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Academic Performance Intervention for Individuals with ADHD: Perspectives from Behavioral, Educational and Family Interventions

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Abstract. This study reviews non-pharmacological interventions for ADHD across childhood, adolescence, and adulthood, with a focus on how different settings support learning and behavioral control. In school contexts, behavioral programs—most notably Contingency Management, Peer Tutoring, Organization, Time Management, and Planning Skills Training (OTMP), and selected sensory-based tools—are commonly used to improve classroom engagement and day-to-day regulation. Academic-oriented approaches, including the Challenging Horizons Program (CHP) and self-monitoring strategies, place greater emphasis on structured coaching and the gradual build-up of self-regulatory routines. At home, family-centered interventions such as Parent Training in Behavior Management (PTBM) and the Daily Behavior Report Card (DBRC) strengthen parental involvement and help align expectations between families and schools. Overall, the evidence suggests that interventions combining clear goals, regular feedback, and coordinated support from students, educators, and parents are the most reliably linked to gains in academic outcomes, organization, and self-management.

Keywords: ADHD, intervention, academic performance, school-based intervention, non-pharmacological intervention

1. Introduction

Students with attention-deficit/hyperactivity disorder (ADHD) frequently experience weaknesses in working memory, sustained attention, and core executive skills—especially planning, managing time, and staying organized—which makes routine schoolwork harder to handle [1]. In classroom settings, these deficits tend to show up in very practical ways: students may participate less, complete homework unevenly, drift mentally during tasks, or slip into off-task and sometimes disruptive behavior. As a result, many fall behind academically and may also find peer and teacher relationships more difficult to maintain [2,3]. If these patterns persist, the performance gap between students with ADHD and their classmates often grows, narrowing later opportunities for study, work, and social participation. For this reason, strengthening school-based functioning is not just a clinical priority; it is also a concrete step toward fairer educational outcomes and healthier long-term development.

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Beyond clinical interventions, a substantial body of evidence supports school-based, non-pharmacological approaches across three complementary domains: behavioral, family, and academic. However, reviews of ADHD interventions for students remain largely fragmented—typically focusing on classroom and school-based strategies, parent-training and family programs, or academic skill interventions such as homework and organizational training, often in postsecondary contexts. Among existing studies, there are relatively few comprehensive syntheses that integrate these three domains within a single framework, considering target populations across different age groups and systematically comparing their effects, potential interactions, implementation conditions, and alignment with academic outcomes. Recent reviews have tended to focus on specific educational stages (e.g., secondary school) or on methodological rigor (e.g., randomized controlled trials), yet they still primarily emphasize the school setting without fully integrating family and academic strategies into a unified model.

This review integrates behavioral, academic, and family-based interventions into a single analytic frame. Rather than treating these approaches in isolation, we compare them in terms of the academic outcomes they share, and we close by highlighting gaps in the current evidence. We pay particular attention to technology-supported interventions, which are developing quickly but still require stronger empirical testing.

Bringing together results from different intervention traditions matters for clinicians, educators, and families. A side-by-side synthesis makes the literature easier to use in practice, helping stakeholders decide when to introduce specific supports, how to combine them, and how intensively to apply them in school and at home. Over time, this kind of integrative view can also guide new research and innovation, with the broader aim of building learning environments that are both supportive and fair.

2. Key intervention categories

2.1. Behavior intervention at school

To help students with ADHD adapt effectively to the classroom environment, researchers have investigated several methods to engage them through behavioral adjustment strategies, such as contingency management, peer tutoring [4], Organization, Time Management, and Planning Skills Training (OTMP) [5], and sensory-based tools including weighted vests and stability balls [6]. Collectively, these studies demonstrate improvements in academic engagement, behavioral regulation, and task performance.

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Table 1. Summary of school-based behavioral interventions for students with ADHD

Intervention	Target Group	Intervention Components	Intervention Outcomes
Contingency Management & Peer Tutoring	Primary to high school ADHD students (ages 7–18)	• Rewards to encourage targeted behaviors • Punishments • Peer tutoring	• Increased classroom engagement • Improved academic performance • Better behavior control
Organization, Time Management and Planning Skills Training (OTMP)	Undergraduate ADHD students (ages 18–25)	• Time awareness and scheduling • Task management and motivation• Implementation of organizational systems	• Reduced ADHD symptoms • Improved academic performance
Sensory-Based Tools	Children with ADHD (ages 5–12)	• Weighted vests • Stability balls as classroom seating	• Limited improvements in classroom behavior and academic productivity • Stimulant medication showed significantly greater effects

Table 1 summarizes the school-based behavioral interventions reviewed in this section, including their formats, target groups, core elements, and reported outcomes.

A recurring finding in the school-based literature is that contingency management works especially well when it is paired with peer tutoring, with gains reported across engagement, achievement, and behavioral regulation. Butts treated these two strategies as complementary supports rather than stand-alone tools [4]. Contingency management is essentially a structured reinforcement system: teachers deliberately reward target behaviors (for instance, through specific praise or small tangible incentives) and use light, predictable consequences (such as brief limits on leisure time) to discourage disruptive patterns. Peer tutoring operates through guided collaboration between students, usually by matching a more proficient peer with a classmate who benefits from extra academic support, so learning happens in a socially scaffolded way. In Butts' study of students aged 7–18 (spanning primary to high school), both approaches were associated with better classroom involvement and behavioral control. When used together, they were further linked to stronger academic performance and noticeably higher learning motivation [4].

