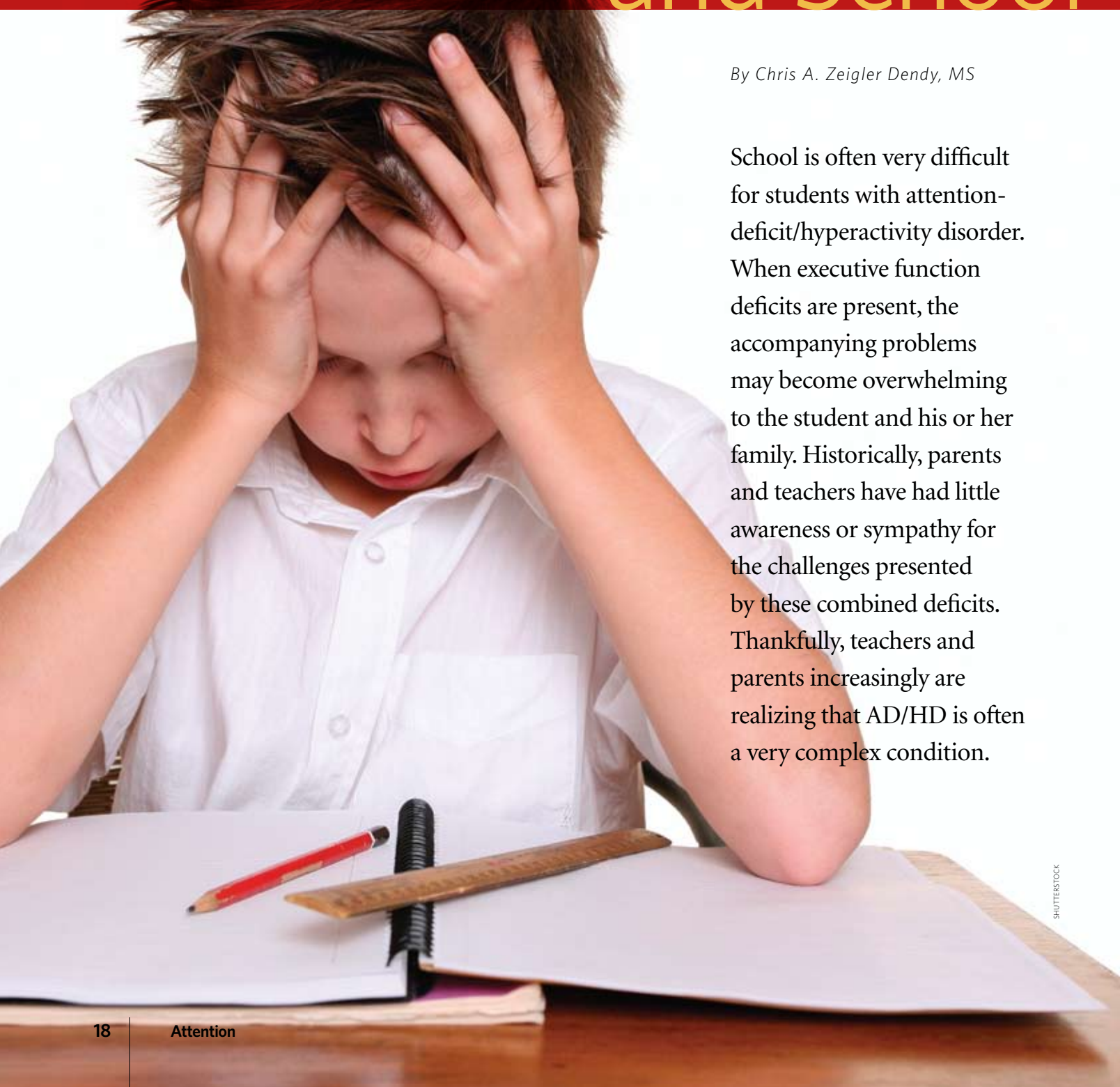
Understanding the Link EXECUTIVE FUNC and School



SHUTTERSTOCK

By Chris A. Zeigler Dendy, MS

School is often very difficult for students with attention-deficit/hyperactivity disorder. When executive function deficits are present, the accompanying problems may become overwhelming to the student and his or her family. Historically, parents and teachers have had little awareness or sympathy for the challenges presented by these combined deficits. Thankfully, teachers and parents increasingly are realizing that AD/HD is often a very complex condition.

