



School-Based Interventions and Accommodations for ADHD

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17.1 School-Based Interventions and Accommodations for ADHD

Children and adolescents with attention-deficit/hyperactivity disorder (ADHD) typically show functional impairment in a wide variety of settings, but often a referral for diagnosis or treatment comes due to impairment at school. DuPaul and Langberg (2015) reviewed the academic impairment associated with ADHD, finding that even in preschool, children with higher levels of ADHD symptoms (particularly inattention) have lower levels of early literacy skills. In elementary school, students with ADHD exhibit lower academic skills, lower levels of on-task behavior in school, and trouble with organizing school materials, particularly homework. In high school, these problems continue, and they become more severe as teachers expect more independent work on the part of students and there are fewer opportunities to catch up. Therefore, it is perhaps not surprising that ADHD is associated with more failed classes, higher rates of school drop-out, and lower rates of attending a four-year college.

In this chapter, we review the research literature on school-based strategies for managing the

impairment associated with ADHD. As an organizing heuristic, we use the life-course model of ADHD management proposed by Evans et al. (2014; see also DuPaul et al., 2020). The life-course model involves four stages of strategies that can be implemented sequentially. In the first stage, a foundational framework for service delivery is set up. Practitioners ensure that the child's home environment is safe and supportive and that parents or guardians have lines of communication with teachers and other school staff as needed. A brief assessment may find all this already in place, but if it is not, it is set up if at all possible before moving on. Because such a framework is rarely sufficient for treating ADHD, a second stage typically occurs, involving the implementation of various specific psychosocial interventions targeted to functional impairment in different settings. If these are insufficient or (occasionally) simply not feasible, a third stage occurs, involving prescribed medication that directly reduces ADHD symptoms. If psychosocial and medical interventions have been implemented with integrity and care, and the student continues to show significant impairment, a fourth stage occurs, involving accommodations.

The general rule of the life-course model is “interventions before accommodations,” and the reason is clear: our goal, when working with children and adolescents with ADHD, should be to set them on the path toward independence in adulthood. Interventions have the potential to build skills allowing for later independence, so

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that supports are eventually not necessary. In contrast, implementing accommodations within the life-course model essentially admits that it is not possible to improve certain skills in a student with ADHD, and so instead, tasks must be modified to fit the student's existing skill levels. The life-course model is reminiscent of Reinhold Neibuhr's famous serenity prayer, asking for "grace to accept with serenity the things that cannot be changed, courage to change the things that should be changed, and the wisdom to distinguish the one from the other" (quoted in Sifton, 1998, p. 16). Whenever skill levels can be changed (i.e., improved), we should have the courage to implement interventions; when skill levels cannot be changed, we must accept this with serenity and pivot to accommodations.

A recent randomized controlled trial (RCT) provides support for the life-course model's preferred ordering of strategies. Harrison et al. (2020) directly compared two groups of middle school students with ADHD; one group received a package of interventions related to planning, organization, and other executive function problems, whereas the other group received a package of accommodations related to the same issues. For instance, whereas one group received a copy of class notes, the other group was taught note-taking strategies. The RCT found that at the end of the study, students who received interventions improved their skills, whereas those who received accommodations did not. Although these results may not be surprising, accommodations are often provided without any consideration of their long-term impacts (Arnold, 2021).

In recent years, the percentage of K-12 students receiving special education services under the "other health impairment" category (often, mainly ADHD) has been rising steadily (National Center for Education Statistics, 2021). Over 1 million US children are now served under that category, constituting over 15% of all students receiving special education and over 2% of total public school enrollment. Many other students with ADHD are served under

Section 504 plans, which prevent a student from being discriminated against due to disability. Section 504 plans generally only include accommodations, whereas special education services (provided under Individualized Education Programs, IEPs) typically include specialized instruction with separate, individualized academic and/or social/behavioral goals, in addition to any needed accommodations. Interestingly, research suggests that accommodations are more common than evidence-based interventions in school settings for ADHD (e.g., Spiel et al., 2014). Indeed, Lovett and Nelson (2021) concluded that accommodations are likely to be the most frequent response to ADHD in schools, which raises the question of whether the philosophy of the life-course model is being widely followed. Nevertheless, in this chapter, we cover the two types of strategies in the order suggested by the life-course model, starting with interventions and then moving to accommodations. Also consistent with the model, we devote more space and detail to the interventions.

17.2 School-Based Interventions for Students with ADHD

We searched the research literature to determine which interventions, specifically those designed for the school environment, have been found to improve ADHD-related impairment in school-aged children. The most extensive research has been conducted on direct intervention and home/school collaboration with middle school and high school students, as older children appear to respond best due to their increased cognitive control. Many of these programs target outcome measures such as teacher- and parent-rated organizational, time management, and planning (OTMP) skills, as well as objective measures such as grade point average (GPA) and percentage of completed assignments. Despite similarities in targeted outcomes, these programs differ by degree of structure, intervention content, and delivery method.

