Raggi, 2006). Similarly, the parent-teacher consultation session of the HIP program involved brief psycho-education and the identification of problems specific to homework. However, teachers were not instructed in a wide range of behavioral techniques for use in addressing the child's problematic disruptive and off-task behaviors. In contrast, one or two accommodations were chosen collaboratively between parents, teachers, and therapist for use within the classroom, in order to specifically target homework problems. This may involve having the teacher prompt the adolescent to write his or her assignment down at the end of each class, or providing peer support in collecting needed materials at the end of the school day.

In contrast to the strong support for behavioral parent training and school interventions in the treatment of ADHD-related impairment, instructional modifications such as goal setting have undergone little testing. Despite this, the general strategy of breaking down academic assignments into smaller subunits to accommodate the child's attention span and presenting them one at a time rather than all at once, with the use of a

timer and rewards for completion of each assignment or goal, has been commonly used and recommended in classrooms for improving the performance of students with emotional and behavioral disorders (e.g., ADHD), and learning disabilities (Piffner & Barkley, 1998; Robin, 1998). This technique likely improves attention, efficiency, and motivation for completing difficult, tedious or disliked assignments, and may provide a unique component to the HIP program, beyond what can be addressed through the application of general homework management principles. Therefore, while goal setting itself has not undergone previous testing in the treatment of children with ADHD, preliminary results of its effectiveness for improving the homework problems of non-clinical populations of children (Miller & Kelley, 1994; Kahle & Kelley, 1994), as well as its common use within the classroom for children with ADHD, suggest that it is likely to be an effective tool in addressing the homework problems of young adolescents with ADHD. We therefore chose to include goal setting as one of the strategies incorporated into the HIP program.

Finally, intervention design was also guided by research on the core problem areas and underlying neural processes associated with ADHD. Executive function is a cognitive domain that encompasses skills related to self-regulation (e.g., problem-solving, planning skills, organization, working memory and response inhibition). As highlighted previously (Seidman et al., 1997; 2000), children and adolescents with ADHD typically have associated executive functioning deficits, which result in a variety of impairments that have specific implications for the development of academic problems. The HIP was designed with the goals of teaching skills that directly map on to these deficits.

For example, children and adolescents with ADHD have been found to have robust deficits in working memory (Willcutt et al., 2005b), the ability to hold and manipulate information “online”. These deficits may manifest in adolescents with ADHD as difficulties remembering to complete and turn in homework assignments, planning ahead, and prioritizing or organizing long-term homework tasks. There are numerous ways in which the HIP attempts to address these underlying working memory deficits. For example, the HIP focuses on carefully identifying and modifying stimuli in the environment that may overwhelm or distract the adolescent, resulting in off-task behavior and/or frustration. This may involve finding a quiet, non-distracting workplace for the adolescent to complete homework, breaking down assignments into more manageable subunits of information, and offering rewards and privileges for staying on-task and completing a planned task or assignment. When the adolescent does become distracted by non-relevant stimuli, increasing parental involvement in supervision provides an important control for helping the adolescent refocus his attention on task completion.

Highly related to working memory is planning, the ability to mentally generate a series of steps in order to solve a problem or accomplish a goal. Research has found that planning ability is also disrupted in children and adolescents with ADHD (Pennington & Ozonoff, 1996). Planning is specifically targeted through the HIP by teaching the adolescent how to break down long-term assignments into more manageable goals and short-term deadlines, and to incorporate these modified goals into daily study time. In this way, the adolescent learns how to plan for task completion in advance, rather than waiting until the day before the project is due to begin the assignment. Instruction in planning is also accomplished through helping the adolescent develop and use a set of

explicit criteria for organization of the assignment notebook and study binder. In this way, the adolescent learns how to use an organized approach and self-monitor his performance regularly. Within the classroom, the adolescent may be matched with a peer to cross-check his organization of these materials daily, providing another means for keeping track of assignments and initiating key planning and organizational activities.

Deficits in self-regulation of affect, motivation and arousal/activation have also been proposed to exist in children and adolescents with ADHD. This may result in emotional and behavioral problems within the classroom, low motivation and initiation of academic tasks, and difficulties maintaining task-oriented behavior in the face of tedious or boring homework assignments. In order to address these hypothesized deficits, the HIP focused on developing an associated privilege system to help the adolescent maintain arousal or activation of motivational states during mandatory study time, thereby increasing overall productivity and efficiency of this time. Further, given difficulties with self-monitoring and initiation of tasks by children and adolescents with ADHD, the HIP also incorporated negotiation of a consistent time to start homework and provision of a prompt or reminder by the parent. Prompts or reminders within the classroom by teachers to turn in homework or write homework assignments down were also discussed. Finally, given that children and adolescents with ADHD are more prone to frustration and emotional problems, the HIP included instruction in general behavior management strategies for parents. Increasing praise and encouragement for small successes, providing clear and explicit instructions and expectations that are not long-winded or complex, and establishing a consistent privilege system have been found to not only reduce frustration

and angry outbursts in children and adolescents with ADHD, but also improve and encourage positive behavior.

While previous studies of homework interventions for non-clinical populations of children have focused on testing the efficacy of an individual technique or strategy (i.e., goal setting, parent training, and parent-teacher consultation), the focus of the current study was to develop and test an integrated intervention that most effectively addresses the homework problems of the population of young adolescents with ADHD. In order to accomplish this, strategies involving parents (i.e., homework management training) and teachers (i.e., parent-teacher consultation), as well as those that are more global (i.e., homework management training, psychoeducation) and those that are more specific (i.e., goal setting) were incorporated into this treatment program. Since homework is a behavior that involves multiple steps completed at school (i.e., collecting needed materials, writing homework assignments down, organizing materials) and at home (i.e., completion of homework, studying), and as each setting influences the other, coordination across home and school is vitally important in identifying and resolving points of breakdown in the homework process (Robin, 1998; Weiner, Sheridan, & Jenson, 1998). Additionally, as homework problems may include a number of different behaviors, it makes sense to incorporate a number of strategies, each of which may address a different aspect or component of the problem. Therefore, as a whole this homework intervention program was expected to be more effective than any individual strategy alone. These design choices are consistent with best practices for the treatment of ADHD which recommend multi-component treatment approaches implemented in all settings in which impairment is present (Pelham, Wheeler, & Chronis, 1998).

Previous studies of homework-focused strategies have typically involved one to three weekly sessions of one hour per session. For example, Anesko and O'Leary (1983) utilized three, weekly sessions of parent training in homework management principles, Kahle and Kelley (1994) compared 2 weekly sessions of either parent training in homework management principles or goal setting, Evans (personal communication, August 17, 2005) examined 2 weekly sessions of parent training in homework management principles, and Rhoades & Kratochwill (1998) examined a multi-component parent training intervention involving behavior and homework management, goal setting, time management, organizational skills, and home-school communication using 5 individual sessions. Taking into consideration the fact that in previous studies each technique was provided within only 1 to 3 sessions of 1 hour each, and in the current study these techniques will also be limited to training in only one specific domain (i.e., homework problems), five sessions was chosen for the current study, in order to provide 1 session per technique, as well as time for parents to practice each technique weekly. This session format also allowed for troubleshooting support, addressing obstacles to implementation of the strategies taught, and providing reinforcement of skills through modeling, role play, and review to be integrated into treatment sessions.

It was also decided that sessions would be extended to 1.5 hours each (as opposed to the originally proposed length of 1 hour per session), in order to provide additional time to discuss, model, and instruct on a given technique. Lengthening each session provided an additional 2.5 total hours of treatment. This method was chosen instead of adding two additional sessions to the treatment package because extending the duration of treatment would have restricted the number of baseline measurements possible due to

practical time constraints (i.e., the necessity of completing treatment prior to the December holiday season, and completing treatment prior to summer break). Decreasing the number of baseline measurements would have compromised the strength of the multiple baseline design. Therefore, limiting the duration of treatment to 5 weeks was important for this reason. As mentioned previously, a baseline of at least 2 measurements is considered the minimum necessary, but more measurements can provide a much clearer demonstration of differences between treatment and baseline conditions (Kazdin, 2003). The treatment program was also limited to five sessions in order to provide a relatively brief intervention focused on a very specific problem (i.e., homework difficulties). This is relatively consistent with the only other intervention package developed to address homework difficulties in youth with ADHD (Power, Karustis, & Habboushe, 2001). In this treatment package, one technique was covered per 1 hour group session for a total of five sessions, with 2 additional follow-up sessions provided for troubleshooting support and review.

Manual development also took into consideration the most logical and feasible ordering of sessions. Identification of behavioral targets and the context within which the problem occurs (i.e., ABCs) was felt to be a necessary first step in order to fully understand the problem prior to intervening. Therefore, this assessment strategy was incorporated into the first session, along with psycho-education on ADHD and homework problems for parents and adolescents. Secondly, as parent training in homework management principles is a more global approach that provides an overall structure and routine within which the adolescent can complete homework, whereas goal setting and organization of the binder and assignment notebook are more specific to certain aspects

of the homework process, it was decided that providing an overall framework prior to working on more specific strategies for increasing productivity, organization, and accuracy would be the most logical order of sessions. It was also decided that it would be more beneficial to meet with teachers after parents and adolescents have identified relevant homework-related problem behaviors and have taken initial steps to establish an overall structure or homework management plan at home. This would provide a context and rationale within which teachers could provide additional support to help with homework-related problem behaviors already targeted at home. Therefore, the parent-teacher consultation (session 3) was chosen to follow parent training in homework management principles (session 2), with the organizational, time management and goal setting strategies placed last (sessions 4 and 5).

