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Summer Treatment Programs for Youth with Attention-deficit/ hyperactivity Disorder

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Synopsis

Children with ADHD require intensive treatments to remediate functional impairments and promote the development of adaptive skills. The summer treatment program (STP) is an exemplar of intensive treatment for ADHD. In the STP, evidence-based interventions are embedded into academic and recreational activities, and the treatment program occurs throughout the summer months. STP intervention components include a reward and response cost point system, time out, use of antecedent control (i.e., clear commands, establishment of rules and routines), and liberal praise and rewards for appropriate behavior. Parents also participate in parent management training programming to learn how to implement similar treatment procedures within the home setting. There have been a number of studies of the STP and its component parts. There is a strong evidence base in support of the efficacy of the STP as an intervention for ADHD.

Keywords

Attention-deficit/hyperactivity disorder; summer treatment program; behavior modification; evidence-based treatment; contingency management; parent training

Attention-deficit/hyperactivity disorder (ADHD) is a chronic, pervasive childhood mental health disorder with a typical onset during early childhood.[1] Hallmark features of ADHD include developmentally inappropriate and excessive levels of inattention, impulsivity, and hyperactivity. These difficulties are present early in development and they persist over time.[2] These behaviors result in impaired functioning in social, academic, and occupational roles.[1] These areas of impairment include being rejected in peer relationships,[3–4] attaining

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lower levels of academic achievement and academic and occupational status,[5–6] and the families of youth with ADHD are marked by considerable caregiver strain.[7]

The economic costs associated with ADHD are also substantial.[8] Cost estimates suggest that the lifetime costs of treating ADHD approximate the costs for major depressive disorder and stroke.[8] Remarkably, costs related to ADHD are accrued within multiple functional domains, and they include medical costs (emergency room visits, pediatric care, medication costs), educational costs (costs for special education, repeating grades, academic accommodations and tutoring), family costs (lost work time to supervise a child suspended from school or driving a child to school suspended from the bus), and justice-related costs (fines, juvenile detention). Beyond monetary costs, raising a child with ADHD can result in personal costs including higher rates of separation/divorce in families that include a youth with ADHD[9] and greater parental stress;[10] these are costs that are difficult to quantify in economic terms but they are important to consider as part of the burden of the disorder. Due to the short- and long-term negative outcomes associated with ADHD,[11–12] effective treatment approaches are needed. It is likely that the Summer Treatment Program (STP) is an effective intervention for individuals with ADHD because it is highly intensive, sustained, and targets behaviors within the settings where impaired functioning is evident.

Target of treatment

As noted, youth with ADHD experience varied and pervasive impairment in functioning. To obtain a diagnosis of ADHD consistent with Diagnostic and Statistical Manual of Mental Disorders – 5th edition (DSM-5) criteria, the individual must have the requisite number of symptoms (i.e., at least six inattentive and/or hyperactive/impulsive symptoms), the symptoms must cause functional impairment, and the symptoms must be pervasive and long-standing.[1] Thus, although the symptoms provide a criterion for the specific constellation of behaviors that must be present for a diagnosis of ADHD to be made, it is the functional impairment that drives the diagnosis and should be the target of intervention. This is because the symptoms of ADHD are not in and of themselves abnormal – all people exhibit inattentive, overactive, or impulsive behaviors from time to time; ADHD is only diagnosed if these symptoms are developmentally inappropriate, maladaptive and dysfunctional, and they occur over a sustained time period and across settings. Thus, impairment in functioning is the proximal target of intervention for youth with ADHD.

This manner of conceptualizing targets of treatment may run counter to prevailing approaches in the field that prioritize targeting ADHD symptoms as the primary target of treatment and outcome measured. For instance, studies of primary outcome and systematic reviews routinely prioritize symptom ratings.[13] However, impairment is what drives initial treatment-seeking in families,[14] improvement in impaired functional domains are emphasized by parents in their evaluation of intervention components,[15] and improvement in impaired areas (e.g., functioning in peer relationships; academic achievement; improvements in family functioning and parenting) are strong predictors of long-term outcome relative to ADHD symptoms.[16] Thus, one reason for the effectiveness of the STP is its explicit targeting of behaviors that are meaningful outcomes for children and families.

