24 Best Practices in Assessing and Improving Executive Skills

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OVERVIEW

School psychologists who have been in the field beginning a decade or two prior to the turn of the century have had the opportunity to observe an evolving conceptualization of how to meet the needs of students who underperform and underachieve. We have gone from the refer-test-place model, to an emphasis on mainstreaming, and, most recently, to a model that provides a graduated set of interventions based on the severity of the need and student response to already attempted interventions. This approach employs a multitiered model that begins with high quality instruction in the regular classroom, moves to more intensive small group interventions, and, finally, if previous efforts fail, to a more intensive level of support, where an individualized intervention is designed.

While school psychology and special education were focusing on an evolving understanding of how best to meet the needs of problem learners, within the broader education community a parallel movement was taking place. This began with *A Nation at Risk* (National Commission on Excellence in Education, 1983), was followed by the No Child Left Behind Act, and most recently has led to a call for states to embrace a more uniform curriculum that would emphasize the kind of analytical thinking and problem solving necessary for students growing up in an information age. As of 2013 we are now on the threshold of adopting the Common Core State Standards, developed by the National Governors Association and the Council of Chief State School Officers.

Underlying school success, however, is a set of skills that has been neglected both in thinking about the needs of problem learners and in thinking about what it will take for a challenging curriculum such as the Common Core State Standards to be implemented effectively. Traditionally, educators think about what students need to know and what they need to be able to do. For instance, we teach children the difference between fiction and nonfiction and we teach them how to produce both kinds of writing. Neglected, however, are a set of foundational skills students need to have to make possible both kinds of learning (content area knowledge and academic skills).

These are skills—commonly referred to as *executive skills* or *executive functions*—that students must bring to bear on every learning task they confront in order to master it. There is not a complete consensus on the definition of executive skills (see Barkley, 2012b, for a discussion), but, broadly speaking, the term refers to the brain-based skills required to execute tasks. Although there is also no agreement regarding how many different executive skills there are, nor the appropriate terminology for individual skills, the term executive function is generally considered to be an "umbrella construct that includes a set of interrelated functions that are responsible for purposeful, goal-directed problem-solving behavior" (Gioia, Espy, & Isquith, 1996, p. 1). Executive function encompasses the skills that drive behavior regulation, such as controlling emotions, managing impulses, and dealing with situations requiring cognitive flexibility, as well as a set of metacognitive skills, such as initiating tasks, sustaining attention, keeping track of what needs to be done, planning and organizing tasks, and monitoring behavior based on feedback from the environment or the reactions of others.

Frankly, there is no task we ask students to perform, from as young as preschool through postsecondary education and beyond, that does not require some level

of executive functioning. Furthermore, there is evidence to show that performance on measures of executive functioning very early on (as young as preschool) is a better predictor of later academic performance than either cognitive ability or family characteristics, both of which are commonly understood to influence academic outcomes (Jacobson, Williford, & Pianta, 2011).

And yet no one is charged with teaching these skills. As a result, students who are advantaged either by heredity or environment with strong executive skills tend to be far more successful in school than those who lack those advantages. Without a clear understanding of the role executive skills play in learning, when school psychologists assess learning problems or design interventions to overcome them, school psychologists are likely to have an incomplete understanding of why students fail, and how to help students overcome failure.

This chapter will provide a brief introduction to executive skills, including definitions of terms and how these skills manifest themselves within a developmental context, from early childhood through adolescence. Best practice guidelines for assessment of executive skills will focus on sources of information school psychologists should consider during the evaluation process as well as how to interpret the results and make decisions regarding the need for services. The chapter will conclude with a discussion of interventions, both those geared to individuals as well as interventions that can be implemented on a class-wide or school-wide basis.

The National Association of School Psychologists (NASP) *Model of Comprehensive and Integrated School Psychological Services* (NASP, 2010) is a framework for service delivery. Because executive skills encompass both behavior regulation and metacognition, the domains of Interventions and Instructional Support to Develop Academic Skills as well as the domain of Interventions and Mental Health Services to Develop Social and Life Skills have associated executive skill components. Furthermore, when schools fully grasp the central role executive skills play in academic success, school psychologists can help schools put in place strategies to promote executive skill development as a critical component of a school dropout prevention program, thus incorporating the NASP domain of Preventive and Responsive Services. Executive skill development is not within the purview of schools alone, and school psychologists can play a role in helping parents understand these skills and how they can support their development in the home, using the NASP domain of Family-School Collaboration Services. Finally, all school psychology service delivery is built on two foundational

domains: an assessment process that is based on Data-Based Decision Making and Accountability and a process using Consultation and Collaboration with students, families, educators, and allied service providers. Knowing how to assess executive skills, design measurable interventions, and communicate findings and recommendations with appropriate individuals are key skills school psychologists should possess to meet the needs of underperforming and underachieving students.

While the material in this chapter should be useful for school psychologists as they assist in designing interventions for individual students with executive skill weaknesses, it is our hope that they will move beyond an individual child focus and consider how to promote executive skill development at a system's level, or at a universal (Tier 1) general education level by designing whole class and whole-school supports and training models to ensure that by the time students graduate from high school these students have what they need to be successful in college or in the workplace.

It is a rare employer who asks an employee to solve an algebraic equation or outline the economic and cultural factors that led to the Civil War. On a daily basis, however, employers ask their employees to use planning, organization, and time-management skills, as well as all the other executive skills featured in this chapter. These same skills are necessary to function as responsible adults in the home and all other venues. By targeting executive skills, schools can more effectively prepare students for life beyond school.

BASIC CONSIDERATIONS

Infants are not born with executive skills, but the mechanism for executive skill development is hard wired into the brain, much the way language acquisition is. These skills develop slowly, primarily within the prefrontal cortex, beginning shortly after birth and not reaching full maturation in typically developing brains until the middle of the third decade of life (De Luca & Leventer, 2008).

The growth of the prefrontal cortex, and the brain more broadly, occurs through the generation of neurons (nerve cells) that communicate with each other through branching structures called axons and dendrites. These form the so-called gray matter of the brain. These branches connect at junctures called synapses. When skills are learned and practiced, neurons fire, and with each firing, insulating material called myelin encircles the nerve cells in the form of a fatty sheath (white matter), increasing the speed with which nerve signals

are conducted. The faster the impulse travels, the better the skill. In the early years, there is tremendous growth in the number of nerve cells and synaptic connections.