17.2.1 Homework, Organization, and Planning Skills (HOPS) Intervention

One of the areas most impacted by ADHD in school-aged children is homework completion. The Homework, Organization, and Planning Skill (HOPS) intervention was developed with the planning and organizational aspects of homework completion in mind, specifically for students with ADHD. Delivered by school mental health (SMH) providers, typically school psychologists or school counselors, HOPS is a brief (16 sessions) program completed within a single school semester, with each session lasting for a maximum of only 20 minutes. Notably, SMH providers can feasibly implement the intervention during the school day, given the brevity of the sessions. Initial sessions generally target homework recording and management skills (e.g., how to use a planner to consistently and accurately record assignments, tests, and projects) and materials organization (e.g., a system of binder, backpack, and locker organization; an organization system for transferring necessary materials to and from school). Later sessions address time management and planning (e.g., how to break up studying for tests and large assignments into smaller, more manageable units; how to plan for timely completion of each unit; how to plan out evenings and extracurricular activities to have adequate time to complete school responsibilities). Students are reinforced on a point system (e.g., timely homework completion earns one point) and rewarded for consistent implementation of learned skills via a rewards menu developed by the SMH provider. Ideally, each of these skills is taught during the first 10 sessions, which are condensed into 5 weeks (two sessions per week), after which sessions move to once weekly to address self-monitoring and maintaining skills, as well as other problem-solving difficulties. In addition, two one-hour meetings are held with caregivers and students to teach them tools to promote similar skills at home.

Langberg et al. (2012) found that among a sample of 47 sixth through eighth graders with ADHD, those assigned to participate in the HOPS intervention ($n = 24$) had higher grades post-intervention, as well as significantly greater improvements in parent ratings of task planning ($d = 1.05$), “organized actions” (use of tools and strategies for organization; $d = 0.88$), and homework completion behaviors ($d = 0.85$) relative to those in a waitlist group. Furthermore, post-intervention parent ratings revealed a greater decrease in inattention symptoms ($d = 0.52$) compared to students on the waitlist. These improvements, as measured by parent ratings, were sustained at a three-month follow-up. However, no significant differences were found between groups on changes in teacher ratings of organizational skills and homework problems.

In a later study assessing the importance of skills learned by adolescent and parent participants from the HOPS intervention, as well as predictors of intervention response, Breaux et al. (2018) sampled 111 students with ADHD who had received the HOPS intervention in seven public middle schools. Specifically, the researchers examined the acquisition of OTMP skills among adolescents (e.g., bookbag organization, homework recording, assignment planning), parent implementation of monitoring and reinforcing OTMP behaviors, and how these factors predicted intervention outcomes. These outcomes included post-intervention parent and teacher ratings of homework problems and organizational/time management skills, and the objective measure of student grade point average (GPA).

Regression analyses, when controlling for baseline variables, found that the acquisition of OTMP skills varied in the prediction of post-intervention outcomes (Breaux et al., 2018). With respect to parent-reported outcomes of homework problems and organization, the acquisition of all three OTMP skills (organization, time management, and planning) predicted improved homework performance ($\beta = 0.27\text{--}0.38$) and lower ratings of organizational problems ($\beta = -$

0.25). In contrast, none of the OTMP skills predicted teacher-rated homework problems and only acquisition of time management skills predicted lower teacher-rated organizational problems ($\beta = -0.29$). Acquisition of the three OTMP skills predicted improvement in assignment completion ($\beta_s = 0.21$). Together, the acquisition of all three OTMP skills and one parent skill, specifically the use of rewards and consequences for OTMP behaviors, significantly predicted improvement in student GPA ($\beta_s = 0.20-0.33$) but were not found to be significant unique predictors.

With regard to the efficacy of the HOPS intervention, Breaux et al. (2018) found that the majority of students demonstrated significant improvement in backpack and binder organization, as well as the strong acquisition of accurate homework recording (75%) and organizational skills (76.4%), whereas one-quarter of the sample was classified as “non-responders” to OTMP skills training. Overall, these results indicate that the acquisition of all three skills taught during the HOPS intervention are significant predictors of intervention outcomes, while demonstrating that the improvement in outcomes appears to be independent of parent skills implementation.

17.2.2 Completing Homework by Improving Efficiency and Focus (CHIEF)

Completing Homework by Improving Efficiency and Focus (CHIEF) is a similar homework intervention program that focuses on the behavioral components of homework completion. Unlike the HOPS program, CHIEF focuses more on reinforcement of desired behaviors rather than skills acquisition, as some students with ADHD have the skills necessary to organize and plan to complete homework, but require more structure in their schedules in order to complete assignments. The CHIEF intervention utilizes the same service delivery design as HOPS (i.e., 16 sessions over one semester and two parent meetings); however, a behavior management program is implemented utilizing a point system in order to set work

completion goals and to encourage students to study for exams and complete homework assignments. Through consultation, parents and caregivers are guided in how to implement a similar point-based behavior system at home, targeting how to set clear work completion goals and deadlines with a focus on encouraging sustained attention and efficiency in work completion.

An analysis of both these programs suggests considering the student’s behavioral presentation and severity of executive functioning (EF) deficits when choosing which program is more likely to be beneficial for individual students. Langberg et al. (2018) conducted the first empirical evaluation of the CHIEF intervention in a comparison study of CHIEF and HOPS interventions in middle school students (grades six through eight) against a waitlist control group. Across a three-year period, 111 students were given the CHIEF intervention, 111 were given the HOPS intervention, and 52 were placed on a waitlist with no intervention. OTMP outcomes of homework completion, homework materials management, and organizational skills, as well as parent satisfaction were assessed via rating scales completed by relevant stakeholders (i.e., parents, teachers). These outcomes, paired with student GPA, were compared across groups at three time points: pre-intervention, post-intervention, and at six-month follow-up. In relation to baseline performance and waitlist controls, significant effects were found post-intervention in both CHIEF and HOPS groups for organization and homework outcomes (CHIEF d_s ranged from 0.57–1.08; HOPS d_s ranged from 0.79–1.27), and these gains were maintained at six-months post-intervention. Notably, there was no significant change in GPA across groups and the effect size was negligible in range ($\eta_p^2 = 0.01$). HOPS and CHIEF groups demonstrated comparable outcomes on measures of focus and efficiency during work completion compared to waitlist controls, with the most significant gains seen in students with the least severe pretest behavioral symptomatology. In general, HOPS participants made significantly greater improvements in parent and teacher ratings of organization actions

($d_s = 0.68$) as compared to students in CHIEF ($d_s = 0.43$), although no differences were found across intervention groups for ratings of homework problems. However, moderation analyses revealed that, for students who had more severe psychopathology and EF impairment, the HOPS intervention led to significantly greater improvements in ratings of homework problems and organizational skills as compared to the CHIEF intervention. The results from this study suggest that both HOPS and CHIEF can be used to improve associated homework problems in middle school students with ADHD. However, the HOPS intervention may be preferable for those students with more severe symptomatology.

