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An Evaluation of a Summer Treatment Program for Adolescents With ADHD

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Although adolescents with attention-deficit/hyperactivity disorder (ADHD) experience serious life impairment (Molina et al., 2009; Wolraich et al., 2005), very few effective psychosocial interventions exist to treat this population (Pelham & Fabiano, 2008; Smith, Waschbusch, Willoughby, & Evans, 2000). Intensive child-directed interventions are an important component in the treatment of childhood ADHD (Pelham et al., 2005), yet no study exists that fully evaluates an intensive adolescent-directed intervention. The current investigation is a pilot study of 19 adolescents with ADHD (age range: 11-16) who participated in an 8-week intensive Summer Treatment Program–Adolescent (STP-A) during the summer of 2009. The program was developed to address specific difficulties associated with ADHD in adolescence. As such, the program was designed to be ecologically valid, age appropriate, and parent-involved. Results suggest that almost all adolescents who attended the STP-A benefitted from the program according to parent, self, and staff ratings and objective measures. These ratings also indicated that participants showed moderate improvement in each of the 6 domains targeted by treatment (i.e., conduct problems, adult-directed defiance, social functioning, inattention/disorganization, mood/well-being, and academic skills). All parents indicated that both they and their children benefitted from the program and all but 1 parent indicated that the STP-A was more effective than the treatments they had utilized in the past. A case example is presented to illustrate typical improvement patterns during the STP-A. Discussion addresses the role of the STP-A in the treatment of ADHD in adolescence.

Attention-deficit/hyperactivity disorder (ADHD) is traditionally viewed as a disorder of childhood; however, current empirical work suggests that in most cases, ADHD symptomatology and related impairment persist into adolescence (Barkley, Fischer, Smallish, & Fletcher, 2002; Wilens, Biederman, & Spencer, 2002). Although evidence suggests that adolescents with ADHD experience a decrease in the severity of their DSM symptoms (Barkley, Fischer, Edelbrock, & Smallish, 1990; Hart et al., 1995; Mick, Faraone, Biederman, & Spencer, 2004), these adolescents continue to experience a constant level of ADHD-related impairment during adolescence (Molina et al., 2009). Across domains, the adolescent and young adulthood outcomes of children diagnosed with ADHD are grim, highlighting the need for sustained long-term treatment in this population (Barkley, Murphy, & Fischer, 2007; Molina et al.; Wolraich et al., 2005). Unfortunately, few adolescent-specific treatments exist to address this need (Smith, Waschbusch, Willoughby, & Evans, 2000).

Although some argue that childhood and adolescent ADHD are sufficiently similar to apply childhood treatments to adolescents (Barkley, 2004), there is evidence to the contrary. For example, the most common treatment for ADHD in childhood is stimulant medication (Smith, Barkley, & Shapiro, 2006); however, as individuals with ADHD move through adolescence, they are increasingly likely to desist or refuse stimulant medication, even though these medications show evidence of acutely improving functioning (Evans et al., 2001; Smith et al., 1998). During the teenage years, new areas of difficulty confront adolescents with ADHD, including vocational functioning (Barkley, Fischer, Smallish, & Fletcher, 2006), romantic relationships (Flory, Molina, Pelham, Gnagy, & Smith, 2006), delinquency (Sibley et al., 2011), and substance use (Molina, Pelham, Gnagy, Thompson, & Marshal, 2007). Additionally, familiar deficits (e.g., organization, academics, interpersonal relationships) become especially pernicious given the growing demands of the middle and high school years (Wolraich et al.,

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2005). The mounting difficulties experienced by adolescents with ADHD suggest that the adolescent manifestation of this disorder differs qualitatively from ADHD in childhood. As a result, treatment for adolescents with ADHD must be developmentally appropriate in order to be maximally effective.

While there are over 175 studies of psychosocial treatments for ADHD children, (Fabiano et al., 2009), perusal of the scientific literature suggests that there are very few studies (approximately 15) of psychosocial treatments for ADHD adolescents (Smith, Waschbusch, et al., 2000). In addition, many of these studies possess very small sample sizes and are uncontrolled. In childhood, evidence-based psychosocial treatments take three forms: (a) behavioral parent training, (b) school-based behavioral interventions, and (c) intensive child-directed interventions (Pelham & Fabiano, 2008; Wells et al., 2000). The published studies of psychosocial treatments for adolescents with ADHD primarily evaluate adolescent-specific behavioral parent training protocols (Barkley, Edwards, Laneri, Fletcher, & Metevia, 2001; Barkley, Guevremont, Anastopoulos, & Fletcher, 1992) or secondary school–based behavioral interventions (Evans, Langberg, Raggi, Allen, & Buvinger, 2005; Evans, Serpell, Schultz, & Pastor, 2007). Noticeably absent from the literature is a full evaluation of an intensive adolescent-directed intervention for ADHD. Such an intervention would increase the comprehensiveness of treatment options for these youth at a time when they are critically at risk for initiating more serious behaviors such as substance use (Molina et al., 2007), delinquency (Sibley et al., 2011), and school failure (Kent et al., 2011).

In preventing these serious outcomes, an intensive adolescent-focused intervention may also be necessary. Problems associated with ADHD in adolescence are typically more severe than problems associated with ADHD in childhood (Barkley, 2006) and reported psychosocial treatment effects are smaller in samples of adolescents with ADHD than they are with children (Fabiano et al., 2009; Smith, Waschbusch, et al., 2000). Similarly, evidence-based treatments for adolescent conduct problems (i.e., Multi-Systemic Therapy-MST; Henggeler & Lee, 2003) are necessarily more intensive and expensive than evidence-based treatments for conduct problems in children (Lochman & Wells, 2004). Furthermore, the intensity and costs of intervention for problems such as delinquency (Foster, Jones, & CPPRG, 2005), substance use (King, Gaines, Lambert, Summerfelt, & Bickman, 2000), school disciplinary problems (Special Education Expenditure Project, 2004), and grade retention (Foster et al., 2005) far exceed the cost of an intensive adolescent-focused intervention for ADHD. Thus, if their ADHD-related impairments are left untreated, adolescents with this disorder are highly at risk for requiring the costly services noted above.