In order for skills to work efficiently, however, a process called *pruning* reduces the number of neurons and synapses, winnowing the brain of excess nerve cells so that those that remain can work in a more streamlined fashion. Pruning takes place at two points of development, first during the preschool years and then throughout the course of adolescence.

Brain research has shown that executive skills reach maturation at different points in age. The earliest executive skill to develop is inhibition, followed soon after by working memory around 7–8 months of age. *Shifting*, or attentional flexibility, appears to be another early developing skill (Best & Miller, 2010). Although questions have been raised about whether these skills are independent of each other, a unity and diversity viewpoint has been proposed (Miyake et al., 2000) that states that executive skills form a set of interrelated but distinct components. Among the later developing executive skills are planning and goal setting (De Luca and Leventer, 2008). The pruning that takes place in adolescence allows for more complex executive skills, such as metacognition, to emerge and develop (Chapman, Gamino, & Mudar, 2012).

Definition of Terms

As noted previously, researchers differ in how they define individual executive skills. This has led to a proliferation of definitions and constructs, with one researcher (Eslinger, 1996) identifying 33 different executive skills. Dawson and Guare (2009) have identified 11 executive skills that they believe are most associated with school success and are listed in Table 24.1, in roughly the order in which they emerge and mature, along with a brief definition and descriptions of how the skills manifest themselves at the younger and older end of the developmental period.

Impact on School Performance

While a discussion of brain development and how executive skills emerge and mature over time can be complicated, the critical information for school psychologists is that in typically developing individuals the skills emerge slowly, take lengthy practice to perfect, and do not reach full maturation until around age 25. Full maturation occurs even later in those with attention disorders or other developmental disorders. Executive skills can be affected by a wide range of environmental factors and psychological disorders. The consensus is that attention deficit hyperactivity disorder (ADHD) is fundamentally a disorder involving executive skills, particularly task initiation, sustained attention, and response inhibition, as well as goal-directed persistence (Barkley, 1997; Willcutt, Doyle, Nigg, Faraone, & Pennington, 2005). But experts also agree that individuals with autism spectrum disorders, in addition to impairments in the social and communication domains and restricted, repetitive, and stereotypic behaviors, have profound executive skill weaknesses (Hume, Loftin, & Lantz, 2009), including weaknesses in initiation, planning, and metacognition. Children born with fetal alcohol syndrome have been shown to have impairments in attention, spatial working memory, planning, set shifting, and strategy use as a result of prenatal exposure to alcohol (Green et al., 2009). Traumatic brain injury can also have an impact on executive function (Ewing-Cobbs, Levin, & Fletcher, 1998). And there is also evidence that sociocultural factors, such as poverty and low socioeconomic status, can have an impact on executive skill development (Blair & Ursache, 2011; Lucas & Buchanan, 2012).

As children progress through school the demands on executive skills increase. Students with vulnerable executive skills may function adequately in the lower grades, but as they are expected to complete seatwork independently, produce larger quantities of writing, and manage more complex tasks, such as long-term assignments or studying for unit tests or midterms, they often struggle, and academic performance declines. For many, middle school is the tipping point (Jacobson et al., 2011). Having to juggle multiple classes with teachers who do not necessarily coordinate homework load and assignment deadlines, combined with the fact that the social life of middle schoolers is more time consuming, requiring children to manage a daily schedule with competing demands, is more than many students with weak executive skills can handle. By the time students reach high school, what leads to failing grades often has less to do with poor academic skills or weak cognitive ability, and more to do with executive skill development that has failed to keep pace with demands.

Particularly at this stage, if school psychologists who become involved in assessing or designing interventions for failing students do not consider the role played by executive functions, they are likely to fall short in their efforts to keep underperforming and underachieving students in school and on track for graduation.

Table 24.1. Executive Skills Definitions

Executive Skill	Definition	Examples
Response inhibition	The capacity to think before you act. This ability to resist the urge to say or do something allows the child the time to evaluate a situation and how his or her behavior might impact it.	A young child can wait for a short period without being disruptive. An adolescent can accept a referee's call without an argument.
Working memory	The ability to hold information in memory while performing complex tasks. It incorporates the ability to draw on past learning or experience to apply to the situation at hand or to project into the future.	A young child can hold in mind and follow one- or two-step directions. The middle school child can remember the expectations of multiple teachers.
Emotional control	The ability to manage emotions to achieve goals, complete tasks, or control and direct behavior.	A young child with this skill can recover from a disappointment in a short time. A teenager can manage the anxiety of a game or test and still perform.
Flexibility	The ability to revise plans in the face of obstacles, setbacks, new information, or mistakes. It relates to an adaptability to changing conditions.	A young child can adjust to a change in plans without major distress. A teenager can accept an alternative such as a different job when the first choice is not available.
Sustained attention	The capacity to keep paying attention to a situation or task in spite of distractibility, fatigue, or boredom.	For a younger child an example is completing a 5-minute chore with occasional supervision. A teenager can pay attention to homework, with short breaks, for 1–2 hours.
Task initiation	The ability to begin projects without undue procrastination, in an efficient or timely fashion.	A young child is able to start a chore or assignment right after instructions are given. A teenager does not wait until the last minute to begin a project.
Planning/prioritization	The ability to create a roadmap to reach a goal or to complete a task. It also involves being able to make decisions about what is important to focus on and what is not important.	A young child, with coaching, can think of options to settle a peer conflict. A teenager can formulate a plan to get a job.
Organization	The ability to create and maintain systems to keep track of information or materials.	A young child can, with a reminder, put toys in a designated place. A teenager can organize and locate sports equipment.
Time management	The capacity to estimate how much time one has, how to allocate it, and how to stay within time limits and deadlines. It also involves a sense that time is important.	A young child can complete a short job within a time limit set by an adult. A teenager can establish a schedule to meet task deadlines.
Goal-directed persistence	The capacity to have a goal, follow through to the completion of the goal, and not be put off by or distracted by competing interests.	A first grader can complete a job to get to recess. A teenager can earn and save money over time to buy something of importance.
Metacognition	The ability to stand back and take a bird's-eye view of oneself in a situation, to observe how to problem solve. It also includes self-monitoring and self-evaluative skills (e.g., asking How am I doing? How did I do?).	A young child can change behavior in response to feedback from an adult. A teenager can monitor and critique performance and improve it by observing others who are more skilled.

Note. From *Smart But Scattered: The Revolutionary "Executive Skills" Approach to Helping Kids Reach Their Potential*, by P. Dawson and R. Guare, 2009, New York, NY: Guilford Press. Copyright 2009 by Guilford Press. Adapted with permission.