17.2.3 Challenging Horizons Program (CHP)

Another school-based intervention that has been studied in middle school students with ADHD is the Challenging Horizons Program (CHP). CHP is a multicomponent intervention that focuses on training organizational skills, interpersonal skills, and homework management. CHP is unique among school-based interventions in its duration, lasting for an entire school year rather than for a set number of sessions.

Evans et al. (2016) assessed the effectiveness of two forms of CHP in 326 middle school students (grades six through eight) with ADHD: CHP-after-school version (CHP-AS) and a mentoring version (CHP-M), against a treatment-as-usual control group (CC). The CHP-AS ($n = 112$) program took place after school 2 days per week during the school year, with sessions lasting 2 h and 15 min and involving 6 to 10 students. During these sessions, students engaged in five core activities, including an individual meeting between the student and their trained undergraduate student counselor (primary counselor time), group social skills intervention (ISG), education/study skills (education group), individual homework completion (individual education time), and time for games and/or recreation (recreation time). In addition to these after-school sessions, three parent meetings were held

throughout the school year to provide psychoeducation about ADHD and the interventions applied during CHP-AS.

Students within the CHP-M treatment group ($n = 110$) received intervention from a school-teacher or staff member (mentor) during the school day (e.g., homeroom, lunch, study hall, before classes) rather than after school. These meetings, as in sessions for the CHP-AS program, involved interventions targeting organizational skills, homework recording, daily report cards (DRCs), assignment checks, and study skills. In addition to these one-to-one sessions with students, mentors met with their consultant bi-weekly (a trained doctoral psychology student) to review student data and provide guidance regarding intervention modifications.

Students randomized to be in the control group ($n = 104$), received a list of local resources available at the beginning of the school year. This list was developed collaboratively with school staff and local providers, such that families might have access to psychosocial and pharmacological intervention options outside of the school.

At follow-up, CHP-AS was found to provide moderate improvement in the organizational measures of task planning ($d = 0.57$) and memory/materials measurement ($d = 0.55$) in comparison with the CC group. When compared to CHP-M at follow-up, CHP-AS demonstrated similar improved ratings on task planning ($d = 0.58$) and memory/materials management ($d = 0.40$), as well as improvements on the third organizational measure, organized actions ($d = 0.36$). No significant differences were found post-intervention or at follow-up between CHP-M and CC groups. With regard to academic functioning, no significant differences were found between groups at either time point.

Students in the CHP-AS group were found to have greater improvement ratings of inattention symptoms at post-intervention ($d = 0.51$) and follow-up ($d = 0.61$) compared to the CC group. While no significant difference was found between CHP-AS and CHP-M groups at postintervention, CHP-AS showed significantly greater improvement on inattention ratings at follow-up ($d = 0.55$). Again, no significant

differences were found between CHP-M and CC groups on ratings of inattention at either time point. Finally, the outcome of homework problems was subdivided into two factors: inattention and avoidance of homework (Factor 1) and poor productivity and non-adherence with homework rules (Factor 2). At both post-intervention ($d = 0.44$) and follow-up measures ($d = 0.61$), CHP-AS students had superior ratings for both factors in comparison with the CC group. Although no significant differences were found post-intervention between CHP-AS and CHP-M students, follow-up measures revealed significant improvements in CHP-AS students compared to CHP-M students on Factor 1 of homework problems ($d = 0.49$). A comparison of CHP-M and CC groups post-intervention found improvements favoring CHP-M students on Factor 2 ($d = 0.31$); however, these differences were not maintained at follow-up.

DuPaul et al. (2021) assessed the effectiveness of CHP delivered during the school day in 186 high school students with ADHD (grades 9 through 11), both during the treatment year and during a six- to eight-month follow-up. The importance of maintaining treatment goals at follow-up is paramount to stakeholder (e.g., parents, teachers) concerns, which typically prioritize the maintenance of skills gained over time. Of the 186 students sampled, 92 were randomly assigned to receive treatment, while the remaining 94 were assigned to a community care (CC) condition to serve as controls, in which students and parents were given a list of available resources within their community. The CHP model used in this study included individual in-school counseling sessions, monthly collaborative problem-solving sessions with the student and coach, and parent sessions. Students met one-to-one with their coaches twice per week throughout the school year, typically during a free period (e.g., homeroom, lunch, study hall) or an elective class, to foster organization, problem-solving, study, and interpersonal skills. Initial sessions focused on developing an organization system for the student's materials (e.g., binders, folders), as well as tracking assignments in an electronic calendar or planner. Binder and planner checks

were built into subsequent sessions to assess the student's adherence to the developed system, during which time the student would practice addressing any disorganization (e.g., update the planner, put assignments in correct folders/binders). On a monthly basis, coaches met with students and reviewed performance in six areas identified for improvement: missing assignments, failing classes, in-school discipline, out-of-school suspension, tardiness, and absenteeism. If, during these check-ins, a student met a predetermined threshold (e.g., 80% or fewer assignments turned in on time), students and coaches would engage in a problem-solving process. Finally, ten 90-min sessions were offered for parents throughout the school year (five in the fall, five in the winter and spring), in which parents received psychoeducation on ADHD and common issues faced by adolescents with this diagnosis.

