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Treatment Response to an Intensive Summer Treatment Program for Adolescents With ADHD

Margaret H. Sibley^{1,2}, Bradley H. Smith³, Steven W. Evans⁴, William E. Pelham¹, and Elizabeth M. Gnagy¹

Abstract

Objective: There are presently almost no empirically validated treatments for adolescents with ADHD. However, in childhood, behavioral treatments for ADHD typically include behavioral parent training, classroom interventions, and intensive child-directed interventions. **Method:** The present investigation examines treatment gains following an 8-week intensive summer day treatment program for adolescents with ADHD (STP-A). Baseline measures of functioning and parent improvement ratings were obtained for 34 STP-A participants. **Results:** Parent ratings indicated that adolescents who attended the STP-A improved across all target domains. Across domains, 63.0% to 90.9% of adolescents improved during the STP-A. There was no evidence of iatrogenic effects during the STP-A. Correlates of treatment response included adolescent effort, oppositional-defiant behavior, and cognitive/scholastic functioning. **Conclusion:** Findings are discussed with regard to effective treatment delivery for adolescents with ADHD. (*J. of Att. Dis.* 2012; 16(6) 443-448)

Keywords

ADHD, adolescence, treatment

In adolescence, ADHD is typically treated with stimulant medication or behavioral interventions (Smith, Waschbusch, Willoughby, & Evans, 2000). However, up to 95% of adolescents with ADHD desist or refuse to take stimulant medication by young adulthood (McCarthy et al., 2009). Available behavioral interventions are often parent-teen contract negotiation (Barkley, Edwards, Laneri, Fletcher, & Metevia, 2001) or school-based organization skills training (Evans, Schultz, DeMars, & Davis, 2011). However, compared to childhood ADHD treatments (Fabiano et al., 2009), response to these interventions is not always strong (Smith et al., 2000). As a result, there is a great need to develop more effective treatment options for adolescents with ADHD.

There may be multiple reasons for the reduced efficacy of standard behavioral interventions in adolescence. For one, there are very challenging barriers to treatment delivery in the secondary school setting, including teachers who do not have the resources to deliver interventions, the need to coordinate across multiple classes, and pressures to increase the adolescent's level of self-sufficiency (Eccles, 2004). In addition, the problems of adolescents with ADHD may be more ingrained and severe than those of children

(Barkley, Fischer, Edelbrock, & Smallish, 1990; Molina et al., 2009), necessitating more intensive intervention.

For the reasons noted above, an intensive adolescent-directed treatment with a strong parental involvement component may be an effective way to elicit behavioral change in adolescents with ADHD. Increasing the standard dose of behavioral treatment in a therapeutic environment may enhance treatment effects and reduce the need to deliver behavioral interventions in barrier-laden secondary schools. For more than 30 years, intensive child-directed programs have been offered for elementary school-age children with ADHD with very positive results (Summer Treatment Program; Pelham, Gnagy, et al., 2010). More recently, a promising adolescent version of the Summer Treatment

¹Florida International University, Miami, USA

²State University of New York at Buffalo, USA

³University of South Carolina, Columbia, USA

⁴Ohio University, Athens, USA

Corresponding Author:

Margaret H. Sibley, Center for Children and Families, Florida International University, HLS I Room 146, 11200 SW 8th Street, Miami, FL 33199, USA
Email: msibley@fiu.edu

Program (STP-A; Sibley et al., 2011; Smith et al., 1998) has been developed that addresses the deficits of adolescents with ADHD. The STP-A is a modular program conducted within an analogue secondary school setting that teaches teens skills to overcome their attention and behavioral deficits and also includes group behavioral parent training. Early work suggests that the STP-A leads to improvements across multiple domains of impairment (i.e., organization skills, academics, behavior problems, and social skills) and enhances academic and behavioral performance while the treatment is in place (Sibley et al., 2011). However, variability in treatment response appears to exist, indicating that for some adolescents, the STP-A is insufficient to produce meaningful gains.

The present investigation is a retrospective replication of the STP-A's preliminary efficacy (Sibley et al., 2011) that examines parent improvement ratings from a cohort of participants who attended the STP-A in Pittsburgh between 1993 and 1995. Although data were collected more than a decade ago, this evaluation remains relevant because (a) there is only one published study of an intensive adolescent-directed intervention for ADHD (Sibley et al., 2011) and (b) the STP-A of the 1990s is consistent with the latest advances in the treatment of adolescents with ADHD. In fact, very few treatment studies with this population were conducted since these data were collected (e.g., Barkley et al., 2001; Evans et al., 2011). In addition to evaluating program efficacy, we also conduct an exploratory analysis to investigate factors that may influence treatment response. We hypothesized that across domains, most STP-A attendees will be rated by their parents as improving at least somewhat. Furthermore, as the literature suggests, in children and adolescents with ADHD (Kolko & Pardini, 2010; Molina et al., 2009; Owens et al., 2003), we hypothesized that at baseline, lower levels of disruptive behavior and higher IQ and achievement scores would be associated with greater improvement during the STP-A. In addition, because treatment effects are smaller for adolescents (Smith et al., 2000), we hypothesized that younger ages would be associated with greater improvement during the STP-A. Finally, we also hypothesized that treatment engagement, as indicated by parent ratings of "effort" during the STP-A, would be associated with greater improvement.