Need for the treatment

ADHD is a disorder that relies on others to implement treatment. The evidence-based, non-pharmacological interventions for ADHD include behavioral parent training, school-based contingency management approaches implemented in classrooms, and training interventions that teach the individual adaptive skills.[17–19] There is a large and consistent evidence-base that supports the use of these approaches for youth with ADHD. However, these interventions require consistent implementation, considerable implementer effort, and they often need to be sustained over time to realize beneficial outcomes. Further, the targets of treatment that include impaired functioning in recreational settings, academic classrooms, and other situations common in daily living are not able to be treated within clinical office settings. Clinicians attempting to determine how the child behaves in response to social or academic demands have to rely on second or at times third-hand reports, which may be inaccurate or biased. STPs bring the treatment to the child rather than waiting for the child to access and engage with treatment. In an STP setting, intensive evidence-based treatment can be implemented, modified, and tailored. For this reason, STP interventions are also an evidence-based approach to ADHD intervention.[18]

Theoretical Overview for the STP

The STP represents a packaging of evidence-based interventions for youth with ADHD. Most of the interventions are based on an applied behavior analytic approach using operant conditioning and social learning theory.[20–21] Applied behavior analytic approaches identify the antecedents and consequences of targeted behaviors, and these, along with setting events are manipulated so as to promote the occurrence of positive behaviors and suppress negative or maladaptive behaviors. This approach relies heavily on individuals (i.e., teachers, counselors, parents) who implement strategies in the child's natural environment consistently over time. Social learning theory suggests that learning can also occur through the observation of rewards or punishments directed toward others, even if the individual does not directly experience these consequences. Thus, learning also can occur through vicarious reinforcement and modeling.[22]

Within the context of the STP, antecedents, consequences, and social learning opportunities are embedded within all program activities.[23] As described below, antecedents such as the establishment of clear rules for all activities, the provision of clear commands for expected behaviors, and structured activities support appropriate child behaviors. Consequences include time out, a token economy supported by rewards, and labeled praise for good behavior and corrective feedback following negative behaviors. Social learning opportunities frequently include modeled social skills during group discussions as well as multiple opportunities for children to observe other youth receive rewards and punishments following clearly labeled targeted behaviors.

Treatment Delivery

The STP is a six to nine week program for children and adolescents aged 5 to 16 years. Children are placed in age-matched groups of approximately 12–15 children, and counselors implement treatments for each group. Groups stay together throughout the summer, so that

children receive intensive experience in functioning as a group, in making friends, and in interacting appropriately with adults. A notable aspect of the treatment delivery in the STP is that all interventions occur in the context of typical child and adolescent activities. Further, treatment is implemented by counselors, teachers, and aides, supervised by senior clinical staff (i.e., M.D. or Ph.D.-level). It is also important to emphasize that weekly behavioral parent management training sessions[24] are also a component of the STP. This facilitates parents' development of adaptive and effective parenting strategies that can then be applied outside the STP setting. Childcare is typically provided by STP staff one evening per week to facilitate parent attendance at these treatment sessions.

Treatment delivery in the STP is also continuous. From the moment the child arrives at the STP each morning, until the child departs, best practice behavioral interventions are interwoven into all daily activities. The intervention is a multi-component approach that includes a number of contingency management and training strategies that are evidence-based for youth with ADHD.[17–19] A treatment manual and multiple supporting documents describe the program in detail.[23] The multiple aspects of the intervention approach are briefly described below.

Contingency Management

The guiding framework for the STP is a reward and response cost token economy that assigns points for targeted behaviors within the program setting. These behaviors include adaptive behaviors that children are encouraged to exhibit more frequently (e.g., following rules, ignoring provocation) and negative behaviors children are encouraged to decrease (e.g., aggression, interrupting others). Children earn points for exhibiting appropriate behaviors and lose points if they behave negatively. The points that children earn are exchanged for privileges (i.e., field trips), social honors and camp privileges, and home-based rewards.

Supporting the point system is an individualized daily report card (DRC), which is a best practice for youth with ADHD.[25–27] DRCs in the STP include idiographic target behaviors as well as specific criteria for meeting behavioral goals (e.g., completes all seatwork assigned within the time provided at 80% accuracy or better; No instances of intentional aggression; Interrupts group discussions 2 or fewer times). Target behaviors and criteria for meeting daily goals are set and revised in an ongoing manner. Importantly, success on the DRC is rewarded with STP and home-based rewards. In the STP parenting sessions, parents learn how to provide home-based rewards for meeting DRC goals (e.g., "screen time;" special activities).

