

## CHAPTER 1

# The Need for Organizational Skills Training for Children with ADHD

This book provides an evidence-based intervention designed to improve key organizational skills in elementary school children with attention-deficit/hyperactivity disorder (ADHD). Organization, time management, and planning skills are needed to meet school demands and associated tasks that must be completed at home. Without these skills, children in general, but especially children with ADHD, are at risk for school disengagement, school failure, and subsequent negative outcomes (Barkley, Fisher, Smallish, & Fletcher, 2006; Bernardi et al., 2012). Reviews of the literature; case analyses; and consultations with parents, teachers, and professionals all indicate that significantly impairing organizational problems emerge around third grade, persist into later grades, and are major contributors to poor outcome.

In childhood, organizational difficulties, such as misplacing, forgetting or losing materials, failing to record homework assignments and due dates, and not completing or handing in assignments on time not only hinder academic performance and scholastic attainment, but lead to diminished confidence and engagement in school (Power, Werba, Watkins, Angelucci, & Eiraldi, 2006). Teachers report reduced achievement in children who misplace assignments or take too long getting materials ready for in-class assignments (Diamantopoulou, Rydell, Thorell, & Bohlin, 2007; Langberg, Molina, Arnold, Epstein, & Altaye, 2011). Indeed, teachers indicate that failing to execute organizational behaviors can even hinder the academic performance of intellectually talented students (Baker, Bridger, & Evans, 1998; Clemens, 2008), as well as gifted students with ADHD (Assouline & Whiteman, 2011; Leroux & Levitt-Perlman, 2000). At home, many parents of children with ADHD affirm that organizational difficulties contribute to intense and frequent family conflict (Abikoff & Gallagher, 2009), especially at homework time (DuPaul, 2006; Power et al., 2006). Notably, organizational difficulties tend to persist into adulthood (Barkley & Fischer, 2011) and adversely affect the work productivity of adults with ADHD (Doshi et al., 2012). Marital relationships are also negatively affected by organizational difficulties, as exemplified by spouses who report significant conflicts when a partner with ADHD forgets to pay bills on time or loses important papers (Minde et al., 2003; Solanto et al., 2010). In light of the adverse consequences and

chronic nature of organizational difficulties, it is critical to intervene early with children with ADHD and address their organizational impairments before they enter middle school, when organizational challenges increase and adult supervision decreases.

The cardinal symptoms of ADHD (inattention, hyperactivity, and impulsivity), in conjunction with the associated features of poor frustration tolerance and delay aversion (Thorell, 2007), ineffective social skills (Ronk, Hund, & Landau, 2011), motivational difficulties (Volkow et al., 2009), and executive functioning (EF) deficits (Barkley, 2012), contribute to problems in key aspects of functioning. Among the most prominent and well-documented functional difficulties during childhood are impaired peer relationships (Mikami, 2010), conflicts with parents and teachers (Kos, Richdale, & Hay, 2006; Woodward, Taylor, & Dowdney, 1998), disruptive classroom behaviors (Abikoff et al., 2002), and poor academic performance and achievement (Eisenberg & Schneider, 2007; Hinshaw, 1992; Sexton, Gelhorn, Bell, & Classi, 2012). Many different behavioral interventions have been used to treat these problems. Treatment approaches that primarily involve working directly with the children have included social skills training, self-instructional training, and training in interpersonal problem solving. In contrast, other treatment approaches have targeted parents and/or teachers as change agents, and include parent management training, parent friendship coaching, classroom behavior management, and contingent reinforcement of on-task and academic performance. Reviews of the treatment literature indicate considerable differences in the efficacy of these approaches, with minimal support for child-based treatments and broader evidence for contingency management procedures and parent behavior management training (Hinshaw, Klein, & Abikoff, 2007).

Until recently, few systematic treatments have directly targeted organizational functioning in children with ADHD. Rather, most efforts have focused on improving children's academic performance, productivity, and homework functioning. For example, Power and colleagues have created a homework solutions program for children with ADHD (Power, Karustis, & Habboushe, 2001; Power, Mautone, Soffer, Clarke, Marshall, et al., 2012). Implemented by parents, the intervention rewards children for staying on task, completing homework in a timely fashion, and determining what rules should be followed while completing work. DuPaul and Stoner (2003) describe a variety of school-based approaches, including the use of peer buddies and peer tutors to help students with ADHD write down assignments and pack up needed materials, and the use of daily behavior report cards to reinforce on-task behavior and turning in work. A number of reports utilizing multiple-baseline designs for single or a small number of participants have also emphasized work completion; on-task behavior in school and at home; and (at times) minimal aspects of organization, time management, and planning, with noted improvements in work completed and quality of work (Axelrod, Zhe, Haugen, & Klein, 2009; Currie, Lee, & Scheeler, 2005; Dorminy, Luscre, & Gast, 2009; Gureasko-Moore, DuPaul, & White, 2006, 2007; Raggi & Chronis, 2006).

Although many of these interventions have demonstrated positive effects, they also have empirical and practical limitations. Reports of success are often based on a small number of children, and efficacy has not been established in randomized controlled trials. Furthermore, many of the interventions cannot be easily implemented by clinicians unless they are working in a school setting. But, most importantly, the utility of some of these approaches is limited for children with organizational difficulties. For example, the success of a homework improvement plan will be suboptimal if a child does not know what homework has been assigned or has lost important materials needed for the work. In addition, even though adverse effects resulting from organizational difficulties often begin in elementary school, most interventions that have directly addressed such difficulties have focused on children

in middle school (Langberg, Epstein, Becker, Girio-Herrera, & Vaughn, 2012) and on adults with ADHD (Solanto et al., 2010). These programs with older children and adults are of significant value; however, the lack of established, effective interventions for organizational difficulties in elementary school-age children with ADHD is noteworthy. The organizational skills training (OST) program described in this book addresses these issues.