Regarding treatment fidelity, DuPaul et al. (2021) found that students within the CHP group attended, on average, one session per week, lasting around 15 minutes, throughout the school year. Most absences throughout the study were attributable to school absences, closures due to weather, or in six cases, due to withdrawal from treatment during the year. The average attendance of parent group sessions was 4.3 sessions ($SD = 3.8$), suggesting that parents within the study attended about half of the offered parent sessions.

DuPaul et al. (2021) found that at the end of the school year, students assigned to the CHP treatment group demonstrated significantly better scores in parent-rated organizational skills (ds ranged from -0.40 to -0.58) and homework performance (ds ranged from -0.40 to -0.44) as compared to students in the CC group. These improvements were found at post-intervention and were sustained into the following school year. Additionally, regression analysis revealed steeper slopes for students in the CHP group, suggesting that these students made faster improvements than those in the CC group. Although the difference in grade improvement was minimal across groups, it is worth noting that CHP appeared to protect against a steep decline in grades. Finally, no statistically

significant differences were found between groups in adolescent self-reports ($d = 0.38$) or teacher ratings ($d = 0.17$) of academic performance. Overall, these data suggest that CHP leads to improvements in homework performance and organization skills in high school students.

17.2.4 Students Taking Responsibility and Initiative Through Peer Enhanced Support (STRIPES)

Peer-delivered interventions have yielded variable results. A benefit of these peer-delivered programs is that participants may be more receptive and responsive to similar-aged peers delivering an intervention rather than unfamiliar adults doing so. STRIPES (Students Taking Responsibility and Initiative through Peer Enhanced Support) is a low-burden, peer-delivered intervention developed from pre-existing executive skills training interventions for middle school students, and later adapted for a high school population as well. Over the course of 16 weeks, weekly 30-min meetings are held in a STRIPES teacher-sponsor supervised group setting between two middle school or high school students and one peer interventionist. During the initial session, students set long-term goals that they track and discuss with their peer interventionist during subsequent weekly sessions. Targeted skills include managing and organizing materials, accurately writing down assignments in a daily planner, time management and assignment/homework planning, reviewing grades and assessing recent performance, and problem-solving areas of concern. Students also work to set weekly short-term goals that support their devised long-term goals. Peer interventionists, who are nominated by their teachers for demonstrated strong academic performance and organizational skills, are trained to provide positive feedback and reinforcement for one constructive action taken by the student each week.

Sibley et al. (2020), in assessing the feasibility of implementing STRIPES in a real-world school environment, found that students enrolled in the program and peer interventionists both

experienced bonding and positive enjoyment during the program, as well as overall positive satisfaction. Goal setting, reviewing weekly goals, managing materials, and planning homework were rated to be the most helpful target skills by students in the program, whereas using the daily planner and time management interventions were rated as least helpful. Students indicated that the helpfulness of the intervention and spending time with their peers were the greatest benefits of the program, while other commitments and forgetfulness emerged as the primary barriers to engagement. The most common suggestion for improvement was to deliver the program during the school day, rather than after or before school. Notably, while students on both sides of the program (participants and interventionists) reported enjoyment and positive outcomes from the program, the intervention data did not meet the researchers' fidelity metric. Attendance data indicated that the average student in the program attended 5.38 ($SD = 5.30$) of 16 offered sessions, whereas the average peer interventionist attended 15.50 sessions. Fidelity checklists indicated a range of 75–83.3% compliance in students working toward program goals. As indicated by participant suggestions for improvement, this failure to meet the feasibility metric may stem from poor fit with the developmental stage, as high school students likely have greater extracurricular responsibilities than elementary or middle school students. Thus, the data suggest that the STRIPES model may be more effective among high school students with ADHD if offered as part of the school day to overcome barriers to sufficient attendance.

In order to address the issue of feasibility, Sibley et al. (2020, Study 2) conducted a subsequent study of STRIPES student outcomes ($N = 72$) with the added variable of the delivery model. Three models were implemented across three high schools: after-school delivery (HS1), as implemented in the above study; pull-out delivery (HS2), where peers pulled students from an elective class for 30 min per week; lunch-delivery (HS3), in which students participated in STRIPES intervention meetings during lunch once per week. All three

intervention groups ($n = 36$) were compared with a monitored control group without intervention ($n = 36$).

With regard to feasibility, results indicated a statistically significant difference in attendance between different provision models. Overall, students within the pull-out delivery group (HS2) demonstrated higher average session attendance ($M = 8.42$, $SD = 1.78$) than students at HS1 receiving intervention after school ($M = 3.50$, $SD = 2.43$) and those in HS3's lunch model ($M = 4.458$, $SD = 4.66$). However, no differences were found across delivery models for peer interventionist attendance.