Method

Participants

Participants were 34 adolescents who completed the STP-A at the Attention Deficit Disorder (ADD) Program at Western Psychiatric Institute and Clinic between 1993 and 1995. Participants were required to (a) meet *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., revised;

DSM-III-R; American Psychiatric Association [APA], 1987) diagnostic criteria for ADHD, (b) be at least 12 years of age, (c) have a Verbal IQ higher than 80, and (d) have no conditions that precluded trial of stimulant medication or full participation in the STP-A athletic activities. Forty-nine participants were initially recruited for the STP-A. Two participants were discharged due to poor attendance, another participant withdrew against medical advice, and the parents of 12 participants failed to complete improvement ratings. Participants and nonparticipants in the study were not significantly different ($p > .25$) on 10 demographic and diagnostic characteristics.

Mean participant age was 13.88 years ($SD = 1.15$), and all recently completed sixth to ninth grade. Mean IQ was 102.42 ($SD = 13.38$). According to *DSM-III-R* criteria, all participants were diagnosed with ADHD, 45.5% with oppositional-defiant disorder (ODD), 18.2% with conduct disorder (CD), and 18.2% with a learning disorder. Consistent with epidemiological research (e.g., Safer & Krager, 1994), 88% of participants were male. The racial composition (82% Caucasian) accurately reflects the population in Allegheny County, Pennsylvania, where the study was conducted. Median family income was US\$38,500 (range = US\$8,300-US\$500,000). All adolescents participated in a 6-week stimulant medication trial during the STP-A (Smith et al., 1998).

Procedure

The STP-A is an 8-week intensive summer treatment program for adolescents with ADHD. The program is fully described in a manual available from the authors (Pelham, Sibley, et al., 2010). Adolescents attended the program from 8:00 a.m. to 5:00 p.m. each day and participated in modules designed to mimic a secondary school setting. The STP-A teaches academic and organizational skills that are relevant to secondary school (i.e., note taking, study skills, writing skills, daily planner use, binder organization) to foster generalization of therapeutic gains. STP-A modules also include daily jobs, substance use prevention (i.e., Life Skills Training; Botvin, 2004), and leadership training to teach life skills and prevent maladaptive outcomes such as deviant peer affiliation, substance use, and delinquency. The STP-A behavioral feedback system is sensitive to adolescent social norms. To enhance efficacy and generalizability, the STP-A contains high levels of parent involvement, parent-teen collaboration, and group-based parent training. Because ADHD is a heterogeneous disorder, individualized treatment plans and adjunct treatments are used as needed to customize treatment to the unique deficits of each participant. A more detailed description of the STP-A is offered by Sibley and colleagues (2011).

The version of the STP-A evaluated in the current study included earlier iterations of the study skills, organization

skills, and substance use prevention modules. Adolescents were in groups of 8 to 13 similar age peers, with identical schedules and activities regardless of calendar year or age of group members. Each group was staffed by a lead counselor and three or four undergraduate counselors. To promote treatment fidelity, staff members received 60 hours of preservice training and were required to pass a test of STP-A procedures. STP-A staff was supervised by PhD-level mental health professionals and trained fidelity observers. Clinical supervisors and fidelity observers provided daily feedback about adherence to manualized procedures and interobserver reliability. Any aspect of program integrity that fell below the standard was immediately addressed with remedial procedures. On the last day of the STP-A, all parents were given improvement ratings to complete and return.

Measures

Improvement ratings. The Improvement Rating Scale (Pelham et al., 2000) was used to measure improvement during the STP-A. Parents were asked to indicate the target adolescent's degree of improvement on 15 items using a 7-point Likert-type 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. These items assessed 13 domains of treatment and overall improvement, and a final item assessed the participant's level of effort (treatment engagement).