OST is based on a programmatic body of clinical research that spanned more than a decade, including a randomized controlled trial (summarized later in this chapter). Designed for elementary school children in grades 3–5, OST uses behavioral skills training procedures to improve children’s organizational skills. It also includes a prompt–monitor–praise–reward component for teachers and parents, as well as home-based contingency management procedures. The program is time-limited and consists of 20 sessions lasting 1 hour each and held twice weekly over 10–12 weeks. In addition to two orientation sessions for the child and parent and a concluding session, four key skills modules are taught: Tracking Assignments, Managing Materials, Time Management, and Task Planning. Chapter 2 presents an overview of the treatment program and offers guidelines for assessment. Detailed session-by-session guidelines are presented in Part II of this book. Two initial contacts are held with the child’s teacher to determine the child’s level of functioning in school and to determine the teacher’s ability to provide direct assistance in implementing the program. If the teacher agrees to participate, five subsequent structured contacts between the therapist and the teacher are built into the program. These are described in detail in Chapter 3. Copies of all handouts and forms provided to each teacher, parent, and child, as well as forms used by the therapist, can be found in Part III of this book. In the rest of this chapter, we first review specific organizational deficits found in many children with ADHD. We then describe the development of OST, the rationale for its components, and the treatment’s evidence base.

## **ORGANIZATIONAL DEFICITS IN CHILDREN WITH ADHD**

Clinical observations, as well as functional and factor analyses, reveal that many (but not all) children with ADHD experience difficulties in four broad domains of organizational behavior: tracking assignments, managing materials, time management, and task planning (Abikoff & Gallagher, 2009). OST was designed to address weaknesses in these four key organizational skill domains, especially as they relate to school performance. The abbreviation OTMP is used throughout this book to represent organization (O), time management (TM), and planning (P) functions.

### **Tracking Assignments**

Children with ADHD often do not systematically keep track of short-term and long-term assignments. They also do not consistently use tools for tracking assignments, such as planners for writing down homework assignments or calendars for noting the due dates of long-term assignments. Without these critical tools, children are unable to complete their assignments appropriately, and receive negative feedback from disappointed teachers and frustrated parents.

Inefficient tracking of assignments can have long-lasting detrimental consequences, especially in academic settings. In clinical interviews with clients ranging in age from 8 to 19, weaknesses in tracking assignments were highlighted as key factors limiting school

success. One male client, Jack,<sup>1</sup> a 19-year-old college student who had been accepted to a college ranked within the top 50 universities in the United States, was asked to take a leave of absence due to multiple course failures. When asked why he had failed so many courses, he indicated that he consistently missed deadlines for handing in papers and other major assignments, because he did not note due dates on a calendar. Jack's multiple course failures cost his parents tens of thousands of dollars, as he was unable to obtain credit for more than 25% of the courses for which he had registered. Another male client, Andrew, a high school junior with ADHD, reported that he used random scraps of paper to record homework assignments instead of using the school-supplied planner. He often lost these scraps of paper and had to call his increasingly annoyed classmates to ask about the homework assignments each evening. Anne, a sixth-grade student, reported that she was overwhelmed by efforts to keep track of assignments for the five classes she had each day. She was often successful at recording the assignments for two or three of those classes, but made errors or forgot to record the assignments for the other classes. For all of these students, failure to use organizational tools effectively for tracking assignments contributed to significant academic, social, and (in Jack's case) financial consequences.

### Managing Materials

Children with ADHD also have difficulty managing the materials that are necessary for completion of school assignments. They may write down the homework assignments for a given day, but forget to pack the requisite textbooks or notebooks in their backpacks, making it impossible for them to complete those assignments. They find it especially challenging to manage the multiple papers that are distributed in school. These children often arrive home with crumpled papers at the bottom of their backpacks, or return to school without their completed homework, which has been forgotten on a desk at home. They do not take the time to consider the materials they will need to complete various tasks, and find themselves unprepared for class or for completing their homework.

In clinical interviews with parents and children, problems with managing materials are frequently reported as causing significant conflicts related to schoolwork. Hugh, a fifth-grade boy, and Pam, a fourth-grade girl, told similar stories of their struggles with managing materials for schoolwork. Both children often forgot books or papers at school, forcing their parents or other caregivers to travel back to the building or call friends to get copies of missing papers. In Pam's case, devastating fights ensued when she forgot items at school. In the intake interview, she cried for 10 minutes as she recounted how much she hated those fights. She said she did not want her mother to think that she did not care about school or that she was a bad girl. Her mother stated that she hated the fighting, too, but had trouble controlling her frustration when Pam did not respond to frequent reminders to be "better organized." Hugh and his parents had similar experiences, reporting that Hugh often lost significant time going back to school or getting copies of papers from friends, forcing him to stay up late or miss beloved sport practices or games to complete his homework. His parents were not as harsh in their criticism, but were very concerned that untimely completion of assignments could cause Hugh to lose the necessary credit and grades to take advanced classes, for which he possessed the requisite intellectual abilities.