Students in STRIPES treatment groups across sites experienced a smaller decline in ratings of bookbag organization over time as compared to those in the control groups, suggesting that the STRIPES intervention is protective against worsening organizational skills regardless of delivery method. Group differences also emerged regarding academic interest, as students in the STRIPES pull-out model (HS2) demonstrated small improvements over time ($d = 0.23$), while those in the control group showed a steep decline in the perceived importance of academics ($d = -1.46$). Students in HS2 also showed improvement in academic self-confidence ($d = 0.23$) and willingness to try one's hardest ($d = 0.55$), while those in the control group demonstrated medium to large declines in these outcomes over time ($d = -0.62$; $d = -1.50$). These group differences, however, did not emerge between controls and students in STRIPES after-school (HS1) and lunch-delivery (HS3) models. The results of these two studies indicate that context-specific delivery impacts the efficacy of the STRIPES intervention for high school students with ADHD, as intervention delivered in a pull-out model during the school day is the most likely to lead to intervention fidelity, as well as positive long-term student outcomes.

17.2.5 Collaborative Life Skills (CLS)

Pfiffner et al. (2011) developed the Collaborative Life Skills (CLS) program in an attempt to

integrate school, parent, and student treatments delivered by school-based mental health providers (SMHPs). The program adapted the clinic-based Child Life and Attention Skills Program (CLAS) to fit the school environment, adding simultaneous clinician-teacher-family meetings to support each participant in their role to bring about positive behavioral change and skill acquisition in children with ADHD in grades two through five (7–11 years of age). This program progresses over the course of 12 weeks, with school, parent, and student treatments delivered within both the school and home setting. The school component, involving mental health providers and teachers, includes one SMHP-led orientation, followed by a series of SMHP and teacher consultation meetings reviewing Classroom Challenges to facilitate behavioral modification. These challenges include a school-home DRC targeting individualized problem behaviors which are developed in the first consultation meeting, and a homework plan if needed. This report card is implemented daily, with skill instruction on behalf of the teacher to assist students in earning stars for meeting individualized behavior goals. These stars may be exchanged for daily home rewards and are praised in a child group component each week for group-based reinforcement. Additional classroom supports, such as preferential seating, targeted use of praise, and consistent prompting, may be implemented as needed on an individual basis.

To enforce consistency across school and home environments, parents of children in the CLS program have their own curriculum for implementing the Home Challenge. This Home Challenge, similar to the Classroom Challenges, is a token economy in which students can earn stars for parent-selected target behaviors at home. Parents are taught skills to effectively reinforce these behaviors over the course of 10 group parent sessions, such as how to improve homework routines, organization and independence in the execution of home tasks, and peer interactions in their children. These group sessions also provide parents with skills to appropriately use commands, rewards, and discipline, as well as

how to manage their own parent stress. Finally, parents are encouraged to attend up to five SMHP-teacher meetings over the course of the 12 weeks to increase understanding of their child's progress in the classroom setting.

The child skills component of the CLS program involves two curriculum modules, namely, social skills and independence, aiming to address common ADHD-related deficits. The social skills module is delivered first, with emphasis on being a good sport (e.g., following directions, taking turns, using kind words), accepting consequences, problem-solving, self-control, and friendship-making skills. The independence module includes a curriculum regarding homework skills, independence in completing household tasks, and establishing and following routines. These two modules are delivered in ten 40-min group sessions throughout the 12 weeks.

Pfiffner and colleagues' (2011) seminal study provided evidence supporting the positive impact of the CLS program within the school setting. Compared to pretreatment measures, students in second through fifth grade (ages seven to 11 years) referred to the CLS program ($n = 37$) demonstrated improvement in ADHD symptoms ($d = 0.83$), related behavior problems ($d = 0.68$), and organizational skills ($d = 0.78$). Further, these improvements were found to be consistent with those seen in students receiving the non-adapted CLAS program in a clinical setting, suggesting that the adaptation to the CLS program was adequate in maintaining efficacy across settings. These preliminary results reinforced the value of simultaneous parent, teacher, and student intervention components, as well as the ability to successfully implement comparable adapted interventions within the school setting.

In a subsequent study, Pfiffner et al. (2016) reinforced these preliminary findings using a RCT of the CLS program in comparison with usual services within a large school district. One hundred and thirty-five students in grades two through five ($M = 8.4$ years) were randomly assigned to either the CLS program or usual services, with a difference-in-means comparison at post-treatment. Results indicated that students assigned to CLS had significantly greater

improvement on parent-rated ($d = -1.05$) and teacher-rated ($d = -0.67$) measures of ADHD symptom severity, organizational impairment (parent report $d = -1.09$; teacher report $d = -0.68$), and parent ratings of interpersonal skills (parent report $d = 0.39$) as compared to the control group. This study supported the superior efficacy of CLS as compared to typical school services for improving ADHD-related school impairment, as well as providing promise for improving access to evidence-based treatment beyond the clinical setting.

In a final study, Pfiffner et al. (2016) examined the sustained effects of the CLS program on ADHD symptoms and related school impairment. Using a randomized cluster design, schools within a large, urban public school district (grades two through five) were assigned to CLS or usual services to address ADHD symptoms. It was found that students at schools assigned to the CLS program ($n = 72$) showed significantly greater improvement following a maintenance period of one school year on parent-reported ratings of ADHD symptom severity ($d = -0.95$), organizational impairment ($d = -0.57$), and global impairment than students assigned to usual school services ($n = 62$). However, there were no sustained post-treatment differences between groups on teacher ratings of these measures at follow-up. While this lack of differences in teacher ratings suggests the need for further study of sustained outcomes across school years and new teachers, the sustained significant differences in parent ratings provide support for CLS as an effective intervention for ADHD with long-term outcomes.

17.2.6 Moderators of Efficacy

As discussed above, children with symptoms of ADHD often experience significant impairment in school performance. While the aforementioned interventions have demonstrated varying levels of efficacy in addressing these impairments, research has implicated a number of factors that moderate the success of ADHD interventions within a school-aged population. Social support,

co-occurring psychopathology, student emotional engagement, clinician competency and adherence, and parental adherence to intervention have been shown to play a role in intervention efficacy and severity of ADHD-related impairment post-treatment.