One intensive adolescent-focused intervention that stands to meet the needs of families of adolescents with ADHD is the Summer Treatment Program for Adolescents (STP-A). The STP-A was adapted from the nationally recognized children's Summer Treatment Program (STP), which is the foremost child-focused intervention for ADHD (Pelham, Greiner, & Gnagy, 1997). The STP is an 8-week intensive day treatment program that uses comprehensive reward and response-cost programs to target social functioning, classroom performance, and disruptive behavior. Children participate in therapeutic recreational activities (i.e., sports, swimming) and classroom modules (i.e., reading, peer-assisted learning, art) in groups of same-aged peers. Numerous controlled studies have documented the STP's effectiveness (Chronis et al., 2004; Fabiano et al., 2007; Pelham et al., 2010; Pelham et al., 2005; Pelham, Gnagy, et al., 2010) and there is clear evidence that this program improves the peer relations, classroom behavior, self-esteem, and overall impairment of children who attend it (Pelham et al., 2000; 2005). For a number of years, an adolescent version of the STP has been offered that was adapted to be age-appropriate for adolescents (Evans et al., 2001; Smith, Pelham, Gnagy, Molina, & Evans, 2000). The STP-A was revised in an iterative fashion over the years, but a systematic evaluation of this program has not yet been conducted. Several medication studies were carried out in the context of the STP-A (Evans & Pelham, 1991; Evans et al., 2001; Smith et al., 1998), as was one study of the ability of adolescents with ADHD to reliably provide self-report of behavior (Smith, Pelham, et al., 2000). Only one study tested the efficacy of a component of an STP-A; Evans, Pelham, and Grudberg (1994) found that a note-taking module offered as a part of the program improved listening comprehension and disruptive classroom behavior over the course of the summer. Despite its promise, further evaluation of the STP-A is greatly needed to determine the utility of this intervention as a component of the treatment armamentarium for adolescents with ADHD.

As the STP-A was adapted from the children's STP, we were particularly mindful of developmental differences between childhood and adolescence. Middle school and high school demand greater independence than elementary school as students are required to keep track of their own schedule and school materials, turn in homework with minimal prompts, remember assignments given across multiple classes, and plan for long-term projects (Eccles, 2004). It was our intention to develop a program that teaches academic and organizational skills that are relevant to secondary school (i.e., note-taking, study skills, writing skills, daily planner use, binder organization) and

mimicked the structure of the middle and high school environment in order to foster generalization of therapeutic gains. Furthermore, during the secondary school years, successful adolescents begin employment, manage complex social and romantic relationships, and independently navigate extracurricular activities. STP-A modules such as Daily Jobs, Health (i.e., substance-use prevention program), Social-Problem Solving, and Business Meetings specifically equip adolescents with skills to function effectively in these domains and protect against maladaptive outcomes such as deviant peer affiliation, substance use, and delinquency. In addition to the areas of difficulty mentioned above, adolescents with ADHD continue to experience the peer problems that characterized their childhood (Bagwell, Molina, Pelham, & Hoza, 2001; Sibley, Evans, & Serpell, 2010). Because social dynamics change such that once inappropriate behaviors can become somewhat adaptive (Bukowski, Sippola, & Newcomb, 2000), the STP-A behavioral feedback system is specifically sensitive to the social norms of adolescence. Evidence also suggests that parent-teen collaboration can increase an intervention's success, decrease problematic behaviors, and increase academic functioning (Hill & Tyson, 2009; Stormshak, Dishion, Light, & Yasui, 2005). Thus, we also attempted to design a program with enhanced efficacy through increased parent involvement, parent-teen collaboration, and group-based parent training. Because ADHD is a heterogeneous disorder, individualized treatment plans and adjunct treatments were used as needed to customize treatment to the unique deficits of each participant.

The current investigation represents the first pilot study of the STP-A, which was conducted with 19 adolescents with ADHD and related disorders. We examined parent, teacher, self, and staff ratings of adolescent improvement across key domains. We hypothesized that across raters and domains, adolescents would show improvement after attending the STP-A. We also examined several objective criteria for success in the STP-A (e.g., recording notes with 80% or higher accuracy, exceeding daily job expectations), hypothesizing that a majority of adolescents would consistently meet these criteria by the final 3 weeks of the STP-A. Finally, we examined parent satisfaction with the STP-A, hypothesizing that all parents would be at least somewhat satisfied with their family's experience.

Method

Participants

Participants were 19 adolescents who attended the STP-A during the summer of 2009. The STP-A was offered as a clinical service at a university research center in the northeastern United States. Participants ranged in age from 11.25 to 16.75 years (M=14.06, SD=1.73). Demographic, educational, and diagnostic characteristics of the sample, along with their service utilization history, are listed in Table 1. During the spring of 2009, advertisements for the STP-A were distributed to the research center's client mailing list and to local school guidance staff. Parents and teachers of adolescents completed an application that contained behavioral rating scales, a demographic questionnaire, and a treatment history form. Through dual clinician review, participants were accepted to the STP-A if parent and teacher rating scales indicated the presence of clinically significant symptoms (assessed by Disruptive Behavior Disorder Rating Scale; Pelham, Gnagy, Greenslade, & Milich, 1992) and cross-situational impairment (assessed by Impairment Rating Scale; Fabiano et al., 2006) consistent with a diagnosis of ADHD. Parents completed the computerized Diagnostic Interview Schedule for Children (Shaffer, Fisher, Lucas, Dulcan, Schwab-Stone, 2000) so that clinical staff could confirm diagnosis.[1] Adolescents were administered the Vocabulary and Block Design subtests of the Wechsler Intelligence Scale for Children-IV (Wechsler, 2003) in order to obtain an estimated IQ score. Participants were also administered the Word Reading, Spelling, and Mathematics subtests of the Wechsler Individual Achievement Test-II (Wechsler, 2002) in order to assess achievement. Adolescents were excluded from the program if they qualified for a diagnosis of pervasive developmental disorder, a psychotic disorder, or possessed an IQ score less than 80. Parents signed informed consent and adolescents signed youth assent forms prior to the start of treatment.

Procedure

The STP-A was an 8-week intensive summer day treatment program for adolescents with ADHD. The program is fully described in a manual that is available from the authors (STP-A; Pelham et al., 2010). Adolescents attended the program from 8:00 a.m. to 5:00 p.m. each day and participated in a series of rotating modules designed to mimic the block schedule system utilized by many secondary schools. The purpose of these modules was to help adolescents develop specific skills in three broad areas: (a) academics, (b) vocational training, and (c) social relations. For the 2009 STP-A schedule, see Figure 1.