If problems with managing materials are not addressed early in elementary school, they can cause long-lasting difficulties in middle school and beyond, when the demands for

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<sup>1</sup>Case presentations have been modified to protect confidentiality.

juggling materials for multiple classes increase. Benjamin, a seventh grader, struggled with the demands of managing his class materials throughout the school day. He would often arrive at a class without the appropriate books or other materials, and would have to request permission to go to his locker to retrieve the necessary items. Benjamin reported that some teachers would not grant this permission, and would penalize him for not handing in homework that he had actually completed but left in his locker. Edward, a sixth-grade student, experienced similar problems with being prepared for class; he decided that using his locker was too risky, given his tendency to forget essential items there. Instead, he carried all of his materials with him throughout the day, so he would never be without a needed item. To avoid using his locker, he carried two fully packed bags with him. His parents reported that he was experiencing significant back problems—probably because the combined weight of the bags was over 25 pounds, and he was a slight boy, weighing just 90 pounds.

### Time Management

Children with ADHD also have difficulty managing time effectively, and this negatively affects their ability to complete schoolwork and other important tasks. These children typically cannot accurately predict how much time will be required to complete tasks; thus they do not plan their schedules appropriately, and are unable to complete required tasks in a timely manner. Difficulties with time estimation can cause daily problems, as children may not leave enough time for homework completion, throwing the entire evening routine into turmoil. Time estimation problems also pose significant issues in relation to long-term assignments, which must be completed over the course of several days or weeks. Children who underestimate how long it will take to complete an extended assignment often find themselves stressed as they attempt to complete complicated tasks at the last minute. In addition to problems with understanding time and schedules, children with ADHD also tend to “lose time”—by getting off task. Multiple internal and external distracters cause them to lose focus on tasks, which slows them down; parents and teachers often complain that these children “waste time” or take an inordinate amount of time to complete simple tasks.

Pam, the fourth-grade student described above, reported that homework often took her 2–3 hours to complete, even though her teacher insisted that homework should take only 45 minutes daily. Pam reported that it was difficult for her to focus on her homework for extended stretches of time; things like her brother’s watching TV in the next room or her own doodling on her papers distracted her from her work, slowing her down. Hugh’s parents described their frustration with Hugh’s inability, even as a fifth grader, to manage the evening schedule appropriately. A babysitter watched Hugh after school and was supposed to monitor his homework completion. However, Hugh often told her that his homework would take only 15 minutes to complete, and then watched TV or played outside for an hour or more before starting his work. When his parents came home at 6:00, Hugh would often just be starting his homework, which would inevitably take close to an hour to complete. This delay in the evening routine caused significant stress and conflict in the home.

Problems with time management cause functional impairment not only in academic situations, but in daily routines. Julie, a third grader, fought with her mother every morning because Julie was never on time for the bus. Her mother complained that even though Julie’s alarm clock went off an hour before the bus arrived, Julie was not dressed and ready in time. Furthermore, Julie was slow to complete her bedtime routines; her mother reported that Julie often daydreamed in the shower, which took her 20–30 minutes to complete, and then

she had to be repeatedly reminded to get her pajamas on and brush her teeth. Julie's mother reported that the morning and evening hours felt like a never-ending series of arguments; both she and Julie were exhausted and frustrated by the end of the day.

### **Task Planning**

A final organizational area that poses difficulty for children with ADHD is task planning. Children who are poor planners often do not know how to start projects, and they tend to get stuck in the middle of their work because they do not know how to complete projects appropriately. They do not exercise good planning skills, which include breaking goals down into smaller steps, obtaining the needed materials for completion of those steps, fitting steps into their schedule so that they are completed in a timely fashion, and checking work for neatness and completeness. Thus they often rush to complete projects at the last minute and hand in assignments that are missing important components. Furthermore, because they do not plan appropriately for other activities or events (such as family occasions or extracurricular activities), they often find themselves unprepared for these situations, because they have failed to consider items that might be needed or steps that should have been taken.

Both Hugh and Pam received multiple long-term assignments that required extended work over a period of several days or weeks, such as book reports, biographies, and science projects. Their parents reported that Hugh and Pam were often paralyzed by fear of these assignments, not knowing how to get started or what steps were required to complete these assignments. They would become more anxious as deadlines approached, and their parents would end up putting in hours, sometimes the night before a project was due, helping the children put together a subpar product. Hugh's teachers were especially disappointed in the poor-quality work he handed in, as they knew he was intellectually capable of doing better work. However, Hugh simply did not know how to plan appropriately to complete assignments that required sustained effort over an extended period of time.

Jack, the college student who failed multiple courses, reported that poor planning significantly impaired his ability to work productively in a university environment. He was unable to spread out the steps for studying for exams or completing papers and projects. Without his parents there to organize him, as they had done throughout elementary and high school, Jack was unable to plan a schedule that would allow him to complete all of the steps necessary for his course assignments.

Tom, an eighth grader on a traveling swim team, reported that poor planning caused problems for him in the team's activities. He was responsible for packing his swim bag before each practice, and he often forgot to include all of the equipment he needed. He often had to borrow items for practice or call his mother to bring him needed items. His inability to plan ahead and consider what might be needed caused stress for him, the members of his swim team, and his parents.