In a 2020 study, Green et al. assessed the impact of several social health determinants on the efficacy of school-based ADHD interventions. A sample of 222 adolescents with a diagnosis of ADHD were randomly assigned to receive either the CHIEF ($n = 111$) or HOPS ($n = 111$) interventions, with intervention efficacy measured by the percentage of assignments turned in and teacher and parent ratings of homework performance. These students were further categorized by the social health determinants of income, maternal education, single-parent status, and race to determine any between-group differences in intervention efficacy.

An analysis of students by income indicated that students within higher income households had better parent-reported homework performance following both interventions, although this relationship was less pronounced for students who received the CHIEF intervention (HOPS $d = 0.48$; CHIEF $d = 0.20$), and neither group sustained improvement at the 6-month follow-up measure. There were no significant differences in outcome measures found between groups when parsed out by levels of maternal education. However, an effect was found for single-parent status, with children receiving CHIEF from two-parent households showing significantly higher scores for teacher-rated homework performance at follow-up ($d = 0.79$). Interestingly, this pattern did not appear at follow-up in students who received the HOPS intervention, as no significant differences were found between single- and two-parent households on teacher ratings of homework performance ($d = 0.35$). No significant differences emerged based on parents' marital status at immediate post-intervention for either intervention group. Further, while single- and two-parent households did not differ in the percentage of assignments turned in within the HOPS group, students within the CHIEF intervention group in single-parent households had

reduced intervention effects on the percentage of assignments turned in at post-intervention ($d = 0.39$) and follow-up ($d = 0.57$). Analysis revealed a main effect of race for the percentage of assignments turned in ($p < 0.001$) and teacher-rated performance ($p < 0.001$), with white students having higher ratings than black students at all time points throughout the study. These data suggest that while school-based interventions have the potential to decrease ADHD-related school impairment, the effects of these interventions may be moderated by social determinants of single-parent status, race, and income.

Other student health aspects have been implicated in the efficacy of interventions for children with ADHD. For instance, while these interventions target school performance outcomes such as homework completion, organization, and attention levels, many students with ADHD diagnoses have co-occurring psychopathology which may exacerbate commonly seen social deficits. In their study, Morgan et al. (2020) sought to identify factors contributing to varying responses in social skills treatment, examining co-occurring externalizing, depression, and anxiety symptoms in children with ADHD. A sample of 159 children with a diagnosis of ADHD were randomly assigned to participate in the CLS program or to receive usual services, with multi-informant measures of co-occurring psychopathology and baseline social skills collected prior to intervention initiation. Results indicated that parent-rated externalizing and depression symptoms significantly moderated treatment outcomes, with higher ratings of symptomatology predicted worsening social skills in response to usual services, while they had no effect on students in the CLS group. In contrast, teacher-rated anxiety symptoms moderated social skill treatment effects, with higher levels of anxiety predicting greater improvement in social skills in response to CLS, but no significant effect following usual services. These findings reflect the importance of understanding students' co-occurring psychopathology in selecting ADHD interventions when targeting social skills, as comorbid symptomatology significantly

moderates treatment response in children with ADHD.

Given that many ADHD interventions are school-based, the role of the school-based mental health provider is crucial to the implementation of treatment content and eventual treatment outcomes. This implementation has been suggested to be composed of three aspects: the working alliance between the client and clinician, clinician adherence to therapeutic interventions, and clinician competence in service delivery. While prior research has demonstrated a positive correlation between the clinician–client relationship and treatment outcomes (Breux et al., 2018; Langberg et al., 2013, 2016), few studies have investigated the impact of clinician adherence and competence in school-based ADHD interventions. However, Breux et al. (2021) explored the differential roles of clinician adherence and competency, specifically as predictors for treatment outcomes in the HOPS intervention. The study sample included 107 adolescents with ADHD who participated in the HOPS intervention, with clinician adherence defined as fidelity to session content and length, and competency measured by levels of responsiveness, collaboration, and demeanor. With regard to parent-reported outcomes, clinician competency was found to be moderately negatively associated with organizational difficulties, such that higher clinician competency was associated with less organizational difficulties when controlling for baseline scores and demographics ($B = -0.40$, $p = 0.03$). Similarly, clinician competency emerged as a marginally significant predictor of a higher percentage of assignments turned in post-intervention ($B = 0.30$, $p = 0.01$). In contrast, clinician adherence was largely unrelated to teacher-reported outcomes of organization and percentage of assignments turned in.

Clinician adherence and fidelity to intervention did not correlate significantly with either parent- or teacher-reported outcomes. Interestingly, clinician fidelity and competency were inversely related ($r = -0.34$, $p < 0.001$), as clinicians rated as higher in competency demonstrated less fidelity to the HOPS intervention content. This finding, taken together with

results that competency is a significant predictor of treatment outcomes, suggests that more competent clinicians may be more comfortable with adapting session content to the individual student, which in turn may enhance treatment outcomes rather than reduce them. Thus, when implementing these school-based interventions like HOPS, it is imperative that clinicians focus on their competency, or communicated levels of empathy, motivation of the student, and collaboration, while being able to flexibly implement school-based programs to improve ADHD-related school impairment.

Taken together, these identified mitigating factors highlight the multifaceted nature of school-based ADHD interventions. As with all interventions, it is important to evaluate the main effects of treatment to gauge overall efficacy. However, the empirical studies mentioned above demonstrate a number of factors to be considered in the delivery of these interventions.