There is also a need to use consequence control, at times, following negative behaviors in the STP. Following certain prohibited behaviors (e.g., intentional aggression, repeated noncompliance), children receive a time out from positive reinforcement. Consistent with the positive approach emphasized in the STP, time outs are designed to be short in duration such that the child can re-enter the "time in" setting as soon as possible. Children also are rewarded by shorter time outs, if they exhibit self-control and self-management after a time out is assigned. The time-out program used in the STP assigns children with an initial time-

out duration that is relatively long (e.g., 10–30 minutes depending on the child's age), but a child may immediately earn a 50% reduction in time for "good behavior".[23,28]

Attention to Antecedents and Consequences

Social reinforcement in the form of praise and public recognition (buttons, stickers, and posted charts) is embedded within all activities to provide a positive, supportive atmosphere. This begins immediately as a counselor greets the child at the car door at drop-off warmly and with enthusiasm. (This can be contrasted with a typical day in other settings where the first interaction with a child with a disruptive behavior disorder may be a reprimand or criticism). The end of the day also includes a brief conversation between the child, his or her counselor, and the parent to review the day's success and encourage the child to continue to work toward individual behavioral goals. In addition to the liberal use of praise, staff members attempt to shape appropriate behavior by issuing commands with characteristics (e.g., brevity, specificity) that maximize compliance.[23]

Peer Interventions

Current reviews of evidenced-based practice emphasize the importance of training children in adaptive functioning.[17] In the STP, social skills training is provided in brief, daily group sessions that are part of the morning meeting with the children. Specific social skills introduced and reviewed with the children include communication, participation, validation, and cooperation.[29] Sessions include instruction, modeling, role-playing, and practice in key social concepts as well as more specific skills when necessary. Then, throughout daily activities, children's implementation of the social skills training program is reviewed and reinforced using the other treatment components (e.g., token economy, daily report card). The combination of training reinforced by a contingency management approach has been shown to be necessary for children with externalizing disorders.[4]

An additional peer-focused intervention component within the STP is the emphasis on the development of sports skills and related competencies. Children with ADHD may have low knowledge of the pragmatic and social aspects of sports activities.[30–31] This is concerning as sports activities currently comprise an important setting for typical development. It is estimated that a third of children in kindergarten through 8th grade participate in sports after school at least weekly.[32] Many more children participate in recreational activities informally (e.g., board games, sports with neighborhood youth, playing with siblings), and thus these activities are important settings for interventions. The intensive practice and time that is necessary to effect changes in sports skills highlights the value of the STP as a setting for this goal. For instance, in a recent study where youth were randomly assigned to receive the STP intervention, or summer activities as usual, those who participated in a 6-week STP evinced improved sports knowledge and game awareness, sports skills, and improved fine and gross motor skills as measured by a standardized measure of these functional outcomes.[30]

Classrooms

Academic impairments are a key concern for youth with ADHD proximally[33–34] and distally.[5] To deal with these serious academic impairments, a number of academic

accommodations and interventions[35–36] are integrated into the two to three hours of academic classroom time each day. Children spend two hours daily in a classroom modeled after an academic special education classroom, and they spend a third hour in an art class. Behavior in the classrooms is managed using a relatively simple point system that includes both reward (earning points for work completion and accuracy) and response-cost (losing points for rule violations) components.[37–39] The other behavioral intervention strategies (e.g., liberal use of labeled praise, time out) are also integrated into the classroom. The behavior management system in the classroom is designed to be implemented by a single teacher and a classroom aide, which is consistent with the approach in most inclusive and special education settings.

The goal of the STP classroom is to teach children adaptive skills and academic enablers that can be supportive within the authentic classroom setting in the fall. Children engage in independent seatwork tasks where they are required to persist with academic seatwork for at least 30 minutes, a peer-tutoring period where they cooperate with a partner on a reading task in a cooperative learning exercise[40], and a computer class where additional academic fluency practice is implemented.

