

# Access News

EXECUTIVE FUNCTION 2015, PART 1 of 2

## Understanding Executive Functioning: Part One

*This edition of Access News is the first of a two-part series that focuses on Executive Functioning and its role in learning success both academically and in life. It is unknown just how many children have difficulty with executive function skills but [research has shown](#) that executive function deficits are common among children with diagnoses such as Attention Deficit Hyperactivity Disorder (ADHD), autism, specific language impairments (SLI), and hearing impairments, just to name a few.*

ASK Resource Center (ASK) is publishing this series in an effort to share information and resources and help provide an understanding of the role executive functioning skills have in a child's development. Part one of the series addresses the basic questions surrounding this topic and what role it plays

in early childhood learning; and part two will look at executive functioning skills as it relates to academic success for school-age children.

Executive functioning plays an important role in a child's development into adulthood and adequate support is needed to help these skills grow especially in their early years. A child isn't born with executive function skills but rather they are born with the ability to learn them. Adults in any setting such as daycare, early education programs, and at home, have an opportunity to assist in the learning of these skills through quality interaction and support. The development of executive function skills allows children to show positive behavior and encourages them to make healthy choices for themselves.

## WHAT IS EXECUTIVE FUNCTIONING?

Imagine a conductor's role in an orchestra. To begin the performance, the conductor must first organize all of the different instruments to either play all at the same time or to begin at different times and in different combinations. He then blends the music together by bringing in and fading certain actions, and controls the pace and intensity of the music. Finally, the performance comes to an end and all the little jobs the conductor had to coordinate, resulted in a wonderful evening of entertainment.

The conductor metaphor was used by Dr. Tom Brown to help create a visual image of what [executive functioning](#) is. By definition, executive functions are those **actions or mental skills we perform that help the brain organize, act on information, and manage our behavior**. In other words, when we plan our day, organize information, remember important dates, times, events, prioritize our responsibilities, get started on tasks, and pay attention, we are using executive functions. Just as the conductor used many actions to accomplish a successful performance, we, as individuals, use executive function skills to help us accomplish our goals and guide our behavior. Executive function challenges are not considered a disability on their own. Instead they are viewed as weaknesses in eight specific [mental skills](#). Research has shown that children with weakness in those skill areas also have issues with learning and attention, and/or diagnoses of ADHD, dyslexia, and others.

### EIGHT KEY EXECUTIVE FUNCTIONS

- ✓ Impulse Control
- ✓ Emotional Control
- ✓ Flexible Thinking
- ✓ Working Memory
- ✓ Self-Monitoring
- ✓ Planning and Prioritizing
- ✓ Task Initiation
- ✓ Organization

Amanda Morin, a parent advocate, former educator, and contributor to Understood.org, a collaborative resource for parents of children with learning and attention issues, describes executive function as the CEO of the brain, "It's in charge of making sure things get done from the planning stages of the job to the final deadline". The stronger an individual's executive functioning, the quicker the planning stages are completed. Difficulties with executive functions slow down the planning process and can create frustration and behavior issues especially for early learning and school-aged children. As we become better at doing these skills, the more successful we become at using the information we gather to solve current problems.

Source: [Understood.org](http://Understood.org)

# ENCOURAGING EXECUTIVE FUNCTION DEVELOPMENT IN A CHILDCARE SETTING



*Child Care Aware of America, one of the nation's most trusted resources for parents and child care providers, acknowledges that executive functions are absolutely necessary for success in school. Learning and developing executive functions begins as early as infancy and continues through adulthood. These skills set a strong foundation for school success and are best taught through repeated experiences with adult support. Early childcare settings play a significant role in the development of executive functions.*

*Parents searching for the most appropriate childcare provider for their children should consider the following questions and guidance provided by Child Care Aware of America. Additional questions to help parents evaluate a childcare provider can be found at [Child Care Aware: Evaluating Providers](#).*

## 1. What would my child's daily routine look like?

Having a predictable daily routine allows a child to begin practicing time management, moving from one activity to another, strengthening their memory by remembering what event happens next in the day.

