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Title

The Effects of School-Based Interventions for Attention Deficit Hyperactivity Disorder: A Meta-Analysis

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Abstract (from source)

A meta-analysis examining effects of school-based interventions for children and adolescents with attention-deficit hyperactivity disorder (AD/HD) was undertaken with 63 outcome studies. Gives separate analysis for studies employing between-subject, within-subject, and single-subject experimental designs. Reports positive and significant overall mean-effect sizes for dependent measures of behaviors across all three experimental designs.

Background

Many school-based interventions have been developed for students with AD/HD to help them improve their academic and social skills. Among the most researched interventions are:

1. **Contingency management**—This approach combines positive reinforcement for desired behaviors with punishment to reduce unwanted behaviors.
2. **Cognitive-behavioral**—This approach develops student-centered self-control skills and reflective problem-solving strategies that help the student monitor his or her own behavior.
3. **Academic interventions**—This approach focuses on the ways in which subject matter is introduced or taught and on the instructional materials that are used.

Previous studies have not separated the results to see if one of these approaches is more effective than another. Nor have researchers effectively explored whether different school settings make a difference in outcomes (e.g., private school vs. public school, special education class vs. general education class). This meta-analysis sought to address these previously unanswered questions.

Research Questions

This meta-analysis examined the effects of academic, contingency management, and [cognitive-behavioral*](#), school-based interventions for children and adolescents with [Attention-Deficit/Hyperactivity Disorder \(AD/HD\)*](#). Two specific questions drove the meta-analysis:

1. Are school-based interventions for AD/HD effective in changing disruptive, off-task behavior, and academic performance in children with AD/HD?
2. Are particular interventions (specifically, academic, contingency management, or cognitive-behavioral) more effective than others?

Research Design

[Meta-Analysis*](#)

Research Subjects

School-aged students in grades K-12

Age/Grade of Subjects

Most participants were:

- Between the ages of 5 and 10 years old
- In grades K-12
- Attending public schools
- Included in general education classrooms for at least part of the school day

Specified Disability

In order to be included in the meta-analysis, subjects had to be diagnosed or described as having one or more of the following: AD/HD, Attention Deficit Disorder, Hyperkinetic Impulse Disorder, Hyperactive Deficits, or Attention Deficits.

Intervention

Participants received school-based contingency management, [cognitive-behavioral*](#), or [academic interventions*](#) that measured their academic or behavioral performance or their performance on clinic-based tests (e.g., standardized measures of vigilance; reaction time; intensity).

Duration of Intervention

N/A

Number of Studies Included

63

Number of Subjects

637

Years Spanned

1971-95

Findings

Researchers identified 137 primary studies for possible inclusion in the meta-analysis. Of these, 63 met predetermined criteria for inclusion. Separate analyses were performed for studies employing [between-subjects*](#) (7 studies), [within-subjects*](#) (19 studies), and [single-subject*](#) experimental designs (37 studies). The following findings were supported across all studies:

1. Students with AD/HD showed clear improvements in classroom behavior after participating in any one of the 3 types of interventions (contingency management, academic, and cognitive-behavioral).
2. Contingency management and academic interventions were found to be more effective in improving classroom behavior than cognitive-behavioral strategies.
3. All 3 types of intervention had a significantly greater effect on behavior than on academic performance.

Other findings emerged depending on the type of research design used:

1. Interventions had a greater impact on behavior when implemented in public schools (findings supported by single-subject designs only).
2. Interventions had a greater impact on behavior when they were implemented in special education classrooms as opposed to implementation in general education or a combination of general education and special education placement (findings supported by single-subject designs only).

Combined Effect Size*

1. The overall effect sizes* for dependent measures* of behavior were positive and significant across all three experimental designs (between-subjects = .45; within-subjects = .64; single-subject = 1.16).
2. Positive effects on academic performance were also found for within-subjects design (.31) and single-subject design (.82) studies.
3. Contingency management strategies and academic interventions were found to be more effective for behavior change than were cognitive-behavioral strategies for both within-subjects (.69, .94, and .19, respectively) and single-subject design studies (1.44, 1.61, and .80, respectively).
4. Behavioral effect sizes obtained in public schools (1.26) were greater than treatment effects in private settings (.93) for the single-subject design studies. No differences were found across studies utilizing between- or within-subject designs.
5. Behavioral effect sizes obtained in special education settings (1.24) were greater than treatments in general education settings (.49) for within-subject designs. No differences were found across studies utilizing between- or single-subject designs.

Conclusion/Recommendations

For practice: The results of this meta-analysis support previous findings in this area—that school-based interventions are clearly effective in reducing AD/HD-related behaviors and, to a lesser extent, in enhancing academic performance. To improve a student's attention and/or reduce his or her disruptive behavior, contingency management (i.e., providing positive reinforcement for desired behaviors and penalties for undesirable behaviors) and academic interventions (e.g., peer tutoring*) are preferred over cognitive-behavior modification strategies (e.g., problem-solving training). Improvements in academic performance are not nearly as likely. Finally, teachers are encouraged to provide consistent, ongoing support to maintain the positive effects of a chosen intervention.

