

Systematic Review: Educational Accommodations for Children and Adolescents With Attention-Deficit/Hyperactivity Disorder

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Objective: Children and adolescents with attention-deficit/hyperactivity disorder (ADHD) often receive instruction and take tests using educational accommodations. This review aims to summarize and integrate the research literature on accommodations for this specific population.

Method: Electronic databases in medicine (MEDLINE), psychology (PsycINFO), and education (ERIC) were systematically searched (last update January 13, 2020), with inclusion criteria selecting any document with a focus on accommodations in educational settings or on academic tasks for children or adolescents with ADHD. The search yielded 497 unique documents. Additional searches yielded 13 more documents. Of the 510 total potentially useful documents, 68 met criteria for topical relevance and age range, to be discussed in the narrative review. The wide range of document types led to a qualitative synthesis.

Results: Accommodations are by far the most common response to ADHD in educational settings, with testing accommodations such as extended time being particularly prevalent. However, most accommodations fail to show evidence of benefits that are specific to students with ADHD, and many of the more common accommodations have few or no experimental studies supporting them. An exception is read-aloud accommodations, which have two randomized experiments finding specific benefits for younger students with ADHD. Students and those who work with them often express ambivalence and dissatisfaction over the accommodations process.

Conclusion: More empirical research is needed to examine the effects of these extremely common supports. In the absence of supportive evidence, health professionals should be hesitant to recommend accommodations immediately after a diagnosis. Even when such evidence exists, educational accommodations should only be provided along with evidence-based interventions, or after interventions have failed, as suggested by the “life course” model of managing ADHD.

Key words: ADHD, educational accommodations, school services

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Attention-deficit/hyperactivity disorder (ADHD) is a common childhood-onset psychiatric disorder that causes substantial impairment in real-world functioning.¹ Because educational settings require sustained attentional focus and self-control, ADHD is particularly likely to affect academic performance and school behavior more generally. On average, students with ADHD obtain lower class marks, learn less in school, and are more likely to repeat a grade or fail to complete high school.^{2–5} However, several school-based interventions have shown effectiveness for this population. Meta-analyses have supported the use of organizational skills training (showing large effects on those skills but also small-to-medium effects on inattention symptoms and academic performance⁶) as well as instructional interventions such as use of flash cards and writing strategy training (showing medium to large

effects on both behavioral and academic outcomes⁷). Even medication interventions appear to have effects—albeit small ones—on academic skills, and particularly on speed and productivity of academic responses.⁸ Unfortunately, intervention implementation is often challenging and uneven in practice, and even research-based interventions are unlikely to completely eliminate the gap in achievement between students with and without ADHD.

In addition to interventions, or in lieu of them, many students with ADHD receive educational accommodations. The most well-known accommodations are in the context of testing and assessment; a student with ADHD may be permitted to take tests with a longer time limit, or in a separate room, or having the items read aloud by a teacher.⁹ However, instructional accommodations are also available; these may involve providing personal reminders about

assignment due dates to a student with ADHD, or allowing a student to answer only the even-numbered homework problems.¹⁰ In either case, the essential content of the academic program (instruction or testing) is retained, but the mode of administering an aspect of the program (the timing, scheduling, setting, presentation style, or response format) is altered. Unlike interventions, which aim to change the student's levels of skills or other traits, accommodations adjust the delivery of the academic program to the student's current state, changing the expectations for the student.

This article systematically reviews the research literature on educational accommodations for children and adolescents with ADHD. The goal is to integrate this information to learn when and how accommodations are being provided to this population, as well as how useful and appropriate such accommodations are, and how they are perceived by stakeholders in the accommodations process. In addition to identifying the most effective practices and programs, gaps in current knowledge and implications for future research will be discussed.

METHOD

We followed PRISMA guidelines for our review. Our PRISMA checklist is provided as Figure S1, available online.

Search Strategy

We used the EBSCO library to simultaneously search electronic databases in medicine (MEDLINE), psychology (PsycINFO), and education (ERIC). We searched the full text of database records for the combination of "attention deficit" and "accomm*". The final update to the EBSCO search occurred on January 13, 2020, and several additional documents were identified later, as part of the review process.