Between TIONS Success

Understanding executive functions

Research shows us that critical cognitive skills known as executive functions are slower to develop in many children with AD/HD. These functions operate as the "brain's CEO," helping to manage and regulate behavior. They play an important role in performing many tasks necessary for academic success. Tasks influenced by executive functions can include organizing materials, getting started on and finishing schoolwork, remembering homework, memorizing facts, writing essays or reports, solving complex math problems, completing long-term projects, being on time, controlling emotions, and planning for the future.

Before we understood the role executive functions play, parents and teachers were often baffled when students teetered on the brink of school failure. Unfortunately, to the uninformed, deficits in executive skills often appeared to be a simple matter of laziness or lack of motivation. When a student had trouble starting and finishing an essay or math problem, it was easy to assume that the student chose not to do the task.

According to Russell Barkley, PhD, a leading researcher on the topic, students with AD/HD experience roughly a 30 percent developmental delay in organizational and social skills. Many of these students appear less mature and responsible than their peers. A thirteen-year-old adolescent with AD/HD, for example, may have executive skills that are more like those of a nine-year-old child. To ensure academic success for these students, parents and teachers must provide more supervision and monitoring than is normally expected for this age group. I like to refer to this as providing developmentally appropriate supervision.

Although scientists have not yet agreed on the exact elements of executive functions, Barkley and Thomas Brown, PhD, have given us insightful working descriptions. Barkley describes executive functions as those actions that help accomplish self-control, goal-directed behavior, and the maximization of future outcomes. Brown compares executive functions to the conductor's role in an orchestra. The conductor organizes various instruments to begin playing singularly or in combination, integrates the music by bringing in and fading certain actions, and controls the pace and intensity of the music.

Favorite Strategies for Success in School

Over the years I have identified several teaching strategies and accommodations that work well for students with AD/HD. Here are just a few of my favorite tips.

Make the learning process as concrete and visual as possible.

Written expression

- Allow the child to dictate information to a "scribe" or parent.
- Provide graphic organizers to serve as visual prompts.
- Teach child to use "post-it" notes to brainstorm essay ideas.

Math

- Match the child with a peer tutor.
- Use paired learning: teacher explains problem, then students make up their own examples, swap problems, and discuss answers. (After barely passing high school and college algebra, my son made an A in calculus plus had a 100 average on tests when the professor used this strategy.)

Memory

- Teach child to use mnemonics (memory tricks), such as acronyms or acrostics; for example, **HOMES** to remember names of the Great Lakes.
- Use "visual posting" of key information on strips of poster board.

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Modify teaching methods.

- Use an overhead projector to demonstrate how to write an essay. (Parents may simply write on paper or a computer to model this skill.)
- Use color to highlight important information.
- Use graphic organizers to help students organize their thoughts.

Modify assignments—reduce written work.

- Shorten assignments.
- Check time spent on homework, and reduce it if appropriate (when total homework takes longer than roughly 10 minutes per grade, as recommended in PTA/NEA policy; for example, for a 7th grader taking longer than 70 minutes).
- Write answers only, not the questions (photocopy questions).

Modify testing and grading.

- Give extended time on tests.
- Divide long-term projects into segments with separate due dates and grades.
- Average two grades on essays—one for content and one for grammar.

Modify level of support and supervision.

- Appoint "row captains" to check to see that homework assignments are written down and later turned in to the teacher.
- Increase the amount of supervision and monitoring for these students, if they are struggling.

An Effective Homework Strategy

Students with AD/HD who have executive function deficits are often punished when their lack of organizational and memory skills interferes with their ability to bring home correct homework assignments and books.

One effective intervention would be to have someone (a friend or teacher's aide), meet the student at his locker to get the necessary homework materials together.

Information about executive function deficits can help teachers and parents develop more innovative intervention strategies. Ultimately, the process of modeling and shaping behavior at the critical "point of performance" (as Sam Goldstein, PhD, terms it) will help the student master skills—or at a minimum, teach him or her to compensate for deficits.

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Based upon material from Barkley and Brown, I have outlined some general components of executive functions that impact school performance.