### **POSSIBLE CAUSES OF CHILDREN'S OTMP PROBLEMS**

The causes of children's OTMP difficulties have not been fully established. It is likely that the cardinal symptoms of ADHD contribute to these problems. For example, daydreaming while the teacher describes the homework assignment can result in a child's not writing down the homework, and attending to a conversation with a peer while packing up can lead to materials' being misplaced or overlooked. Inattention can even interfere with the learning

of OTMP routines, so that, for instance, teacher instructions on how to write down assignments or how to use a planner may be missed if a child is attending to something else in the classroom. Impulsivity, manifested by rushing, can also lead to OTMP problems. Examples include making errors while writing down instructions in a planner, skipping important steps when working on a long-term assignment, or leaving important materials at school or at home while rushing to catch the bus.

The potential impact of ADHD symptoms on OTMP functioning suggests that a treatment targeting the former, such as stimulant medication, might improve functioning in both areas. To address this issue, a small, placebo-controlled, crossover study evaluated whether the use of stimulant medication in medication-naïve children with ADHD and OTMP difficulties would improve ADHD symptoms and OTMP functioning (Abikoff et al., 2009). Significant medication effects were found for parent and teacher ratings of ADHD and OTMP behaviors. However, OTMP scores were not normalized for 61% of the children, who continued to show impairments in OTMP functioning while on medication. The study findings, which suggest that medication may be helpful in ameliorating OTMP difficulties in some but not all children with ADHD, are in accord with clinical observations that some stimulant-treated children with ADHD continue to present with significant OTMP problems (Abikoff & Gallagher, 2003).

It is also conceivable that OTMP difficulties are behavioral manifestations of EF deficits in children with ADHD, and stem from impairments in inhibitory control, delay tolerance, working memory, time perception, and self-monitoring (Barkley, 2006; Pennington & Ozonoff, 1996). For example, deficits in working memory in general, and visual-spatial working memory in particular (Martinussen, Hayden, Hogg-Johnson, & Tannock, 2005), could affect children's storage and recall of verbal information and instructions and could impede their recall of where essential supplies and materials have been placed (Reck, Hund, & Landau, 2010). In addition, poor time estimation (Sonuga-Barke, Bitsakou, & Thompson, 2010) could interfere with children's ability to determine how long it takes to complete tasks, resulting in problems with setting schedules to meet deadlines. It has been suggested that these EF deficits hinder self-regulatory behaviors, and interfere with organizing actions and planning (Willcutt, Doyle, Nigg, Faraone, & Pennington, 2005).

EF is addressed in more detail later in this chapter. However, it is important to point out here that, notwithstanding the presumed neuropsychological underpinnings of OTMP dysfunction, the relationship between performance on neuropsychological measures of EF and measures of daily life activities is quite low, with correlations typically ranging from 0 to .30 (Barkley & Murphy, 2011). These findings call into question the ecological validity of these EF measures and suggest that they assess functional constructs with little relationship to real-world behavior (Barkley & Murphy, 2011). These findings are also reflected in the goals and intentions of OST. Namely, the OST intervention is not intended to target and change putative aspects of EF underlying ADHD. Rather, to the extent that these EF deficits are present, our position is that through OST, children can be taught to minimize their functional consequences.

### **OST TREATMENT MODEL: RATIONALE AND THEORETICAL ASSUMPTIONS**

The OST intervention primarily relies on the use of behavioral skills training procedures to improve children's organizational skills and enhance their OTMP functioning. The initial

impetus for OST derived from our clinical work with children with ADHD who had organizational difficulties. We were struck by two observations. First, it became clear that OTMP difficulties had adverse effects on children's academic functioning, as well as their confidence and their engagement in school, homework behaviors, and family relations. Second, we observed that many youngsters with OTMP difficulties appeared to lack the relevant knowledge and specific skills to organize their materials, manage their time, and plan their work effectively. Their organizational abilities were compromised because they did not know what behaviors to use in specific situations, and/or they lacked the proficiency to use the behaviors effectively and efficiently. Moreover, many of the children could not state what they would do in response to organizational demands or demonstrate effective OTMP behaviors, even when told what to do.

We considered that these difficulties were primarily a result and reflection of OTMP skills deficits. As such, we deemed that an appropriate intervention had to emphasize behavioral skills training procedures to facilitate the development and use of effective OTMP behaviors. In addition, to increase children's motivation to participate in treatment and to facilitate training, skill usage, skill acquisition, and learning, several basic behavior modification elements and principles are incorporated into the OST program. These include a prompt–monitor–praise–reward component for teachers (see Chapter 3) and parents (see Session 2), and home-based contingency management procedures as described in the Part II treatment sessions.

## INTERVENTION DEVELOPMENT

### Developing a Measure of OTMP Functioning

Because there was a lack of validated, normed measures that assessed children's functioning on a wide range of ecologically valid behaviors reflecting OTMP demands at home and school at the time OST was being developed,<sup>2</sup> we focused on developing such a measure. Our intention was that the availability of this kind of measure would (1) assist in treatment development by providing information on the various domains and their associated behaviors that characterize children's OTMP functioning; (2) yield age- and gender-based normative scores indicating typical levels of OTMP functioning; (3) establish cutoff scores signifying problematic functioning in the clinical range, which could be used to identify children in need of treatment; and (4) enable evaluation of change in children's OTMP functioning by assessing their skill levels before and after treatment.