As described previously, this program is novel and innovative in its attempt to modify behavioral approaches to address the developmental needs of adolescents with the disorder. Previous studies testing treatments for children with homework problems have focused on training either parents or teachers, with minimal involvement of the child within sessions (e.g., Anesko & O'Leary, 1982; Kahle & Kelley, 1994; Rhoades & Kratochwill, 1998). In contrast to this approach and as a result of unique developmental changes occurring during adolescence (e.g., increased independence seeking and abstract thinking) (Smith et al., 2000), it becomes increasingly important to include and engage the adolescent in the treatment process in order to enhance treatment outcome. Of the handful of psychosocial treatment studies of adolescents with ADHD that have been published, the majority have attempted to include the adolescent in the treatment process (e.g., through teaching skills such as note-taking and organization, or the self-monitoring

of one's own behavior) (e.g., Evans, Pelham, & Grudberg, 1994; Evans, Axelrod, & Langberg, 2004; Stewart & McLaughlin, 1992).

Therefore, the current study included the adolescent in all clinic sessions and modified techniques to be developmentally appropriate. Instruction on how to structure the homework process and establish organizational and time management goals were presented to both the parent and adolescent. The adolescent was encouraged to take an active role in the treatment program and contribute to the development of intervention targets and the privilege system. Rewards were determined by adolescents and parent together and therefore, were developmentally salient. Parents supervised the homework process with the goal of tapering their involvement over time. As opposed to homework interventions for children, more focus was placed on organizational and time management issues which are two of the main difficulties of adolescents with ADHD, especially as they transition into middle school and environmental demands increase (Robin, 1990; 1998). As many adolescents have multiple teachers throughout the course of a day, every effort was made to include as many of the adolescent's core teachers in the consultation as possible. Those that could not attend this session were contacted by phone to explain the program and enlist their involvement.

In addition to modifications designed to make this intervention developmentally appropriate for adolescents, treatment development also took into consideration the high level of stress commonly found in families with ADHD (Johnston & Mash, 2001). This was done through an attempt to simplify methods for tracking goals and administering rewards in order to increase the likelihood that parents and adolescents will understand and be capable of implementing these procedures in the home setting, and will maintain

consistent motivation throughout treatment. For example, instead of utilizing a point or token system (Habboushe et al, 2001) which can be time consuming and difficult to implement, a privilege system which allowed access to most privileges upon completion of a mandatory study time, and access to all privileges upon meeting additional organizational and behavioral goals, was used. This system has been effectively utilized in an after-school program for adolescents with ADHD (Evans, Axelrod, & Langberg, 2004) and does not require total points to be tracked, point values to be assigned to each reward, and points to be cashed in and subtracted from the total number of points in order to receive desired rewards. In addition, instead of creating a comprehensive homework contract (see Robin, 1998) that included all desired homework-related behaviors, parents and adolescents were asked to choose three to four homework related goals of priority to focus on. This was expected to increase the focus on the most critical problematic behaviors, and prevent diffusion of the intervention through overwhelming the parent and/or adolescent with too many criteria on which to focus.

SESSION 1: PSYCHO-EDUCATION AND IDENTIFICATION OF HOMEWORK-RELATED PROBLEM BEHAVIORS

RATIONALE

This session is designed to educate parents and adolescents about the nature of ADHD and associated homework problems and the goals and format of the Homework Intervention Program, so that they are better prepared for addressing these problems and understand their role in the program. Secondly, by identifying individual problem behaviors and examining antecedents and consequences associated with these behaviors, parents and adolescents will learn how the environment influences the likelihood of whether or not a behavior occurs. Through practicing identifying antecedents and consequences for a given problem behavior, they will learn how to analyze the environmental causes of behavior, and be more open to and in a better position to change these factors, through working to modify antecedents and consequences associated with problematic homework behaviors within the next session.

MATERIALS NEEDED

- Weekly Measures for Upcoming Week
- Daily Homework Logs for Upcoming Week
- Handout: Outline and Session Format of HW Program
- Handout: What Parents and Teachers Should Know about ADHD
- Handout: Diagram of Academic Pattern of Children with ADHD
- Handout: Case Examples from [Robin, A. (1998). ADHD in Adolescents. New York: Guilford Press.]
- Handout: ADHD and associated homework problems [Power, T., Karustis, J.L., & Habboushe, D.F.(2001). Homework Success for Children with ADHD. New York: Guilford Press.]
- Handout: ABC Worksheet [Power, T., Karustis, J.L., & Habboushe, D.F.(2001). Homework Success for Children with ADHD. New York: Guilford Press.]

PHASE 1: COLLECT WEEKLY MEASURES AND DAILY HOMEWORK LOGS

PHASE 2: DISCUSS GOALS OF THE HOMEWORK PROGRAM

- Improve homework completion and efficiency
- Improve homework accuracy
- Improve parent-school communication and educational accommodations implemented by the school system to aid in the homework process
- Decrease parent-child conflict and parental stress surrounding the homework process
- Increase overall academic success (higher progress report marks and grade reports, improved perceptions of child by teachers)

PHASE 3: DISCUSS FORMAT AND SESSION CONTENT OF THE HOMEWORK PROGRAM

- Discuss with parents and adolescents that the strategies used in this program have been found through numerous research studies to be effective in dealing with the homework difficulties of children and adolescents with academic problems.
- In addition, behavioral strategies like those used in this program have been found to be effective for children with ADHD. However, this homework intervention has never been tested with middle school students with ADHD.
- Sessions are weekly for five weeks
- Four sessions will be held at the psychology clinic and one session will be conducted at the school.
- Each session will last 1.5 hours.
- All sessions are conducted with both parent and adolescent. The third session will include the adolescent's team of teachers.
- Each session will focus on one or two topics or strategies which have shown effectiveness in addressing homework difficulties. The following topics will be covered
 - Education about ADHD and its relationship to homework problems
 - Analysis of homework problem behaviors within the environment
 - Parent-teacher consultation and setting up accommodations
 - Developing and implementing a homework management plan
 - Organization and use of an assignment notebook
 - Using goal setting and time management techniques
 - Developing a privilege or reward system
- Each session will involve a review of homework, instruction, discussion and questions, modeling or practice of techniques, performance feedback, and explanation of homework to complete for the next session.
- Measures will be collected weekly to assess improvement over time and grades and homework samples will be collected from the teacher at the beginning and end of the program.

PHASE 4: PSYCHO-EDUCATION ON ADHD AND ACADEMIC PROBLEMS

- Briefly review *Handout: What Parents and Teachers Should Know about ADHD*
- Highlight the core symptoms of ADHD (inattention, hyperactivity, and impulsivity) and how these symptoms may be related to the academic problems observed in children and adolescents with ADHD.
- Give parents the *Handout: ADHD and associated homework problems*. Go through each point and ask for examples within the home or school setting where parents have noticed these symptoms affecting their adolescent's homework behavior.
 - Symptoms of inattention in children with ADHD are commonly known to result in poor concentrating and listening capabilities, forgetting and losing things, failing to finish tasks and assignments, and changing activities often

- Symptoms of hyperactivity or excessive verbal and motor activity in children with ADHD result in difficulties staying seated in the classroom, excessive fidgeting, greater touching of objects, and playing noisily. All these symptoms may lead to increased discipline and negative teacher attributions in the classroom and lower levels of task completion.
- Symptoms of impulsivity, the child's difficulty in withholding active responses, typically produce academic errors, because the child fails to wait long enough to consider alternative information, consequences, or responses. This can result in poor multiple choice taking, and choosing to engage in an activity with an immediate reward (e.g., playing a video game) rather than working on a science fair project that is not due for another week.

PHASE 5: PSYCHO-EDUCATION ON ADHD AND ACADEMIC PROBLEMS IN ADOLESCENCE

- Explain to parents and adolescents how as the child with ADHD enters middle and high school, academic demands increase significantly. The child must transition between multiple classrooms and teachers, use and organize a locker, manage materials for a variety of classes, synthesize material from lectures, take organized notes to study from, and use time-management skills to complete long-term assignments. These may all lead to greater academic difficulties for youth with ADHD.
- This is also a difficult stage due to developmental changes including an increased reliance on peers, and hormonal changes which may affect the adolescent in variable ways.
- Furthermore, co-occurring learning problems in reading, written expression or mathematics may increase the difficulties and frustration of these children.
- Discuss how the transition to adolescence may also be difficult for parents and teachers
 - Teachers may view the adolescent with ADHD as lazy and unmotivated. Parents may have expectations that their child function independently with their homework, and the increasing frustration and homework refusal may result in increasing parent-child conflict. Parents may be unsure as to how much support and help to provide, while still allowing for valuable skills such as independent/autonomous behavior to be learned.
- Examples: Adolescents with ADHD often procrastinate on homework and other chores, take long periods of time to complete assignments, rush through and make careless mistakes, write sloppily, shift from activity to activity when being asked to complete homework, and become frustrated easily. They often come to class unprepared, don't turn in assignments, forget to bring the appropriate materials and books to class, fail to write homework assignments down, procrastinate on long-term projects, and keep their rooms and lockers disorganized.