17.3 Educational Accommodations for Students with ADHD

As we noted above, the life-course model of services for ADHD students suggests that accommodations should only be attempted after interventions have failed, or as a temporary measure while interventions are tried. Although this may be overly conservative in some cases, we certainly concur with the general philosophy of making interventions a default response to ADHD.

17.3.1 Common Accommodations for ADHD

Weyandt and DuPaul (2013) classified educational accommodations for ADHD into four types. First, *presentation accommodations* alter the way that material is presented. This could include providing written instructions for class assignments in addition to orally stating expectations (in case a student with ADHD had difficulty recalling what the teacher had said).

Second, *response accommodations* alter the way in which students are permitted to respond to assignments and exams. For instance, a student with ADHD may be permitted to type essays on a laptop computer during an in-class exam, rather than using their handwriting. Third, *timing and scheduling accommodations* change the time at which an activity takes place or how much time a student is given to do an activity. Additional time to complete exams and assignments would be examples of such accommodations, as would breaks during a lengthy exam. Finally, *setting accommodations* change the environment or place where the student engages in some activity. “Preferential seating,” where a student is seated near the teacher, and a small-group administration format for a test, would be examples of these accommodations.

17.3.2 What Makes an Accommodation Appropriate?

When deciding on *interventions*, appropriateness is relatively easy to determine. Generally, an intervention is appropriate if it is effective in raising a student’s skill or performance levels, and can be implemented efficiently. In the case of accommodations, things are not so simple. Frequently, school staff will cite, as evidence for an accommodation’s appropriateness, the fact that a student’s performance levels went up; similarly, staff will often argue for an accommodation by saying that it is likely to raise performance. However, this cannot be sufficient evidence for an accommodation, because accommodations involve altering standards for performance in some way, and so an apparent increase in performance may be due merely to the shift in standards as opposed to a genuine improvement in the student’s functioning. Consider a high school student with ADHD who has trouble keeping track of her assignments. An accommodation might involve accepting late work from the student without penalty. If the student’s grades rise, the school and family may be pleased, as would the student, but the appropriateness of the

accommodation would remain unclear. Advocates of the accommodation might argue that the accommodation allowed the student to demonstrate her skills, but critics would argue that the accommodation led to an unfair boost in performance.

Several criteria have been proposed to determine accommodation appropriateness (Lovett & Lewandowski, 2015; Phillips, 1994). Two criteria are particularly pertinent to the present discussion. One of these criteria is sometimes known as “differential boost,” the idea that an appropriate accommodation should differentially benefit students with disabilities, being narrowly tailored to disability-related functional impairment (Fuchs et al., 2005; Sireci et al., 2005). An example of this would be an accommodation for visually impaired students in which tests are printed in very large font size; students with typical visual acuity would likely not benefit nearly as much from the accommodation as visually impaired students would. In contrast, to return to our earlier example, accepting late work without penalty may not show differential boost effects. If an accommodation would benefit everyone equally, it seems unfair to reserve the accommodation just for students with ADHD.¹

A second criterion that has been suggested is that an accommodation does not compromise the core, essential requirements of a test or academic activity. This comports well with the legal standard (under the Americans with Disabilities Act) that a reasonable accommodation would not involve a “fundamental alteration” to a requirement (Stone, 2006). Again, this is easiest to see in the case of sensory or physical disabilities; if a candidate for a bus driver position were legally blind, it would not be appropriate for the candidate to request, as an accommodation, that someone tell the candidate how to steer the bus. If punctuality and good work habits are part of the skills that high school teachers are hoping to

¹ Indeed, accommodations are seen as desirable by students with *and without* disabilities (Lovett & Leja, 2013), and seeking accommodations is one reason why older students may even exaggerate symptoms of ADHD (Nelson & Lovett, 2019).

instill and reinforce, an accommodation of accepting late work without penalty might be similarly inappropriate. This second criterion implies that an accommodation that is appropriate in one setting may not be appropriate in another. Individual classes and even individual assignments and exams have different goals, and so in each case, decision-makers must consider whether the accommodation would prevent the student from acquiring or demonstrating the skills that are the focus of instruction or assessment.

17.3.3 Research on Accommodation Effects

Research on testing accommodations effects can be very useful, but its utility is somewhat attenuated by two factors. First, much research combines different accommodations and different disability conditions, making it difficult to determine which accommodation and which disability condition is responsible for any observed relationships between accommodation status and educational achievement or test performance. Second, even when a study is specific to students with and without ADHD (as opposed to other disability conditions), the inclusion criteria for entry into the ADHD group can vary greatly from one study to another. For these reasons, it is important to inspect individual studies and also make decisions based on individual student data (a point that we return to later).

The accommodation that appears to have been studied the most is extended time on tests. Lovett and Nelson (2021) located nine studies on the topic. Research has generally shown that students with ADHD improve their performance with extended time, as long as the tests are somewhat time-pressured. However, this accommodation also appears to fail the “differential boost” criterion described above; extended time also helps students without ADHD on the same tests (for literature reviews, see Cahan et al., 2016; Lovett, 2010; Sireci et al., 2005). This does not mean that extended time is never appropriate, to be clear; those students with ADHD who have clear deficits in skills that allow them to access tests

under time pressure should receive such accommodations, so long as the tests are not designed to measure speed or fluency. Indeed, research suggests that many K-12 students with ADHD will need additional time to be able to access the same number of test items as nondisabled students can under standard time limits (Lewandowski et al., 2007). However, due to the lack of differential boost, the accommodation should not be given without evidence of individual need. When students who do not need additional time are given extended time anyway, they are likely to choose to take longer to work, and they do not get practice working under time pressure (Pariseau et al., 2010).