Study Selection

We cast a wide net, both topically and methodologically, with regard to which documents were included. Topically, the principal inclusion criteria were that a document was required (a) to have a significant focus on the topic of ADHD, (b) to specifically concern children or adolescents, and (c) to concern accommodations (or have clear, explicit implications for accommodations) in school settings or on academic tasks (including testing). Methodologically, we considered large-scale experimental and nonexperimental studies, case studies, legal analyses, and conceptual papers, among other documents, and we included dissertations and reports from government bodies and advocacy groups as well as peer-reviewed journal articles. This exploratory

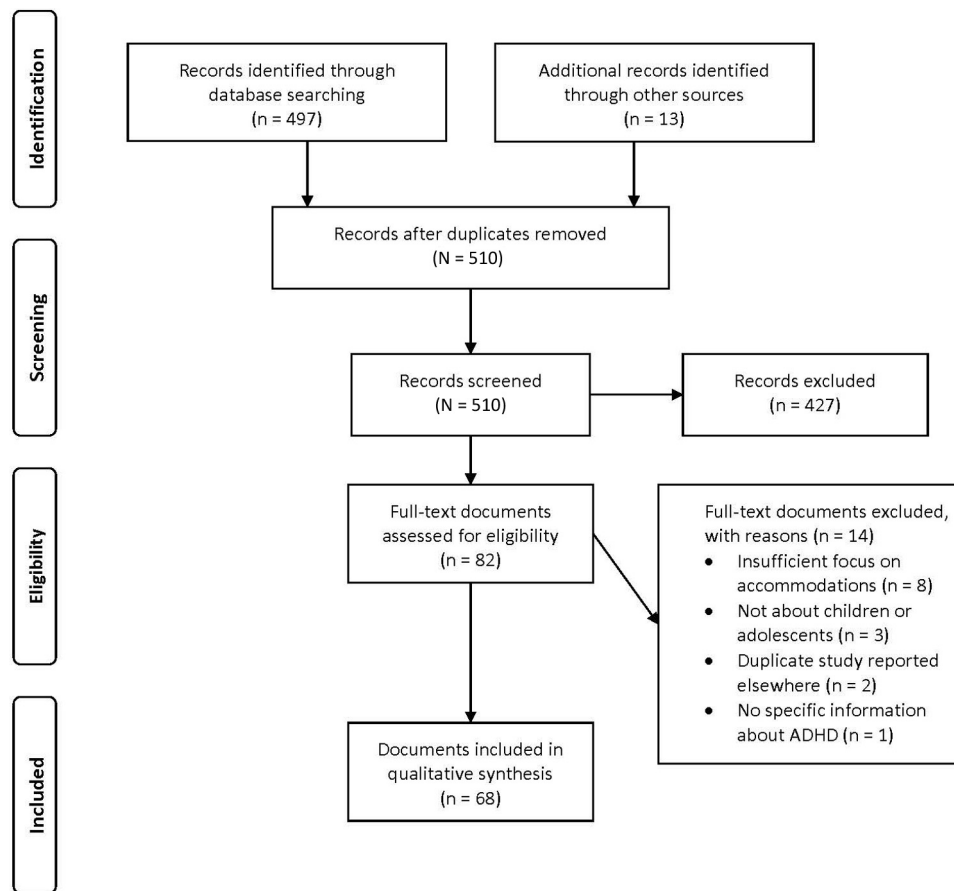
approach led us to develop categories of documents as we reviewed the literature, rather than starting from a priori categories. Given this breadth of literature, we were careful to identify what evidence on which each document based its claims. To reduce risk of bias during evidence synthesis, we included unpublished as well as published work (to address possible publication bias), and we examined results ourselves (and in some cases performed independent calculations) rather than relying solely on researchers' own conclusions (to address possible interpretive biases).

The primary reason that documents were excluded at the abstract review stage was an insufficient focus on accommodations (eg, a brief mention of accommodations in a more general paper on management of ADHD). Other common reasons for exclusion were a focus on older populations (particularly college students, who fit better in the adult ADHD literature) and a different meaning of the term "accommodation" (eg, articles on the ocular accommodation reflex in students with ADHD). Both authors reviewed all abstracts and discussed any cases in which there was disagreement as to whether to obtain the document's full text. The authors then reviewed full-text documents to determine whether each document was relevant, and if so, to extract findings of interest. Given the wide range of types of documents, qualitative synthesis was used to integrate results across documents.