## 2. Is the room where my child spends his/her time clean and organized?

An environment that is clean and orderly with specific spaces for toys and activities supports a child's ability to follow directions and take responsibility with age-appropriate jobs (e.g., line leader, hanging up their coat, cleaning up). Designating specific areas for different types of play is also important for social skill development and learning how to

deal with conflict.

## 3. What materials (games, toys, books, etc.) will my child be able to use?

Providing a variety of materials allows a child to grow their imagination and critical thinking skills. Materials that appeal to multiple children creates opportunities for children to share, resolve conflict, and explore different perspectives. However, make sure the materials provided are age-appropriate—if the materials or toys are too simple, the opportunities for growth are fewer. The same goes for materials or toys that are too difficult.

## 4. Will my child get an opportunity to choose from variety of activities throughout the day?

Providing age-appropriate choices of activities encourages initiation of tasks, time management, and transitioning to different activities. It also allows children opportunities to lead and follow.

## 5. What is the number of adults compared to the number of children where my child will be and do the adults interact with the children or just oversee them?

The development of executive functioning skills is best learned through repeated, quality interaction with adults. As children begin to explore their executive functioning skills, the more support they will need from an adult and as they become more confident and successful the amount of support required from an adult decreases. Making sure there is adequate number of adults available in order to provide each child with the necessary support and quality interaction is important.

## 6. How many children are in the same room, center, or home setting?

Repeated, quality interactions are most important for the development of executive functioning skills. Too many children decrease the ability of the caregiver to provide such interactions. In addition, the size of the group will determine how many opportunities a child will have to lead an activity, play with a variety of materials, interact in a small group setting, and be able to manage conflict.

## 7. What are the expectations and rules of the childcare facility?

Overly strict rules and/or discipline take away opportunities for children to explore and think on their own. Instead of learning how to start a task, when it is time to move to another activity, and remembering where their backpack goes on their own, an adult decides for them and the opportunity to develop important executive functioning skills is taken away. The same can be said for rules and discipline that are too loose. The right amount of guidance is needed to ensure these skills are learned.

# DEVELOPING EXECUTIVE FUNCTION DURING PLAYTIME

Think back to your childhood and the different ways you kept yourself entertained. Maybe you used your imagination to role-play as teacher and student with your sibling, pretended the backyard playset was a pirate ship, or got together with friends for a game of pick-up baseball. You probably were not aware of it then, but engaging in those types of imaginative and spontaneous play were helping to create the foundation for strong executive function skills.

During imaginative or creative play kids learn how to control their emotions, resist impulses, and practice self-discipline. Imaginative play such as dress-up or role-playing assists in teaching children self-guidance and how to regulate their behavior. Engaging in this type of play also helps children develop self-talk, which involves the child mentally working through how and when to execute a task before they do it. Adults use self-talk to manage and guide their behavior as they organize thoughts and work through multiple tasks. Young children often model their own self-talk after their parents' and apply it during playtime activities to manage their own behavior.

In a society where toys are made to resemble objects, video games provide simulated real-life experiences, and children's daily schedules are filled with structured lessons, imaginative play has taken a back seat. So before you consider buying your child the newest toy on the market or enrolling them in another structured lesson, consider giving your child a "day off" and see where their imagination takes them.



