

ADHD

From Stereotype to Science

Forget Dennis the Menace and other outdated stereotypes about kids with ADHD. New research reveals the breadth and complexity of the disorder.

Thomas E. Brown

In almost every classroom, at least one or two students are identified as having attention deficit hyperactivity disorder (ADHD). Sometimes the parents mention at the start of the term that their child has been diagnosed with ADHD; sometimes word comes from a 504 plan or a teacher who previously had that student in class. Usually the ADHD label is taken as a warning that the student is likely to be difficult to teach and manage, that he or she will be more restless and disruptive than most other students in the class.

However, this image of the student with ADHD as Dennis the Menace is an outdated stereotype. Some students with ADHD *are* restless and disruptive, but many others with this disorder are quieter, more distracted and passive, and not very productive or consistent in their work.

Ever since it was first described in the medical literature in 1902, the

disorder, now referred to as ADHD, has been considered essentially a behavioral problem. For a long time, it was seen as just a problem of hyperactive little boys who couldn't sit still, wouldn't stop talking, and frustrated their parents and teachers with chronic misbehavior. The term *attention deficit* wasn't added to the name until 1980. Since then, there have been substantial changes in our scientific understanding of ADHD that are important for educators to know.

An Update on the Basic Facts

These facts are now well-established in the scientific research.

- ADHD is a developmental impairment of the brain's self-management system that includes problems with getting motivated, organized, and started on necessary tasks; focusing on what needs to be attended to and shifting focus when needed; managing alertness and sleep; sustaining effort to complete tasks; processing and outputting information

efficiently; managing emotions; using short-term working memory; and monitoring one's actions to fit the setting and avoid excessive impulsivity (see fig. 1 on p. 55).

- All of us experience characteristics of ADHD from time to time; those with ADHD simply have more chronic and impairing difficulty with these problems. ADHD isn't an all-or-nothing situation like pregnancy, where one either is or isn't pregnant. ADHD is more like depression—it comes in small, medium, and large levels of severity. Everyone feels down sometimes, but being unhappy for a couple of days doesn't warrant a diagnosis of clinical depression. The diagnosis is reserved for those who are significantly and persistently impaired by their symptoms.

- Although some children and adults with ADHD have significant problems with hyperactive and excessively impulsive behavior, many with the disorder don't display such behavior. The majority of those who



were “hyper” as children outgrow most of their hyperactivity in early adolescence but continue to have chronic difficulty with inattention and related problems.

- ADHD is highly heritable; it runs in families. Twenty-five percent of children with ADHD have a parent with ADHD, and 30 percent have a brother or sister with ADHD. Twenty studies comparing identical twins yielded a heritability index of 0.75, which means that most of the

**ADHD is found
in people across
the full range of
intellectual abilities.**

variability in developing ADHD is accounted for not by family environment but by inherited vulnerabilities (Faraone et al., 2005). Subsequent studies have demonstrated that this vulnerability isn’t caused by any one gene; it’s caused by a large number of genes in combination.

- Longitudinal and other imaging research has demonstrated significant differences in brain development and connectivity of children with ADHD compared with typically devel-

oping children of similar age (Shaw et al., 2007). Although much brain development is similar in the two groups, some areas of the brain that are important for self-management tend to mature about three to five years later in those with ADHD.

■ It was once thought that a child with ADHD would outgrow the disorder before reaching the age of about 14. However, longitudinal studies have shown that approximately 70 percent of those who have ADHD in childhood will continue to have some ADHD impairments at least into late adolescence (Biederman, Petty, Evans, Small, & Faraone, 2010; Biederman, Petty, Monuteaux, et al., 2010.) For many but not all, the impairments of ADHD continue throughout life.

■ ADHD is sometimes apparent during the preschool years, but it's often not noticeable until the child enters elementary school or advances into middle school, where there's no longer just one teacher who provides structure and control for most of the day. Some children don't demonstrate significant ADHD impairments until they enter high school or move away from home and must deal with challenges of more independent life in college or employment. Those with later onset of ADHD can be fully as impaired as those with earlier onset.

■ ADHD has nothing to do with how intelligent a person is. ADHD is found in people across the full range of intellectual abilities.

■ Emotions play two important roles in ADHD, neither of which is reflected in current diagnostic criteria. First, conscious and unconscious emotions play a crucial role in the problems of motivation and self-regulation that are pervasive in ADHD. Second, many people with ADHD have chronic difficulty recognizing and managing the expression of their emotions.

■ ADHD is not just one or two specific symptoms. It's a complex syndrome, a cluster of impairments that often appear together, although some aspects of the disorder may be more or less prominent in any particular person. There are many differences among those with ADHD, even among those of similar age; people with the disorder are not all alike in either their strengths or their difficulties.

struggle with chronic ADHD problems may have none of those problems when they engage in a particular activity or task.

Although they struggle to focus on their schoolwork, students with ADHD may demonstrate a remarkable ability to focus and work effectively when they're playing a sport, creating art or music, doing mechanical tasks, or playing a favorite video game.