RESULTS

A total of 68 documents met full inclusion criteria (see Figure 1 for the PRISMA flow chart and Tables S1 and S2, available online, for summaries and classifications of all documents). Consistent with our broad search, we found documents providing relevant information about the following topics: the current legal framework supporting students' rights to educational accommodations; the prevalence of accommodations; the effectiveness of various accommodations; perceptions of the accommodations process; and proposals for improving current practices. Of the 68 documents, more contained original empirical data (31 empirical articles in peer-reviewed journals, 9 dissertation studies, and 3 reports covering empirical studies by research institutes) than did not (12 conceptual/review articles in peer reviewed journals, 9 reports from government entities or foundations, 3 chapters in edited books, and 1 authored book).

The typical levels of evidence used in medical reviews could not be easily applied to many of the documents; a legal analysis might have strong evidence through its citation of authoritative sources, and the strength of the logic of its argument would not rely on the features of high-quality

FIGURE 1 PRISMA Flow Chart

empirical studies. Even for the empirical studies, markers of the quality of research were highly dependent on the study type, and so we provide general characterization of quality markers below, and more details in Table S2, available online.

Legal Framework for Accommodations

We found 9 documents with relevant information concerning the legal framework for accommodations for students with ADHD. Three federal laws provide for possible educational accommodations for these students, and different laws are relevant depending on which sort of school a student attends. First, public schools must enforce the Individuals with Disabilities Education Act (IDEA), which covers any student who meets criteria for any of 13 categories of disability and requires special education or related services to achieve an appropriate education. These covered students receive an Individualized Education Program (IEP), which often lists accommodations, particularly for state examinations. Although ADHD is not one of the

13 official categories, many students with ADHD are served under IDEA,¹¹ specifically under its categories of Other Health Impairment (OHI), Emotional Disturbance (ED), and Specific Learning Disability (SLD).^{12,13} IEPs contain not only accommodations, but individualized educational goals and objectives for the student, which must be monitored continuously by school staff. Importantly, the decision to classify a student under IDEA and the content of an IEP are at the school district's discretion, albeit with parental input; neither a diagnosis of ADHD, nor a physician's recommendation for an IEP, requires the school to create one.¹⁴ Moreover, many students with valid ADHD diagnoses will not require an IEP and should have standard curriculum goals.¹⁵

Students who are in schools receiving any federal funding are protected by Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination against individuals with disabilities. All public K-12 schools fall under this law, and so do a small number of specialized private schools that are for students with special needs. Many

students in covered schools receive “504 Accommodation Plans” that mention an ADHD diagnosis. All schools (whether public or private) as well as independent testing agencies (such as the ACT, a test used for US college admission) fall under a similar law, the Americans with Disabilities Act (ADA).¹⁶ Both Section 504 and ADA generally define a disability as a condition (such as ADHD) that substantially limits a major life activity, and “concentrating” is explicitly mentioned as an example of such an activity, as are other activities in which some students with ADHD are limited (eg, reading). However, although many students with ADHD are disabled under the 504/ADA definition,^{17,18} the determination of disability is distinct from a diagnosis, and not all students with ADHD diagnoses will need accommodations under Section 504. Students who only receive 504/ADA services generally do not have individualized educational goals, just accommodations, and the number of students who only have 504 plans have grown substantially in recent years.¹⁹

Prevalence of Educational Accommodations

Our search retrieved 32 documents relevant to the prevalence of accommodations. Many studies have found that accommodations are the most common management strategy for ADHD in educational settings. Their frequency is high, both relative to other strategies and in an absolute sense; studies generally find that the most common accommodation—namely, extended time on tests—is provided to over 80% of students with school-recognized ADHD.^{12,20–23} Other very common accommodations are alterations to assignments (eg, extended time or shorter assignments), access to a calculator for mathematics, a separate setting in which to take tests, and preferential seating (eg, near the teacher). It is typical to receive multiple testing accommodations; for instance, one study of 88 IEPs found an average of 2.62 testing accommodations per student with ADHD.²² However, interestingly, the number of accommodations that a student receives does not appear to relate to the severity of that individual’s ADHD.²⁰