[1] All but one adolescent met diagnostic criteria for ADHD at intake; one female displayed a sudden onset of ADHD and conduct disorder (CD) symptoms that coincided with a recent stressful event that resulted in psychiatric hospitalization and was diagnosed with adjustment disorder with disturbance of conduct.

Table 1
Sample Characteristics

	M(*SD*)
Demographic Information	
Age in years	14.06(1.73)
Gender	68.4% male, 31.6% female
Race/ethnicity	57.9% White, 21.1% Hispanic, 10.5% Black, 10.5% Other
Single Parent Household	31.6%
Adopted	36.8%
Educational Testing	
Full Scale IQ	104.67(12.63)
Reading Achievement	100.26(13.44)
Mathematics Achievement	82.89(21.30)
Spelling Achievement	102.63(14.78)
DSM-IV-TR Diagnosis	
ADHD-PI	42.1%
ADHD-C	52.6%
ODD	47.4%
CD	10.5%
Adjustment Disorder	5.3%
Social Phobia	5.3%
Trichotillomania	5.3%
Stimulant Medication Status	
Consistent Medication	21.1%
Medication Assessment[a]	52.6%
No Medication	26.3%
Educational and Treatment History	
Special Education Services	31.6%
Grade Retention	11.1%
Suspension or Expulsion	36.8%
Psychoactive Medication	63.2%
Individual Counseling	68.4%
Behavior Modification	57.9%
Hospitalization	5.3%

[a] All adolescents in the STP-A were offered a medication assessment prior to the STP-A in which they were randomly assigned to receive varying doses (as clinical need determined) or no stimulant medication on each day during weeks 4-8 of the STP-A. Seven out of 10 medication assessment participants were consistently medicated during weeks 1-3 of the STP-A.

Staff and Training

The program was staffed by an advanced clinical psychology graduate student who oversaw all components of the program and seven undergraduate counselors who each served as the primary counselor for three to four adolescents. Two teachers instructed the academic core modules (one taught Health and Science and the other History and Creative Writing) and a teacher's aide provided a support role during each class period. A licensed clinical psychologist provided supervision to the clinical and academic staff. All staff members participated in a 10-day intensive training program in order to learn and practice the manualized STP-A procedures. During this training, all staff members were required to master the behavior tracking system and program procedures as evidenced by verbatim memorization of several sections of the STP-A manual. In addition, all staff members completed weekly treatment reliability quizzes in order to maintain their knowledge of the STP-A definitions and procedures.

Behavior Tracking System

Throughout the day, program staff provided adolescents with verbal feedback on 5 positive behaviors (e.g., contributing to a group discussion, helping a peer, compliance with adult requests) and 15 negative behaviors (e.g., teasing a peer, verbal abuse to staff members, complaining, violating activity rules; Pelham et al., 1997). At the end of each day, adolescents received a success ratio that summarized their rate of negative behavior during the day. As is typical with most behavior management programs, staff members were trained to apply liberal use of positive reinforcement to their daily interactions with adolescents in conjunction with the behavioral feedback system (Kazdin, 2001). Serious misbehavior (e.g., intentional aggression toward a peer or staff member, repeated noncompliance) resulted in an immediate restriction of program privileges until consistent good behavior was shown.

Daily Report Cards (DRCs)

Prior to the STP-A, individualized behavioral and academic goals were set for each adolescent using parent and teacher reports of impairment. As behavior changed, these goals were adjusted to be appropriate to the adolescent's current level of functioning. Using a DRC, performance on these goals was equated to a daily privilege level (see Figure 2). Privileges took the form of home and program rewards (e.g., social time, STP-A leadership positions, home electronics privileges). On Fridays, adolescents who displayed adequate performance on their DRCs throughout the week attended afternoon social events that included pool parties, trips to local restaurants, karaoke contests, and cooking classes.

Academic Core Modules

Four academic core modules aimed to teach academic skills in an applied classroom setting. Health consisted of the LifeSkills© Training Program (Botvin, 1979-2004), a research-validated program for the prevention of substance use, delinquency, and violence. In addition to providing a prevention curriculum, Health focused on developing class participation, critical listening during lectures, and summary-writing skills. The purpose of the STP-A History block was to develop note-taking skills through instruction and practice during a daily lecture. Adolescents also took structured notes from text for homework and were frequently quizzed on material to provide practice studying from notes. Science targeted study skills, partner work, and quiz-taking. Adolescents were taught evidence-based study skills techniques (Deshler, Schumaker, & Lenz, 1984) and

Time	A-Day	Time	B-Day
8:00 -8:15	Arrivals	8:00 -8:15	Arrivals
8:15 -8:20	Transition	8:15 -8:20	Transition
8:20 -9:10	Classroom 1 (Health)	8:20 -9:10	Classroom 3 (English)
9:10 -9:15	Transition	9:10 -9:15	Transition
9:15 -10:05	Classroom 2 (History)	9:15 -10:05	Classroom 4 (Science)
10:05 -10:10	Transition	10:05 -10:10	Transition
10:10 -10:40	Organization Skills Training	10:10 -10:40	Organization Skills Training
10:40 -10:50	Transition	10:40 -10:50	Transition
10:50 -11:50	Sports Game	10:50 -11:50	Sports Game
11:50 -11:55	Transition	11:50 -11:55	Transition
11:55 -12:15	Lunch	11:55 -12:15	Lunch
12:15 -12:25	Transition	12:15 -12:25	Transition
12:25 -12:55	Business Meeting	12:25 -12:55	Business Meeting
12:55 -1:05	Transition	12:55 -1:05	Transition
1:05 -2:35	Daily Jobs	1:05 -2:05	Sports Skill Drills
2:35 -2:45	Transition	2:05 -2:15	Transition
2:45 -3:45	Sports Skill Drills	2:15 -2:45	Study Hall
3:45 -3:55	Transition	2:45 -2:55	Transition
3:55 -4:25	Study Hall	2:55 -4:25	Daily Jobs
4:25 -4:30	Transition	4:25-4:30	Transition
4:30 -4:55	Daily Feedback	4:30 -4:55	Daily Feedback
4:55 -5:00	Transition to Departure	4:55 -5:00	Transition to Departure
5:00	Departures	5:00	Departures

Figure 1. Typical STP-A Schedule

were quizzed daily on material presented in the previous class. In addition, adolescents participated in daily partner-based lab activities that targeted direction following, planning, and on-task behavior. Creative Writing targeted writing skills instruction, intensive writing practice, and feedback on stories. Each week, adolescents read a short story from *ADHD and Me: What I Learned From Lighting Fires at the Dinner Table* (Taylor, 2007) and completed a worksheet activity that facilitated organization of the story into its components (e.g., setting, characters, plot). Adolescents also responded to daily writing prompts that were later developed into organized stories through staff and peer feedback.