To this end, we developed the Children's Organizational Skills Scales (COSS), with versions for parents and teachers, and a self-report version for children. The questionnaires assess a child's functioning on a 4-point rating scale, ranging from 1 = "Hardly ever or never" to 4 = "Just about all of the time." They contain items describing a wide range of situations at home and school that call for OTMP behaviors, as well as items assessing how much interference in functioning and conflict result from the child's OTMP difficulties. The initial COSS dataset consisted of teacher ratings of a representative sample of over 900 third- to eighth-grade general education students attending schools in the New York metropolitan

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<sup>2</sup>Other measures that assess aspects of OTMP functioning include the Behavior Rating Inventory of Executive Function (BRIEF; Gioia, Isquith, Guy, & Kenworthy, 2000) and the Comprehensive Executive Function Inventory (Naglieri & Goldstein, 2012).

area (Abikoff, Gallagher, & Alvir, 2003). In addition, parent ratings of 138 students in this sample were obtained, as were self-ratings provided by these 138 children.

To broaden the normative database, COSS ratings from teachers, parents, and children were subsequently obtained on a larger national sample. Confirmatory factor analyses yielded the same primary factor structure obtained on the initial 2003 COSS dataset (Abikoff & Gallagher, 2009). Specifically, three factors were identified, with item content considered to reflect Memory and Materials Management, Task Planning, and Organized Actions. Memory and Materials Management contained items that indicated problems in recalling assignments, forgetting needed materials, losing needed materials, and losing track of due dates. Task Planning items reflected problems in timely completion of tasks, not knowing how to start on tasks, not being able to follow a schedule even when one had been created, and rushing to complete tasks, which often results in messy work. A set of proactive behaviors, such as using calendars, making outlines, and using folders for needed papers, constituted the Organized Action factor.

The psychometric properties of the COSS (Abikoff & Gallagher, 2009) include important validity data, which confirm earlier findings (Gallagher, Fleary, & Abikoff, 2007) that the scales differentiate children with ADHD from typically developing children. Notably, although these group differences are marked (OTMP problems are significantly greater in the group with ADHD), a *majority* (slightly more than 50%), but *not all* children with ADHD have impairing OTMP problems. This finding has important clinical implications, and speaks to the target population that OST is intended for—namely, children with ADHD who have demonstrable OTMP difficulties.

### **Rationale for the Treatment Components**

OST was developed and pilot-tested in a treatment development grant provided by the National Institute of Mental Health (NIMH). In addition to the organizational domains identified by the COSS, a functional analysis of school demands for elementary school children indicated that tracking assignments was another key aspect of organizational functioning that could be problematic for children with ADHD and negatively affect their productivity and performance. Thus treatment modules were developed to address four broad organizational areas: Tracking Assignments, Managing Materials, Time Management, and Task Planning. Specific skills associated with Tracking Assignments and considered critical were recording homework in written form and using a calendar to keep track of test dates and other due dates. Managing Materials incorporated tools and routines to organize and transfer papers; develop methods for packing and transferring needed books, writing instruments, and other supplies; create reminder checklists for school backpacks and other bags (e.g., for sports, for lessons, or for going from one parent's house to another if a child had separated or divorced parents); and organize work areas and desktops. Time Management focused on improving children's awareness of time by estimating and tracking how long tasks and activities took to complete; determining when specific assignments and work on projects should be scheduled through parent-child and teacher-child discussions; and developing a personal calendar of after-school and weekend activities. Task Planning emphasized the process of systematically considering all of the steps needed to complete a task, determining how long each step should take, gathering the needed materials for each step, and reviewing each step to make certain the project was done neatly and completely by the deadline.

During treatment development, an iterative process was utilized for clinical evaluation of each treatment session. Child, parent, and teacher feedback was used to alter session

content and materials that were hard for children to understand, and to determine whether the actions that were taught to children made sense and could be carried out without undue difficulty. The feedback was also used to ascertain whether using the actions targeted in treatment was effective in improving the children's OTMP functioning.

Several crucial lessons were learned in the iterative development of the intervention components. Most critically, it became apparent that treatment required working directly with the children, while incorporating extensive involvement of parents and teachers to facilitate children's skill acquisition and implementation. Developing methods for parents and teachers to support children's use of the recommended tools and routines was vital in several ways. It was observed that even the most cooperative children found the process of changing their actions and implementing new strategies a challenge; children were more likely to meet this challenge when parents utilized behavior management methods that incorporated prompting, recording, praising, and rewarding their children's efforts. It was also essential to inform teachers about the specific tools and routines children were learning to use for tracking assignments, managing materials, using time well, and task planning. Teachers had to be engaged so that they understood the sequence of treatment and knew what actions children should be prompted and praised for using each school day. Teachers were instrumental in providing parents with reports on a daily record about whether or not a child used the target actions, so that parents could incorporate school behaviors into the home-based positive behavior management program. Engaging parents necessitated providing them with instructions in behavior management prior to skills training for children, and guiding the parents in the effective implementation of behavior management throughout the remainder of the program. A separate set of procedures engaging teachers was also developed.

During initial work with the children in skills building, two further lessons were learned. First, it became clear that many of the children were highly sensitive about their organizational problems. They had often received many requests simply to "remember" to engage in tasks (e.g., writing down assignments or storing papers in backpacks) from parents and teachers, who could not understand why these actions were so difficult. In many cases, arguments, reprimands, and punishments resulted when children showed persistent problems. Parents and teachers sometimes wondered whether the children were doing poorly on purpose, in order to avoid work. The children often believed that there was something terribly wrong with them; they could not understand why they could not engage in simple routines that other children seemed to manage easily. Thus parents, teachers, and children were all frustrated by the children's seeming inability to exercise basic organizational skills.