BEST PRACTICES IN ASSESSING AND IMPROVING EXECUTIVE SKILLS

As with any domain likely to have a significant impact on learning and behavior, executive skills are best assessed using multiple measures rather than relying on a single source of information or data. This is in part because environments support executive skills to a greater or lesser degree, and hence the impact of an executive skill weakness will vary depending on the setting. For instance, schools generally provide more structure than is available in the home, and thus executive skills may look less problematic at school than at home. On the other hand, schools place more demands on students to use executive skills, in which case executive skills may appear weaker at school than at home. Because of the disparities in environmental demands and supports, any assessment of executive skills should include gathering information from both parents and teachers.

Assessment of Executive Skills

At a minimum, an assessment of executive skills should include parent, teacher, and/or student interviews and behavior checklists. Parent interviews, in particular, provide useful information because parents can provide a developmental context and a longer term perspective than is available to teachers. In the home, executive skill weaknesses manifest themselves in three primary contexts: daily routines, chores, and homework.

Interviews
When interviewing parents, school psychologists should ask how independently children are able to engage in any of those three activities. If parents report difficulties in any of those domains, then further questioning should bring to light which executive skills are affected. For example, children who struggle with homework may do so because they forget to bring home needed materials (working memory), delay starting homework (task initiation), quit before the work is done (sustained attention), give up at the first obstacle (emotional control), or be at a loss for how to actually do the assigned work (which may involve planning, organization, or metacognition).

When interviewing teachers, school psychologists should focus on understanding the specific problem areas of greatest concern to teachers, bearing in mind that classroom performance may not correlate well with standardized test performance. A student may be able to produce a piece of writing in a testing situation, in part because the evaluator is sitting with the student and making sure the student spends the allotted time working. In the classroom, however, when a teacher assigns a writing task, a student may struggle because the task is not being closely supervised or is more open ended than the writing prompt given to the student in the testing situation. By carefully interviewing teachers, school psychologists can understand what environmental factors either mitigate or exacerbate executive skill weaknesses.

Student interviews can also provide useful information, but caution is urged in interpreting student self-reports. Students often lack insight into their own behavior and misjudge their own strengths and weaknesses. If they are looking for an excuse for poor school performance, they may exaggerate their weaknesses. This is sometimes the case when students believe that taking a stimulant medication will make school easier for them, and hence they report that their attentional difficulties are more pronounced than they actually are. On the other hand, if they mistakenly equate an attention disorder or any other executive skill weakness with "stupidity," they may underreport genuine problems. The more specific school psychologists can be in the questions they ask, the more likely they are to obtain useful information. Both the adolescent version of the Brown Attention-Deficit Disorder Scales and the structured student interview developed by Dawson and Guare (2010) include items and questions that reach a useful level of specificity.

Behavior Rating Scales
Behavior rating scales provide a norm-referenced assessment of executive skills so that school psychologists can compare the performance of the student in question with others of the same age. Examples of rating scales designed to assess executive skills in students are the Behavior Rating Inventory of Executive Function (Gioia, Isquith, Guy, & Kenworthy, 2000), the Barkley Deficits in Executive Function Scale–Children and Adolescents (Barkley, 2012a), and the Comprehensive Executive Function Inventory (Naglieri & Goldstein, 2012). Whenever possible, obtaining both parent and teacher ratings is useful (Barkley's rating scale only has a parent version), since executive skills manifest themselves differently at home and at school.

In addition to rating scales focused explicitly on executive skills, the assessment process should also include a more broad-band social-emotional rating scale such as the Behavior Assessment System for

Children-Second Edition (Kamphaus & Reynolds, 2007) or the Achenbach scales (Child Behavior Checklist, Teacher Report Form; Achenbach, 1991a, 1991b). As noted previously, executive skill weaknesses are often associated with an array of psychological disorders, and hence it is important to understand the skill weaknesses within a wider context of social-emotional functioning. Elevated levels of internalizing problems, such as anxiety or obsessive-compulsive disorder, are often associated with weaknesses in a number of executive skills, including emotional control, flexibility, and task initiation. Similarly, youngsters with elevated externalizing problems often struggle with response inhibition, sustained attention, and emotional control.

Classroom Observations

Other components that are often included when assessing executive skills are classroom observations and the administration of formal tests. While both may provide useful information, there are limitations to each. When an observer enters a classroom, his or her very presence alters the dynamics of that classroom. People generally behave differently when they know they are being observed, and children are no different. Most commonly, they put on their best behavior, and it is the rare student who cannot maintain a higher level of performance for at least the short amount of time during which the observation is taking place. If the observer is in and out of the classroom frequently, such that he or she is seen as part of the daily classroom structure, then the observation is more likely to yield an accurate picture. Even then, steps should be taken to ensure that the observation is occurring during an activity in which the problem behavior is likely to occur. If a child has difficulty remembering to raise his or her hand before speaking out, then a circle time activity may be a good time to schedule an observation. If a child has a great deal of difficulty getting started on writing tasks, then the observation should be scheduled during independent seatwork when the class is working on a writing assignment.

Formal Tests

There are a number of commercially available tests that are designed to assess executive skills, such as the Delis-Kaplan Executive Function System (Delis, Kaplan, & Kramer, 2000) or the NEPSY-II (Korkman, Kirk, & Kemp, 2007). Unfortunately, the results obtained from formal measures of executive functioning do not always correlate well either with parent or teacher reports or

with behavior rating scale results. There are a number of reasons for this, but a primary one is because the way standardized tests are constructed reduces the need for the test taker to access executive skills to perform the tasks. For instance, problems with task initiation are difficult to observe when the evaluator is sitting across from the child and signaling when to start the task. Sustained attention is difficult to assess when most formal tests present the child with tasks that can be completed within a short time frame.

Furthermore, even when a test purports to measure a particular executive skill, how that skill is assessed in a formal testing situation may be very different from how the skill is applied in a real-life context. For instance, the Rey Osterrieth Complex Figure is assumed to assess, among other things, planning skills. But the planning required to copy a complex geometric drawing is substantially different from the planning required to carry out a long-term project or set up a study schedule for preparing for final exams, two real-world applications of planning skills that are critical to school success. For a more detailed discussion of the shortcomings of tests of executive function, the reader is referred to Barkley (2012b).