PHASE 6: PSYCHOEDUCATION ON THE BRAIN RELATED ORIGIN OF ADHD SYMPTOMS AND BEHAVIORS

- Use *Handout: Affected Brain Processes in ADHD* to highlight the following points
 - ADHD IS BIOLOGICAL AND HAS AN EFFECT ON MULTIPLE BRAIN PROCESSES. ADHD has an effect on multiple brain functions and is not strictly limited to problems paying attention and being hyperactive. Many of these brain related processes that are affected in ADHD (e.g., persistence, motivation, time management, self-awareness) are oftentimes thought of as choices (e.g., you can choose to be persistent or not, you can choose to manage your time well or not). In actuality, the ability to carry out these behaviors is brain related and certain people biologically will have more difficulty than others in these areas. This means that everyone does not start out on an equal playing field. Those people who have more difficulties in these areas will need extra support.
 - ADHD IS A BRAIN-RELATED DISABILITY AND THEREFORE REQUIRES SUPPORT LIKE ANY OTHER DISABILITY. Just as the child who cannot walk requires a wheelchair and the child with asthma needs an inhaler, certain accommodations or supports will be necessary to help the child or adolescent with ADHD be successful within his or her environment.
 - PRACTICE UNDERSTANDING AND PATIENCE. Re-framing negative views of the problem and understanding the many deficits that surround ADHD will also help you develop more patience, tolerance and empathy for some of your child's difficult behaviors and prevent negative labels from being attached.

PHASE 7: DISCUSS PARENTS ROLE IN THE PROGRAM AND THE NEED FOR CONTINUOUS SUPPORT

- WITHOUT EDUCATIONAL SUPPORT, CHILDREN AND ADOLESCENTS WITH ADHD DEVELOP POOR HABITS AND DEMONSTRATE POOR ACADEMIC PERFORMANCE. Although it is well-intentioned that parents want to have their child develop independence and learn to manage their own academic matters, without structure and support provided by the parent, the adolescent often will fall apart because poor organization, poor time management and poor motivation are an integral part of the disorder!
- In general, parents that do not supervise homework, attend school meetings, emphasize the importance of school work, and do not check assignments have children who are less successful in school.
- Remind parents of the brain mechanisms just discussed. Giving the adolescent complete independence will lead to poor test, quiz and homework grades, and poor report card grades, which will lead to lower self-esteem, less motivation, and depressed mood, which then serve to maintain the cycle. (Draw diagram on board to emphasize this pattern). By providing the support your adolescent with ADHD needs, you can directly change this pattern to instead result in better grades, which will naturally lead to improved self-esteem, motivation, and mood of your child.

- PARENTAL AND TEACHER SUPPORT PLUS ADOLESCENT COMMITMENT EQUALS SUCCESS. By providing the necessary educational structure and support for your adolescent, they will then have the opportunity to take it the rest of the way. We are not advocating doing everything for your child or allowing them no independence. They will also have a large amount of responsibility for creating their own success. We are however advocating increased parental involvement, time and attention to support your adolescent's homework environment in order to provide the necessary ingredients for success.
- DEVELOP A POSITIVE WORKING RELATIONSHIP WITH YOUR CHILD REGARDING HOMEWORK. You should try to develop a positive working relationship with your child in which they accept and understand the rationale for your involvement, their role and responsibility in accomplishing schoolwork, and what the system is in place for doing this. Your role will involve structure and supervision, but you should avoid becoming over-involved, doing the work for your child, or correcting your child's homework.
- THE DEVELOPMENT OF POSITIVE WORK HABITS TAKES TIME. The hope is that over time the adolescent will learn habits, structure and self-monitoring skills that will help him or her be more self-sufficient and to be able to better manage the difficulties of his or her disorder.
 - Tapering of parental involvement over time is encouraged once the adolescent becomes used to the routine and successful at implementing the techniques. This may take time and it is important for parents to realize that helping to improve their adolescents' academic success requires their active and consistent involvement over the long-term.

PHASE 8: SOCIAL LEARNING THEORY: ANTECEDENTS, BEHAVIOR AND CONSEQUENCES

- Discuss how the environment has an effect on behavior
 - Although ADHD symptoms such as forgetfulness, daydreaming, and distractibility will make it more likely that the adolescent with ADHD will engage in negative homework behaviors, the environment within which the adolescent lives and works can also serve to increase or decrease these potential problems considerably
- Describe social learning theory: antecedents, behaviors, and consequences
 - Social learning theory states that what determines our behavior is often what comes directly before and directly after that behavior.
 - Events that occur just before the behavior are called antecedents.
 - Events that occur directly after the behavior are called consequences.
 - Many problem homework behaviors can be more fully understood by looking at the antecedents and consequences that helped produce and maintain (continue) that behavior.
 - By observing the situation within which our adolescent responds, we can better understand how to change the antecedents and consequences within the environment to improve and better manage the homework behaviors of this adolescent

- Define “behavior” for parents
 - A behavior is something observable, that a person does (e.g. watching television, talking back, refusing to do homework, forgetting to walk the dog, smiling at mom, etc.).
 - Behaviors can be observed by how often (e.g. complaining, whining, cleaning the dinner table) or how long they occur (doing homework, playing a video game).”
- Have the parent brainstorm a list of specific behaviors related to homework that they would like to change. Encourage them to be explicit/observable and specific. Parents can use the Homework Problems Checklist they have already completed to determine what they would most like to focus on and change. These problems can be listed on a sheet of paper or a blackboard. Some possible problem behaviors of adolescents with ADHD that are related to homework are:
 - Leaves necessary homework materials at school
 - Does not know what the assignments are
 - Lies about having completed homework at school
 - Does homework in a distracting location
 - Needs constant reminders to begin homework
 - Needs constant supervision to remain on task
 - Argues or complains
 - Becomes frustrated easily
 - Rushes through assignments, making careless errors
 - Fails to submit work to teacher
 - Difficulties with homework lead to parent-child conflict or conflict with other family members
- After obtaining a list of behaviors, choose two of these and have the parent think about what typically comes directly before and directly after that behavior. List the antecedents and consequences for each behavior on the board next to that behavior.
- Discuss with the parent that the techniques they will learn throughout this program will help them to change antecedents and consequences in the environment in order to help their adolescent more effectively engage in productive homework behavior.
- The plan that is created will be based on the specific homework behaviors that they wish to target and change.
- The adolescent will also be involved in the decision making process and will have a say in the plan that is implemented. By considering the adolescents’ needs and desires and fully involving them in the treatment process, there will be a much greater likelihood of success.

PHASE 9: WORK ON DEVELOPING A THERAPEUTIC RELATIONSHIP AND OBTAINING COMMITMENT FROM THE ADOLESCENT

- Ask about the adolescent’s perceptions of therapy in general. Educate them about therapy, provide factual information, explain what to expect, and provide reassurance.

- Address how this therapy may affect their independence. Ask about what they feel may be disadvantages to changing, or disadvantages to engaging in therapy. Discuss these disadvantages as well as alternatives. Acknowledge their ambivalence.
- Stress what they are likely to achieve from therapy if they commit to it.
- Use future-oriented questioning to help them imagine what it would look like if the problem was improved or better. How are things different? What is better? How is it better? What does homework time look like?
- Focus on attaining initial engagement and commitment, even if only to return to the next session
- Ask about times from the past when homework or academics were better. What was easier or what was different about this time? How did you feel? What did you do differently during this time?
- Ask the adolescent what parental behaviors are contributing to the problem? How do you think your parent could help you with homework better?
- Engage adolescent by using their favorite activity as a metaphor for the problem
- Tips for communicating with adolescents
 - Maintain flow of communication throughout sessions
 - Use direct questions, be explicit and concrete. Interpretive or nondirective questions can be viewed as trickery
 - Use a spontaneous conversational approach.
 - Communicate a liking and interest in the adolescent
 - Refrain from unstructured probing or queries about deep personal feelings

PHASE 10: INTRODUCE THERAPY HOMEWORK

- Explain the importance of parents' completing homework assignments given in therapy. Each homework assignment has a specific purpose and helps the parent and adolescent work through the program goals for that week. It is important to be thinking about and practicing the techniques throughout the week. Successful progress cannot be made if nothing is done outside of the clinic room; activities/strategies must be taken home and used consistently.
- Assign homework for parents to read the *case examples from Robin, A. (1998)*
 - Explain that sometimes, when dealing with all the behaviors and frustration of having a child with ADHD, parents may not realize or may forget that others have very similar situations and children with very similar behaviors to their own children, and that they are not alone. The behaviors they are observing in their adolescent with ADHD are common to the majority of adolescents with ADHD. Ask parents to read and think about these examples and bring any thoughts or responses to the next session.
- Ask parents to finish completing the *ABC Worksheet* for homework
 - Choose two homework-related problem behaviors and identify the antecedents and consequences associated with each behavior by examining the behavior when it occurs during the course of the

week. (This helps you learn to play the detective in uncovering the reasons behind your adolescent's behavior.)

- Also, discuss the importance of careful monitoring of their adolescents' behaviors at home and in attending to all environmental situations and behaviors, people, and events that may be producing or maintaining problem behaviors.
- Encourage continued completion of the daily homework log that was introduced during the assessment session. For this daily log, parent and adolescent record the amount of time spent on homework each evening. Let them know that as goals are added during this program, the information recorded on this log will increase.
- For the next session, ask parent and adolescent to bring the adolescent's assignment notebook or binder (if they have one), and to bring the adolescent's homework materials to the clinic for the next session.

SESSION 2: PARENT-TEACHER CONSULTATION

RATIONALE

As homework success at home is dependent upon the adolescent bringing needed materials home from school and writing assignments down, it becomes increasingly important to involve teachers in the process and elicit their support for helping to improve behaviors at school that otherwise may compromise the parent's ability to effectively manage and support positive homework behavior at home. Therefore, the goal of this session is to educate teachers about the homework intervention program and the parent's role in this program, review the parent's list of target behaviors with the teacher, and elicit teacher support through the provision of informal educational supports to address some of these target behaviors.