For research: The authors discuss several weaknesses within the current research base and suggest that future investigations:

1. Examine the effects of academic interventions or the manipulation of antecedent events
2. Include adolescents and/or girls as participants
3. Evaluate treatment generalization* over time and across settings
4. Assess treatment integrity* and the social validity* of obtained results.

At a minimum, future studies in this area should:

1. Use multiple, objective criteria to determine which subjects will be included.

2. Use multiple, dependent measures that identify and track students' academic, behavioral, and social functioning.
3. Evaluate treatment integrity.
4. Determine how acceptable teachers, parents, and students find the interventions.

Assess whether effects of the intervention are maintained over time and/or generalized across settings or behaviors.

Research Connections

NICHCY's website connects you to resources and information for helping children who have AD/HD:

- If you're looking for the basics, [NICHCY's AD/HD Fact Sheet](http://www.nichcy.org/pubs/factshe/fs19txt.htm) is a good place to start.
Available at: <http://www.nichcy.org/pubs/factshe/fs19txt.htm>
- [NICHCY's AD/HD Briefing Paper](http://www.nichcy.org/pubs/factshe/fs14txt.htm) offers a much more detailed discussion of attention-deficit/hyperactivity disorder, including understanding and diagnosing AD/HD, treatment recommendations, school issues and interventions, and suggestions to help parents meet the challenges that often come with raising a child with this disability. Good for teachers, too!
Available at: <http://www.nichcy.org/pubs/factshe/fs14txt.htm>
- [NICHCY Connections... to research-based resources for working with students who have AD/HD](http://www.nichcy.org/resources/researchspecificdisab.asp#ADHD).
Available at: www.nichcy.org/resources/researchspecificdisab.asp#ADHD
- [NICHCY's Spanish materials on AD/HD](http://www.nichcy.org/enews/foundations/ADHD101.asp#Spanish)
Available at: <http://www.nichcy.org/enews/foundations/ADHD101.asp#Spanish>

From the [U.S. Department of Education](http://www.ed.gov) (<http://www.ed.gov>):

- [Identifying and treating attention deficit hyperactivity disorder: A resource for school and home](http://www.ed.gov/teachers/needs/speced/adhd/adhd-resource-pt1.doc).
Available at: <http://www.ed.gov/teachers/needs/speced/adhd/adhd-resource-pt1.doc>

From the [National Institutes of Health](http://www.nih.gov) (<http://www.nih.gov>):

- [NIMH research on treatment for attention deficit hyperactivity disorder: The Multimodal Treatment Study- Questions and answers](http://www.nimh.nih.gov/childhp/mtaqa.cfm).
Available at: <http://www.nimh.nih.gov/childhp/mtaqa.cfm>
- [Diagnosis and Treatment of Attention Deficit Hyperactivity Disorder](http://consensus.nih.gov/1998/1998AttentionDeficitHyperactivityDisorder110html.htm). Available at: <http://consensus.nih.gov/1998/1998AttentionDeficitHyperactivityDisorder110html.htm>

For information on reducing disruptive behaviors through Positive Behavioral Support, check out the [National Technical Assistance Center on Positive Behavioral Interventions and Supports \(PBIS\)](http://www.pbis.org/main.htm)

Available at: (<http://www.pbis.org/main.htm>).

From the [Technical Assistance Alliance for Parent Centers](http://www.taalliance.org/research/discipline.htm) :

- [Scientifically-based information and resources for students with behavioral/discipline problems](http://www.taalliance.org/research/discipline.htm).
Available at: <http://www.taalliance.org/research/discipline.htm>

From [CHADD](https://www.chadd.org/) (Children and Adults with Attention Deficit/Hyperactivity Disorder) (<https://www.chadd.org/>):

- [Evidence-Based Psychosocial Treatment for Children and Adolescents with AD/HD](https://www.chadd.org/fs/fs9.htm)
Available at: <https://www.chadd.org/fs/fs9.htm>

From the [University of Buffalo's Center for Children and Families](http://wings.buffalo.edu/adhd/)

Available at: <http://wings.buffalo.edu/adhd/>

- [ADHD Psychosocial Treatment Information Sheet for Parents and Teachers](http://128.205.76.10/PsychosocialFactSheet.pdf)
Available at: <http://128.205.76.10/PsychosocialFactSheet.pdf>
- [How to Establish a Daily Report Card \(for both Parents and Teachers\)](http://128.205.76.10/DRCPacket.pdf)
Available at: <http://128.205.76.10/DRCPacket.pdf>

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