What formal tests allow for is direct observation of the child engaged in a variety of cognitive tasks, and this may have some utility in understanding how executive skill weaknesses manifest themselves. This may most usefully be done when the psychologist knows in advance what to look for. For example, an in-depth interview with parents may bring to light the fact that their daughter has problems with situations requiring cognitive flexibility. She may throw tantrums when unexpected changes in plans arise, or she may be unable to accept her parents' explanation of how to do her math homework when it differs from the way the teacher explained it. Cognitive inflexibility may show up on cognitive measures in a variety of ways; that is, difficulty adjusting to the greater level of abstraction required to complete more challenging puzzles (e.g., Block Design on the Weschler Intelligence Scale for Children-Fourth Edition [WISC-IV] or Triangles on the Kaufman Assessment for Children-Second Edition), or difficulty shifting set when the most obvious answer to a question is not the right one (often seen on the Picture Concepts subtest of the WISC-IV). Inflexible children also have difficulty generating more than one answer to questions when multiple responses are called for, as is the case with a number of questions on the Comprehension subtest of the WISC-IV. When school psychologists know what to look for, they may be able to pick up on

more subtle manifestations of the problem, even if the subtest score by itself does not signal a significant weakness.

The reason for assessing executive skills is to understand the role executive skills may play in academic or behavior problems. In some cases executive skills are the primary reason for the problem at hand, while in other cases these skills are contributing factors. When designing interventions, understanding the role played by executive skills increases the likelihood that the intervention targets the appropriate behavior, thereby increasing the likelihood that the intervention will be successful.

Designing Interventions for Executive Skill Weaknesses

Research on expertise (Eriksson, 1996) concludes it takes 10,000 hours of deliberate practice to develop expertise. Effective interventions to address executive skill weaknesses are most effective when these weaknesses are viewed more as habit change rather than as short-term strategies to change isolated behaviors. As a result, those who work with students to improve executive functioning are well served by taking a long view; that is, by setting long-term goals and building in ongoing training and practice as well as progress monitoring to mark improvement. If executive skill development is seen as a slow acquisition of habits of mind, then those who work with children are likely to be patient, thoughtful, and deliberate in their approach, recognizing that more often than not progress is measured in years and not months, a mantra that is worth repeating to parents and teachers who may become exasperated with the slow pace of change or improvement.

Role of the School Psychologist
School psychologists who work directly with students (e.g., as therapists, behavior specialists, or coaches) can incorporate the strategies described below into their own interactions with students. Because practice on a daily basis is the most effective way to acquire new skills, however, school psychologists are usually not in the best position to be the direct agents of behavior change. They are typically limited in the amount of time they spend with either individual students or groups of students. However, they are in a position to provide instruction, training, and coaching to those who can provide ongoing direct intervention, particularly parents and teachers. Thus, realistically, the role school psychologists can play in implementing the suggestions

in this chapter will be indirect rather than direct; that is, through consultation and advocacy. To perform these roles, school psychologists will need a solid grounding both in executive skills and in the range of intervention options available to improve executive functioning.

Examples of ways school psychologists can share this expertise are:

- Through working with parents and teachers or both on individual students with executive skill weaknesses on a case consultation basis
- Providing inservice training for teachers to help teachers understand executive skills and to help teachers implement classroom-based strategies for creating supportive environments for students with executive skill weaknesses as well as teaching strategies to help improve executive functioning
- Providing presentations or ongoing seminars for parents on executive skills and how parents can support executive skill development at home
- Leading study groups for parents or teachers on the topic (this differs from the suggestions above in that in this context the school psychologist acts less as an expert on the topic but as a group member taking the lead in helping either parents or teachers better understand the topic and to apply the lessons learned)
- Leading seminars for middle or high school students to help these students assess their own executive skill strengths and weaknesses, to understand how executive skills have an impact on school performance, and to learn strategies for strengthening executive skills in the context of classroom behavior and study skills
- Setting up coaching programs and peer coaching programs at the middle and high school level; that is, school psychologists are ideally situated to organize and train coaches, either peer coaches or adult volunteers, and as a systems-level intervention this approach could reap tremendous benefits to struggling students and academic underachievers, especially those students who may not qualify for special education supports
- Consulting at the systems level by working with school administrators to understand the critical role executive skills play in school success.

Intervention Design
There are two ways of thinking about interventions to address executive skill weaknesses: the focus can be on the needs of individual students, identified through the

assessment process described above, or on designing classrooms and schools that simultaneously provide accommodations and supports for immature executive skills and that foster executive skill improvement in a developmentally appropriate fashion. This way of thinking corresponds nicely to the NASP Practice Model (NASP, 2010), which identifies the domains of Student-Level Services and Systems Level Services. It also fits a multitiered model of service delivery, with its underlying premise that interventions begin at a whole-class or whole-school level before moving on to more intensive interventions for students who need them.

While school psychologists are most commonly charged with designing interventions to meet the needs of individual students, in the process of doing so patterns often emerge that show how schools may be failing large numbers of students in predictable ways. School psychologists may be well positioned to help schools tackle these systems-level issues in a way that reduces the number of students in need of intensive or individualized interventions.

What follows are general principles for thinking about interventions that should be familiar to school psychologists since they fit in an A-B-C model (antecedent-behavior-consequence). Whether a school psychologists is operating at an individual child level or at a classroom or school level, there are two options available. If the goal is to help students with executive skill weaknesses be more successful in school, then school psychologist can either target the surrounding environment or the school psychologist can target the student.

Environmental Modifications

Environmental modifications operate at the antecedent level and are designed to improve the goodness of fit between task demands and the child's current level of functioning and may include modifications such as changing the physical or social environment, modifying the tasks children are asked to perform, or changing the way adults interact with students to increase the likelihood that the students will use or practice weak executive skills. These modifications may be geared toward individual students (e.g., making tasks shorter so that children with weak sustained attention are not expected to complete the same amount of work as their peers with longer attention spans) or can be implemented as whole-class strategies (e.g., asking the whole class to complete a proofreading checklist before handing in a writing assignment). Examples of each are provided below:

Change the physical or social environment: Classrooms can be structured to reduce the impact of weak or immature executive skills. Preschool classrooms, for instance, are designed to reduce the temptation to run inside by placing furniture in such a way that children cannot run very far before they run into something. In the elementary classroom, children who have difficulty initiating tasks or sustaining attention are placed near the teacher so they can be cued and monitored. Teenagers who are susceptible to distractions may be allowed to listen to music on a mobile device while taking tests. Children whose poor impulse control gets them in trouble on the playground may be assigned to a structured activity led by a playground aide as an alternative to free play.