Parent Involvement

Behavioral parent training (BPT)is an evidence-based treatment for youth with ADHD.[17–19] Behavioral parent training includes teaching parents how to use strategies similar to those employed by counselors and teachers during the STP day. A typical course of BPT will include how to attend to and “catch” their child behaving appropriately, use planned ignoring for minor, inappropriate behaviors, use effective instructions and commands, employ contingency management strategies (e.g., daily report cards, Premack contingencies, token economies, time out), and use effective problem-solving strategies for new problems that might occur or new settings where intervention is needed (e.g., school, outside of the home). There are a number of evidence-based parent training programs suitable for youth with ADHD. The parent training program most commonly employed within the STP is a large-group problem-solving approach that is designed to improve maintenance of skills learned in parent training called the Community Parent Education (COPE) program.[24] COPE is appropriate for working with large groups, such as the parents of children with the STP, and it uses an approach that encourages parents to identify parenting errors and then generate personal solutions for managing identified problems. Parents practice parenting strategies through role-play and weekly at-home assignments. Notably, the BPT component of the STP is nearly universally attended by parents with most attending all sessions. This participation rate is considerably greater than that found in community or stand-alone BPT courses for youth with ADHD[41], suggesting that one advantage of the STP is the engagement and retention of parents in a course of this effective treatment.

Beyond the formal, weekly BPT classes, there are a number of other opportunities for parental involvement. Parents have daily contact with staff members and with each other when they drop-off or pick-up their children. At times based on individual family needs, or for parents who have already completed the foundational BPT course, the children and their parents participate in shared exercises and activities, using in vivo training situations. The

STP has also spawned a number of BPT approaches to target particular groups in need of specialized support including mothers with depressed mood[10], fathers[42–43], and low-income or single parent families.[44]

Medication Assessment

Stimulant medication is an evidence-based intervention for youth with ADHD.[45] The stimulants prescribed to ADHD children are generally inadequately assessed and monitored.[46] This may result in the overall poor compliance with, and sustainability of, this intervention.[47] If desired by the child's parent(s), and the child's response to the intensive behavioral treatment within the STP is not sufficient to normalize functioning, a child may undergo a controlled evaluation of the effects of stimulant medication.[23] Data gathered routinely in the STP provide ecologically-valid outcome measures of the effects of medication within the child's daily activities. Staff and parents can also provide daily ratings of side effects to determine whether there are any reasons to discontinue medication or adjust doses.

In numerous studies conducted in the STP in which doses of medication have been compared, lower doses of medication (e.g., .15 mg/kg to .3 mg/kg methylphenidate given twice daily) combined with behavior modification are routinely as effective as .60 mg/kg b.i.d. doses of methylphenidate.[37–39,48–49] Recent studies within the STP have clearly shown that even a modified, less intensive version of the STP procedures can be combined with a low dose (.15 mg/kg b.i.d.) of methylphenidate to produce benefits greater than .60 mg/kg b.i.d. methylphenidate used alone.[38,48]

Developmental Modifications

Most of our description above applies to the STP for elementary-aged children with ADHD. However, the STP has been successfully modified at both ends of the ADHD age spectrum —preschoolers and adolescents. Manuals have been developed for both of these ages, and the data indicate that the program works well for preschool-aged children through the middle school and early high school years.[50–54] The modifications are those that would be expected for use with very young children and with adolescents. For example, the classroom procedures are adapted to resemble preschool and middle/high school classrooms, respectively. The point system and procedures are simplified for younger children, and the program for teens involves more involvement of the teen in treatment (e.g., selecting treatment goals).

Individualized Programming

As discussed above, the STP is a highly operationalized and rigorous treatment with a set of clearly detailed treatment manuals that describe all aspects of the treatment programming. However, it is also important to note that the STP is a highly flexible intervention that includes clear procedures for determining whether treatment modifications are needed, how to make treatment modifications, and how to evaluate these modifications. Some modifications are made on a group level. For instance, procedures are included in the STP manual for group problem-solving discussions and group contingencies, which are modifications of interventions applied to the entire group of children.