Academic Support Modules

Two academic support modules provided instruction and practice in positive study and organization habits. Organization Skills Training (OST) developed skills in time management, organization of academic materials, and management of assignments (Evans et al., 2009) through individual coaching with a primary counselor. Standardized checklists and daily monitoring were employed to maintain skills such as keeping an organized binder and locker, recording assignments in a daily planner, and creating a homework task list for Study Hall. In the Study Hall module, adolescents practiced time management skills and on-task behavior during a 30-minute unstructured work period. Counselors made randomly scheduled checks in order to monitor and reward adolescents for appropriately working.

Vocational Modules

The Business Meeting developed planning skills, teamwork, responsibility, and money management skills through a Future Business Leaders of America (FBLA) style program (Geddes, 1986). Adolescents participated in daily teen-led meetings and fundraising activities as counselors monitored appropriate vocational functioning (e.g., be polite to customers, count all money before placing it in the cashbox). Each adolescent held a personal position within the business (e.g., chairman, treasurer, secretary, shift manager). A second vocational module, Daily Jobs, developed accountability and appropriate interaction with supervisors. During the first week of the program, each adolescent completed an application process and was placed in a job that was therapeutically beneficial to his/her individual needs (i.e., teaching sports skills to younger children, producing a weekly newsletter, working as a classroom assistant, supporting the group business). Job coaches provided feedback on job performance and adolescents received monetary pay based on their performance ratings.

Social Skills Modules

Sports Skill Drills consisted of a combination of skill drills and small group scrimmages designed to provide individualized attention to adolescents' sports and social performance. Sports Game period gave adolescents a naturalistic setting in which they practiced the sports and social skills learned during Sports Skill Drills (Pelham et al., 1997). Adolescent captains selected teammates

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1.	Less than 3 classroom rule violations (level 1 eligibility).	Y	N
	Less than 5 classroom rule violations (level 2 eligibility).	Y	N
	Number of classroom rule violations: _____		
2.	On-task for at least3 study hall checks (level 1 eligibility).	Y	N
	On-task for at least 2 study hall checks (level 2 eligibility).	Y	N
	Number of checks on-task: _____		
3.	Less than 3 teasings (level 1 eligibility)	Y	N
	Less than 5 teasings (level 2 eligibility)	Y	N
	Number of teasings:_____		
4.	Turns in 100% of homework (level 1 eligibility)	Y	N
	Turns in 50% of homework (level 2 eligibility)	Y	N
	% of homework: _____		
5.	Less than 3 instances of complaining (level 1 eligibility)	Y	N
	Less than 5 instances of complaining (level 2 eligibility)	Y	N
	Number of complainings: _____		

In addition in order to be eligible for Level 1:

A.	Success Ratio must *exceed 90%.*	Y	N
B.	Job Rating form returned	Y	N
C.	Job Rating 3 or greater	Y	N
D.	Individual Tracking Sheet completed.	Y	N

In addition, in order to be eligible for Level 2:

A.	Success Ratio must *exceed 75%.*	Y	N
B.	Job Rating form returned.	Y	N
C.	Individual Tracking Sheet completed.	Y	N

Success Ratio: _____ Job Rating: _____

LEVEL: _____

Figure 2. Sample Daily Report Card

and practiced team leadership skills. Adolescents received verbal feedback on social behavior from counselors who modeled appropriate game play (Pelham et al.) and counselors led pre- and post-activity discussions designed to reinforce sports and social skills. As conflicts or problems arose, adolescents participated in structured on-line group problem-solving under the guidance of program staff (Pelham et al.). Adolescents learned a structured problem-solving procedure and although counselors typically convened problem-solving discussions, adolescents were encouraged to request these discussions when peers conflicts arose. Examples of problem-solving topics were excessive teasing, arguments, exclusive cliques, and inappropriate displays of affection.

Daily Feedback

The primary counselor provided individual feedback on daily progress to each of his/her assigned adolescent at the end of every day. The primary goal of these sessions was to enhance self-awareness through discussion of

target behaviors, performance on daily goals, level status, and specific problems that arose during the day.

Parent Component

Prior to the STP-A, parents met with program staff to set program goals and to establish a home privilege program. This program served in tandem with the STP-A privilege program to reinforce progress during the STP-A. Parents attended a weekly behavioral parent training group conducted in a small group interactive format (Cunningham, 2006). The content of these sessions included adolescent-specific issues such as behavior management techniques, monitoring, contracting, and creating home privilege programs. Individual sessions were available to troubleshoot home issues and to develop a similar goal and privilege program for the upcoming school year.

Data Collection

Participant data were collected daily in order to monitor progress and adjust the individualized targets. These data included behavioral frequencies, scores on academic assessments, and performance on program checklists. On the last day of the STP-A, all adolescents, counselors, and teachers completed improvement ratings on each of the adolescents with whom they worked. At this time all parents were given improvement and satisfaction ratings to complete and return. All but two adolescents and two parents (from different families) returned completed improvement ratings. Parents were given the option to return the satisfaction scales anonymously. Five parents did not complete the satisfaction ratings and these parents were not recontacted given the condition of anonymity under which the scale was distributed.

Measures

Improvement

An adolescent adaptation of the Improvement Rating Scale (Pelham et al., 2000) was used to measure improvement during the STP-A. Several items were revised to reflect age-appropriate domains of improvement for adolescents (e.g., self-awareness, time management). Respondents were asked to indicate the target adolescent's degree of improvement on each item using a 7-point Likert scale that ranged from 1 (*very much worse*) to 4 (*unchanged*) to 7 (*very much improved*). For each item, respondents could also select "0-No Problem" if the item was not applicable because the adolescent did not historically possess impairment in that area. Items on the improvement rating scale were separated into six face valid domains for subscale scoring (see Figure 3): Conduct Problems (9 items including lying, cheating, stealing), Adult-Directed Defiance (3 items including noncompliance, arguing, complaining), Social Functioning (10 items including assertiveness, cooperation, communication skills), Mood/Well-being (5 items including self-esteem, happiness, accepting disappointment), Inattention/Disorganization (12 items including time management, being prepared for class, following through with responsibilities), and Academics (only completed by teacher; 6 items including writing skills, note-taking skills, test-taking).The parent and self-report Improvement Rating Scales included 39 items. The counselor Improvement Rating Scale included 35 items (4 items were excluded that pertain specifically to home behavior). The teacher Improvement Rating Scale included 34 items and focused primarily on classroom behavior and academics. For specific items on each version, see Figure 3. All versions of the Improvement Rating Scale contained a final item that assesses "Overall Improvement."