MATERIALS NEEDED

- Weekly Measures for Upcoming Week
- Daily Homework Logs for Upcoming Week
- Handout: Outline and Session format of HW program
- Handout: What Parents and Teachers Should Know about ADHD
- Handout: ADHD and Associated Homework Problems [Power, T., Karustis, J.L, & Habboushe, D.F.(2001). Homework Success for Children with ADHD. New York: Guilford Press.]
- Teacher-completed APRS Rating Scale
- Handout: List of School-Based Homework Support
- Handout: Diagram of Academic Pattern of Children with ADHD

PHASE 1: COLLECT MEASURES

- Collect Weekly Measures and Daily Homework Logs from Parents
- Collect Pre-Intervention Measures from Teachers if Not Already Returned

PHASE 2: INTRODUCTION FOR TEACHERS TO THE HOMEWORK INTERVENTION PROGRAM

- Outline what will be discussed in this consultation session
 - parental role and involvement in the homework program
 - research on ADHD
 - teacher role in the program
 - gathering information from teachers
 - brainstorming of parents, teacher and therapist on ways to help the adolescent with ADHD
- Thanks teachers for their agreement to participate in our program, acknowledge the value of their time, and recognize their commitment to help the child. Emphasize that by participating, they are not only helping the child, but are also contributing to research on the development of effective treatments for ADHD
- Discuss goals of the homework intervention program
- Briefly outline sessions and what will be taught to parents and adolescents
- Discuss all aspects of parental involvement in the homework program

PHASE 3: PSYCHOEDUCATION ON ADHD

- First, I wanted to provide some information on ADHD, what we know about how ADHD affects academics, and what we know about the type of intervention and support that is needed to address academic problems in children with ADHD
- *WHAT IS GOING ON WITH THE CHILD WITH ADHD?* Describe to teachers how ADHD has an effect on multiple brain functions and is not strictly limited to problems paying attention and being hyperactive. Brain related processes that are thought to be affected in ADHD include persistence, motivation, time management, and self-awareness. These processes are often thought of as choices (e.g., you can choose to be persistent or not, you can choose to manage your time well or not). In actuality, the ability to carry out these behaviors is brain-related. Certain people will naturally have more difficulty than others in these areas. Those people who have more difficulties in these areas will need extra support.
- *HOW DO ADHD SYMPTOMS CONTRIBUTE TO HOMEWORK PROBLEMS?* Briefly, highlight how symptoms of ADHD may contribute to homework problems specifically (Use *Handout: ADHD and Associated Homework Problems*)
- *WHAT HAPPENS WHEN THE CHILD WITH ADHD ENTERS MIDDLE SCHOOL?* Discuss with teachers the increase in academic demands in middle and high school. The child must transition between multiple classrooms and teachers, use and organize a locker, manage materials for a variety of classes, synthesize material from lectures, take organized notes to study from, and use time-management skills to complete long-term assignments. These activities require organization, time management, integration and attention to material, all of which the adolescent with ADHD has difficulty with. These may all lead to greater academic difficulties for youth with ADHD.

- Examples: Adolescents with ADHD often procrastinate on homework and other chores, take long periods of time to complete assignments, rush through and make careless mistakes, write sloppily, shift from activity to activity when being asked to complete homework, and become frustrated easily. They often come to class unprepared, don't turn in assignments, forget to bring the appropriate materials and books to class, fail to write homework assignments down, procrastinate on long-term projects, and keep their rooms and lockers disorganized.
- *WHAT ACADEMIC PATTERN CAN BE EXPECTED WITHOUT EDUCATIONAL SUPPORT?* Although it is well-intentioned that parents and teachers want to have their child or student develop independence and learn to manage their own academic matters, without structure and support provided, the adolescent will most often fall apart because of poor organization, poor time management and poor motivation. Giving the adolescent complete independence will lead to poor test, quiz and homework grades, poor report card grades, which will lead to lower self-esteem, less motivation, and depressed mood, which then serve to maintain the cycle. (*Use Handout: Diagram of Academic Pattern of Children/Adolescents with ADHD*) By providing the support your adolescent with ADHD needs, you can directly change this pattern to instead result in better grades, which will naturally lead to improved self-esteem, motivation, and mood of your child.
- The hope is that over time the adolescent will learn habits, structure and self-monitoring skills that will help him or her be more self-sufficient and to be able to better manage the difficulties of his or her disorder.

PHASE 4: DISCUSS WHAT TEACHER ROLES IN THE RESEARCH PROGRAM

- To complete measures pre, post and at follow-up
- To attend this parent-teacher consultation
- To help identify homework-related problems of the adolescent
- To help to determine and implement strategies to provide extra support and structure for the adolescent at school to improve these homework-related problems
- Emphasize the importance of having both parents and teachers on board with this intervention and the unique role teachers have within the homework process. The next step in this process needs teacher's support and involvement.

PHASE 5: GATHERING INFORMATION FROM TEACHERS

- Identify problematic homework-related behaviors at school based on the teacher-reported Academic Performance Rating Scales (APRS) completed prior to the meeting.
- Focusing on each behavior identified as problematic by teachers, have teachers describe the frequency, severity and context within which this problem behavior occurs.

- For example, Allison does not write her math assignment down about 80% of the time. The teacher verbally states the math assignment and writes it down on the board one minute prior to the end of each class. At this time, Allison is usually attempting to finish the current class assignment. She leaves the classroom as soon as the bell rings with her best friend Susan. The teacher does not prompt her to write down the math homework assignment.
- Have parents discuss their role in helping the adolescent with these specific behaviors (i.e., what have they been implementing in this program).

PHASE 6: SETTING UP SCHOOL-BASED INTERVENTIONS AND SUPPORT

- Have teachers identify what school resources may be available to alleviate each homework-related problem discussed, and what specific educational supports may help this child become more successful.
- Acknowledge the time constraints of the teacher and get their feedback on what they are and are not capable of implementing within the classroom. Emphasize that the overall goal is to help the student, in order to reduce the time spent overall by parents and teachers in dealing with this problem. There is an investment of time but it should pay off in the end.
- Based on the discussion of school resources and the identified homework-related problems, have parents and teachers collaboratively develop informal educational supports that may be feasibly implemented by teachers during the school day.
- Provide teachers with a list of ideas for school-based homework support (*Use Handout: List of School-Based Homework Support*)
 - Designate a peer to function as an aid for helping the adolescent collect homework materials from the locker at the end of the day, or for cross-checking assignments written down in the assignment notebook
 - Designate a consistent time and place when the adolescent should be writing assignments down during class
 - Have teacher prompt the adolescent to write assignments down or to spot check for all assignments written down
 - Have each classroom teacher provide initials next to assignments written correctly
 - Have teacher aid in the organization of the assignment notebook and binder at the beginning or end of each day
 - Have student seated in the front of the classroom near the blackboard
 - Allow the student to be late to the following class provided he or she stay to write assignment down at the end of each class
 - Obtain an extra set of books to leave at home
- Emphasize to teachers that interventions set up within the school system will be tracked and rewarded at home. Targeted behaviors (writing assignments down, bringing home necessary materials, organizing

homework binder, etc.) will be defined according to criteria needed to achieve these daily goals (eg. 3 out of 4 assignments must be written down) and home-based rewards and privileges will be earned by the adolescent for success at these goals.

- In particular, if not already addressed through the discussion, ask teachers to describe methods for getting children to write down homework assignments and bring appropriate materials home. Ask parents and teachers to develop a plan that will allow homework to be accurately and legibly recorded during the school day, and for the correct textbooks and material to be brought home.
- Discuss with teachers the absolute maximum amount of time the adolescent should spend on homework. Discuss goals of the homework program to increase productivity and efficiency and the rationale for limiting homework time. Ask the teacher to discuss if and how the child would be penalized for incomplete homework.
- Finally, discuss the importance of consistency in implementing these interventions and encourage regular parent-teacher contact to maintain and modify these interventions as changes or new issues arise.
- Let teachers know that you will be making a follow-up phone call to each of them in two weeks in order to provide support in implementing these strategies at school and in troubleshooting any problems or obstacles which may have arose.
- Offer contact information and encourage them to contact you earlier than this should any problems arise, or if they have any questions about the intervention.
- Remind parents to continue completing daily homework logs, weekly measures, and to bring the adolescent's homework and assignment binder to the next session

SESSION 3: DEVELOPING A HOMEWORK MANAGEMENT PLAN: MANDATORY STUDY TIME AND PRIVILEGE SYSTEM

RATIONALE

The goal of the second and third sessions are to teach parents and adolescents methods for better managing and organizing the homework process at home (e.g., establishing a mandatory study time, organizing the assignment binder). Through modifying antecedents (schedule, location, materials, and organization) and consequences (access to privileges) within the home environment, the adolescent should be better able to effectively and efficiently complete homework. Procedures will be created and collaboratively agreed upon by the parent, adolescent, and therapist for keeping track of assignments, bringing home materials, organizing the assignment binder and homework folders, turning in assignments, the schedule and setting for doing homework, and daily goals and mandatory study time for homework completion. Other individualized behavioral goals may also be established if necessary (i.e., decreasing arguing or complaining behavior during homework).

MATERIALS NEEDED

- Weekly Measures for Upcoming Week
- Daily Homework Logs for Upcoming Week
- Homework Contract Sheet Part 1 (Should be on color paper to engage attention)
- Adolescent's Assignment Binder and Homework Materials (brought to the session by parents)
- Handout: Mandatory Study Time and Privilege System
- Handout: Establishing a Good Homework Routine/Schedule
- Handout: List of Reinforcers adapted from [Pelham, W.E (2002). Attention Deficit Hyperactivity Disorder: Diagnosis, Assessment, Nature, Etiology, and Treatment. Pittsburgh: Pelham, W.E.]