Modify the tasks students are asked to perform: Students with short attention spans are asked to do shorter tasks or breaks are built in so that they are not overwhelmed by how long they think the task will take to accomplish. Students with problems with weak flexibility who do not respond well to surprises or uncertainty benefit from a visible daily schedule so they can see how their day will go when they arrive at school each day. These same students often have trouble with open-ended tasks, so they may be asked to do a closed-ended task instead (e.g., writing their spelling words 10 times each rather than composing sentences with the spelling words). Students who struggle with goal-directed persistence are given choices to make tasks more appealing to them.

Change the way adults interact with students: This may mean providing prompts, cues, or supervision for students who have weak working memory or poor organization (e.g., reminding them to hand in homework, making sure they have written down their homework assignments, or watching them place their homework in the homework folder rather than stashing it randomly in their backpack). It may mean rehearsing with a child how the child will handle a challenging situation (e.g., for a child with weak emotional control, it may mean role playing how the child will handle it when assigned some math work that the child thinks he or she cannot do). Another way adults can alter responses to students with weak executive skills is to go out of their way to notice when students use a weak skill or show improvement. Through the use of specific praise, students learn what is valued, which increases the likelihood the student will produce the response in the future. Statements such as, "I saw you really trying to control your temper" or "I like the way you thought about that and figured out a good solution to the problem" provide this kind of specific feedback. Finally,

when adults who work with children embed metacognitive questions into their conversations, this will prompt students to access their own executive skills. Examples of these kinds of questions are: What are three things you can do if you start your math homework and realize you don't remember how to do it? How long do you think it will take you to finish the poster you have to do for health class? When are you planning on starting it? What can you do if you realize you're about to lose your cool in the lunchroom.

School psychologists who work directly with students (e.g., as therapists, behavior specialists, or coaches) can incorporate these suggestions into their own interactions with students. More broadly, however, they can share these strategies with both parents and teachers; that is, the adults who come into contact with children on a daily basis and have the greatest likelihood of intervening effectively.

Teaching Executive Skills

Environmental modifications have limitations, the most obvious being that if the focus is exclusively on this strategy, every environment the child encounters will have to be modified (the home, the sports field, religious institutions, and shopping malls) as well as every single school setting the child enters (playground, cafeteria, gym, classroom, corridors). This is not only unrealistic, it does not prepare the student for a world in which he or she is expected to function independently without modifications. Thus, the child must be targeted directly, either by teaching the child the weak skill or providing motivation for the child to practice the weak skill to make it stronger.

Teaching a skill means operating directly on the behavior of concern (i.e., the missing or weak executive skills) and involves the following process: (a) describe the problem behavior; (b) set a goal related to the problem behavior; (c) establish a procedure or a set of steps the child will follow to reach the goal; (d) turn the steps into a written list, checklist, or short set of rules to follow (with very young children, pictures can be used in place of words); (d) prompt the child to use the list when it is needed; (e) evaluate the process and make changes if necessary; and (f) fade the supervision. For example, a child with weak working memory who is learning to write sentences may continually forget to begin each sentence with a capital letter and end it with a period. A two-step checklist could be created (Start every sentence with a capital letter. End every sentence with a period). The child could be prompted to complete the checklist each time a writing assignment is completed. When the

child is able to use the checklist effectively, the teacher can fade the process by asking the child to check the work without using a checklist and to place a small checkmark next to his or her name to signal that he or she has done so. Eventually, the checkmark can be dropped as well. For other examples of teaching procedures for common home and school problems associated with executive skill weaknesses, the reader is referred to Dawson and Guare (2009, 2010).

Some students have executive skills at their command but choose not to employ these skills because it takes too much time, feels burdensome or effortful, or they do not believe that using the skill makes a difference for the final outcome. For example, a student may well be capable of developing a plan for writing a paper or completing a chemistry project, but may feel that the quality of the work does not suffer if the planning phase is omitted. In these cases, the best intervention strategy may be to work with consequences; that is, create an incentive for using the skill. This may be in the form of a daily home-school report card targeting specific behaviors, such as, for the child with weak response inhibition, raising a hand to speak rather than calling out or keeping hands to himself or herself when walking in line. While positive incentives are generally preferable to negative consequences, there are times when penalties work well, such as, for a student who fails to do homework because of weak task initiation or sustained attention, having that student remain after school on days he or she fails to hand in homework can be effective.

For students with significant executive skill weaknesses, incorporating all three strategies (environmental modifications, skill instruction, and the use of motivators or incentives) should be considered. A planning form that can be used for designing individual interventions is shown in Figure 24.1. This planning form can be used at all levels of a multitiered system to design interventions ranging from those that could be incorporated into whole class instruction or daily routines to those that might be considered Tier 2 or Tier 3 strategies. The role of the school psychologist in this planning process may vary from school to school, but in many schools it is the school psychologist who provides a leadership role in designing interventions and monitoring progress.

Research Support for Intervention Strategies

Empirical evidence supporting the efficacy of interventions for improving executive skills is limited by a number of practical and methodological considerations. First, intervention research tends to focus on interventions

Figure 24.1. Checklist for Designing Interventions

Intervention Steps

1. Establish the behavioral goal.

    Problem behavior: _____

    Goal behavior: _____

2. What environmental supports will be provided? (Check all that apply.)

    ☐ Change physical or social environment (e.g., add physical barriers, reduce distractions, provide organizational structures, reduce social complexity).

    ☐ Change the nature of the task (e.g., make shorter, build in breaks, give something to look forward to, create a schedule, build in choice, make the task more fun).

    ☐ Change the way adults interact with the child (e.g., rehearsal, prompts, reminders, coaching, praise, debriefing, feedback).

3. What procedure will be followed to teach the skill?

    Who will teach the skill/supervise the procedure?

    What steps will the child follow?
    1. _____
    2. _____
    3. _____
    4. _____
    5. _____
    6. _____

4. What incentives will be used to encourage the child to learn, practice, or use the skill? (Check all that apply.)

    ☐ Specific praise

    ☐ Something to look forward to when the task (or a piece of the task) is done

    ☐ A menu of rewards and penalties

    Daily reward possibilities:_____

    Weekly reward possibilities:_____

    Long-term reward possibilities:_____

Note. From *Smart But Scattered: The Revolutionary "Executive Skills" Approach to Helping Kids Reach Their Potential*, by P. Dawson and R. Guare, 2009, New York, NY: Guilford Press. Copyright 2009 by Guilford Press. Adapted with permission.

of brief duration (i.e., weeks or months), while, as noted earlier, months or years are more often needed for interventions to bear fruit. Second, it is easier to design an intervention using simple laboratory tasks (e.g., computer games for improving working memory) than it is to design an intervention to be implemented in vivo directed at real- world tasks requiring executive functions (such as remembering to bring to and from school all the materials needed to complete and hand in homework assignments). Third, effective interventions are often complex, involving multiple components. When this is the case, it is challenging, if not impossible, to unpack the intervention to determine which components were critical to success.