Program Data

Nine pieces of program data were used to evaluate success on pre-established benchmarks.

Note-taking. Prior to each History lecture, the teacher created a gold-standard outline of his lecture organized by main points and supporting details. Accuracy percentage represented the proportion of main points and supporting details included on the adolescent's notes.

Quiz grade. All adolescents received a daily quiz in Science and History. All quizzes included 10 to 15 items and were fill-in-the blank format. Quiz grades were converted to letter grades and a C represented a 73% or higher.

Creative writing final draft. Adolescents brought three separate short stories to the final draft stage during the STP-A. The final draft represents approximately two weeks of peer feedback and revision and was scored on a 1-4 scale (1 = *poor*, 2 = *fair*, 3 = *good*, 4 = *excellent*).

Homework completion. A homework assignment was considered turned-in if the teacher received it by the end of the class in which it was due. Homework was due in each core academic module on each day.

Binder organization. The binder organization checklist contained 10 items that assessed the orderliness of a binder that contained sections for each program module. Each day adolescents were assessed on items that included, "Is the binder free of loose papers?" and "Are all folders secured by three rings?"

Planner use. Each day adolescents were required to record all homework assigned during class prior to the end of the class period in which it was assigned.

On-task behavior. On five random occasions during Study Hall, a counselor recorded whether or not each adolescent was on-task according to whether they were actively following their Study Hall schedule (see Procedures).

Job performance. At the end of each 90-minute job shift, the job supervisor rated the adolescent on a 1-5 scale according to how he/she performed during the shift. Scores of 1 or 2 exceeded job expectations.

Domains of Improvement

Conduct Problems	Inattention/Disorganization
Following rules	Morning routine[a]
Behavior in public settings	Evening routine[a]
Using materials appropriately	Completing homework
Respecting others' property	Time management
Physical fights with peers	Autonomy/independence
Stealing others' belongings	On-task behavior
Cheating in games or work	Keeping belongings neat in their place
Lying	Planning ahead for long-term projects
Swearing or using obscene language	Prepared for class
	Paying attention
	Following through with responsibilities
	On-time to class
Adult Directed Defiance	Mood/Well-being
Adult directed defiance/noncompliance	Self-esteem
Inappropriate complaining/whining	Happiness
Arguing with adults	Dealing with anger/frustration
	Accepting disappointment
	Self-awareness
Social Functioning	Academic Skills[b]
Cooperation with others	Writing skills
Saying and doing nice things to others	Class participation
Communication skills	Note-taking skills
Participating with siblings/others	Test/quiz performance
Interrupting others	Overall work quality
Name calling/teasing toward peers	Following instructions on assignments
Bossiness toward peers	
Getting along with siblings[a]	
Problem-solving skills	
Assertiveness	

[a]Item refers to home-specific behavior and did not appear on the counselor or teacher improvement rating scale. [b]Academic Skills items were only included on the teacher improvement rating scale.

Figure 3. Domains of Improvement

Success ratio. The denominator of this index was constant and was calculated by multiplying 15 total negative behavior categories by 8 nonacademic periods of the day (equaling 120). At the start of each day, each adolescent begins with a 120/120 success ratio. A point is lost on the numerator for each category in which the adolescent offends during each period of the day.

Satisfaction

Parent satisfaction ratings were completed by parents at the end of the summer (Pelham & Hoza, 1996; Pelham et al., 2000). Five items were used to evaluate parent satisfaction (see Table 4). Parents were asked to rate their satisfaction with each item on a 4-point scale from "Not at all" to "Very Much."

Analytic Plan

Overall Improvement

In order to evaluate overall improvement during the STP-A, the "Overall Improvement" item on the Improvement Rating Scale was examined. Specifically, the percentage of adolescents who fell into each categorical response (1-7) was examined descriptively for parents, adolescents, teachers, and staff. Teacher ratings were not aggregated as the Science/Health and Writing/History classrooms were considered separate contexts for improvement. However, because counselors observed adolescents in the same context, the three counselor ratings were averaged and the mean rating was rounded to the nearest category.

Domain-Specific Improvement

To examine improvement within each domain, the six domain subscale scores were calculated for each rater by averaging the responses to each item within the domain (see Figure 3). If a rater endorsed "0 = *no problem*" for an adolescent, that item was excluded from the adolescent's domain subscale score, as is typically done with STP improvement ratings (Pelham et al., 2000). All domain scores were examined descriptively.

Criterion-Based Success

Using program data that were collected as a part of treatment, we calculated the percentage of adolescents whose average performance met preestablished criteria

Table 2
Overall Improvement during STP-A

	No Problem	Very Much Worse or Much Worse	Somewhat Worse	Unchanged	Somewhat Improved	Much Improved or Very Much Improved
Parent	0.0%	0.0%	0.0%	17.6%	52.9%	29.4%
Adolescent	0.0%	0.0%	0.0%	11.8%	11.8%	76.5%
History/Writing Teacher	0.0%	0.0%	0.0%	10.5%	73.7%	15.8%
Science/Health Teacher	0.0%	0.0%	10.5%	57.9%	31.6%	0.0%
Counselors	0.0%	5.3%	0.0%	0.0%	68.4%	26.3%

Note. %s indicate the proportion of adolescents rated in an overall improvement category by the rater listed to the left.

for normalization on nine measures by the final three weeks of treatment. The final 3 weeks were chosen for two reasons: (a) shaping procedures were used to build skills, resulting in relatively basic tasks being assigned and assessed during the first half of treatment; and (b) averaging data across several weeks allowed for more stable estimates of the adolescents' performance in each domain. The criteria were selected to represent typical expectations for the performance of a secondary school student.