PHASE 1: COLLECT MEASURES AND REVIEW THERAPY HOMEWORK FROM LAST WEEK

- Collect weekly measures and daily homework logs
- Ask for reactions from case examples read
 - How does this sound similar to or different from your own child?
- Discuss the antecedents and consequences generated for 2 identified homework-related problematic behaviors
 - What have you learned about your child through this process?
 - How might this knowledge be used to help your child?
 - What are some things you could try to do to change these behaviors?
 - Review the concept of antecedents and consequences

PHASE 2: ESTABLISH A STRUCTURED HOMEWORK PLAN

- Review the importance of parental involvement in their adolescent's education for improving academic success
- Review the importance of understanding ADHD as a disability, and that individuals with ADHD require extra aid and support in order to be successful
- Discuss with the adolescent the importance of joining with their parent and developing an alliance for getting homework done
- Use Handout: *Establishing a Good Homework Routine* to provide a visual for discussing each point. Ask questions about what typically occurs at home and aid the parent and adolescent in collaboratively deciding on basic homework rules and recording these rules on the *Homework Contract Sheet*.
 - Choose a quiet, non-distracting location (table/desk clean, no music, tv, videogames, or noise from other sources, etc)
 - Choose a location where parent can supervise from a distance
 - Consistent time to start homework (may be different on days with extracurricular activities and start later)
 - Short (5-min breaks) allowed
 - Limited number of short breaks
 - Locate all needed supplies and materials

PHASE 4: ESTABLISHING A MANDATORY STUDY TIME

- Explain the importance and benefits of limiting the time spent on homework such as: increased productivity, efficiency, and less parent-child conflict
- Establish two study blocks (usually 1 to 2 hours total) with a short study break in between the two study blocks.
- Explain to parents the importance of maintaining a consistent homework routine to establish consistency and good study habits, even if the child does not have any homework or the parent is unsure if they have any homework. Children with ADHD have difficulty creating habits on their own, and if the homework schedule and amount of time varies considerably each day, this makes it very difficult for the child or adolescent with ADHD to develop appropriate homework habits or routines.
- If the adolescent does not have homework, have them study for an upcoming test, begin work on a long-term project, or read from a school textbook. Parents should choose what the adolescent will work on if the adolescent does not bring home assignments from school.
- Once the child has completed the two study blocks, they should be allowed to quit homework if they choose, even if all of the homework has not been completed. Parents can encourage them to complete more work, but this should ultimately be the adolescent's choice, and they should be granted all privileges associated with completing the study blocks. While not completing all homework may have negative consequences at school, the goal of a mandatory study time is to develop study habits that are consistent and more productive, and to decrease negative patterns at home (i.e., homework procrastination, complaining, extending homework to last all evening, parent-child conflict, etc.).
- Length of study blocks may need to be modified on days when other extracurricular activities or events occur. The plan for these situations should be incorporated into the HW contract.
- Ask for reactions to the ideas just presented, thoughts, concerns, opinions, etc. to make sure all parent and adolescent concerns regarding this process are addressed and that everyone is on the same page. Make modifications to the HW contract/system based on input from parent and adolescent.

PHASE 5: ESTABLISHING A PRIVILEGE SYSTEM

- Brainstorm with the parent and adolescent a list of privileges within the home (eg., TV, computer, radio, phone, sports equipment, pets, video games, etc.) that can be made contingent on daily homework behavior (*Use Handout: Reinforcers*). Ideally, these privileges should be physically removed (e.g., locking video games, radio in closet)
- Explain that the amount (time, magnitude, etc) of privileges received by the adolescent should be determined by 1) the completion of mandatory study time and 2) the degree to which the assignment notebook is complete and organized. This week we will focus only on the first goal.

- The details of each privilege system are developed collaboratively between parent, adolescent and therapist
 - Example: adolescent receives phone and TV time for completion of the first mandatory study block, and access to video games, phone, and radio for completion of the second study block
 - OR all privileges are contingent upon completion of entire mandatory study time
- Record privileges contingent upon each homework goal on the *HW Contract Sheet*
- Restrict access to privileges until goals are completed
 - Discuss effectiveness of and rationale for restricting access to privileges: Provides external motivation for adolescent, provides expected structure and consequences, prevents limitless distractions.
 - Importance of being consistent (e.g., don't give in or give up!) No exceptions for extraneous circumstances (e.g., a friend calls and has something they have to talk about now)
 - Importance of supervising the adolescent in the evening
 - Remove access to privilege for 24 hours if adolescent engages in activity before earns it
 - Discuss potential obstacles to restricting access to privileges
 - Discuss with adolescent the importance of their support

PHASE 6: DETERMINE REWARDS OR PRIVILEGES CONTINGENT UPON MEETING OTHER BEHAVIORAL GOALS

- If an additional behavioral target is chosen, this can be added to the *HW Contract Sheet* and tracked on the *daily homework log*.
 - Clearly define desired behavior at a level that adolescent is likely to achieve based on current level of performance
 - *Example:* If Mark currently requires five or six reminders to begin homework, establish a goal that Mark will begin homework with no more than two reminders.
 - Record progress on this goal daily on the *homework log*
 - Other possible behavioral targets may have to do with complaining or arguing during the homework process, refusing to start homework, or other difficulties.

PHASE 7: EXPLAIN ROLES OF PARENT AND CHILD IN HW PLAN

- Adolescent role
 - Start homework at designated time with minimal reminders
 - Write down assignments and bring home necessary materials
 - Complete homework without complaining or arguing
 - Ask for help when needed
 - Take breaks according to the schedule
 - Receive rewards for good homework completion
 - Allow parent to help structure homework time

- Parental role
 - Set clear expectations and goals
 - Make clear the privileges or rewards to be earned
 - Help adolescent understand or attend to the directions for homework
 - Supervise and provide help when requested
 - Review goal achievement and administer rewards or grant access to privileges
 - Be consistent with system
 - Track progress

PHASE 8: INTRODUCING ADDITIONAL INFORMATION TO TRACK ON THE DAILY HOMEWORK LOG

- Parent and adolescent together should record the following:
 - The amount of time spent doing homework each evening
 - Whether mandatory study time was completed
 - Any additional behavioral goals

PHASE 9: INTRODUCE THERAPY HOMEWORK

- Implement mandatory study time at home
- Restrict access to privileges until study time complete
- Do not penalize for organizational problems, we will begin to target this next week
- Record information on daily homework log
- Bring the adolescent's homework and assignment binder with them for the next session
- Complete weekly measures

SESSION 3: DEVELOPING A HOMEWORK MANAGEMENT PLAN: ORGANIZATION OF HOMEWORK PROCESS AND OVERVIEW OF BEHAVIOR MANAGEMENT STRATEGIES

RATIONALE

The goal of the third session is to teach parents and adolescents methods for better organizing the homework process at home (e.g., bringing home necessary materials, organizing the assignment binder, writing assignments down). Procedures will be created and collaboratively agreed upon by the parent, adolescent, and therapist for keeping track of assignments, bringing home materials, organizing the assignment binder and homework folders, and turning in assignments. Other individualized behavioral goals may also be established if necessary (i.e., decreasing arguing or complaining behavior during homework). The first part of this session will be conducted with both the parent and adolescent. The second part of this session involves psycho-education with the parent on behavior management strategies that they can apply during the homework process to better manage their adolescent's behavior. The adolescent can work on completion of homework at this time in other room.

MATERIALS NEEDED

- Weekly Measures for Upcoming Week
- Daily Homework Logs for Upcoming Week
- Homework Contract Sheet: Part 2 (Should be on color paper to engage attention)
- Adolescent's Assignment Binder and Homework Materials (brought to the session by parents)
- Handout: Binder Organization
- Handout: Behavior Management Strategies

PHASE 1: REVIEW PROGRESS AND OBSTACLES IN IMPLEMENTING HOMEWORK MANAGEMENT PLAN

- Review homework logs for the past two weeks
- Discuss adolescent progress and involvement (offer praise for any improvements observed)
- Discuss any parent or adolescent-reported problems in consistent implementation of the system
- Give both parent and adolescent time to respond on how well things went during the past week and what did not go well
- Troubleshoot any obstacles which may have arose and suggest solutions

PHASE 2: ESTABLISHING ASSIGNMENT BINDER PROCEDURES

- A 3-ringed binder or notebook with a space for folders should be kept by the adolescent (a binder should be purchased by the parent if the adolescent is not currently using one or has lost their binder)
- Explain how assignments are to be written in the binder
 - Assignments for each class should be written down next to the correct subject heading
 - If there is no assignment in a class, the adolescent should write "None" next to the correct subject heading
 - All assignments should be written legibly so that someone else can read them
 - All assignments should have teacher initials next to them to indicate that the assignment is accurate if this can be agreed upon with teachers (established during the teacher meeting)
- Explain how the binder should be organized
 - No loose papers should be in the binder
 - Every subject should have its own folder
 - All papers should be in the correct subject folder
 - One folder should be designated the homework folder
 - All homework should be put in the homework folder
- Parent should check assignment binder upon adolescent's arrival home for completion and organization
- Refer to the *daily homework log* for assignment binder criteria
- Have parents cross-check with homework hotline, or establish a system for parents to communicate with teachers one week in advance to get

homework assignments or a daily e-mail, or parents can check board upon pick up

PHASE 3: MODEL CHECKING THE ASSIGNMENT NOTEBOOK AND RECORDING EACH GOAL FOR THE PARENT AND ADOLESCENT

- Use the adolescent's assignment notebook and homework which they were asked to bring with them for this session
- Request for the adolescent to sit down and open the assignment notebook to the correct dated page
- Have parent check the notebook for each goal and record
- Have parent record what privileges have been earned to be received later that evening by the adolescent
- Emphasize the little amount of time that this requires in comparison to time spent arguing, summer school, etc

PHASE 4: DETERMINE REWARDS OR PRIVILEGES CONTINGENT UPON MEETING DAILY ORGANIZATIONAL GOALS

- If incorporating organization goals into the privilege system, divvy up privileges that will be contingent upon mandatory study time from those that will be contingent on meeting organizational goals. Privileges contingent on organizational goals should be salient and motivating to the adolescent as well, so that the adolescent has the incentive to make the effort in this area.
 - Example: adolescent receives phone and TV time for mandatory study time completion, and computer and video games for completion of the assignment notebook
 - Example: one hour of access to all privileges for completion of mandatory study time and unlimited access to privileges for the rest of the evening for completion of both mandatory study time and the assignment notebook
- If using a reward system that is separate from the privilege system:
 - First, generate a list of at least 10 additional reinforcers that both parent and adolescent agree are salient and motivating to the adolescent
 - Example: snacks, a dollar, special trips or outings, renting a video, going to the mall or movies with friends (*Use Handout: Reinforcers*)
 - Have parent and adolescent choose a daily reward for completion of a certain number of goals
 - Example: Sarah will have 4 out of 5 assignments written down and no loose papers in her binder, in order to have her choice of renting a video or ordering in pizza the following evening
 - Goals should be set at a level slightly above what the adolescent is currently achieving, so that there is a high likelihood for initial success. This will increase adolescent

commitment and engagement in the program initially, leading to more work and effort in the long run.