Some students with ADHD are restless and disruptive, but many others who suffer from this disorder are quieter and more distracted.

■ Most people with ADHD also have difficulties resulting from one or more co-occurring disorders. The incidence of learning disorders, anxiety and mood disorders, sleep disorders, obsessive-compulsive disorders, substance use disorders, and autism spectrum disorders is considerably higher among those with ADHD than in the general population. Sometimes the co-occurring disorder is recognized, whereas the ADHD is not.

■ Medication doesn't cure the disorder, but for about 8 of 10 people with ADHD, carefully managed medication significantly improves the symptoms. These medications aren't like an antibiotic that may cure an infection; they're more like eyeglasses that improve vision while they're worn.

The Central Mystery of ADHD

There's one fact about ADHD that's most puzzling: The symptoms are situationally variable. That is, people who

Although they may not be able to keep directions for assignments in mind or retain basic facts learned in social studies or math, they may have an incredible ability to recall the statistics about their favorite baseball team or the lyrics of popular songs.

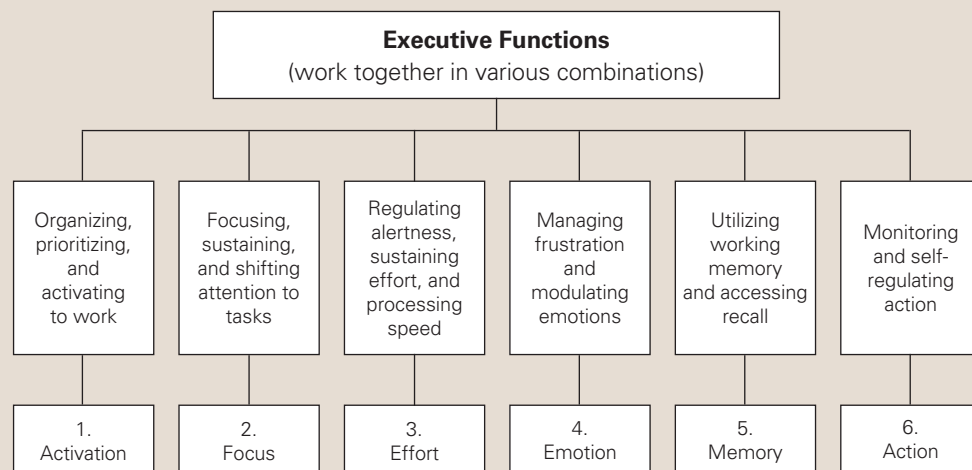
When asked why they can focus so well when it comes to these few activities, students with ADHD often reply that it depends on whether the task is interesting—that if it's not, they just can't stay tuned. Although this may be true for everyone—that we focus better on things that interest us—there's an important difference here. Most of us can make ourselves focus on something we recognize as important, even though it's pretty boring. For those with ADHD, doing so is much more difficult.

A patient once remarked to me that having ADHD "is like having erectile dysfunction of the mind. If the task you're trying to do is something that really interests you, you can perform.

But if the task you are trying to do is not intrinsically interesting, you can't make it happen." Although ADHD often appears to be a problem with willpower, it's not. It's a problem with the dynamics of the chemistry of the brain.

When people are faced with a task that really interests them—because it appears to offer pleasure to them *at that moment* or seems to ward off some imminent unpleasantness they want to avoid—that perception, conscious or unconscious, instantly changes the chemistry of the brain. This motivation process is *not* under our voluntary control.

FIGURE 1. Executive Functions Impaired in ADHD



Source: From *Attention Deficit Disorder: The Unfocused Mind in Children and Adults* (p. 22), by Thomas E. Brown, 2005, New Haven: Yale University Press. Copyright © 2005 by Thomas E. Brown.

ADHD and Reading

The motivation problem is often apparent in reading. Students with ADHD often report that they may understand a text as they read it—they can decode all the words and understand what's being said. Yet just a few minutes later, they don't have the foggiest idea what they just read. To extract the meaning of the text and retain it, they often have to reread it several times. One student with ADHD reported,

When I'm reading something that's not really interesting to me, it's like I'm licking the words and not chewing them. I know what all the words mean as I'm reading them, but they just don't stick inside my head. I don't really digest them. That's why I have to write notes while I'm reading or use a highlighter or else just read the same page over several different times.

ADHD and Memory

Many students with ADHD have adequate or even exceptionally good long-term storage memory. They may be able to recite extended song lyrics

or explain in detail the storyline of a movie they saw years ago. Yet they may have great difficulty keeping in mind the directions the teacher just gave for an assignment. During class discussions, students with ADHD may raise their hands to answer a question the teacher has posed and then forget what they intended to say if the teacher calls on someone else first.

Their problem isn't with long-term storage memory; the memory problem in ADHD is more with short-term working memory, the ability to keep one bit of information in mind while thinking about or doing something else.