Brief, skills-focused programs that target organization and time-planning difficulties can also ease ADHD-related academic impairment. Lacount et al. evaluated OTMP as a cognitive-behavioral training package intended to improve both school functioning and everyday task management in students with ADHD [5]. OTMP is organized around three areas: (1) building time awareness and scheduling habits, (2) strengthening task management and motivation, and (3) developing workable organization systems. Practically, the Time Awareness component teaches students to rely on calendars and task lists to plan, pace, and review study activities. Task Management centers on breaking assignments into concrete steps and pairing follow-through with reinforcement to sustain effort. Organization Systems focuses on prioritizing work and establishing routines that make studying more predictable and efficient. The trial enrolled undergraduates aged 18–25 who reported ADHD-related academic difficulties. In a randomized controlled design, participants either attended three weekly group sessions or completed routine online questionnaires as controls. Relative to controls, OTMP participants showed reduced ADHD symptoms alongside meaningful improvements in academic functioning, suggesting that even short interventions can be impactful when they directly train core organizational skills [5].

Sensory-based seating options, in contrast, have shown more limited classroom effects. Macphee et al. tested two commonly discussed tools—weighted vests and stability balls—as alternatives to

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standard classroom chairs for children with ADHD [6]. Both are intended to support attention by shaping sensory input: weighted vests (typically 5–10% of body weight) provide deep pressure that may help regulate arousal, whereas stability balls allow subtle movement (e.g., rocking or bouncing) that can meet sensory needs without leaving the seat. The study involved 64 children aged 5–12 in a randomized crossover summer-school design. Students alternated between intervention and control seating conditions, and the protocol also accounted for whether stimulant medication was used during the six-week program. Results showed no reliable advantage of weighted vests or stability balls over traditional chairs for engagement or academic productivity. Medication, however, produced clear improvements on both outcomes. Taken together, the data imply that while sensory tools are theoretically attractive, their real-world classroom benefits are small in comparison with established pharmacological supports [6].

2.2. Academic intervention at school

Beyond behavioral supports, many schools also use academic interventions to help students with ADHD keep up with coursework and perform more consistently on school assessments. These approaches are designed to tackle practical learning barriers linked to ADHD—especially problems with organization and executive functioning that can undermine day-to-day studying and task completion. Across the interventions discussed in prior work [7,8], the ones with the strongest and most consistent academic benefits are the Challenging Horizons Program (CHP) and structured self-monitoring techniques [9].

Table 2. Overview of academic-focused interventions aimed at improving organizational and self-regulatory skills in students with ADHD

Intervention	Target Group	Intervention Components	Intervention Outcomes
Challenging Horizons Program	Middle/high school ADHD students	• Individual academic coaching• Social skills training• Parent involvement	• Increased organizational skills• Improved homework completion• Increased GPA
Self-Monitoring	University ADHD students	• Goal setting• Study skills training• Self-recording + feedback	• Reduced ADHD symptoms• Improved academic behaviors• Increased GPA

Table 2 provides an overview of the academic-focused interventions discussed here, including the target populations, main elements, and outcomes reported for the Challenging Horizons Program and self-monitoring approaches.

Challenging Horizons Program (CHP): The Challenging Horizons Program is a school-based academic intervention designed for adolescents with ADHD, offering structured coaching in academic planning, organization, and peer-related functioning. It combines individual mentoring with group-based interpersonal skills work. In practice, CHP-M (mentoring) is delivered through one-to-one sessions that cover planning routines, organizational strategies, and social–academic problem solving. CHP-AS (after-school) uses a more intensive format: students attend structured group meetings three times weekly, with sessions targeting organization, social skills, and study techniques. Evans et al. compared these two delivery models in a randomized evaluation and found that CHP-AS produced moderate to large gains in organizational skills, homework management [7], and overall academic functioning—benefits that were stronger than those observed in CHP-M or in standard community care. Related work by Evans, Cleminshaw-Mahan, and Fu likewise showed that CHP improves academic performance in high-school students with ADHD [8]. Taken together,

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the evidence supports CHP as a durable academic support, particularly when delivered in the higher-intensity after-school format.

Self-monitoring interventions: For college students with ADHD, self-monitoring has been studied as a structured, multi-step intervention that typically includes goal setting, study-skills instruction, self-tracking, and periodic follow-up meetings [9]. In the intervention described here, students used an Excel-based form (shared via Dropbox) to record attendance, study hours, and assignment completion. Goals were revisited and adjusted over time in response to these records and discussions about progress. Compared with a control condition that received only study-skills and goal-setting instruction, students in the self-monitoring group showed significant reductions in ADHD symptoms (ASRS), better academic behaviors (School Success Checklist), higher goal attainment (Goal Attainment Scale), and improved GPA. These results indicate that systematic self-tracking, paired with ongoing goal adjustment, can strengthen academic functioning for college students with ADHD.