- These daily rewards and other similar reinforcers should be restricted from access at all other times. If the environment is saturated with free access to other similar reinforcers, this will reduce the adolescent's interest in earning a reward.
- Adolescents and parents also have the option of choosing a weekly reward for successful completion of a certain number of goals.
- Rotate daily and weekly rewards to keep them interesting and motivating to the adolescent.
- Record privileges and rewards earned each day on the *HW Contract Sheet*.

PHASE 5: INTRODUCING ADDITIONAL INFORMATION TO TRACK ON THE DAILY HOMEWORK LOG

- Parent and adolescent together should record the following:
 - The amount of time spent doing homework each evening
 - Whether mandatory study time was completed
 - Whether all necessary HW materials were brought home
 - Whether all papers are in correct folder in binder
 - Whether there are loose papers in binder
 - Check for the number of assignments that are written down and teacher initials are received
 - Check and track progress for any additional behavioral goals
 - Administer rewards for successful completion of each goal

PHASE 6: USE APPROPRIATE BEHAVIOR MANAGEMENT STRATEGIES TO ENCOURAGE COMPLIANCE

- This phase involves a discussion with the parent alone. The adolescent can work on homework in another room during this time.
- Discuss with parents the four general principles of behavior management and how these strategies can be specifically applied to the homework situation. Discuss how these strategies have been extensively researched and found to be effective for managing child and adolescent ADHD behavior, and how they can help make implementing the homework system much smoother, with less parent/child conflict.
 - Don't let sleeping dogs lie. Praise small successes and appropriate homework behavior, even if for only a short period of time.
 - Ask parents what the qualities of their favorite and least favorite supervisor were. Ask them how motivated they were with each supervisor. Ask them what qualities they display as a supervisor of their child. Ask them which qualities are more likely to result in increased motivation of their child.

- Parents tend to focus on controlling the negative behavior, and ignore positive behavior. This is understandable as many parents feel afraid to interrupt their child when they notice good behavior because they don't want them to stop that behavior, or they think that they should not be praising their child for something they should be doing anyway. However, exclusive use of negative strategies (i.e., punishment) will not turn the situation around and may make it worse because it creates conflict at home.
- Discuss how focusing on the positives, even if they are hard to find, creates more motivation in your child, and more desire of your child to please you. In order to increase or maintain motivation of your child, research has indicated a 3:1 ratio of positive to negative comments. Any less than this is likely to create discouragement and lower motivation.
- Example: I am impressed with how well you are focusing on that math homework. I am proud of you for sticking with this even though I know it is not the most interesting topic. Wow, you got a lot of problems done in the last 15 minutes; at this rate, you will be done with homework in no time. I've noticed you have settled down and started your work, good job.
- Therefore, provide positive praise and attention to small successes. Don't ignore good behavior. Praise productivity and acknowledge when child is sitting attentively completing homework. Praising small successes is important because it increases the likelihood that those behaviors will occur in the future.
- Pick your battles. Ignore minor misbehavior during homework time.
 - Ask about some minor annoying habits or other things that the adolescent does during homework time. For example, your adolescent may doodle on paper during homework, may ask you a non-relevant question or try to engage you, may repetitively hit his pencil on the table or engage in another mildly annoying habit.
 - How do you typically react to these? How does your adolescent react to your response to these behaviors? Use social learning theory to help parents determine if their responses are increasing or decreasing the minor misbehavior of their adolescent.
 - What alternative parental responses might not reinforce your adolescent's behavior in this situation? Help parent brainstorm.
 - Discuss the principle of ignoring with parents.

- Little things that can be ignored should be. These are things which may be annoying but are not breaking major rules or being disrespectful. Parent should briefly turn away and stop talking to their adolescent at these times. Don't engage the adolescent until the behavior stops. This will prevent you and your adolescent from getting into negative conflict, arguing, lecturing, etc. over things that matter less. Ignoring minor misbehavior combined with praising small successes will allow you to develop a more positive relationship with your child. This relationship will provide a foundation for handling more important negative behavior that needs to be addressed through provision of consequences.
- This also goes for engaging your child during homework time. Encouraging their off-task behavior by laughing with them or answering their off-task questions, will increase the likelihood that they will attempt to communicate with you this way in the future, leading to less productivity. Limit talking with your child about your day and other fun topics to scheduled break times and after homework time.
- Be consistent when providing rewards or withholding privileges according to the HW contract.
 - Ask parents if they have ever given up and done the task themselves or allowed the adolescent off the hook when they procrastinated or complained. Based on social learning theory, how will this affect the adolescent's future behavior in this situation?
 - Giving in sends a message to the adolescent that if they complain, procrastinate or argue long enough, they will get what they want. This leads to increased negative behavior in the future, because there is no need to follow the rules, they can get what they want other ways.
 - Don't let your adolescent talk you into giving in or allowing something they have not earned. Don't allow them to use arguing or complaining as a tool to get you to back down.
- Let the rules, rewards, and consequences do the work for you.
 - Focus your attention on implementing the system and consequences. If consistent and desired by the adolescent, these contingencies will serve to change behavior.
 - Avoid negative communication such as lecturing, scolding, arguing, and nagging. Keep discussions about homework to

a minimum. These communication patterns lead to increased conflict and less motivation of your child to complete homework, and more often feelings of being forced or pressured. Don't hyper-focus on when child is not paying attention, procrastinating, complaining or demonstrating other negative behavior.

- Give direct, concise commands and make expectations clear and explicit.
 - State commands in a firm, businesslike tone of voice. Do not use questions or ask your adolescent to do something as a favor. For example, "Why don't you start your homework now?" makes it sound like starting homework is an option, when it is not. Instead, saying "Please begin your homework now" is a much more clear and explicit request, without room for confusion.
 - Explain what to do, rather than what not to do.
 - Give a request only when there are no competing distractions. Do not expect compliance when other things are happening because children and adolescents with ADHD naturally have difficulty in these situations.
 - Don't give multiple commands at one time. Children and adolescents with ADHD have difficulty following multi-step instructions and will often only accomplish the first command, leading to parental frustration and negative reactions.
 - Be careful of commands that involve a management of time. Since children and adolescents with ADHD have difficulty managing time, commands such as "Have your homework completed in one hour" will be difficult unless accompanied by a digital clock, timer or parental reminders of the time left throughout the process.
 - Never give a command that you do not intend to enforce with consequences if not completed. Your adolescent must learn that you mean what you say, or your requests will become meaningless and ignored by your child.
- Give parents the *Handout: Behavior Management Strategies* and have them post these strategies in a place where they can see them
- Ask parents to practice using these strategies during homework time with their adolescent

PHASE 7: REVIEW THE HOMEWORK MANAGEMENT PLAN WITH PARENTS AND ADOLESCENTS

- Adolescent writes assignments down during school and gets teacher initials
- Adolescent organizes binder before returning home

- Parent performs a daily check of the completion and organization of the assignment binder as the adolescent arrives home
- Parent makes request for adolescent to begin homework
- Parent and adolescent implement mandatory study time each evening
- Parent supervises homework process (provides help if needed)
- Parent uses daily homework recording log to track adolescent progress on goals
- Parent allows adolescent to have privileges when earned and not when they are not earned/restrict access otherwise

PHASE 8: INTRODUCE THERAPY HOMEWORK

- Remind parent and adolescent to bring adolescent's homework with them next week
- Have parent and adolescent continue to implement the mandatory study time and privilege system
- Have parent also check and track organizational goals of the child, and provide rewards when earned
- Have parent continue to complete daily homework logs
- Have parent complete weekly measures
- Bring assignment notebook and homework to next session

SESSION 4: TIME MANAGEMENT AND GOAL SETTING

RATIONALE FOR SESSION

This session focuses on time management strategies that can be implemented by the adolescent along with parent support, in order to improve productivity during homework time and completion of long-term projects and studying for tests. The goal setting procedure should be used for assignments that are tedious, overly challenging, or disliked by the adolescent. This procedure makes work manageable and less overwhelming by breaking the assignment down into smaller subunits and setting goals for completion and accuracy for each segment. In addition, incentives for successful goal attainment will also be used to help boost motivation and increase work productivity. Use of a monthly calendar can help plan ahead for future projects, and the use of a daily planner can help prioritize daily activities.