Nonetheless, executive function intervention studies are becoming prevalent enough to enable some conclusions to be drawn about efficacy, using a combination of meta-analyses, single case studies, and small case series. For an extensive review of the extant literature, see Slomine, Locascio, and Kramer (2010), which groups interventions by the specific executive skill targeted, focusing on attention, working memory, initiation, problem solving, and inhibitory control. Many of the studies Slomine et al. (2010) cite employ one or more of the three strategies emphasized in this chapter and described above. For instance, studies aimed at improving initiation typically use cueing strategies, such as verbal prompts, visual cues (pictures or reminder notes), or physical prompts, but efforts have also been made to teach subjects to self-prompt, using smartphones or other electronic devices (e.g., DePompei et al., 2008; Gillette & DePompei, 2004).

Transferring the prompting function to the children themselves is an example of teaching the skill. Another example of efforts to teach students skills have focused on teaching a problem-solving strategy to children and teenagers impaired in this function due to an acquired brain injury (Gureasko-Moore, DuPaul, & White, 2006; Suzman, Morris, Morris, & Milan, 1997; Wade, Walz, Carey, & Williams, 2010). Direct instruction in executive skill strategies has also been shown to be effective within the context of academic skills, most notably the work of Graham and Harris (2002), who developed an approach to teaching writing that includes goal setting, self-instruction, self-monitoring, and self-reinforcement.

Interventions designed to treat symptoms associated with ADHD are extensive and provide the greatest empirical support for the efficacy of practices to enhance executive functioning. In a recent review, DuPaul, Eckert, and Vilardo (2012) classified the kinds of interventions into three categories that match the three intervention strategies described in this chapter: (a) academic interventions, focusing "primarily on manipulating antecedent conditions" (p. 391); (b) contingency management, defined as "an intervention that uses reinforcement (e.g., praise, tangibles) or punishment (e.g., corrective feedback, response cost)" (p. 391) to effect behavior change; and (c) cognitive-behavioral approaches designed to improve self-control by teaching strategies such as cognitive rehearsal, self-instruction, and self-management. DuPaul et al. (2012) concluded that all three intervention practices were associated with positive effects for both academic and behavioral outcomes. Since the symptoms associated with ADHD

represent a subset of the executive skills described in this chapter, this suggests that similar efforts to tackle other executive skill deficits may be equally promising.

One study that went beyond the executive skill weaknesses traditionally associated with ADHD attempted to improve organizational skills in ADHD students (Abikoff et al., 2013). This study is also unique in that it compared a strategy that focused on teaching deficient executive skills (organizational skills training) with one that employed a motivational strategy that primarily relied on the use of reinforcers to improve organization (parents and teachers helping kids organize). Although both groups improved more than controls on most of the nine outcomes measured, a head-to-head comparison of the two interventions demonstrated the superiority of the skills training intervention over the contingency management intervention, particularly when looking at gains in academic proficiency.

While it is likely unrealistic to expect school psychologists to conduct formal outcome studies of their own as they begin to implement the strategies described in this chapter, responsible intervention design must include identifying ways to assess efficacy. Whenever possible, naturally occurring records can serve as outcome measures. These might include reduced discipline referrals (as measures of improved response inhibition or emotional control), increased homework completion rates (as measures of improved working memory, task initiation, and sustained attention), and improved grades on long-term projects (as measures of improved planning and time management skills). Checklists, rubrics, and goal-setting strategies can also be created to measure outcomes objectively. Dawson and Guare (2012) provide a discussion of progress monitoring for executive skill development that spells out these strategies with more specificity.

Cultural Considerations
It becomes quickly evident in looking at cultural influences on executive skill development that different parenting styles and cultural values have an impact on the development of traits commonly associated with both temperament and personality. There is considerable overlap, particularly when considering traits associated with temperament and those commonly defined as executive skills. For example, Garstein et al. (2006) define temperament as "individual differences in reactivity an self-regulation, which are constitutionally based and influenced over time by heredity, maturation, and experience" (p. 146). They note that the specific traits associated with self-regulation and reactivity are

attention, behavioral inhibition, arousability of affect, and self-soothing. Child-rearing patterns in different cultures are felt to reflect the values of those cultures. For instance, Eastern cultures are felt to promote collectivist attitudes, while Western cultures emphasize individualistic attitudes.

Delineating cultural differences in executive skill development is well beyond the scope of this chapter. Studies have shown, for instance, that motivational beliefs and self-regulated learning vary when comparing early adolescents in the United States to those in China (Wang & Pomerantz, 2009) and that self-report of adolescent procrastination is greater in Singapore than Canada (Klassen et al., 2009). A study comparing Finnish and American students found differences in both attentional control and inhibitory control (Gaias et al., 2012), while another study found that whereas there is a gender gap between boys and girls when it comes to self-control in young children in America (with girls exhibiting more self-control than boys), no gender gap in self-control development is evident in Asian cultures (Wanless et al., 2013).

While it is unrealistic to expect school psychologists to fully understand how child-rearing practices influence executive skill development in children from different cultures, it is reasonable for school psychologists to be sensitive to cultural differences and to avoid imposing their own values on families from different cultural backgrounds. It is therefore incumbent on school psychologists to elicit from the parents the values and behavioral expectations those parents may import from their own cultures. School psychologists also should avoid sounding judgmental when they work with parents to help parents understand things they can do at home to promote the kind of executive skill development that will be most likely to further academic success.

Case Examples

One case example is focused on an elementary-aged student with problems with behavioral excesses associated with those executive skills most closely tied to problems with behavior regulation. The second case example features a middle school student with executive skill weaknesses associated with behavioral deficits (i.e., poor time management, working memory, task initiation, sustained attention).

Case Example 1

Max is a third-grade student who, when given an assignment requiring some kind of production (math,

writing), does one or more of what follows more than half the time: complains loudly or refuses to do the task ("I don't know how to do this!" "I'm not doing this stupid paper!"), pushes the paper off the desk or crumples it, or roams around room and does not respond to teacher directions. The problem behaviors occur whether or not the task is within Max's independent ability, but the more difficult the task, the more disruptive the behavior.