Source: [Center on the Developing Child, Harvard University](#)

## Activities to support executive function development in the early learning years

*The activities provided here have been identified by the Center on the Developing Child at Harvard University as age-appropriate ways to strengthen various components of executive function. These activities are not the only ones that may help; rather, they represent a sample of the many things children enjoy that can support healthy development of executive function skills.*

*For a complete list of activities, refer to The Center on the Developing Child at Harvard University's activities guide, [Enhancing and Practicing Executive Function Skills with Children from Infancy to Adolescence](#). Each chapter of the 16-page guide contains activities suitable for a different age group, from infants to teenagers.*



### AGES 6 to 18 MONTHS

- Lap games: Pat-a-Cake, Peekaboo, etc.
- Fingerplays: Itsy Bitsy Spider, Where is Thumbkin?, etc.
- Hiding games
- Simple role play
- Conversation

### AGES 18 to 36 MONTHS

- Songs with movement: I'm a Little Tea Pot, Hokey Pokey, etc.
- Instruction games: Follow the Leader, Simon Says, etc.
- Imaginary play
- Simple puzzles
- Matching and sorting activities

### AGES 3 to 5 YEARS

- Active games: Duck Duck Goose, Red Rover, etc.
- Imaginary play with props
- Puzzles
- Matching and sorting games: Quirkle, bingo, etc.
- Cooking with an adult

### AGES 5 to 7 YEARS

- Strategy games: Checkers, Sorry!, etc.
- Card matching games: Uno, Crazy Eights, etc.
- Active ball games: Four square, dodgeball, etc.
- Brain teasers and logic puzzles
- Hand clapping rhythms: Miss Mary Mack, Hi My Name is Jo, etc.

# EXECUTIVE FUNCTION SKILLS CAN LEAD TO QUALITY HEALTH

According to the Center on the Developing Child at Harvard University, research shows that quality interactions and experiences in early childhood contribute to the development of executive function skills, which are essential for success across the lifespan. When children have had opportunities to develop executive function skills successfully, not only does it benefit the individual, but their community and society overall can reap the benefits.

## Individual impact

- ✓ Increased ability to manage stress
- ✓ More able to make healthy choices regarding nutrition and exercise
- ✓ Increased ability to avoid engaging in risky behaviors such as drug use and unhealthy sex practices
- ✓ More cognizant of personal safety

## Overall impact on society

- ✓ Healthier population
- ✓ More productive, adaptable workforce
- ✓ Reduced health costs for everyone

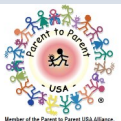
*Well developed executive function skills build the foundation for a skilled workforce, a responsible community, and a thriving economy.*

Source: [Center on the Developing Child, Harvard University](#)

## EXECUTIVE FUNCTIONING TERMS YOU SHOULD KNOW

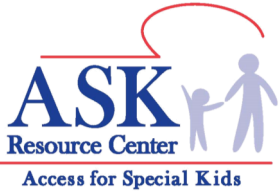
	Definition	Simply Put
<b>Adaptive Behavior</b>	Everyday living skills (dressing, toileting, etc.), work/school functioning skills (meeting deadlines, organizing materials, etc.) that a child learns through the process of adapting to their surroundings.	Per the Iowa Area Education Agency Special Education Procedures manual, executive functioning skills are referred to as “adaptive behaviors”. These skills should be included in any comprehensive evaluation. (Refer to the <a href="#">Winter 2014 issue of Access News</a> for more information on the evaluation process.)
<b>Emotional Control</b>	Child’s ability to connect what she thinks and know to how she feels and reacts.	Poor emotional control might cause your child to overreact or respond inappropriately to things that upset them.
<b>Flexible Thinking</b>	Child’s ability to think of alternate ways of doing things, integrate new ideas, and abandon what isn’t working to try a new approach.	Child’s ability to see other viewpoints and try different ideas to solve a problem, and adjust to the unexpected.
<b>Organization</b>	The ways your child gathers and stores information to use in the future. Child’s ability to keep track of things physically and mentally.	Child’s ability to store and manage information in their brain so they can pull it out of their “mental filing cabinet” when they need to use it.
<b>Self-Monitoring</b>	Child’s ability to keep track of their performance, assess how it measures up to a goal, and identify and correct mistakes.	Child’s ability to figure out how they are doing.
<b>Task Initiation</b>	Child’s ability to get started on an activity and come up with ideas or problem-solving strategies on their own.	Child’s ability to take action and get started.
<b>Working Memory</b>	A combination of auditory (hearing) and visual-spatial memory, and relies on attention skills in order to complete a task.	Child’s ability to hold onto information in order to complete a task or activity