MATERIALS NEEDED

- Weekly Measures for Upcoming Week
- Daily Homework Logs for Upcoming Week
- Handout: Goal Setting Tracking Sheet
- Handout: Goal Setting Procedures
- Handout: List of Reinforcers adapted from [Pelham, W.E (2002). Attention Deficit Hyperactivity Disorder: Diagnosis, Assessment, Nature, Etiology, and Treatment. Pittsburgh: Pelham, W.E.]
- Handout: Reward Tracking Sheet (Optional)
- Handout: Monthly Calendar
- Handout: Daily Planner

- Intervention Satisfaction and Acceptability Questionnaires
- Homework assignment brought to session by parent and adolescent
- Video equipment for recording observation session
- Packet of Monthly Follow-Up Measures

PHASE 1: COLLECT WEEKLY MEASURES AND DAILY HOMEWORK LOGS

PHASE 2: REVIEW PARENT-TEACHER CONSULTATION WITH PARENTS AND ADOLESCENT

- Ask parent for feedback on the teacher session, and if they have any concerns or questions
- Discuss the importance of keeping in regular contact with teachers and maintaining a positive working relationship
- Make sure each educational support that teachers plan to implement is also targeted at home and that rewards are associated with successful completion (e.g., teacher prompts adolescent to write homework assignments down at school, parent rewards adolescent for coming home with assignments written down)

PHASE 3: REVIEW PROGRESS AND OBSTACLES IN IMPLEMENTING HOMEWORK MANAGEMENT PLAN

- Review homework logs for the past two weeks
- Discuss adolescent progress and involvement (offer praise for any improvements observed)
- Discuss any parent or adolescent-reported problems in consistent implementation of the system
- Troubleshoot any obstacles which may have arose and suggest solutions

{Based on the individual needs and targeted goals for each family, the therapist should decide whether to instruct parent and adolescent in the use of goal setting, or the use of a monthly and daily planner. Goal setting should be chosen when parents complain that the adolescent takes a very long time to complete homework because the assignments are very boring, tedious or challenging, and the child often daydreams instead of working productively. Use of planners should be chosen when the adolescent is not completing long term assignments or studying for tests in advance, and is not using his or her time appropriately by choosing the most important assignments to complete first. If both of these areas are problematic, therapists should choose to focus on the area which appears to be the most impairing. Parental capability in understanding and implementing interventions at home should also be taken into consideration when determining which strategy to focus on. Both strategies require parental involvement; however, the use of goal setting may be more appropriate for adolescents who require intensive, regular support and cannot function for short periods without this guidance. Use of daily/monthly planners may be more appropriate for adolescents who are more independent. }

PHASE 4: INTRODUCE AND EXPLAIN GOAL SETTING PROCEDURES

- Explain importance of time management and setting goals. Make sure to discuss with parents and adolescents when to use goal setting (for long, tedious, difficult or disliked assignments) and why goal setting is likely to be useful (makes work less overwhelming, increases efficiency and attention)
- For each 10-15 minute time block, have parent and adolescent together establish a reasonable, clearly defined goal that details the amount of work to be accomplished. Describe both the amount to be completed and the accuracy level desired. Use *Handout: Goal Setting Procedures* to facilitate this discussion.
 - *Example:* Maria will complete 6 algebra problems, with at least 4 out of 6 correct, in 15 minutes. Brian will outline three main points from chapter 3 of the novel in 10 minutes.
- Goals should be achievable and set slightly higher than the adolescent's current level of performance.
- Include the adolescent in setting goals and clearly explain the expectations for each goal before the adolescent begins work on that goal.
- Record each goal on goal-tracking sheet and use a check or star to indicate goal completion (Use *Goal-Tracking Sheet*).
- Use a timer to aid the adolescent in managing his or her time.
- This procedure should be used for at least two difficult assignments over the course of a week. The goal tracking sheet should be used to record progress using this procedure.

PHASE 5: USE FREQUENT SMALL BREAKS TO REWARD GOAL ACHIEVEMENT

- Discuss that when assignments are really boring or difficult, it takes extra effort and motivation to get through them. Rewarding the adolescent with more frequent breaks can help increase the motivation to get through the 10 to 15 minutes of work. This prevents work from dragging on all evening when an explicit, easily achievable goal and reward is not set-up. Therefore, the task feels overwhelming and the adolescent works slower rather than faster.
- Reward the adolescent with a short break for successful goal completion. If the adolescent does not successfully complete the goal, set another shorter goal and reset the timer to begin work. Make sure the goal is manageable so that there is a high chance for success. It is important to keep the adolescent motivated, without making it too difficult to achieve rewards.
- Decide on length of each break and have the adolescent set a timer for the break. When the timer goes off, give the adolescent a reminder to return to homework. If they don't return immediately, discuss that they will have a longer work period next time.
- Another method of reinforcement is to use a reward such as a snack or video game time to reward completion of each 10 to 15 minute work period. The method of reward should be worked out between parent and

adolescent and should be something that both agree on and feel will work at home.

PHASE 6: MODEL THE GOAL SETTING PROCEDURE FOR PARENTS AND ADOLESCENTS

- Model with parent and adolescent how to use this procedure by choosing a current homework assignment of the adolescent's, and having the parent and adolescent practice breaking that assignment down into smaller subunits, deciding on a goal for each subunit, and establishing rewards for successful goal completion.

OR

PHASE 4: HOW TO PREPARE FOR LONG-TERM ASSIGNMENTS

- We know how difficult it can be for children with ADHD to plan ahead. As we have discussed previously, part of this disorder involves difficulties managing time and planning for the future. Therefore, it will be critical for you to work with your adolescent to develop strategies for effectively managing time. When these strategies are used consistently, they can become a learned habit that your adolescent performs daily.
- Long-term assignments are particularly problematic for children and adolescents with ADHD. Science fair and history projects, book reports, and other long-term assignments are often where adolescents with ADHD fall behind. This is because assignments will often be started the week of, or even the night before a project is due. This leaves little time to get large assignments done, leading to projects that are not turned in, are incomplete, or are executed poorly. These assignments are often worth a large portion of the final grade, and therefore doing poorly on a long-term assignment can subtract a letter grade or more from the final score.
- The next strategy will help your adolescent plan ahead for long-term assignments. This requires the use of *Handout: Monthly Calendar*.
 - As soon as a long-term project is due, have your adolescent determine how many weeks they have to complete the project. Then working together with your adolescent, help them divide up the assignment into a number of smaller parts.
 - For example, a research paper may involve the following steps:
 - Research and choose a topic
 - Locate sources of information
 - Read the sources
 - Prepare note cards from reading
 - Write an outline
 - Write a draft
 - Revise the draft
- Parents should be very involved in this process, especially during the first few times the adolescent attempts this exercise. This will help the adolescent learn to break the project down into appropriate steps.

- Once the project has been broken down, use the *Monthly Calendar* to record when each part of the project should be completed. Usually each part should be completed by the end of a given week. The number of steps should be equal to the number of weeks before the assignment is due.
- If the amount of work for a given week is too large to accomplish in a day or two, break that part of the project down into even smaller parts, and mark on the calendar the due dates for getting each part done during the course of the week.
- All tests, quizzes, projects, and book reports should be broken down and recorded on the monthly calendar as they are assigned. The monthly calendar should be posted on the refrigerator or other location where both parent and adolescent have easy access.

PHASE 5: HOW TO PRIORITIZE WORK THAT NEEDS TO BE ACCOMPLISHED

- Each day at the start of homework time, the parent and adolescent should update the monthly calendar if needed, and consult the calendar in order to prioritize what work needs to be completed during mandatory study time that evening.
- Parents and adolescents should use both the adolescent's daily assignment notebook and the assignments recorded on the monthly calendar to determine what needs to be completed that evening during mandatory study time. In addition, to assignments due tomorrow, part of mandatory study time should be spent studying for upcoming tests, quizzes, and working on projects. Using the monthly calendar will help the parent and adolescent determine what needs to be accomplished that day.
- If a visual, more concrete method is needed for prioritizing assignments that are to be completed daily, the adolescent can complete the *Handout: Daily Planner* with the help of his or her parent. On the *Daily Planner*, the adolescent will record what work they "must do" that evening, and what work they "want to do" if they have extra time.

PHASE 6: ENFORCING THE USE OF TIME MANAGEMENT STRATEGIES

- In addition, to parents being involved in helping the adolescent create an appropriate timeline for completion of the project, they should also be responsible for enforcing completion of each step. Parents can use any of the previous methods discussed to encourage the adolescent to record assignments on the monthly calendar and to use the daily planner. For example, parents may use reminders or prompts to use the strategies, help their adolescent break assignments down, praise them for successful completion, and provide small rewards or snacks for using the strategies.
- Incentives or privileges should also be provided when the adolescent not only completes mandatory study time, but also successfully completes all "must do" items on his daily planner. Weekend trips to the movies, renting a video, an outing with parents or friends, or other activities may be used for successful completion of "must do" items on a certain number of days in a

given week, decided upon in advance by parent and adolescent, and recorded in the HW contract.

PHASE 7: MODEL USE OF MONTHLY CALENDAR AND DAILY PLANNER

- Model for the parent how to use these procedure by choosing a long-term assignment of the adolescent's, and having the adolescent practice breaking that assignment down into smaller parts, deciding on due dates for each part of the assignment, and establishing rewards for successful goal completion.
- Model for the parent how to use the daily planner. Have the adolescent use his or her assignment notebook and monthly planner to determine what "must be done" that evening, and what he "would like to do". Record these on the daily planner.

PHASE 8: INTRODUCE THERAPY HOMEWORK

- Use the goal setting procedure for at least two of the adolescent's more difficult, tedious or disliked homework assignments during the course of the next week, OR use the monthly planner for every long-term assignment or upcoming test, and the daily planner each evening before beginning mandatory study time.
- Follow the procedure for setting goals and monitor progress on the goal tracking sheet.
- Make sure to be consistent in administering daily and weekly rewards or privileges associated with goal completion.
- Continue to implement the HW contract on a daily basis. Problem solve with your child when obstacles arise.