Accommodations are popular regardless of whether students with ADHD are receiving services in a general education classroom or in a self-contained special education setting,^{24,25} and some research has explored the creative accommodations that are provided in classes such as music^{26,27} and foreign language.²⁸ Instructional accommodations in particular, while associated with ADHD, are given by some teachers to students both with and without the disorder, according to teacher surveys as well as review of official school records.^{29,30} In 3 studies, researchers have observed that evidence-based interventions such as behavior management plans are actually less common than

accommodations.^{23,31,32} For instance, in one study of a representative sample of 107 high school students with ADHD who had special education or accommodation plans, 87.9% received extended testing time accommodations, but only 24.1% had a behavior management program and only 37.1% received learning strategies or study skills assistance.²¹ Finally, students with ADHD are a group well represented in research on testing accommodations, second only to students with learning disabilities.³³

Part of the high popularity of accommodations for ADHD may stem from government guidance documents (eg, from state departments of education), position papers from advocacy groups, and educational resource manuals, all of which tend to provide lengthy lists of accommodations for students with ADHD, without mentioning evidence that the accommodations are effective or appropriate.^{34–41} Similarly, articles and books in the professional literature for teachers often provide such lists.^{42–46} One group of researchers even developed a worksheet for school staff to rate their frequency of using various accommodations, while also identifying barriers to use (that can presumably be addressed, to increase the number of accommodations that students with ADHD receive).⁴⁷ A related feature that may increase popularity is that many accommodations are far less expensive and intensive to provide, compared to interventions, which can be costly.⁴⁸ Finally, diagnosticians have acknowledged that students experiencing pressure for high performance may seek ADHD accommodations to have a boost in performance, whether or not they are truly disabled.⁴⁹ This has led scholars to suggest that diagnostic assessments should include specialized measures to detect adolescents who may be exaggerating impairment by over-reporting symptoms or deliberately performing poorly on cognitive tasks.⁵⁰

Effectiveness of Accommodations

We found 22 documents that included information about the effectiveness of accommodations. There is no single, agreed-upon metric for determining the effectiveness of an accommodation; the simplest one—a positive effect on grades or test scores—would arguably not be meaningful if it were only due to lowered standards. A commonly mentioned standard for effectiveness is therefore whether the accommodation only has positive effects—or has greater positive effects—on students with ADHD than on their nondisabled peers.^{48,51,52} The standard is based on accommodations for sensory or physical disabilities; a test form in Braille or a ramp into a building is primarily of benefit to individuals with disabilities. However, below we consider effectiveness more broadly, reporting whatever effects of accommodations have been found in empirical research.

Nine studies have examined the effects of extended testing time. On time-pressured tests, this accommodation does lead to higher test scores for students with ADHD, but it also has this effect for nondisabled students, according to studies of middle school students ($N = 54$) and high school students ($N = 1,929$).^{51,53} These results converge with those from a large-scale study of high school students with and without ADHD diagnoses ($N = 784$), which found few differences in performance on a battery of timed reading measures, and instead found more evidence of making careless mistakes by students with ADHD, which would support prompts to check for mistakes rather than a simple provision of additional time.⁵⁴ Moreover, many teacher-made classroom examinations are not heavily time pressured, which may explain the lack of an association between receiving services such as extended time and grade point average (GPA) in students with ADHD ($N = 333$).²¹ Finally, an interesting study calculated the rate of correct worksheet completion among middle school students with ADHD ($N = 33$) under shorter and longer time limits, finding that students' work rate declined with extended time⁵⁵; this suggests that students with ADHD are likely to use at least some of their extended time when it is provided, whether or not the extended time is actually needed (see also studies with similar findings for high school students taking SAT-style tests^{56,57}).

Although the evidence for extended time's appropriateness appears to be generally weak, other research has at least defended it against two criticisms. First, the concern that it induces fatigue through lengthier test sessions does not appear to be true, according to a study examining fatigue in high school students with ADHD taking extended time (versus standard time) versions of the SAT (which is already much longer than typical classroom tests).⁵⁸ Second, according to another study using the SAT, extended time does not significantly alter the factor structure of tests (ie, the relationships between items) for students with ADHD and/or learning disabilities ($N = 4,952$), which is a key psychometric property relating to tests' validity.⁵⁹

Read-aloud accommodations, in which items from a paper test are presented orally to students with ADHD, have also received empirical attention. Two randomized experiments ($N = 45$ and $N = 36$) have found that at least for younger children with ADHD (aged ≤ 14 years), read-aloud accommodations improve performance beyond any benefit seen in nondisabled peers.^{52,60} It may be that the presence of a 1:1 adult proctor reading test items helps to focus the student's attention; whether the benefits have to do with reading deficits or redirection is unclear, although many students with ADHD also have academic skill deficits. The redirection explanation was endorsed by another

study that sought to determine whether middle-school students with ADHD ($N = 19$) were getting test items wrong "for the right reasons" (ie, lacking skills that the items are designed to measure) or due to a lack of access, and which determined that some students with ADHD would benefit from read-aloud accommodations to improve test engagement.⁶¹