Predictors of response. Parent ratings of inattentive-impulsive-hyperactive (IO) and oppositional-defiant (OD) behavior were obtained using the IOWA Conners' Rating Scale (Pelham, Milich, Murphy, & Murphy, 1989). These scales each contain five items that give unique information about correlated, but separate, areas of difficulty. Anchors on the scale are 0 = *not at all*, 1 = *just a little*, 2 = *pretty much*, and 3 = *very much*, and the total score range on each scale is 0 to 15. These scales are widely used and have acceptable psychometric properties (Pelham et al., 1989; Waschbusch & Willoughby, 2008). Full-scale IQ was obtained using the Wechsler Intelligence Scale for Children-Revised (Wechsler, 1974). Reading achievement was measured using the Reading cluster standard score from the Woodcock Johnson Psychoeducational Battery (Woodcock & Johnson, 1991).

Results

Improvement

To examine improvement during the STP-A, we examined mean improvement ratings in each domain (see Table 1). Participants rated as 0 = *no problem* were not included in

analyses. Results indicated that across domains, mean ratings converged at 5 = *somewhat improved*. Within each domain, the proportion of adolescents who were improved ranged from 63.0% (interrupting) to 90.9% (following home rules). All adolescents were rated by parents as showing overall improvement (see Table 1). One adolescent was worse on sibling interactions after the STP-A, one on social skills, and one on physical fighting. Thus, there was almost no evidence of an iatrogenic effect during the STP-A (Poulin, Dishion, & Burraston, 2001).

Correlates of Treatment Response

Spearman's rho was used to explore the relationship between hypothesized correlates of treatment response and improvement in each of the 13 domains (see Table 2). Results indicated that OD was negatively correlated with improvement in social skills, cooperativeness, and frustration tolerance. IQ and reading achievement were negatively correlated with improvement in task completion. Treatment engagement was positively correlated with improvement in following home rules, happiness, and teasing peers.

Discussion

This investigation offers additional evidence that an intensive adolescent-directed intervention, such as the STP-A, improves the functioning of adolescents with ADHD. Although our analyses were exploratory, it also appears that OD behavior and treatment engagement during the STP-A may affect treatment response. Furthermore, there was almost no evidence of iatrogenic effects during treatment.

Across all domains of functioning, approximately 60% to 90% of adolescents were improved in each domain. These findings are very similar to improvement noted in a separate sample of adolescents who attended the STP-A (Sibley et al., 2011) and for the children's STP (Pelham et al., 2000; Pelham, Gnagy, et al., 2010). The STP-A's ability to produce improvements across domains is promising given the collection of impairments possessed by adolescents with ADHD (Barkley et al., 1990; Molina et al., 2009). The tendency for many adolescents to be somewhat improved rather than much or very much improved in each domain likely reflects the chronicity of ADHD (Molina et al., 2009). Remission of behavioral problems is not expected after a single dose of treatment; however, sustained implementation of behavioral interventions during childhood and adolescence may lead to long-term gains. It is especially noteworthy that almost no worsening of behavioral problems occurred during the STP-A (see Table 1). Some argue that group treatments for adolescents with disruptive behavior disorders produce iatrogenic effects that contraindicate these therapies (Poulin et al., 2001). There was no evidence of such an effect during the STP-A.

Table 1. STP-A Parent Improvement Ratings

	<i>n</i>	<i>M</i> (<i>SD</i>)	Very much worse (%)	Much worse (%)	Somewhat worse (%)	Unchanged (%)	Somewhat improved (%)	Much improved (%)	Very much improved (%)
Sibling interactions	24	4.83 (.96)	0.0	4.2	0.0	25.0	54.2	12.5	4.2
Sports skills	27	5.30 (.95)	0.0	0.0	0.0	22.2	37.0	29.6	11.1
Defiance	32	5.25 (.72)	0.0	0.0	0.0	9.4	62.5	21.9	6.3
Following home rules	33	5.24 (.61)	0.0	0.0	0.0	9.1	57.6	33.3	0.0
Self-esteem	33	5.33 (.89)	0.0	0.0	0.0	15.2	48.5	24.2	12.1
Happiness	29	5.03 (.91)	0.0	0.0	0.0	31.0	41.4	20.7	6.9
Task completion	34	5.03 (.76)	0.0	0.0	0.0	23.5	52.9	20.6	2.9
Social skills	32	5.09 (.82)	0.0	0.0	3.1	15.6	53.1	25.0	3.1
Cooperativeness	30	5.13 (.73)	0.0	0.0	0.0	16.7	56.7	23.3	3.3
Interruption	27	5.00 (.92)	0.0	0.0	0.0	37.0	29.6	29.6	3.7
Frustration tolerance	32	5.03 (.82)	0.0	0.0	0.0	25.0	53.1	15.6	6.3
Teasing peers	23	5.09 (.95)	0.0	0.0	0.0	30.4	39.1	21.7	8.7
Physical fighting	16	5.00 (.97)	0.0	0.0	6.3	25.0	31.3	37.5	0.0
Overall improvement	34	5.53 (.75)	0.0	0.0	0.0	0.0	61.8	23.5	14.7

Note: STP-A = adolescent version of the Summer Treatment Program.