A multipronged approach is developed to help Max learn to handle his weak emotional control, inflexibility, and response inhibition. Elements of the intervention include (a) a social story describing how he feels and what his options are for helping himself; (b) the creation of a hard-times board (see Dawson & Guare, 2009, for more detailed instructions) that identify triggers, can't do's (behavior Max was not allowed to exhibit), and coping strategies; (c) shorter tasks with check-in breaks at the end of each section with the teacher or paraprofessional; (d) immediate check-ins following the presentation of the task instructions to make sure Max understands the task or to offer help; (e) Max's agreement that if he begins to get upset and does not remember to use his hard-times board, he will accept a cue from an adult to make a choice from it; (f) a rule that if his behavior disrupts class, Max will take an out-of-class break for at least 2 minutes and whatever time after that until he is able to resume his in-class plan; (g) Max's agreement that uncompleted work will be finished during free time or, if needed, at the end of school; and (h) an incentive system allowing him to earn points that he can use to buy computer time, a highly preferred activity, at the end of the morning and at the end of school.

The components of the plan are rehearsed with Max in the classroom with the paraprofessional and teacher modeling how the plan would be implemented and then walking Max through the procedure with cues until he can independently demonstrate how it would work. He and the paraprofessional and teacher agree on a starting time for the plan, and, at the beginning of the day and on returning from lunch, the plan is reviewed by his reading the social story. Over time, Max becomes better able to manage his emotions in the context of the kind of written work that he found aversive.

Case Example 2
Kevin is a bright middle school student with ADHD whose academic performance is inconsistent, with grades on nightly homework assignments, tests and quizzes, and long-term assignments ranging from A to F,

depending on the amount of effort he puts into studying and whether or not he remembers to do the work or to hand it in on time. His parents employ punitive measures (such as removing access to videogames), and he is frequently prevented from participating in sports (his school has a policy that prohibits student athletes from participating in sports events in any given week if they have earned grades of C or less on any graded work the week before). These measures have not been successful, and his parents are looking for a more effective approach to improving Kevin's study habits and working memory. Together, the school psychologist, Kevin, and his parents design an incentive system that allows Kevin to earn points engaging in behaviors that increase the likelihood of academic success, including using an assignment book on a daily basis to record homework assignments, handing in his homework on time, completing homework with at least 80% accuracy, and earning grades of B- or better on tests and quizzes (with more points earned the higher the grade). When Kevin earns 500 points, he can trade the points in for a smartphone, which his parents have agreed to let him purchase.

The incentive system is designed so that it would take Kevin a minimum of 10 weeks to earn the phone, but by tallying points each week and graphing the total, he can objectively measure his progress toward his goal. The plan has built in some ground rules: Kevin agrees to start homework at 7:00 p.m. except on nights when he has a basketball game; Kevin is willing to accept one reminder from his parents to start homework; and Kevin and his mother or father meet to compute points together once a week, usually on Friday to allow him to see his progress toward his smartphone goal. It is understood that at these weekly check-ins, both Kevin and his parents will focus on the positives, with each person stating at least one positive thing about the process at the time they calculate points.

Once implemented, Kevin earns the smartphone within the time frame established. More importantly, he brings his grades up in all subjects, and the plan allows Kevin to practice habits such as writing down assignments, remembering to hand in homework, and studying for tests more thoroughly and effectively, all executive skills that are critical to long-term school success.

Promoting Executive Skill Development Within a Multitiered Model

In designing a multitiered system of supports for students with executive skill weaknesses, the emphasis should be on Tier 1, universal supports. There are two primary ways to support executive skills in a regular classroom. First, classroom teachers can build in daily routines, such as a routine for collecting homework or creating a list of classroom behavior rules that are reviewed regularly with the whole class. These routines correspond to environmental modifications. Second, teachers can incorporate components of executive skill instruction into the subject matter being taught. For instance, when long-term projects are assigned, teachers can teach students how to break down complex assignments into subtasks and timelines. As time goes on, teachers can transfer more and more of the planning process to the students themselves (e.g., by requiring the students to develop a plan as part of the project itself).

Not all students respond to whole-class supports and instructional strategies. For these, either Tier 2 or Tier 3 strategies will be necessary. Table 24.2 provides examples of the kinds of strategies that are appropriate at all three levels.

For a three-tiered model to work effectively, target behaviors must be defined explicitly and rules for success at any given level must be agreed upon. It is beyond the scope of this chapter to describe in detail how this can be done, but readers are referred to other chapters as well as to Dawson and Guare (2010) for examples of how decisions are made within a three-tiered model.

Systems Level Models

As noted previously, executive skill proficiency in young children is a better predictor of later academic success than either cognitive ability or family characteristics. Schools have limited ability to affect directly either intelligence or family traits, but they can have an impact on the development of executive skills by creating classrooms that support training these skills in a developmentally appropriate fashion. Since this a variable that schools can have some control over, making it a target of systems level intervention should be a strategic use of school district resources in terms of time, money, and manpower.

While this is in no way intended to represent the universe of options available to school districts, some ways they might tackle the problem are described below.

Make executive skills a component of school district strategic planning: By making executive skill development an explicit goal, districts can then identify the tactics, strategies, and resources needed to achieve measureable results. When new initiatives are proposed, school administrators often argue that their plates are already full and they have no capacity to take on more work. In

Table 24.2. Strategies for Executive Skill Development at Three Levels

Intervention Tier	Environmental Modifications	Instructional Supports	Motivational Strategies
Tier 1 (universal): Systems-level or classroom-level supports directed at all students and designed to meet the needs of most students.	• Establish classroom routines to manage things such as using an assignment book, handing in homework, planning for long-term assignments, maintaining notebooks • Teach classroom rules for behavior (post prominently, review regularly, and practice for mastery) • Set up school-wide monitoring/ feedback systems (such as Power School or TeacherEase)	*Teach:* • Study skills necessary to meet course requirements: how to study for tests, how to break down long-term assignments into subtasks and time lines • Organizational/working memory skills: how to maintain an assignment book, how to organize notebooks, how to remember important things such as due dates, permission slips • Homework skills: how to plan homework sessions, strategies for getting started, screening out distractions, persisting until completion, avoiding temptation, problem solving	• Use group contingencies to meet specific criteria • Build in fun activities following effortful classroom tasks • Make liberal use of effective praise targeted to executive skill development
Tier 2 (targeted): Somewhat more intensive interventions to meet the needs of the 10–15% of students for whom universal supports are insufficient	• Modify assignments to increase likelihood of success (shorten, build in choice, make more closed ended). • Set up after school homework clubs • Provide weekly progress reports to inform parents of missing assignments, upcoming deadlines	• Set up small group coaching for at-risk students to teach them how to make and follow homework plans and provide closer monitoring to students with working memory deficits or planning or organizational problems • Institute peer tutoring programs or train volunteer tutors • Contact parents to develop a simple plan to address the problem (e.g., arranging for progress reports)	• Home–school incentive systems (daily or weekly report cards) • Require students to use free time or after school time to complete unfinished work
Tier 3 (intensive): For the 1–7% of students with chronic and more severe problems	• At this level an effective intervention involves working collaboratively with parents, teachers, and students to develop an individual support plan	*Elements of an effective intensive intervention:* • Target behavior is well defined and includes criteria for success • Specific environmental modifications are identified • The skill is explicitly taught, modeled, and rehearsed on a regularly • Someone is assigned to check in with the student at least daily • The student is given a visual reminder of expectations; the student's independent use of the skill is monitored over time so that progress can be measured	