Some accommodations that have a conceptual relationship to ADHD symptoms have nonetheless failed to show significant benefits. For instance, students with ADHD are often permitted to complete tests in a smaller group on the theory that this would reduce distractions; however, in one study, researchers found that children with ADHD ($N = 33$) actually completed a greater proportion of test-like worksheets when in a larger group as opposed to a smaller one.⁶² Another frequently recommended accommodation involves breaking assignments into smaller units, on the logic that students with ADHD lack patience and would benefit from more frequent reinforcement (from task completion).²⁷ However, the only study that we located examining this accommodation failed to find any benefit for elementary and middle school students with ADHD ($N = 34$), in terms of productivity or on-task behavior.⁶³ Calculator accommodations are another common support for students with ADHD, but the only experimental study on this point (a small-scale study that included 15 subjects with ADHD) failed to find any effects on performance on a conceptual/application mathematics task (one not designed to measure calculation skills).⁶⁴ This is disappointing, given the noted mathematics deficits seen in ADHD that have prompted some scholars to advocate for accommodations.⁶⁵

One intriguing study found mixed effects of an unusual theory-based accommodation: the addition of "non-informational color" to text during reading tasks. The idea here was that students with ADHD require additional stimulation to maintain attention, and so making reading text colored (despite the color not being relevant, as it would be if it were highlighting key points in a text) was expected to improve performance. The accommodation significantly increased the oral reading accuracy—but not rate or comprehension—of a small group of third through fifth graders with ADHD ($N = 16$).⁶⁶

Finally, some studies have been suggestive without using research designs that permit confident causal conclusions about the effects of individual accommodations. For instance, a nonexperimental study found that among elementary and middle school students with ADHD ($N = 96$), the presence of various accommodations (extended time, breaks, reduced-distraction location, calculator access, and read-aloud) was not associated with scores on state reading achievement tests; however, this may be due to a

selection bias, where students without such accommodations did not need them. Such an explanation is consistent with the finding that calculator accommodations were associated with lower state mathematics test scores in elementary school students with ADHD.²⁰ In other studies, many management techniques have been implemented at the same time (ie, accommodations as well as interventions), and so any improvements in performance and behavior cannot be attributed to accommodations *per se*.^{67,68}

Perceptions of the Accommodations Process

There were 6 documents that contained information from studies examining what various stakeholders in the accommodations process think about current practices. In a large-scale mixed-methods study of adolescents, parents, teachers, health care professionals, and school professionals (total $N = 569$), adolescents were significantly less positive toward testing accommodations, compared to other respondents.⁶⁹ However, respondents from other groups also expressed concerns over how testing accommodations, by physically segregating students, could lower self-esteem.

In another study, a group of 18 teachers, and a separate group of 15 mother/student dyads, were interviewed about the extended time accommodation for ADHD (of which all students had diagnoses).⁷⁰ Approximately half of teachers and parents had wholly positive views toward the accommodation, but many of each group were ambivalent, and some teachers were actively opposed. Perhaps surprisingly, students were the least positive group, with two-thirds expressing ambivalence. The ambivalent students expressed concerns related to fairness (sincerely questioning the fairness of the accommodation but also noting worries that classmates may find it unfair); some teachers worried that extended time unrealistically raises expectations for student performance; and mothers questioned the benefits of such an accommodation for students who are not slow workers.

Ten mothers of students with ADHD were the focus of a small-scale qualitative study about perceptions of the ADHD management process more generally.⁷¹ Of all the aspects of that process, mothers found obtaining school services to be most difficult, expressing particular frustration with obtaining Section 504 accommodations (all but 1 participant noted this). More generally, mothers perceived school staff as lacking training and understanding about ADHD. Parental concerns over 504 accommodations seem to be validated by a study that interviewed parents, teachers, and school 504 coordinators (total $N = 10$) regarding ADHD programming in the middle-school setting; the interviews consistently elicited themes of a lack of training in 504 issues for teachers, confusion over the role of 504

coordinators, and inconsistency in implementing 504 plans.⁷² Relatedly, in the only study to focus entirely on school psychologists' perceptions, fewer than one-third of these professionals (of a total of 161 participants) believed that accommodations of health-related conditions (mainly ADHD) were handled well by teachers, and most respondents felt that two specific problems (namely, teachers' insufficient understanding of the classroom implications of disorders, and weak application of the understanding that teachers do have) were at least "moderate" barriers to appropriate practice.¹³ Therefore, even if teachers know of many of the common accommodations given to students with ADHD,⁷³ many stakeholders still see room for a great deal of improvement in the accommodations process.