In order to engage the children in a cooperative and collaborative process, it became necessary to remove blame from the equation. To do so, the children, their parents, and their teachers were asked to consider that poor OTMP skills were the result of factors that were not completely in the children's control. Rather than blaming the children for doing poorly, participants were presented with an explanatory model suggesting that "Glitches" in their brains were at fault, and that all persons are susceptible to these glitches. Lapses in OTMP skills were presented as the work of the Glitches (described later in this book), personified as mischievous creatures that "live" in people's brains and send messages designed to trip them up. For example, the Go-Ahead-Forget-It Glitch tells children that they do not need to write down assignments, because they will remember the assignments when they get home. However, this Glitch knows that children are prone to forgetting and actually wants the children to fail. When a child is reprimanded, the Glitch dances and laughs, knowing that its trick

worked. In the first phase of treatment, children, their parents, and teachers were asked to work together to beat the Glitches. Thus an orientation component that explained this belief system was added to facilitate a good start to treatment. This form of reframing the problems that children encountered proved very successful, as children, parents, and teachers all found themselves less tense and more willing to meet the challenge of beating the Glitches. In particular, children seemed to be comfortable with this model, especially when they were told that all people succumb to the tricks of the Glitches. Use of the model clearly helped in establishing a therapeutic alliance with the children.

The second major lesson we learned pertained to scheduling of the treatment sessions. It became clear that sessions had to be held during the school year and more than once a week. Initial efforts that provided sessions during the summer months just before school indicated that children did not find simulated practice very useful. The few children with whom this schedule was tried were cooperative, but the skills did not seem to “stick” with just in-session practice. Trying to adapt summer situations for the children to practice the skills between sessions did not make the intervention relevant enough for the children, who then had to apply the skills during the school year. Moreover, even during the school year, it became evident that at least two sessions a week were needed. A schedule of once-weekly meetings did not enable the children to recall the session content sufficiently. In addition, children fell back upon ineffective routines if they were not exposed more frequently to the new skills they were learning and were unable to practice the skills between sessions that were relatively close in time. Twice-weekly sessions addressed these concerns and allowed the children sufficient guided practice to overcome ingrained patterns. In addition, more frequent contact with a therapist provided the children with needed encouragement and feedback as they took on challenges and ensured continued follow-through from parents in implementing behavior management principles at home.

Completion of this iterative phase resulted in a 20-session OST intervention that has been subsequently evaluated in a pilot study and a randomized controlled trial (described below), and that forms the basis of this book. The 20 hour-long sessions include an initial orientation session; one session devoted to training parents in the use of behavior management procedures to prompt, praise, and reward their child for skill use; two sessions on Tracking Assignments; five sessions on Managing Materials; five sessions on Time Management; five sessions on Task Planning; and a final wrap-up session to provide guidance on continuing use of skills.

### **Pilot Study**

An initial pilot test of OST was conducted with 20 third- to fifth-grade children who met the following inclusion criteria: a *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (DSM-IV; American Psychiatric Association, 1994) diagnosis of ADHD; OTMP problems at home and/or school that were in the clinical range and were causing a high level of interference in functioning, based on Parent and Teacher COSS scores; in a general education classroom, with a teacher willing to participate in the child’s treatment; IQ score of at least 85; a standard score of 85 or better on a language comprehension screen; and no other serious psychiatric conditions that would interfere with their participation or required other treatment. Children’s OTMP functioning was evaluated immediately before and after treatment with the COSS, and their homework functioning was assessed with the Homework Problems Checklist (Power et al., 2006). In addition, OTMP functioning was assessed weekly

by parents on a shortened version of the COSS, and teachers completed a shortened version of the COSS at midtreatment.

Results from the pilot study were encouraging and indicated that OST had important positive effects (Abikoff & Gallagher, 2008). Parent and teacher ratings of children's OTMP behaviors improved significantly from pretreatment to posttreatment, and parents reported significant reductions in homework problems. Notably, a sequential analysis of change, based on weekly COSS ratings, indicated that the timing of change in the OTMP targeted areas (i.e., tracking assignments, managing materials, time management, and task planning) almost perfectly matched the provision of skills building for the associated area. Finally, there was evidence of OST's feasibility and acceptability. All children and their parents attended at least 17 of the 20 sessions (90% attended all 20), and there were no dropouts. Parent and teacher ratings indicated satisfaction with the program, with both groups reporting that their roles and the actions required of them were reasonable.

### Randomized Clinical Trial

The positive outcomes related to OST's clinical utility in the pilot study led to a large-scale, dual-site (New York University Langone Medical Center and Duke University Medical Center), randomized clinical trial of OST's efficacy in comparison to an active comparator treatment and a wait-list control group. The study was supported by the NIMH, and results were obtained on 158 children with ADHD and OTMP problems who met the same inclusion criteria used in the pilot study, with the exception that performance on a language comprehension task was not measured.

Children were randomly assigned to either OST; a second intervention, which emphasized instructing parents and teachers in the use of systematic contingency management procedures to reward the child for attaining target endpoints indicative of effective organization; or a wait-list control group. The contingency management program was entitled Parents and Teachers Helping Kids Organize (PATHKO; Wells, Murray, Gallagher, & Abikoff, 2007). In PATHKO, a social learning theory model was used to train parents in the use of positive and negative consequences to increase the frequency of their children's organized behaviors. Children were not provided with skills instruction or informed about how they should reach the targeted organizational endpoints. The active ingredients in PATHKO included the use of a home token economy; a daily behavior report card implemented by teachers; and appropriate use of negative consequences and response cost procedures. Children were rewarded for knowing what homework had been assigned; arriving home with all needed materials; turning in assignments on time; demonstrating actions that reflected planning; and other end results that were selected by parents, therapists, and teachers.