The STP manual also includes an entire chapter on how develop and evaluate individualized behavioral programming for youth who are non-responsive to the standard STP procedures. There are a nearly unlimited number of modifications that can be made to the STP procedures including reducing latency to reward, increasing or modifying feedback on behavior, modifying time out strategies, and enhancing staff to child interactions. Given the standardized STP schedule, procedures, and measurement of outcomes, individualized programming can be rigorously employed and evaluated using single-subject research methodology.[55] In addition to providing more effective intervention within the context of the STP, individualized behavioral programs also provide information on effective intervention approaches that might be useful in the child's home or school setting.[56]

Monitoring Treatment Integrity and Fidelity

For any intervention, the integrity and fidelity of implementation is a critical construct to assess and feedback to clinicians.[57] Treatment fidelity can be defined as the skill, care, and genuineness with which the intervention is implemented, and integrity refers to the degree to which the intervention was implemented as intended. Multiple procedures have been developed to monitor integrity and fidelity in the STP setting.[23] Integrity materials include both lists of treatment procedures and ratings of the quality with which staff members are providing treatment, and 20 fidelity forms have been developed that cover every intervention and related component parts used in the STP. Table 1 includes a sample program day, and integrity and fidelity forms are available for each activity listed.

Empirical support

The STP has been employed as an intervention since the early 1980's. It was developed by William E. Pelham, Jr. as a wrap-around set of activities for children with ADHD participating in a medication efficacy study[58] at Florida State University. Interestingly, the wraparound activities were so well received by the parents of children in the study they requested that the STP be implemented as an intervention during the next summer. Since that time, the STP has been established at a number of academic settings (e.g., University of Pittsburgh Medical Center; University at Buffalo, Florida International University, New York University Medical Center, The Cleveland Clinic, University of Illinois, Chicago, Medical Center). It was a core component of the psychosocial treatment employed by the MTA study.[59] It has been adapted for use in community settings.[60–61] A number of community agencies have implemented the STP nationally and internationally.[61–64] Although outside the scope of this review, it is interesting to note that the STP procedures have also been successfully adapted for use in general education classroom settings[65], parent training programs aimed at engaging and intervening with fathers[42–43], and investigations of medication efficacy.[66–67] The remainder of the review of the evidence for the STP will be focused on studies for youth that occurred in the STP model as operationalized in the treatment manual.[23]

Before discussing the specific empirical studies, it is important to describe the results of other systematic reviews of the STP. The Substance Abuse and Mental Health Services Administration (SAMHSA) has reviewed the STP and includes it in its National Registry of Evidence-based Programs and Practices (NREPP). As an arm of SAMSHA, NREPP

individually reviews treatments for mental health and assigns a rating of the strength of the evidence base supporting the intervention as well as a ration of readiness for dissemination. In September 2008 the NREPP review provided a quality of research rating of 3.3/4.0 and a readiness for dissemination rating of 3.8/4.0; these were both favorable scores supporting the STP intervention.

The STP has also been systematically reviewed by two independent teams applying the American Psychological Association, Division 53 Clinical Child and Adolescent Psychology criteria for evidence-based treatment. Pelham and Fabiano[18] concluded that the STP meets criteria for a well-established evidence-based treatment based on two between group studies, five cross-over design studies, and multiple single-case design studies. Evans, Owens, and Bunford[17] updated the prior review and reached similar conclusions that interventions that provide training opportunities for children to develop and practice adaptive skills are a well-established treatment. This included the STP as well as other interventions that enhance peer relationship, social skills, and academic skills.

For the present review, Oxford Center for Evidence Based Medicine (OCEBM) Guidelines were used to categorize the rigor of the studies conducted to evaluate the STP or component parts. Table 2 includes each of the studies included within the review as well as a classification of study methodology using the guidelines. Overall, 38 studies were identified that evaluated the STP or component parts. As can be seen in Table 2, there are 2 systematic reviews of the STP evidence-base (as described in the paragraph above), 15 randomized controlled trials (either between group or cross-over design), one quasi-experimental design, and 20 single-subject or case series design investigations of the STP or component parts. This is a sizeable evidence base that includes clear evidence for the STP as an intervention with support for the OCEBM question of “Does the intervention help?” Thus, there is clear and replicated evidence, across the past thirty years and different investigatory teams, that the STP is an efficacious intervention. Based upon OCEBM Guidelines, the STP is a Level 1 intervention.

Clinical Decision-Making

Who is most likely to respond?

The studies included in Table 2 include a range of ages from preschoolers[30] to adolescents.[51] The preponderance of evidence within studies has been collected from investigations of the STP with elementary-school aged children (i.e., 6–12 years of age). The majority of participants in these studies are also boys. Although there is no clear indication girls respond any differently to the STP procedures than boys, this is an empirical question in need of further study (See Babinski et al.[68] for an example of how gender may impact treatment response in some domains for adolescents). The STP has been successfully modified for different developmental levels, so the current evidence suggests effectiveness across different age ranges. Analyses of individual differences have routinely shown that children with ADHD with and without conduct problems respond equally well to the STP and that STP response is independent of socioeconomic status.[69]

What outcomes are most likely to be affected by treatment?