Case Example

Much of the STP-A program data is best presented using single subject methodology. As a result, we created a visual representation of typical STP-A improvement on program measures using data from a 14-year-old male participant with a diagnosis of ADHD-C. At the time of enrollment, the participant and his older sister, whose parents were divorced, split custody between their adoptive mother and father. The participant recently completed 8th grade at a suburban public middle school, where he was placed in regular education classes with a consultant teacher. Prior to the summer, the participant had been consistently medicated on a low dose of short-acting methylphenidate (MPH) since early elementary school. The participant also participated in four previous STPs and received as-needed behavioral interventions in the classroom, such as a DRC, throughout his elementary and middle school years. Presenting problems reported by his parents and teachers at the time of intake included: difficulty sustaining attention during schoolwork, disruptive classroom behavior, underperformance on tests, difficulties forming and maintaining friendships, failing to turn in homework, and disorganization at home and school. During the first 3 weeks of the STP-A, the participant was steadily medicated on short-acting MPH. During the final 5 weeks of the program, he participated in a medication evaluation that compared his current short-acting MPH dose to similar doses of long-acting MPH (no placebo condition). The results of the medication assessment revealed that the short-acting and long-acting medications produced equal effects for the participant; thus, he can be considered to have been steadily medicated across the STP-A weeks.

Parent Satisfaction

To examine satisfaction, five parent satisfaction ratings were examined categorically by response.

Results

Overall Improvement

Overall improvement ratings indicated that across all but one rater, most adolescents (82.4% to 94.7%) improved at least somewhat after participating in the STP-A (see Table 2). Parent, counselor, and History/Writing teacher ratings showed similar patterns of improvement (converging around somewhat improved); the Science/Health teacher tended to rate the adolescents

Table 3
Means and Standard Deviations for Improvement Domains by Rater

	Parent	Adolescent	History/Writing Teacher	Science/Health Teacher	Counselors
Conduct Problems	4.85(.71)	4.92(.95)	4.81(50)	3.79(.21)	4.55(.75)
Adult-Directed Defiance	5.01(.70)	4.96(.99)	4.78(.83)	3.67(.41)	4.69(.83)
Social Functioning	5.01(.64)	5.12(.85)	4.64(.84)	4.12(.26)	4.92(.61)
Inattention/ Disorganization	4.89(.59)	4.93(.76)	4.81(.38)	4.10(.25)	5.21(.57)
Mood/Well-being	5.25(.83)	5.06(.89)	4.55(.44)	4.12(.32)	4.85(.62)
Academic Skills	—	—	4.97(.50)	4.20(.37)	—

Note. All domain means represent average improvement on a 7-point Likert scale ranging from "1-very much worse" to "4-unchanged" to "7-very much improved."

as unchanged. Adolescents tended to rate themselves as more improved than parents, teachers, and counselors (converging around much/very much improved).

Domain-Specific Improvement

Domain-specific improvement ratings indicated that on average, the adolescents showed improvement in each domain (see Table 3). Across all but one rater, improvement ratings converged around "5 = *somewhat improved*." The exception for this trend was the Science/Health teacher, whose ratings converged around "4 = *unchanged*."

Criterion-Based Success

Results indicated that in eight of the nine criteria presented in Table 4, a majority of participants (67.7%-100%) achieved success in the final three weeks of the STP-A. Quiz grades were an exception to this finding and appeared to remain an area of difficulty for many adolescents (63.2%).

Case Example

Five target behaviors are displayed for the sample participant in Figure 4. All targets were included on the participant's DRC. The participant displayed a small decrease in teasing over the course of the summer. After 1 week of poor homework completion (16.7%), the participant increased his weekly rate of homework completion to above 80% for the remainder of the program. The participant immediately responded to the binder organization intervention, and with the exception

Table 4
Benchmarks for Success during Final Three Weeks of STP-A

	% meeting criteria
Recorded History notes with at least 80% or higher accuracy (on average)	68.4
Received a C average or higher on quizzes[a]	36.8
Received a 3 or higher on the final Creative Writing draft[b]	80.0
Turned in at least 80% of homework assignments	89.5
Received at least 80% on binder organization checklist (on average)	100.0
Recorded at least 80% of week's assignments in planner (on average)	89.5
Stayed on-task for at least 80% of study hall (on average)	67.7
Exceeded Daily Job expectations (on average)	89.5
Received a 90% or higher success ratio (on average)	67.7

Note. Averages represent the mean score across observations of each criterion during the final three weeks of the STP-A.
[a] Includes Science and History quizzes.
[b] Drafts scored on a 1-4 scale (1 = Poor, 2 = Fair, 3 = Good, 4 = Excellent).