Substantial support was found for OST's efficacy (Abikoff et al., 2013). Children treated with OST improved more than controls in organizational functioning at home and school ( $p < .001$ ). The magnitude of these effects was very high, with effect sizes of  $d = 1.18$  on the Teacher COSS and  $2.77$  on the Parent COSS. Notably, OST's efficacy extended beyond OTMP functioning: It resulted in significant improvements in key aspects of school, homework, and family functioning. Teachers reported positive changes in children's academic performance and productivity ( $p < .001$ ,  $d = 0.76$ ) and in their academic proficiency relative to expected standards ( $p < .01$ ,  $d = 0.42$ ). Parents reported significant reductions in homework problems among children receiving OST relative to controls ( $p < .001$ ,  $d = 1.37$ ), as well as significant improvements in family relationships ( $p < .001$ ,  $d = 0.47$ ) and significant

decreases in family conflict resulting from the children's organizational functioning ( $p < .001$ ,  $d = 1.26$ ). Of special clinical relevance was the finding that at the end of treatment, 60% of the OST-treated children, compared to 3% of controls, no longer had COSS scores in the clinical range; that is, they no longer met the criteria for organizational difficulties required for admission to the study.

All of these improvements persisted at a short-term follow-up, 1 month after treatment ended during the same school year. More importantly, the gains achieved with OST in family relations, in OTMP-related conflicts, in children's academic performance and productivity, and in organizational functioning in school were sustained without any fall-off into the next school year. The school findings at follow-up are especially notable, given that ratings were obtained from teachers who had no involvement in and were unaware of the children's treatment status. There was some drop-off in homework behaviors and organizational functioning at home, although the level of functioning in both areas remained significantly better than pretreatment levels. Academic standing was the only outcome measure that did not show evidence of maintenance effects. Overall, the follow-up findings regarding the sustainability of gains with OST are very encouraging, given the well-documented difficulties in achieving maintenance effects in ADHD behavioral treatment studies (Hinshaw et al., 2007).

The PATHKO intervention, which focused on training parents and teachers to reward children for achieving OTMP endpoints, also had a significant impact on children's functioning. Children who received PATHKO showed similar significant improvements, relative to controls, in most of the study outcomes, with the exception of no group differences in academic proficiency scores. Furthermore, the PATHKO group was statistically equivalent to the OST group on all outcomes except for parent ratings on the COSS, which indicated significantly more improvement in OTMP functioning at home for children treated with OST ( $p < .005$ ,  $d = 0.69$ ).

There were several other important results from the study. First, wait-list children demonstrated no significant change in OTMP behaviors during the 10- to 12-week waiting period, which is in accord with anecdotal reports that OTMP deficits are persistent and do not change over time. Second, children's outcomes were similar, regardless of their medication status. That is, the beneficial effects of OST did not differ in youngsters who began the study on medication, compared to those not treated with medication. Third, OST was similarly effective when applied by clinicians in two geographically distinct clinical settings, providing additional support for OST's generalizability.

Although both OST and PATHKO resulted in significant improvements immediately after treatment and during the next school year, there were some advantages associated with the skills training intervention. First, parent reports indicated that children's overall OTMP functioning at home, especially their use of Organized Actions, improved significantly more with OST and continued to be significantly better than with PATHKO during follow-up. Second, children treated with OST maintained their gains in homework functioning in the next school year, whereas PATHKO-treated youngsters showed a slight, but steady increase in homework problems once treatment had ended. Third, OST-treated children improved significantly more than controls in their academic proficiency scores and in self-ratings of their organizational functioning on the Child version of the COSS, whereas PATHKO-treated children did not differ from controls on these outcomes. Finally, after the waiting period was over, the wait-list parents were able to choose which treatment they wanted for their children. They had no knowledge (nor did the investigators) of the study results and were provided only with full, unbiased descriptions of each treatment's principles, focus, and procedures. Of

30 wait-list cases, 28 (93%) of the parents selected OST for their children. These results have important clinical implications: They speak to OST's acceptability and appeal, and suggest that a treatment format emphasizing direct skill development for the children is and will be more attractive to parents in clinical settings.

### **OST VERSUS EF TRAINING**

OST is a treatment that is intended to improve children's organizational abilities so that they can effectively manage essential tasks, especially those related to school functioning. As described above, there is also empirical support for the expectation that improving children's organizational functioning will be associated with concomitant benefits in other key functional domains, including academic performance, homework management, and family relations (Abikoff et al., 2013). However, in discussing OST, it is also important to reiterate what it is not. Specifically, OST is not designed or considered to be a treatment that improves overall EF in children. To help clarify this point, we emphasize several fundamental differences between OST and general EF treatment (or what has come to be called "cognitive training").<sup>3</sup>

First, OST primarily focuses on teaching children skill sets to meet the demands of relatively specific, recurring situations, many of which are school-related and call for organization. In contrast, EF training is more general in its approach and objectives. Specifically, as noted in a recent article on training cognition in ADHD, EF training attempts to target underlying cognitive "processes that are putatively expected to automatically govern behaviors across multiple situations, making this particular type of intervention a hypothetically broad-reaching treatment" (Rutledge, van den Bos, McClure, & Schweitzer, 2012, p. 543). Second, whereas OST focuses on enhancing skills related to organizational functioning in real-world situations, EF training primarily relies on the use of computerized laboratory tasks as a means of enhancing the development of cognitive control processes (e.g., attention, working memory, response inhibition). General EF training assumes that enhancements in underlying cognitive processes will result in "top-down" behavioral effects, which ostensibly include not only effective application of specific behavioral skills, but also the recognition of when to use the skills. Thus the implicit, if not explicit, expectation is that effective EF training will by its very nature lead to generalization, and result in wide-ranging cognitive and behavioral improvements. Unfortunately, with few exceptions, there is a dearth of empirical support for this hypothesis from randomized, well-controlled trials (Rutledge et al., 2012). More importantly, from a clinical perspective, the current general absence of evidence for behavioral improvements (especially regarding children's organizational behaviors) on ecologically valid outcome measures that assess functioning in real-world settings is especially noteworthy; it speaks to the clinical utility, or the lack thereof, in this approach.