Table 2 lists overall domains targeted by the STP intervention. The majority of studies target academic (e.g., seatwork completion, classroom rule following, note-taking skill-building) and social outcomes (peer and adult interactions). Additional targets of the STP treatment include sports skill and sportsmanship development (e.g., O'Connor et al.[30]). Future work should focus on other positive outcomes from the STP such as modifications in parenting and maintenance of STP treatment gains in the child's natural settings following the program.

What are the contraindications or adverse effects of treatment?

There are no identified contraindications or adverse effects of treatment. Some children respond with increased disruptive behaviors due to the behavioral demands present in the STP setting. However, this is typically reduced as the program progresses, or through the implementation of individualized programs. There was also a concern in the field regarding whether group treatments for youth with disruptive behavior disorders results in "deviancy training".[70] Potentially, given its emphasis on delivering the intervention in a group context, the STP could present this adverse effect. However, the extent to which this was a problem in the STP was addressed empirically, and deviancy training occurs rarely and at levels comparable to typically-developing children in the context of the STP behavioral intervention.[71] Interestingly, the rates of deviancy training are present to a significant extent if the STP behavioral intervention components are removed. Thus, for individuals conducting group interventions with youth with ADHD, the procedures employed in the STP can mitigate the possibility of deviancy training in group-based treatment.

How should the treatment be sequenced with drug therapy and other non-drug treatments?

There is no current study investigating the appropriate sequencing of drug therapy with the STP intervention. In the largest study of the STP[13] the STP occurred for most participants around the same time, after medication was established. Other cross-over studies did not address sequencing as an aim. An advantage of the STP is that the daily point system, DRC, and other observational measures provide clear indications of response to intervention and progress. It seems logical to start the child in the STP off medication, in order to determine whether medication is even necessary. Studies of the STP intervention, compared to no-STP intervention, indicate that for many children there are sizable treatment effects.[38,48] Adding medication may improve behavior incrementally, but for many children and their parents these improvements may not be clinically meaningful. Certainly, future study is needed to investigate the interactions between treatment modality, treatment intensity, and outcomes targeted.

Future directions

This review outlines the STP, the components included within the intervention, and the state of the evidence base. Based on the large number of studies, including systematic reviews, clinical trials, and case studies, there is clear and strong evidence in support of the STP as an intervention for youth with ADHD. Future directions include continued study of the STP,

and associated programs as implemented in after-school, school, and community settings.[60] Two current projects funded by the Institute of Education Sciences examine the utility of the STP as a summer transition from preschool to kindergarten, from elementary to middle, and from middle to high school. Further, researchers should study various ways of sequencing the STP in the context of a treatment package for individual children, as well as varying intensities of implementation.[38,48] Cost-effectiveness studies are also needed to determine in part whether all children with ADHD need and benefit from an intervention as intensive as the STP. Finally, investigating the best way to integrate the STP into a multimodal and chronic model of treatment for ADHD is also needed. The STP represents a best-practice intervention for treating the academic and social impairments present in youth with ADHD, and it is a model program for building child and family competencies to alleviate these impairments. Given the strength of these findings, future directions also include problem-solving how to increase access and affordability of this intensive intervention. This could be done by re-allocating resources from existing community or school-district based summer programs to underwrite an intensive treatment such as the STP. Community agencies and clinics may also find the start-up costs of the STP are acceptable the high patient retention, satisfaction, and improved functioning that results from the treatment. Compared to other interventions for ADHD that are not evidence-supported (e.g., individual counseling with the child), yet widely implemented, dedicating resources to STP interventions instead is justified.

Key Abbreviations

ADHD	Attention-deficit/hyperactivity disorder
STP	Summer Treatment Program
DRC	Daily Report Card

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Key Points

- The Summer Treatment Program is an intensive treatment for youth with ADHD. It includes behavioral interventions that support youth in developing adaptive skills and reducing impairing behaviors.
- The STP includes child-focused interventions such as a reward and response cost token economy and time out. It also include behavioral parent management training.
- The STP has been evaluated in 36 independent studies and two systematic reviews, making it an exemplar intensive intervention for the treatment of youth with ADHD.