2.3. Household intervention

While the education system is essential for implementing behavioral and academic interventions for students with ADHD, families—being one of the most influential factors in a child's development—also play a critical role. Ongoing caregiver involvement is vital for supporting their children's growth and reinforcing intervention strategies. Effective household interventions include the family component of the Challenging Horizons Program (CHP), Parent Training in Behavior Management (PTBM), and the Daily Behavior Report Card (DBRC). Collectively, these approaches underscore the importance of bridging school-based programs with caregiver support to optimize outcomes for students with ADHD.

Table 3. Summary of family-centered and home–school collaborative interventions for children and adolescents with ADHD

Intervention	Target Group	Intervention Components	Intervention Outcomes
Challenging Horizons Program (CHP) with Family Component	Middle/high school ADHD students + Parents	• 10-session parent psychoeducation • Homework management plan • Adolescent social/interpersonal skills sessions• Ongoing family involvement	• Increased organizational skills• Improved homework completion• Increased GPA• Greater social functioning (especially with positive family relationships)
Parent Training Behavior Management (PTBM)	Children with ADHD + Caregivers	• Parent coaching • Positive reinforcement strategies• Integration with classroom interventions	• Reduced disruptive behavior• Strengthened self-regulation• Improved academic and social performance• Cost-effective
Daily Behavior Report Card (DBRC)	Children with ADHD	• Teachers track daily behavior & goal progress• Parents provide contingent rewards • Communication system linking school and home	• Improved on-task behavior• Increased adherence to routines• Reinforced teacher–parent consistency• Practical challenges: communication barriers

Table 3 brings together the family-centered and home–school collaborative interventions discussed for children and adolescents with ADHD, summarizing their target groups, main components, and observed effects.

The Challenging Horizons Program (CHP) described above includes a parent-focused element intended to address adolescents' academic and social difficulties [8]. Parents typically take part in a 10-session psychoeducational group that tackles everyday ADHD-related challenges, including

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issues such as sleep routines and hygiene. Alongside this, clinicians and caregivers jointly build a clear, routine-based homework management plan to support nightly completion and to make organizational habits more consistent at home. Adolescents also receive additional sessions that rehearse interpersonal skills, which helps translate family support into better school behavior. Results from CHP trials show a meaningful pattern: adolescents who started with more positive family relationships (Index of Family Relations) tended to gain more in social functioning, and higher cumulative exposure to CHP was associated with larger improvements in organization and academic grades [8]. Taken together, these findings reinforce the value of engaging both parents and adolescents, and they indicate that embedding family work within school programs can amplify academic and behavioral gains.

PTBM equips caregivers with practical behavior-management tools—clear rules, consistent reinforcement, and predictable consequences—to reduce disruptive behaviors and strengthen children's self-regulation. Evidence suggests that PTBM adds measurable value when combined with classroom supports, yielding improvements in both academic and social functioning through better routine adherence and fewer disruptive incidents (e.g., Fabiano; Pelham.) [10,11]. It is also generally viewed as cost-efficient and may lessen medication reliance for some families, which makes it usable across a wide range of socioeconomic contexts. Overall, PTBM stands out as a flexible, family-friendly approach that can be tailored to different home settings while still supporting school success.

The DBRC offers another structured home–school bridge built around daily feedback and reinforcement [4]. Teachers document whether students meet specific behavioral goals during the school day, and parents follow through at home with agreed-upon rewards tied to that record. Studies suggest that DBRCs are most effective when teacher ratings are consistent and home reinforcement is delivered promptly. In practice, however, communication gaps between school and home can dilute these benefits. Simple adjustments—such as digital reporting tools or having students bring the card home each day—may help maintain continuity and reduce implementation barriers across different economic settings.

3. Conclusion

Taken as a whole, the non-pharmacological evidence base shows clear benefits for people with ADHD across developmental stages and learning contexts. For children, classroom-level behavioral supports—especially contingency management and daily behavior report cards—are the approaches most reliably tied to better attention and more sustained participation in class. During adolescence and young adulthood, interventions that explicitly train skills, such as OTMP and structured self-monitoring, are more closely linked to improved organization and steadier academic progress. Family-centered work, including PTBM and the parent components of the Challenging Horizons Program, complements these efforts by strengthening self-regulation and keeping home and school responses aligned over time.

Technology-supported interventions represent a smaller but fast-growing corner of the field, and the early results are encouraging while still preliminary. Extending video-based feedforward modeling (McDermott) [12], one promising direction is immersive VR/AR training that targets attention and executive control in settings that approximate real classrooms; larger, ecologically grounded trials will be important for judging scalability and durability. A second direction involves wearable or AI-assisted systems that monitor behavior as it unfolds and offer individualized prompts or feedback, which may help with everyday self-management and make school-based supports

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easier to access. Overall, these tools point toward interventions that can adapt more closely to individual profiles and remain workable across both school and home environments.

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