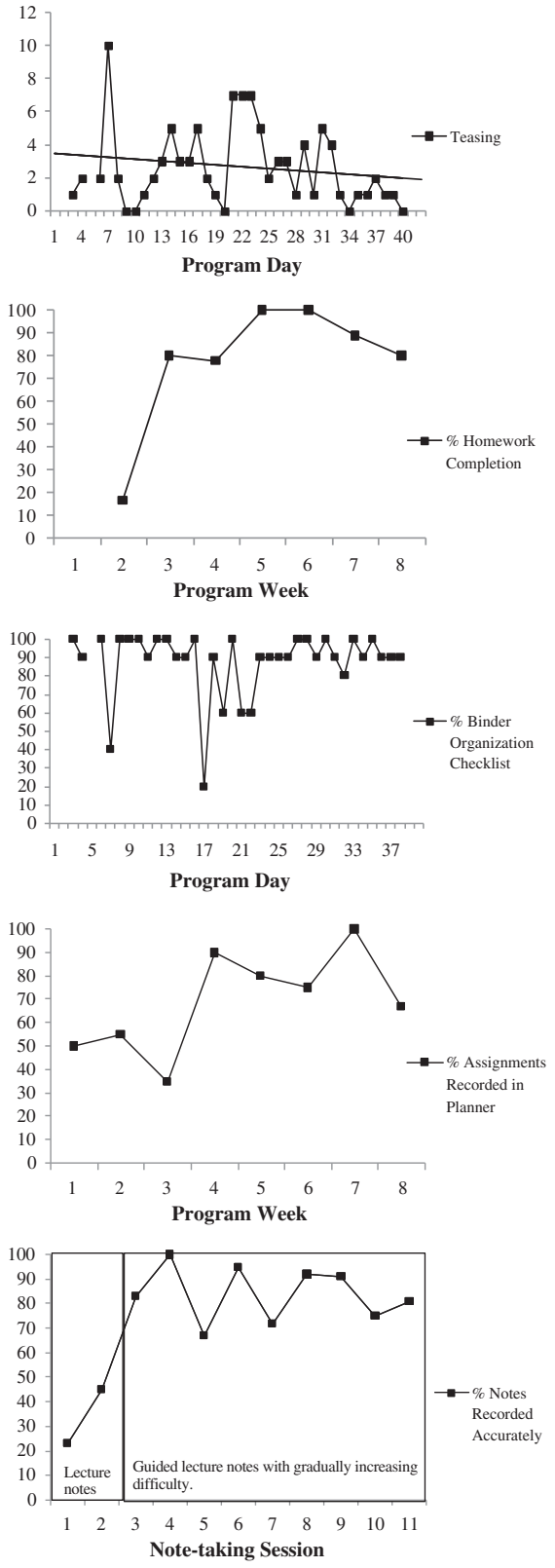

Figure 4. Target Behavior Data from Sample Participant

of 4 days mid-program, maintained this response throughout the STP-A. During the first 3 weeks of the program, the participant displayed marked difficulties recording assignments in his daily planner (35%-55% recorded). However, beginning in Week 4, the participant consistently recorded assignments at an acceptable level (75%-100%). The participant showed an immediate difficulty with note-taking, obtaining very low scores on the first two History note-taking sessions (23%, 45%). Consequently, a guided note-taking intervention was introduced whereby the participant was required to fill in missing information on an outline of the notes. Across sessions, this outline gradually increased in difficulty, while the participant's level of accuracy remained constant at around 80%. At this level of accuracy, the participant was able to fill in an outline that contained only bullet points and very few words by the end of the STP-A.

Satisfaction

Parent satisfaction ratings indicated that all parents felt that the STP-A benefitted their child and themselves at least somewhat (see Table 5). The majority of parents indicated that the STP-A benefitted their child much or very much (78.6%) and him/herself much or very much (85.7%). Most parents (92.9%) reported that their child enjoyed the STP-A at least somewhat, with most parents (78.6%) reporting that their child enjoyed the STP-A much or very much. All parents indicated that they were at least somewhat more satisfied with the STP-A than other services their child previously received (see Table 1). Finally, most parents (92.9%) reported that the STP-A was more effective at changing the adolescent's problems than previous services.

Discussion

This study represents the first attempt to evaluate an intensive adolescent-directed intervention for ADHD. The results of our program evaluation suggest that: (a) according to the majority of raters, most adolescents who attended the STP-A showed overall improvement in functioning that was present across home, classroom, and non-academic STP-A contexts; (b) this improvement was present across all target domains of treatment; (c) a majority of adolescents (67.7%-100%) met most objective criteria for normalization during the final weeks of the STP-A; and (d) parents were highly satisfied with the effectiveness and quality of treatment that they and their children received during the STP-A. Each of the findings is discussed below.

To provide a comprehensive evaluation of the STP-A's therapeutic benefit, improvement ratings were obtained from parents, adolescents, STP-A teachers, and clinical staff. Across a majority of raters, overall improvement was noted for most adolescents (82.4%-94.7%) who attended the STP-A. This finding is consistent with studies of the children's STP, which also suggest high levels of improvement for most participants (Pelham, Gnagy, et al., 2000; Pelham et al., 2010). According to parents, counselors, and the History/Writing teacher, the majority of adolescents improved at least somewhat overall. Although a similar proportion of attendees were at least somewhat improved in studies of the children's STP (95%), more children (58%) than adolescents (15.8%-29.4%) were rated as much or very much improved (Pelham & Hoza, 1996). However, it should be noted that in ADHD samples, psychosocial treatment gains tend to be smaller for adolescents than for children (Fabiano et al., 2009; Smith, Waschbusch, et al., 2000). This point underscores the treatment-resistance of ADHD in adolescence.

Somewhat surprisingly, the Science/Health teacher reported less improvement than other raters. However, this finding is consistent with the low agreement documented between secondary school teachers and between observational measures collected in different classes in the secondary school setting (Evans, Allen, Moore, & Strauss, 2005). In addition, because Health was primarily a prevention module, treatment effects may not have been immediately recognizable to the teacher. Further, quiz-taking was a primary focus of the Science module and objective ratings indicated that most adolescents (63.2%) did not make gains in this area (see Table 4). As a result, the lower Science/Health teacher ratings may reflect the fact that the Science module did not adequately target impairment in quiz-taking. To address this finding, efforts have been taken to improve the Science module by integrating study skills practice into class activities, increasing access to on-line feedback in this domain.

Compared to ratings of "somewhat improved" by parents and staff, the majority of adolescents (76.5%) rated themselves as "much" or "very much" improved. This apparent tendency to overreport self-improvement is not surprising, as previous work suggests that adolescents with ADHD characteristically overestimate their own competence (Fischer, Barkley, Fletcher, & Smallish, 1993; Sibley et al., submitted for publication). However, it may also be the case that adolescents saw themselves as more improved because they witnessed and aggregated their improvement across contexts. Whereas other raters were typically exposed to improvement in one context (i.e., classroom, home, counselor-run modules), some adolescents may have felt that small improvements made in several contexts amounted to a large improvement overall (De Los Reyes & Kazdin, 2005). The divergence of the adolescent and Science/Health teacher overall improvement ratings highlights the importance of acknowledging each rater's unique perspective when assessing adolescents with ADHD (Offord et al., 1996).

Across domains, adolescents who participated in the STP-A showed a pattern of uniform improvement. By rounding to the nearest improvement rating scale anchor, the average adolescent improved somewhat in each of the six improvement rating scale domains. This finding is consistent with program evaluation data from the children's STP that also yielded improvement across a variety of domains (Pelham & Hoza, 1996). Given the heterogeneity of ADHD and the pervasiveness of ADHD-related impairment in adolescence, it is promising to see improvement across all targeted domains. Although not every adolescent possessed problems in all domains, the domain-specific improvement ratings suggest that while the adolescents were attending the STP-A, cross-situational impairment was addressed (Wolraich et al., 2005).