Improving Current Practices

Finally, we found 6 documents with a significant focus on how to improve current practices. One was a study examining the effects of professional development programming on teachers' attitudes and behavior with regard to teaching students with ADHD, including the provision of accommodations.⁷⁴ The investigators concluded that in-service training (which included a presentation on accommodations as well as a sample accommodations plan) was effective at increasing teachers' stated willingness to provide accommodations, as well as their reported actual use of accommodations. Of course, such outcomes should be viewed as positive only if the accommodations are effective and appropriate, issues not discussed by the investigators.

Because ADHD is a heterogeneous disorder, students who have it will vary in terms of which accommodations are most effective. One conceptual article proposed the use of functional assessment for improving the process of determining which accommodations to provide a student with ADHD.⁷⁵ Functional assessment is often used to understand why misbehavior is occurring, by discovering relationships between environmental events that set off or reinforce misbehavior, and ample research supports this practice. The extension of functional assessment to develop accommodation plans (along with interventions) is intriguing, and the authors of the article give many helpful examples.

As students with ADHD become older, and specifically as they move through high school, they are expected to be increasingly involved in developing their own IEPs or accommodation plans. One intensive small-scale study examined a training program to teach high school students with ADHD ($N = 4$) to self-advocate for needed accommodations (through practice in steps such as reporting past accommodations and their perceived efficacy), and this program was found to be effective at making the students better self-advocates.⁷⁶

Finally, we found 3 conceptual/review articles that presented formal models of services for managing ADHD that included accommodations,^{31,77,78} as part of arguments for improving the way in which services are provided. All 3 articles endorsed essentially the same approach, reserving accommodations as either (1) a temporary measure to use while trying out interventions, or (2) a final measure to use when interventions have failed. One article presented a comprehensive “life course model” of services,⁷⁸ which attempts to use 4 strategies to increase long-term independence. The model starts with “foundational strategies” (ensuring that the child’s environment is appropriate with regard to behavior management, and promoting positive relationships and communication among the child, parents, and school officials); then adds behavioral and cognitive-behavioral interventions to increase academic skills and to further address behavior problems; then turns to medication if psychosocial interventions are insufficient; and then finally provides accommodations if a student’s skills/behavior are still not adequate to meet task demands.

DISCUSSION

Child and adolescent psychiatrists and related health care professionals, while not based in school settings, often provide diagnostic documentation and management recommendations for students with ADHD that are presented to school staff as authoritative, and so it is critical for such professionals to understand educational accommodations well. It is difficult to summarize such a broad and diverse body of documents on the topic, but 4 key conclusions were evident. First, educational accommodations are extremely common, the primary response to ADHD in schools. Supported by 3 separate laws at the federal level alone, they are provided to the vast majority of students with ADHD when schools recognize the condition. Second, experimental studies of accommodations often fail to find any efficacy in the sense of improving students’ performance, and it is even rarer that they are found to have benefits that are specific to students with ADHD (as opposed to raising all students’ performance, potentially lowering standards). Read-aloud accommodations for younger students with ADHD emerged as the exception here, with multiple experiments suggesting that the accommodation meets the stringent standard of having benefits specific to students with a disability. Certainly, given the high prevalence of accommodations, and the lengthy lists of accommodations recommended in guidance documents and articles for teachers, it is surprising how the evidence base for accommodations’ efficacy is comparatively thin. Contrast this with a well-

developed body of empirical literature supporting usage of certain interventions.