Table 2. Correlates of Improvement in the STP-A

	Significant correlates ($p < .05$)
Sibling interactions	None
Sports skills	None
Defiance	None
Following home rules	Treatment engagement ($r = .39$)
Self-esteem	None
Happiness	Treatment engagement ($r = .47$)
Task completion	Reading achievement ($r = -.42$), IQ ($r = -.43$)
Social skills	Oppositional-defiant behavior ($r = -.45$)
Cooperativeness	Oppositional-defiant behavior ($r = -.37$)
Interruption	None
Frustration tolerance	Oppositional-defiant behavior ($r = -.37$)
Teasing peers	Treatment engagement ($r = .57$)
Physical fighting	None

Note: STP-A = adolescent version of the Summer Treatment Program. Age and inattentive-impulsive-hyperactive (IO) behaviors did not correlate with improvement.

Two hypothesized predictors of treatment response (oppositional behavior and treatment engagement) were consistently associated with improvement across domains (see Table 2). Adolescents with high levels of OD behavior at baseline were less likely to improve social skills, cooperativeness, and frustration tolerance. Adolescents who were highly engaged in treatment were more likely to display gains in following home rules, happiness, and teasing peers.

Although our analyses were exploratory, these findings suggest that greater efforts to target OD behavior, perhaps by boosting parent-based components or peer-directed intervention components, may enhance response to the STP-A. The association between treatment engagement and response highlights the need to build adolescent motivation and effort in the STP-A. One way to enhance motivation may be to reinforce daily performance through increased attention to home and STP-A contingency management systems (Kazdin, 2001). Surprisingly, adolescents with lower IQs and reading skills tended to display greater gains in task completion. This finding is contrary to that of the Multimodal Treatment of ADHD Study (MTA; Owens et al., 2003). That suggests that children with low IQs show decreased response to treatment. These findings may be spurious given the exploratory nature of our analyses, but it is also possible that adolescents with lower cognitive/scholastic functioning may possess more severe skill deficits and therefore greater room for improvement during the STP-A.

Without a control group of adolescents with ADHD who did not attend the STP-A, it is possible that gains noted during the STP-A occurred due to nontherapeutic influences such as maturation or rater bias. It is also possible that parents who did not return ratings witnessed less improvement than parents who returned ratings. We did not assess academic improvement and or maintenance of gains into the following school year. Our rating of treatment engagement was a parent-rated item contained on the Improvement Rating Scale. The study would be strengthened by including a staff member rating of effort, but such a rating was not available. Of course, our treatment response analyses were exploratory and should be interpreted as such. The STP-A

was conducted in the 1990s, and participants were diagnosed under the *DSM-III-R* criteria, which are slightly different from the *Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition (DSM-IV; APA, 1994)* criteria for ADHD.

Despite its limitations, this study provides additional evidence for the STP-A as an effective treatment for adolescents with ADHD. When implementing the STP-A, or similar treatment programs, clinicians should give careful attention to participant motivation and effort. Contingency management may be a useful tool (Kazdin, 2001). In addition, efforts to reduce OD behavior, perhaps through intensive work with parents, might also enhance treatment gains. Larger studies with control groups are needed to fully evaluate the efficacy of the STP-A. However, it is our hope that demonstrating the efficacy of this promising program will increase its implementation in clinical, school-based, and community settings.

Declaration of Conflicting Interests

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Bios

Margaret H. Sibley, MA, is a doctoral student in clinical psychology at the State University of New York at Buffalo and a research associate at the Florida International University (FIU)

Center for Children and Families. She received her BA from Wake Forest University in 2003 and her MA in psychological science from James Madison University in 2007.

Bradley H. Smith, PhD is an associate professor psychology at the University of South Carolina at Columbia. His research interests include the treatment of ADHD and behavior problems among youth, with a recent focus on school-based interventions.

Steven W. Evans, PhD is a professor of psychology at Ohio University. His work focuses on treatment development and research for adolescents with ADHD, including school-based and family interventions.

William E. Pelham, PhD, is a professor of psychology and psychiatry at FIU. He serves as the director of the FIU Center for Children and Families and has authored or coauthored more than 275 articles on ADHD in childhood and adolescence.

Elizabeth M. Gnagy has a BS from Westminster College in New Wilmington, PA. She is a senior research support specialist at the FIU Center for Children and Families.