In order to evaluate whether participants responded successfully to the STP-A interventions, we set nine normalization benchmarks across domains of social functioning, job performance, organization, and academics (see Table 4). Regarding interpersonal interactions, about two-thirds of adolescents consistently displayed excellent behavior toward peers and staff members (i.e., 90% or higher success ratio), which is also consistent with findings from the children's STP (Pelham et al., 2000). In their individually assigned Daily Jobs, the adolescents who participated in the STP-A were very successful; all but two were rated by supervisors as consistently exceeding job expectations during the final weeks of the STP-A. Given that a job-training program has not yet been evaluated in this population, success on this intervention suggests the promise of an apprenticeship model to improve vocational functioning in these teens. In the domain of organization, our data revealed that by the end of the STP-A, almost all adolescents consistently kept an organized binder (100%), accurately recorded assignments in a daily planner (89.5%), and turned in homework assignments (89.5%). Although previous evidence suggests that these interventions can be successfully implemented in the school setting (Evans et al., 2009), these data suggest that organization skills training can also impact functioning in the context of an intensive day treatment program. Academically, most adolescents (80%) turned in a high-quality Creative Writing paper at the end of the summer, after engaging in weeks of revisions through peer and teacher feedback. These data also indicated that by the end of the STP-A, about two-thirds of adolescents consistently took accurate lecture notes and remained on-task and industrious during 30 minutes of unstructured work time. Data collected across academic interventions were consistent with previous evidence that intensive training and feedback can improve the work quality and on-task behavior of adolescents with ADHD (Evans et al., 1994). However, one benchmark was very challenging for the STP-A adolescents. Despite receiving standard and individualized study skills interventions, only about one third of participants (36.8%) displayed acceptable performance on quizzes by the end of the program. Similar study skills approaches have yielded improvements in academic performance for adolescents with learning problems (Gettinger & Seibert, 2002; Swanson & Deshler, 2003); however, there is evidence that the quiz-taking deficits of adolescents with ADHD are also resistant to the effects of stimulant medication (Evans et al., 2001). Taken together, these findings highlight the need for more intensive study-skills interventions in the ADHD population and in the STP-A.

The trends above are further illustrated by the case example presented in Figure 4. For this 14-year-old male, improvement came in different forms. In some cases, intervention led to an immediate response on parent-selected target behaviors (i.e., organization, homework completion). In other cases, improvement occurred slowly over the weeks of the STP-A (i.e., planner use, teasing); however, by the end of the summer, this participant achieved normalization on many of his target behaviors. In some cases, this participant made noticeable improvements to a deficit through individualized treatment components (i.e., note-taking) but still did not achieve normalization. This pattern is not atypical in the STP-A and underscores the importance of sustained long-term treatment for the deficits associated with ADHD in adolescence.

As with the children's STP (Pelham et al., 2005), parent satisfaction ratings revealed high levels of satisfaction with the STP-A. All parents reported that their child benefitted from the program, with most parents (78.6%) endorsing that the adolescent benefitted much or very much. Notably, this rate was higher than parent *improvement* ratings, which indicated only 29.4% improved "much" or "very much." Taken together, these data suggest that some adolescents who may have only improved "somewhat" still benefitted much or very much from the STP-A. One of the most promising findings from these data was that all parents reported that the STP-A benefitted their selves, with most (85.7%) indicating that they benefitted much or very much. This finding is especially positive given the lack of involvement of parents in secondary schools (Singh et al., 1995), and evidence suggesting that parent involvement in adolescent behavioral treatments maximizes therapeutic gain (Stormshak et al., 2005; Waugh & Kjos, 1992). Despite the initial reluctance of many adolescents who attended the STP-A, parents also reported that most adolescents (92.9%) enjoyed the program at least "somewhat," with most (78.6%) enjoying the program "much" or "very much." All parents also indicated that they were more satisfied with the STP-A than other services utilized in the past and most parents

Table 5
Parent Satisfaction Ratings

	Not at All	Somewhat	Much or Very Much
How much did your child benefit from the program?	0.0%	21.4%	78.6%
How much did you benefit from the program?	0.0%	14.3%	85.7%
How much did your child enjoy the program?	7.1%	14.3%	78.6%
	Less or the same as other programs	Somewhat more than other programs	Much or Very Much more than other programs
How satisfied are you with the STP-A *compared to other services you have received.*	0.0%	46.2%	53.8%
How effective was the STP-A in changing your child's problems *compared to other services you have received.*	7.7%	53.8%	38.5%

Note. Data represent responses from 14 parents who returned anonymous satisfaction ratings.

(92.9%) indicated that the STP-A was also more effective than past attempts at treatment. Past services included special education classes, individual counseling, psychoactive medication, other forms of behavior modification, and in one case, hospitalization (see Table 1). Responses to these final two items likely reflect the paucity of effective treatments for ADHD in adolescence.

Despite its positive findings, this study possesses several important limitations. Without a control group, one cannot rule out the possibility that gains noted during the STP-A occurred due to nontherapeutic influences such as maturation or rater bias. In addition, it is possible that initiation of stimulant medication mid-STP-A may have augmented improvement of three adolescents who were not medicated prior to beginning a medication assessment in Week 4. However, all averages included medication and nonmedication days, minimizing the likelihood that improvement was solely due to these influences. In most other cases, current doses of medication were compared to no medication, lower doses of medication, or different types of medication at similar doses. Thus, it is believed that in most medication evaluation participants, nonmedication days and low-dose days may have actually deflated improvement estimates in later weeks. Although we attempted to obtain satisfaction ratings anonymously, most parents compromised anonymity by returning satisfaction ratings in the same envelope as improvement ratings. Thus, it is possible that some parents did not feel comfortable expressing negative opinions about the STP-A. Furthermore, some parents did not return improvement ratings (N=2) or satisfaction ratings (N=5). It is possible that those who did not return the ratings varied systematically in some way from parents who returned the ratings. The STP-A was offered as a for-pay clinical service with required parent involvement. As a result, most adolescents who attended came from middle-class families with parents who were invested in their child's treatment. Thus, the therapeutic gains noted in this study may be most generalizable to middle-class families with parents who are willing to be involved in their adolescent's treatment.

We believe that this pilot study represents the clear promise of an intensive adolescent-directed intervention, like the STP-A, as an effective treatment for ADHD in adolescence. Adolescents with ADHD experience a multitude of problems (Wolraich et al., 2005) and there is a lack of treatments that have been adequately adapted to serve the unique needs of this population (Smith, Waschbusch, et al., 2000). During the STP-A, the adolescents displayed improvement across domains of treatment, met objective criteria for normalized functioning, and had parents who were more satisfied with the STP-A than other treatments they previously utilized. However, more work is needed to refine and disseminate this treatment. The STP-A must undergo a randomized controlled trial to more carefully examine its efficacy. Certain aspects of the program (i.e., study skills module) may specifically benefit from further development in order to be maximally efficacious. There was also evidence that a couple adolescents did not respond well to the STP-A (see Table 2). Future work should examine factors that contribute to treatment response and nonresponse to promote the extension of treatment gains to all participants. With further development, it is our hope that in future years, adolescent-directed interventions like the STP-A will serve a central role in the treatment of adolescent ADHD.

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