- **Working memory and recall** (holding facts in mind while manipulating information; accessing facts stored in long-term memory)
- **Activation, arousal, and effort** (getting started, paying attention, finishing work)
- **Controlling emotions** (tolerating frustration, thinking before acting or speaking)
- **Internalizing language** (using "self-talk" to control one's behavior and direct future actions)
- **Complex problem solving** (taking an issue apart, analyzing the pieces, reconstituting and organizing it into new ideas)

A mother's experience

I know firsthand what parents of many children with AD/HD go through. My son, Alex, struggled through the early school years. He finally hit the proverbial "AD/HD brick wall" in middle school. I later realized the demands on executive skills increase exponentially in middle school, where students are expected to work independently, organize themselves, get started on assignments, and remember multiple assignments.

As a former teacher and school psychologist, I'm embarrassed to say I failed for many years to recognize that a high IQ score alone was not enough to ensure good grades. It wasn't until I understood the central role executive functions play in school success that I knew why school was so difficult for my son. Teachers would tell me that Alex was very bright and that he could make better grades if he would just try harder.

In truth, children with AD/HD often do try harder, but they may not be able to make good grades without proper treatment and academic supports. Think for a minute what it would be like if we told children with vision problems that if they just tried harder they would be able to read books. We know that is absurd and making the appropriate accommodations, as in providing them with eyeglasses, is the only way they can read books.

Common academic problems

Besides impaired working memory, many students with AD/HD have slow processing speed, which also impacts their school performance. These skills, for example, are critical for writing essays and working math problems.

Research has identified written expression as a learning problem among 65 percent of students with AD/HD. That makes it very challenging to write essays, draft book reports, or answer questions on tests or homework. When writing essays, for example, students may have difficulty holding ideas in mind; acting upon and organizing the ideas; quickly retrieving grammar, spelling, and punctuation rules from long-term memory; manipulating all this information; remembering ideas to write down; organizing the material in a logical sequence; and then reviewing and correcting errors.

Since learning is relatively easy for many of us, sometimes we forget just how complex seemingly simple tasks, such as solving word problems or working math problems, really are. For example, when a student works on a math problem, he must fluidly move back and forth between analytical skills and several levels of memory (working, short-term, and long-term memory). With word problems, he or she must hold several numbers and questions in mind while he decides how to approach the problem. Next he or she must delve into long-term memory to find the correct math rule to use for the problem. Then the student must hold important facts in mind while applying the rules, and shift information back and forth between working and short-term memory to solve the problem and determine the answer.

School success is possible

I am proud that my son beat the odds, thanks to strategies we implemented, and graduated from college. My family offers living proof that there is hope and help for AD/HD and coexisting conditions. To ensure success, parents, working closely with teachers, must identify the student's specific learning problems (such as written expression or math); next, identify their executive function deficits (such as poor working memory, disorganization, forgetfulness, or impaired sense of time); and then provide accommodations (see sidebar on page 19) to address both areas.

Abilities Affected by Poor Working Memory

- Remembering and following instructions
- Memorizing math facts, spelling words, and dates
- Performing mental computation such as math in one's head
- Completing complex math problems (algebra)
- Remembering one part of an assignment while working on another segment
- Paraphrasing or summarizing
- Organizing and writing essays
- Learning from past behavior
- Judging the passage of time accurately, and may not allow enough time to complete academic work
- Examining or changing their own behavior, possibly leading to behaviors that may alienate friends
- Preparing for the future

Teachers will need to be informed and involved. In fact, there will probably need to be some adjustments made in the classroom. You will want to approach your child's teachers in a cooperative and collaborative manner. While you always want to be assertive, you should always recognize the important role teachers play and the expertise they possess.

When you ask for a meeting with your child's teacher, think about sharing this article with him or her. Remember that you both want the same outcome: The best possible education for your child. Succeeding in school is one of the most therapeutic things that can happen to your child. So, do whatever it takes to help your child succeed in school. A

Chris A. Zeigler Dendy, MS, *has over forty years experience as a teacher, school psychologist, mental health counselor and administrator. She is a prolific author on AD/HD and the producer of three videos. She is a previous member of the CHADD board of directors and in 2006 was inducted into the CHADD Hall of Fame for outstanding contributions to the field. She is also the mother of three children who live with AD/HD. This article is an update to her article "Five Components of Executive Function" that appeared in* Attention *in February 2002.*

MORE INFO: For a list of references and helpful resources, visit **www.chadd/org/attention/references.**