Table 1

Sample daily schedule for the summer treatment program.

Time	Activity
7:30–8:00	Arrivals
8:00–8:15	Morning Discussion/Social Skills Review and Training
8:15–8:25	Transition/Bathroom Break
8:25–9:25	Sports Skill Drills - Soccer
9:25–9:35	Transition/Bathroom Break
9:35–11:35	Academic Classroom (Seatwork, Classwide Peer Tutoring, and Computer classes)
11:35–11:45	Transition/Bathroom Break
11:45–12:00	Lunch
12:00–12:15	Recess
12:15–1:15	Recreational Activity – Soccer Game
1:15–1:25	Transition/Bathroom Break
1:25–2:25	Art Classroom
2:25–2:35	Transition/Bathroom Break
2:35–3:35	Basketball Game
3:35–4:45	Swimming
4:45–5:00	Recess
5:00–5:30	Departures

Note: For one designated day during each week a parent training class is held from 6:30–8:30. Program staff provide childcare while the parents are in the meeting.

Table 2

Oxford Levels of Evidence Summary Table for Summer Treatment Program Studies.

Study	Year	Target	Design	OCEBM Rating
Evans et al.[17]	2013	Academic and Social	Systematic Review	1
Pelham & Fabiano[18]	2008	Academic and Social	Systematic Review	1
August et al.[72]	2001	Academic and Social	Between group	2
Carlson et al.[37]	1992	Academic and Social	Within-subject	2
Chronis et al.[73]	2004	Academic and Social	Within-subject	2
Evans et al.[74]	1995	Academic	Within-subject	2
Fabiano et al.[28]	2004	Academic and Social	Within-subject	2
Fabiano et al.[**38]	2007	Academic and Social	Within-subject	2
Haas, et al.[75]	2011	Social	Within-subject	2
Kolko et al.[76]	1999	Academic and Social	Within-subject	2
Manos, et al.[77]	2012	Academic and Social	Within-subject	2
MTA Cooperative Group[*13]	1999	Academic and Social	Between group	2
O'Connor et al.[30]	2013	Social and Athletics	Between group	2
Pelham et al.[39]	1993	Academic and Social	Within-subject	2
Pelham et al.[49]	2005	Academic and Social	Within-subject	2
Pelham et al.[*78]	2000	Academic and Social	Between group	2
Pelham et al.[**48]	2014	Social	Within-subject	2
O'Connor et al.[61]	2012	Academic and Social	Between group	3
Chronis et al.[56]	2001	Academic and Social	Single-subject	4
Coles et al.[55]	2005	Academic and Social	Single-subject	4
Graziano et al.[50]	2014	Academic and Social	Within-subject	4
Gulley et al.[79]	2003	Social	Single-subject	4
Hoza et al.[80]	1992	Academic and Social	Single-subject	4
Hupp & Reitman[81]	1999	Social and Athletics	Single-subject	4
Hupp et al.[82]	2002	Social	Single-subject	4
Miller et al.[83]	2013	Social	Within-subject	4
Northup et al.[84]	1997	Social	Single-subject	4
Northup et al.[85]	1999	Social	Single-subject	4
O'Callaghan, et al.[86]	2003	Social	Single-subject	4
Pelham & Hoza[69]	1996	Academic and Social	Within-subject	4
Reitman, et al.[87]	2001	Social	Single-subject	4
Sibley et al.[88]	2013	Social	Within-subject	4
Sibley et al.[52]	2011	Academic and Social	Within-subject	4
Sibley et al. (a)[51]	2012	Academic and Social	Within-subject	4
Sibley et al. (b)[89]	2012	Social	Single-subject	4
Waschbusch, Kipp, & Pelham[90]	1998	Academic and Social	Single-subject	4

Study	Year	Target	Design	OCEBM Rating
Yamashita et al.***[63]	2011	Social, Academic, Cognitive	Within-subject	4
Yamashita, et al.***[64]	2010	Academic and Social	Within-subject	4

Notes: CEBM = Center for Evidence Based Medicine. MTA=Multimodal Treatment study of ADHD. SRP=Summer Research Program.

* From MTA sample.

** From SRP sample.

*** Overlapping sample from Japan.