There are likely multiple reasons why generalized behavioral improvements have not been achieved with EF training. Prominent among these is the lack of correspondence

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<sup>3</sup>The term "cognitive training" as used here is to be distinguished from the cognitive training approaches used with children with ADHD in the 1970s and 1980s, which attempted, unsuccessfully, to enhance children's reflective problem-solving skills and reduce impulsive behaviors through the use of self-instructional and self-reinforcement techniques (Abikoff, 1985).

between the skills and associated tasks targeted in training and the behavioral outcomes expected to change with treatment. Another related possibility is the failure of EF training to clearly tie the use of the cognitive skills focused on in training to exact situations or situational cues outside of training, leaving a significant gap between the training context and the environment in which the skills should be used. This gap is in marked contrast to OST, which emphasizes and clearly identifies for children the connection between the settings (antecedent conditions) and the specific skills to be used in these settings; provides a rationale for and practice in how to use each skill; and teaches parents and teachers to prompt and cue the children to use each skill when needed. A third factor that may contribute to the lack of behavioral improvements with EF treatments is that reinforcement procedures are typically not used to reward the children for showing generalized behavior change outside the training sessions. In comparison, to increase children's motivation to use the skills targeted in training, OST works with the parents to provide the children with contingent rewards for implementing the skills outside the treatment setting.

In considering the relationship between EF and the clinical treatment of organizational difficulties, it is important to emphasize that there is still no consensus regarding which processes fall under the rubric of EF (Castellanos, Sonuga-Barke, Milham, & Tannock, 2006). Numerous aspects of EF deemed to be crucial have been described in theoretical writings, including attention control, resistance to distraction, behavior sequencing, response inhibition, set shifting, working memory, goal-directed behavior, problem solving, planning, delay tolerance, and temporal processing. Moreover, various theoretical models have been proposed, which differ in the aspects of EF considered to be core in individuals with ADHD (e.g., Barkley, 2012; Sonuga-Barke et al., 2010).

A more practical concern pertains to the relevance of the measures and procedures used to assess EF, and their questionable clinical utility in case identification and treatment planning in children with ADHD. A few clinical research findings illustrate these concerns. First, it is worth repeating that the ecological validity of EF measures is dubious. As noted previously, the association between test scores and daily life activities in adults with ADHD is quite low (Barkley & Murphy, 2011), and there is evidence that although some adults with ADHD have neuropsychological EF test scores in the normal range, they perform badly on real-life analogue tasks with high organizational demands (Torralva, Gleichgerrcht, Lischinsky, Roca, & Manes, 2013). A poor relationship between test scores and organizational behaviors has also been found in children with ADHD. Youngsters in the initial pilot study of OST (Abikoff & Gallagher, 2008) had COSS scores in the clinical range, reflecting organizational difficulties in daily life. However, their scores on EF tests of attention, inhibitory control, planning, and working memory were in the normal range. Moreover, although the children showed significant improvements in OTMP behaviors after treatment, the improvements were not correlated with improvements on EF tasks, and changes in EF tasks were minimal following intervention.

In summary, at this stage of development, many of the readily available tests of EF for children are not useful in assisting in treatment planning, in identifying children with OTMP deficits, or in tracking change in OTMP functioning. These objectives are better served by functional assessments of specific organizational behaviors needed for daily life activities. Additional detailed comments regarding the role, assessment, and treatment of EF in individuals with ADHD are beyond the purview of this book, and are addressed elsewhere (Barkley, 2012).

## CONCLUSION

As described in this chapter, the content of the OST program was developed in the context of a comprehensive program of research. The intervention relies on basic principles of behavioral skills training, which are incorporated into the format of each session. These principles include detailed descriptions of each skill; a rationale for using the skill and for its effectiveness; modeling the specific actions and substeps that encompass implementing the skill; guided practice of the actions by the child in simulated situations that reflect those the child encounters at home and at school; and reinforced *in vivo* practice. To maximize cooperation and skills usage, OST also incorporates behavior management approaches, including the use of prompting, monitoring, praising, and rewarding skills usage. In addition, OST emphasizes an engagement strategy involving the use of a “Glitch” metaphor, which objectifies the problems that children face, facilitates collaborative participation, and helps to avoid resistance and discouragement. In Part II of this book, there are “Helpful Hints” and “Troubleshooting Note” boxes, which are based on our clinical and supervisory experience with the program. These boxes address and provide information about a variety of situations that may arise during the course of treatment, including how to maximize children’s participation and how to manage barriers to treatment resulting from problematic or insufficient parental and/or teacher involvement.

Our hope and expectation is that this treatment manual will prove to be a very useful clinical tool for improving the lives of children with ADHD whose functioning is compromised by their organizational difficulties.