Note. From *Executive Skills in Children and Adolescents: A Practical Guide to Assessment and Intervention* (2nd ed.), by P. Dawson and R. Guare, 2010, New York, NY: Guilford Press. Copyright 2010 by Guilford Press. Used with permission.

fact, by infusing executive skills into daily classroom practices, other goals become easier to achieve. The Common Core State Standards, for instance, can only be successfully implemented if the foundational executive skills are strong enough to support them.

Identify grade level expectations for executive skills, along with the environmental supports and teaching strategies necessary to meet those expectations: We know that executive skills emerge gradually. This means that it is reasonable to identify key executive skills to target at different age levels and to create a gradually diminishing system of supports based on developmentally appropriate expectations. In the lower elementary years, for instance, schools might target task initiation, sustained attention, emotional

control, flexibility, and response inhibition. Moving into upper elementary years, targeted expectations for working memory, planning, and organization can be added. Given the often dramatically increased demands at the middle school level, these three skills should continue to be targeted, along with the addition of time management. At the high school level, an emphasis should be placed on goal-directed persistence and metacognition, along with advanced level training for the other executive skills.

Make executive skills a focus of home school collaboration efforts: Executive skills develop through practice, and students are well served when both parents and educators have a role to play. Parent-teacher conferences, school open

house events, and PTA activities can all be used to help parents understand executive skills, why these skills are important, and steps parents can take to ensure that their children have an opportunity to practice these skills at home. Parents do not always appreciate the role that chores, daily routines, and homework play in helping children develop good work habits. Once parents understand the connection, they are often motivated to do their part.

Create a system of coaching interventions to support students with executive skill weaknesses: Coaching (Dawson & Guare, 2012) is a versatile strategy designed to help students improve executive skills. It has been shown to be an effective way to help elementary-aged students with ADHD improve peer relationships (Plumer, 2007; Plumer & Stoner, 2005), to help middle school students improve homework completion (Merriman, 2010), and to improve academic skills at the high school level (Merriman & Codding, 2008). While this strategy can be used on an ad hoc basis as a Tier 2 or Tier 3 intervention, it can be employed more effectively by establishing it as a service available to students in need in the same way that some schools offer check-in/check-out procedures as a dropout prevention program or provide weekly progress reports to parents to help their children stay on top of their homework. A cadre of adults and peers can be trained to provide this service under the supervision of a school psychologist, following procedures outline by Dawson and Guare (2012).

Remove barriers to providing special education supports for students with severe executive skill weaknesses: All too often students are denied access to the services they need because scores on standardized achievement tests are used as evidence that they are acquiring academic skills at a rate commensurate with their peers. For many of those students, the issue is not input (i.e., acquisition of information or knowledge) but one of output (i.e., ability to demonstrate that knowledge in a format that is acceptable to teachers). When this occurs at the high school level, students are often seen as unmotivated and this is seen as the barrier preventing them from doing the expected work.

Given what is known about executive skills and the impact on behavior and academic performance, it is incumbent on schools to address these skill weaknesses when these weaknesses can be shown to be a primary factor causing students to fail classes or grades. The best way to do this is through a response-to-intervention model, and it is hoped that schools will increasingly adopt this model as the way to meet the needs of students with disabilities.

Where this model is not implemented, however, students with executive skill deficits are often denied services because it is felt they do not have a recognized disability. Many, but not all, students with significant executive skill weaknesses also have ADHD or an autism spectrum disorder, and can access special education through these classifications. For those who do not have ADHD or an autism spectrum disorder, a case can be made that they have a specific learning disability. The Learning Disabilities Association of America (n.d.) defines the disorder in this way: "A learning disability is a neurological condition that interferes with a person's ability to store, process, or produce information." With this in mind, there can be little argument that when executive skill weaknesses are causing students to fail classes or grades, their weaknesses would qualify as a learning disability.

School psychologists have many demands on their time, and school districts vary in terms of how they deploy school psychological services. Whether school psychologists are involved primarily with individual case studies, consultation to teachers around classroom-based concerns, or establishing school-wide interventions, the stronger grounding they have in executive skills and their impact on learning and behavior, the better they will be able to meet the needs of the students they are charged with helping.

SUMMARY

Executive skills are brain-based skills shown to be strong predictors of school achievement. Executive skills emerge slowly and are dependent on brain maturation and practice to become fully operational. When students struggle in school, the assessment process should include an evaluation of executive functioning, primarily through the use of interviews and norm-referenced rating scales. Interventions to address executive skill weaknesses fall into three categories: (a) environmental modifications to improve the goodness of fit between task demands and the student's current level of functioning, (b) teaching strategies to help students develop more competent executive skills, and (c) incentives or other forms of reinforcement designed to motivate students to use or practice skills that they have but that they find effortful or tedious to employ. A three-tiered response-to-intervention model is well suited to meeting the needs of students with executive skill weaknesses. Universal supports include establishing classroom routines and whole-class teaching strategies that are likely to be effective with the vast majority of

students. For students for whom whole-class supports are insufficient, more intensive small group interventions can be used to teach executive skills more explicitly and to provide more direct supervision to ensure students practice the skills being taught. Finally, intensive one-on-one interventions can be designed for students who need a more individualized approach. These typically involve a collaborative effort on the part of teachers and specialists, parents, and the students themselves. School psychologists are also encouraged to address executive skill development at a systems level, for example, by helping schools identify grade-level expectations along with environmental supports and teaching strategies that are developmentally appropriate, by providing guidance to parents about how the parents can support executive skill development in the home, and by developing systems of interventions, such as coaching, to meet the needs of underachieving and underperforming students.

AUTHOR NOTE

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