Students with ADHD will sometimes study for a test the night before the test is given. A parent may quiz them until they have all the material clearly in mind. They walk into class the next day expecting to get a really good grade, only to find that a big chunk of what they knew so well the night before has suddenly evaporated. They can't recall the information when they

need it for the test, but a few hours or days later, something jogs their memory and the information is back again.

It's not that the students hadn't learned it; they simply weren't able to retrieve the information from memory when they needed it. Working memory is the search engine of the brain. Those with ADHD often suffer from chronic difficulties with their working memory even though their longer-term storage memory works very well.

ADHD and Writing

Of all the primary academic tasks, typically the most difficult one for students with ADHD is written expression. In the earliest grades, the student with ADHD may be exceptionally slow in doing any written work. In the time it takes most other students to put the heading on their paper and copy the first three sentences from the board, the student with ADHD may still be working on

getting his or her name and date in the heading. When writing tasks get more lengthy and complex in the higher grades, students with ADHD often report that they have many good ideas for what to write, but it takes them forever to put their thoughts into organized sentences and paragraphs.


Written expression makes more demands on the executive functions that are often impaired in ADHD than do reading and writing. The words and numbers found in texts and math problems provide a structure and an organization to assist the reader, whereas written expression requires students to organize, prioritize,

sequence, and elaborate their thoughts in a structure they need to create. Slow processing speed is often characteristic of students with ADHD.

What Can Educators Do?

Assessment and diagnosis of ADHD usually require a licensed physician, psychologist, or other medical specialist who has been trained to recognize the disorder and design appropriate treatment. But classroom teachers and school administrators have an important role to play.

Educators who are aware of our new understandings about ADHD are better equipped to identify students who may

be struggling with this disorder. When a student demonstrates impairments that may be related to ADHD, the teacher can describe the student's difficulties in detail and encourage the family to present this information to their pediatrician or other specialist. Such early identification can prevent students with ADHD from becoming demoralized by repeated experiences of frustration and failure and can ensure that they receive the assessment and support they need to succeed. 

Copyright © 2015 Thomas E. Brown

References

- Biederman, J., Petty, C. R., Evans, M., Small, J., & Faraone, S. V. (2010). How persistent is ADHD? A controlled 10 year follow-up study of boys with ADHD. *Psychiatry Research* 177, 299–304.
- Biederman, J., Petty, C. R., Monuteaux, M. C., Fried, R., Byrne, D., Mirto, T., Spencer, T., et al. (2010). Adult psychiatric outcomes of girls with attention-deficit hyperactivity disorder: 11-year follow-up in a longitudinal case-control study. *American Journal of Psychiatry*, 167(4), 409–417.
- Faraone, S., Perlis, R. H., Doyle, A. E., Smoller, J. W., Goralnick, J. J., Homgren, M. A. & Sklar, P. (2005). Molecular genetics of attention deficit/hyperactivity disorder. *Biological Psychiatry*, 57(11), 1313–1323.
- Shaw, P., Eckstrand, K., Sharp, W., Blumenthal, J., Lerch, J. P., Greenstein, D., Clasen, L., et al. (2007). Attention-deficit/hyperactivity disorder is characterized by a delay in cortical maturation. *Proceedings of the National Academy of Sciences*, 104(49), 19649–19654.

Resources for Educators About ADHD

Websites

Understood (<https://Understood.org>). This website, created by 15 nonprofit organizations, offers parents and teachers extensive and easily accessible information about attention and learning problems.

The National Resource Center on ADHD (www.help4adhd.org), a clearinghouse for the latest evidence-based information on ADHD, is funded by the U.S. Centers for Disease Control and Prevention.

Books

Bright Kids Who Can't Keep Up by Ellen Braaten and Brian Willoughby (Guilford Press, 2014).

Attention Deficit Disorder: The Unfocused Mind in Children and Adults by Thomas E. Brown (Yale University Press, 2005).

A New Understanding of ADHD in Children and Adults: Executive Function Impairments by Thomas E. Brown (Routledge, 2013).

Smart but Stuck: Emotions in Teens and Adults with ADHD by Thomas E. Brown (Jossey-Bass/Wiley, 2014).

How to Reach and Teach Children with ADD/ADHD: Practical Techniques, Strategies, and Interventions (2nd ed.) by Sandra F. Reif (Jossey-Bass/Wiley, 2005).

Teaching Teens with ADD, ADHD, and Executive Function Deficits: A Quick Reference Guide for Teachers and Parents (2nd ed.) by Chris A. Ziegler Dendy (Woodbine, 2011).

Thomas E. Brown (www.drthomasebrown.com) is a clinical psychologist and associate director of the Yale Clinic for Attention and Related Disorders in New Haven, Connecticut. His most recent book is *Smart but Stuck: Emotions in Teens and Adults with ADHD* (Jossey-Bass/Wiley, 2014).

Copyright of Educational Leadership is the property of Association for Supervision & Curriculum Development and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.