PHASE 8: HAVE PARENT AND ADOLESCENT COMPLETE INTERVENTION SATISFACTION AND ACCEPTABILITY QUESTIONNAIRES

PHASE 9: HAVE PARENTS AND ADOLESCENTS ENGAGE IN ANOTHER 10-MINUTE HOMEWORK TASK THAT IS OBSERVED AND VIDEOTAPED

- Parent and adolescent should have brought to the session homework from a class that the adolescent is currently having homework difficulties in. This homework should be similar in subject matter and type of assignment to what was brought to the original assessment session.
- The adolescent will be given the instruction to work on this homework just as he/she would at home.
- The parent will be given the instruction to provide as little or as much help as he/she feels is needed on this homework task.
- This interaction will be videotaped for 10-minutes.

PHASE 10: INTRODUCE AND EXPLAIN MONTHLY FOLLOW-UP MEASURES

- Discuss with parent and adolescent the collection of monthly measures from them for the next three months. These measures will be mailed to

you with an addressed, stamped envelope for you to return to us completed. Please complete these promptly after receiving them. We will send \$5 in the mail for each completion of monthly measures that we receive from you.

PHASE 11: CLOSING

- Praise parents and adolescents for success or progress made during the course of the program
- Reiterate the need for continued adherence to the strategies taught in the program in order for continued improvement to be seen. Point out that more progress is expected over time if they continue to use these strategies.
- Thank them for their participation and encourage them to fill out follow-up forms as soon as they are received in the mail.

Appendix C: Treatment Integrity Checklist

SESSION 1: PSYCHO-EDUCATION AND IDENTIFICATION OF HOMEWORK-RELATED PROBLEM BEHAVIORS

Session Content:

- Collect Daily Homework Logs and Weekly Measures; distribute additional logs and measures.
- Discuss goals of the homework program.
- Discuss format and session content of the homework program; explain each session topic and what will be covered.
- Review Handout: What Parents and Teachers Should Know about ADHD
- Distribute the Handout: ADHD and Associated Homework Problems; discuss how symptoms of ADHD may result in specific homework difficulties
- Ask parents and adolescents for examples from home where they noticed these symptoms affecting academic work of the adolescent.
- Discuss how increased academic demands in middle school lead to greater academic difficulties for adolescents with ADHD; highlight developmental, hormonal, and environmental changes.
- Discuss how the transition to adolescence can also be difficult for parents and teachers.
- Discuss how ADHD affects multiple brain functions; describe ADHD as a disability that requires support; use analogies from other disorders.
- Use the Diagram: Academic Pattern of ADHD without Educational Support, to emphasize the negative outcomes that can arise without needed support from parents and teachers.
- Define behavior for parents.
- Discuss how the environment has an effect on behavior and give examples.
- Describe social learning theory: antecedents, behaviors, and consequences.
- Have parents and adolescents together brainstorm a list of specific behaviors related to homework that they would like to change; write on dry erase board.
- Choose two of these behaviors and help parents and adolescents identify environmental antecedents and consequences associated with each behavior; write on dry erase board.
- Discuss that techniques learned in this program will help change antecedents and consequences in environment to improve behavior of adolescent.
- Discuss importance of parent and adolescent both being involved and working together to produce positive change.
- Spend 10 minutes with the adolescent to develop trust, engage and obtain initial commitment, get feedback, and ask future-oriented questions to instill hope (this can occur at beginning or end of session).
- Explain to parents and adolescents the importance of completing between-session assignments.

- Distribute Handout: ABC Worksheet; Explain homework assignment.
- Encourage continued completion of daily homework log and weekly measures.
- Ask parent and adolescent to bring the adolescent's assignment notebook and homework materials to the next session.

SESSION 2: PARENT-TEACHER CONSULTATION

Session Content:

- Collect weekly measures and Daily Homework Logs from parents.
 - Collect measures from teachers.
 - Outline what will be discussed in this parent-teacher consultation session.
 - Thank teachers for their participation; recognize their commitment to the child.
 - Introduce and discuss the Homework Intervention Program to teachers.
 - Discuss goals of homework intervention program.
 - Discuss parental involvement in the homework program.
 - Provide psychoeducation on ADHD
 - What is going on with the adolescent with ADHD? How symptoms contribute to homework problems? What happens academically when the child enters middle school? What academic pattern can be expected without educational support? What kinds of support have been shown to be effective for helping children with ADHD in school?
 - Discuss teacher roles in the homework program.
 - Gather information from teachers on the environmental context of problematic homework-related behaviors (frequency, severity, setting, antecedents, consequences).
 - Discuss problematic homework-related behaviors at school based on the teacher-reported Academic Performance Rating Scale.
- Discuss setting up school-based interventions and support.
- Ask teachers to describe methods for getting children to write down homework assignments and bring appropriate materials home.
 - Ask parents and teachers to develop a plan that will allow homework to be accurately and legibly recorded during the school day, and for the correct textbooks and material to be brought home.
 - Distribute handout to teachers: List of School-Based Homework Support.
 - Discuss with teacher what school resources are available to alleviate each homework-related problem discussed.
 - Acknowledge the time constraints of the teacher and get their feedback on what they are and are not capable of implementing within the classroom.
 - Emphasize to teachers that interventions set up within the school system will be tracked and rewarded at home
 - Discuss with teacher the maximum amount of time that should be spent on homework; relate it to goals of intervention program.

- Discuss how child should be penalized if homework is not completed.
- Let teacher know that you will be making a follow-up phone call to each of them in two weeks to discuss any problems and to provide support.
- Offer contact information and encourage them to contact you earlier than this should any problems arise, or if they have any questions about the intervention.
- Thank teachers for their time.

SESSION 3: DEVELOPING A HOMEWORK MANAGEMENT PLAN: PART 1

Session Content:

- Collect weekly measures.
- Review between session assignments from last week (i.e., ABC Worksheet).
- Review importance of parental involvement and understanding ADHD as a disability.
- Distribute Handout: Establishing a Good Homework Routine; discuss points within handout.
- Discuss and establish a mandatory study time using Handout on Mandatory Study Time; Record rules on HW contract.
- Brainstorm a list of reinforcers and privileges with the parent and adolescent that would be highly motivating to the adolescent (both daily and weekly reinforcers). Use the Handout: Reinforcers to help develop this list.
- Discuss and establish a privilege system; Use Handout: Privilege System.
- Record details of the privilege system on the HW Contract.
- Explain restrictions of access to privileges until goals are completed and how consistency and supervision in implementation is needed.
- Explain parent and child roles in the HW process and implementing the HW Contract.
- Discuss and review the Homework Management Plan with the parent and adolescent.
- Discuss homework to implement the HW management contract.

SESSION 4: DEVELOPING A HOMEWORK MANAGEMENT PLAN: PART 2

Session Content:

- Review progress and obstacles in implementing the Homework Management Plan at home.
- Review with parent and adolescent criteria for organization of assignment binder and for writing down assignments in assignment notebook; Use Handout.
- Record goal for assignment binder and assignment notebook on the HW contract sheet.
- Model organization of the assignment notebook and recording each goal for parent and adolescent (if parent and adolescent did not bring notebook with them, discuss these procedures)
- Determine rewards or privileges contingent upon meeting organizational goals.

- Record rewards/privileges adolescent will earn for meeting these goals on the HW contract sheet.
- Introduce additional information to be recorded on the daily homework log.
- Discuss behavior management strategies with parent; Use Handout.
- Introduce homework assignment to continue to implement the plan with additional organizational goals, use daily logs, and complete weekly measures.

SESSION 5: TIME MANAGEMENT AND GOAL SETTING

Session content:

- Collect weekly measures and daily homework logs
- Review progress in implementing Homework Management Plan.
- Discuss any parent or adolescent-reported problems in implementing plan.
- Decide on instruction in either goal setting or daily/monthly planning activity.

If using goal setting:

- Introduce and explain goal setting procedures.
- Discuss importance/rationale for goal setting.
- Discuss the importance of establishing a clearly defined goal for every 10-15 minute time block.
- Explain to the adolescent the expectations for each goal.
- Explain the use of the goal-tracking sheet to track each goal and indicate goal completion.
- Have parent and adolescent decide on either daily and weekly reinforcers, privileges or short study breaks to reward goal achievement.

If using daily/monthly planning:

- Discuss difficulties planning ahead and managing time in ADHD
- Discuss use of a Monthly Calendar to break down long-term assignments into smaller parts
- Model this procedure for the parent by helping the adolescent practice break down a long-term assignment into a number of smaller parts, and mark down weekly due dates on the monthly calendar for each part of the assignment
- Emphasize that adolescents should use the monthly calendar to break down all large projects and studying for upcoming tests and quizzes, with the help of parents.
- Have parent and adolescent determine reward/privileges to be earned by the adolescent for using the daily planner and monthly calendar.
- Emphasize to parents the importance of supervising this process, providing prompts or reminders, helping the adolescents break down assignments, determine priorities, and implement plans.
- Emphasize that parents are responsible for enforcing completion of work by due dates. This can be done by withholding privileges until work is completed at the end of a given week.

- Introduce homework to continue to implement the HW contract, and to utilize organizational and time management strategies on a regular basis.
- Have parent and adolescent complete intervention satisfaction and acceptability questionnaires.
- Introduce and explain monthly follow-up measures.
- Praise parents and adolescents for success or progress made during course of the program.
- Discuss the need for continued adherence to the strategies taught in the program in order for continued improvement to be seen
- Thank them for their participation and encourage them to fill out follow-up forms as soon as they are received in the mail.

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