A third, related conclusion is that many of the most common accommodations have few or no experimental studies directly investigating their efficacy. For instance, we could not locate a single study directly investigating private room testing accommodations specifically in children or adolescents with and without ADHD. Even extended time, the most common accommodation, has generated fewer than 10 empirical studies directly examining its effects and appropriateness in this population. Similarly, we could find only a few experimental studies of any instructional accommodations. Our fourth and final conclusion is that surveys of students with ADHD, as well as those who work with them, have repeatedly found ambivalence and dissatisfaction about accommodations (and the accommodations process) from many stakeholders. Exact results vary from one survey to another, and some positive comments are certainly present as well, but no survey finds widespread positive perceptions of the current state of accommodations practice.

These conclusions appear to provide additional support for the life-course model of ADHD services, in which interventions and other strategies are first attempted, and accommodations are best viewed as either stop-gap measures while a student’s skills undergo intervention (instructional accommodations may be especially relevant here), or as a concession made when the student fails to respond sufficiently to well-implemented, evidence-based interventions. Health and mental health professionals who diagnose ADHD should therefore be hesitant to recommend most accommodations (as part of Section 504 plans or IEPs) immediately after a diagnosis, without ensuring that interventions are in place and have time to work.

We understand that these proposals are easier to state than to implement. Although it is easy to cite the benefits of evidence-based interventions, such interventions are not easily accessed in every school, because of deficits in resources and support as well as weaknesses in knowledge and training. In addition, even when accommodations fail to lead to better behavior or higher achievement, they often represent a genuine commitment to help the student, and so they may be rationalized as having something like a placebo effect. However, like other forms of overtreatment, educational accommodations have the potential to backfire, creating dependency on supports that—unlike placebo medications—cannot be used indefinitely. Extended time for testing, the most common accommodation, can even lead to students slowing their rate of work productivity, keeping them from learning time-management skills. Worse still, the perception of accommodations as “quick fixes” may lead students and their families to

Clinical Vignette

An 8-year-old boy is referred for a psychiatric evaluation after concerns about significant distractibility and impulsive behavior that have been present for 2 years but have apparently worsened since the start of third grade. Parent and teacher reports, as well as clinical observation and record review, all suggest an ADHD diagnosis. The boy's parents inquire about what accommodations they should ask the school to make for their son. Consistent with the comprehensive life-course model of care, what should be done prior to asking the school to modify instruction or testing for the child?

First, foundational strategies such as parent and teacher education should be used. Does the patient's teacher have classroom management skills that include making behavioral expectations clear and enforcing consequences for misbehavior consistently? Do the parents and teacher have a system for communicating regularly to monitor the child's behavior and performance over time?

Second, evidence-based psychosocial interventions should be attempted, to improve the child's skills. Because school is an area of particular concern, one effective school-based psychosocial intervention for elementary school-aged students with ADHD is a token reinforcement system, whereby the child can earn tokens for appropriate behavior and loses them for misbehavior, and can exchange the tokens periodically for privileges or other primary reinforcers.

Third, if psychosocial interventions have been implemented with fidelity and are insufficiently effective for this particular patient, medication can be initiated. Stimulant medications in particular have shown considerable efficacy in reducing levels of core symptoms in many youths with ADHD.

If the strategies described above do not yield gains, and particularly if the treatment provider sees evidence that the child is actually not able to access the educational program (instruction or assessments) because of ADHD symptoms, a recommendation for school-based accommodations can be considered. These accommodations would be targeted to the child's particular pattern of needs. For instance, if the student cannot maintain attention sufficiently to complete an examination, a read-aloud accommodation may be appropriate. Importantly, even if accommodations are implemented, interventions should continue in the hopes of reducing the child's dependence on accommodations. Moreover, the child's response to any accommodations should be monitored, to examine both logistical feasibility and efficacy.

If the provider recommends an accommodation, relevant laws can be cited; however, more importantly, any letter should include clear evidence showing that the child meets the formal criteria for ADHD, is functionally limited, and is unable to access the educational program at present.

seek unwarranted accommodations, even through deliberately exaggerating symptoms; anecdotal reports of this phenomenon have been noted in high school students,⁷⁹ and in post-secondary students there is evidence of frequent symptom exaggeration during ADHD evaluations.^{80,81}

A second implication from our review of the literature is the need for additional empirical research on the effects of accommodations, particularly the ones most commonly used in current practice. Since effects may depend upon such factors as the age of students and the subject matter of classes or examinations, there are many needed studies. Studies should include outcome variables beyond examination performance, such as student self-perceptions and expectations, to further examine the potential harmful (as well as helpful) effects of accommodations. It is our hope that the present review might stimulate such work.

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