Two randomized controlled studies have examined another testing accommodation: tests read aloud. Spiel et al. (2016, 2019) randomly assigned both (a) students with ADHD and (b) nondisabled peers to take typical reading-based tests either under standard test administration conditions or with the test read aloud (in one study, there was a live human reader; in the other study, an audio recording of a human reader was used). Students were 14 years old or younger. In these populations, the test read-aloud accommodation not only benefited students with ADHD, but these students benefited more than their nondisabled peers, meeting the differential boost criterion. It seems likely that for younger students with ADHD who lack attentional focus, having a test reader helps to pace the student and sustain engagement, while also serving as a 1:1 proctor. However, students with ADHD may also have benefited more due to having weaker reading skills than their nondisabled peers (e.g., Sexton et al., 2012). In any case, read-aloud accommodations should be considered for students with ADHD on tests that are not meant to measure reading skills (reading tests in elementary school would typically be excluded from such accommodations approval).

Another common accommodation for ADHD is taking tests in a smaller group or a separate room. The logical basis for the accommodation seems clear; students with ADHD are expected to be more distractible, and a more private setting would include fewer distractions. However, the

available evidence for this accommodation is thin and not supportive. Hart et al. (2011) assigned children with ADHD attending a summer treatment program to complete academic worksheets in either a large group or a small group (all students worked individually). The children actually completed more work in the large group setting. It is not clear if the presence of more peers had a motivational or modeling effect, or whether this study sample was unusual (all of the children had ADHD, which is not the case in a typical school classroom). Regardless, the study suggests, at least tentatively, that small group or private room accommodations should not be a default recommendation merely because a student has an ADHD diagnosis. This also converges with results from a study of college students with and without ADHD who took tests under group and private room conditions (Lovett et al., 2019).

There are not many other high-quality studies on educational accommodations for children and adolescents with ADHD (Lovett & Nelson, 2021). It is remarkable and somewhat disappointing that common accommodations such as preferential seating during instruction have essentially no recent, high-quality research examining their effects, and even accommodations such as taking tests in a separate location have not yielded many studies.

17.3.4 Recommendations for Individual Accommodation Decisions

Beyond understanding the results of the extant research on accommodations for ADHD, diagnosticians, and accommodation decision-makers can use other strategies for making recommendations and decisions in individual cases. First, a student's functional skills must be assessed, and this is best done with measures of performance (diagnostic tests, records of real-world performance, or careful reports of performance from trustworthy sources such as

teachers). Deficits in functional skills are a minimum requirement for accommodations to be considered, and knowing that a student has ADHD tells us very little about their functional skills. Even the severity of ADHD symptoms is actually not very strongly related to functional impairment (Lewandowski et al., 2016). If diagnostic tests are being used to determine functional skill levels, the tests that are most similar to real-world academic tasks should be administered and interpreted (Lovett & Bizub, 2019).

Second, relevant accommodations should—consistent with the life-course model—be considered when high-quality evidence-based interventions have failed, are not available, or are unlikely to succeed quickly enough. When functional skill deficits can be remediated through intervention, this is always preferable to changing the standards for what students must do. Even medication should be considered if the student's family and prescribing professional deem it appropriate. The situation of evidence-based psychosocial accommodations not being available may be a common one in many schools, and so medication interventions may happen alone.

Third, when accommodations are required, they should be narrowly tailored to the evidence of functional skill deficits identified earlier. For instance, a student with ADHD who has low reading fluency may require additional time to take reading-based tests, at least when the tests are not designed to measure speed, fluency, or automaticity of academic skills. Similarly, a student with more significant reading problems—or simply severe difficulty sustaining attention and engagement to a test—may benefit from a test reader. The adjustments should be as minimal as possible to avoid unfair advantages; for instance, if 25% additional testing time is sufficient to allow a student to access the test, there is no need to provide 50 or 100% additional time.

Finally, the use and effects of accommodations should be monitored in each individual case. Is the student actually using the accommodation? (If the accommodation is mediated by technology, does the student know *how* to use the

accommodation properly?) Is the accommodation allowing the student to access instruction or assessments better? Speaking to teachers and students about this is enormously helpful, and at times it is appropriate to actually graph data from before and after accommodations are implemented.

17.4 Conclusions

A variety of school-based interventions and accommodations for ADHD are available, and some have shown efficacy and appropriateness. Although more research on these topics is always helpful, and it is particularly needed with regard to certain common accommodations, the primary challenge in practice may have shifted from “finding out what to do” to “doing what we have found to work.” That is, the challenge has moved from discovery to implementation. Much scholarship in school psychology has discussed this type of challenge (see e.g., Forman et al., 2013; Walker, 2004; Sanetti & Collier-Meek, 2019), and a specialty field—*implementation science*—aims to address it directly. We know that inadequate training and resources are common causes of schools’ lack of use of evidence-based practices, as are disagreements between professionals and perceived difficulty of implementation. Related but distinct issues lead to continued use of ineffective, inappropriate practices, and so more recently, *de-implementation science* has emerged as a term for scholarship on how to remove such practices (cf. Shaw, 2021). De-implementation may be the primary challenge with regard to overuse of accommodations (Lovett & Harrison, 2021). For both implementation and de-implementation challenges, effective school-based consultation skills are crucial, and a complete discussion of those skills is beyond the scope of this chapter. However, the first step is consultants learning what practices are in fact evidence-based, and it is our hope that the present literature review helps with that initial step.

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