## ASK Resource Center



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# Access News

EXECUTIVE FUNCTION 2015, PART 2 of 2

## Understanding Executive Functioning: Part Two

*This edition of Access News is the second publication in a two-part series that focuses on executive functioning and the important role executive functions have in a child's academic and social development and success. It is unknown just how many children have difficulty with executive function (EF) skills but [research has shown](#) EF skill deficits are common among children with diagnoses such as attention deficit hyperactivity disorder (ADHD), autism, specific language impairments, and hearing impairments, just to name a few.*

ASK Resource Center (ASK) is publishing this newsletter series in an effort to share research, resources, and information related to EF, as well as provide an understanding of the important role EF skills have in a child's academic and social

development and success. [Part one](#) of the series addressed the eight key executive functions and their role in early childhood development; and part two will discuss how to identify EF deficits in school-age children, and ways to accommodate those children in order to support their success in school and beyond.

People aren't born with EF skills but rather they are born with the ability to learn them. The development of EF skills allows children to exhibit positive behavior and encourages them to make healthy choices for themselves. Adults in any setting such as daycare, early education programs, or at home, have an opportunity to assist in the learning of these skills through quality interaction and support.

## Identifying executive functioning difficulties



Forgetful, impulsive, distracted, inflexible, unmotivated, interruptive, unorganized, indecisive. Do any of these words come to mind when thinking of a particular child? These traits can be frustrating to a parent, teacher—even the child themselves—but they may not simply be part of a child's personality; they may result from weak EF skills. As discussed in the first newsletter in this series, the eight key executive functions are impulse control, emotional control, flexible thinking, working memory, self-monitoring, task initiation, organization, and planning and prioritizing. Also referred to as adaptive behaviors, EF skills are what we use to “get down to business” when we would rather play. Diagnoses in which EF difficulties are common include ADHD, fetal alcohol syndrome, traumatic brain injury, mood disorders, learning disabilities, and post-traumatic stress disorder (PTSD). Characteristics of EF deficits associated with some of these diagnoses are described below.

### Dyslexia

- Working memory is the major EF deficit.
- Other EF difficulties include attention, planning, and focus.

### ADHD

- Affects attention, impulse control, task initiation, working memory, recall, and activity level.
- An estimated 89-98 percent of children with ADHD have EF difficulties.
- Written expression may be the most common learning problem.

### Fetal Alcohol Syndrome

- Affects working memory, planning, attention, and retention.
- Commonly associated with learning disabilities.

### PTSD

- Affects planning, working memory, decision making.
- Depression contributes to poor EF skills.

Source: [Understood.org](http://Understood.org); [SanDiegoADHDcenter.com](http://SanDiegoADHDcenter.com)

# Executive Function CHECKLIST

ForDyslexia, a resource website dedicated to parents and educators of children with dyslexia, offers a checklist for parents looking to identify EF skill deficits in their children.



## *In recent months, I have noticed my child...*

- ☐ Has difficulty paying attention
- ☐ Is easily distracted
- ☐ Requires repeated reminders to stay on task
- ☐ Finds it difficult setting or completing goals
- ☐ Struggles with making decisions
- ☐ Has trouble initiating tasks or assignments (procrastinates)
- ☐ Focuses on either the small details or the big picture, at the expense of the other
- ☐ Struggles to budget the amount of time it takes to complete a task
- ☐ Takes longer than peers to complete homework and other tasks
- ☐ Loses track of time or assignment due dates
- ☐ Forgets to turn in completed work
- ☐ Struggles with keeping track of personal items, assignments, supplies, etc.
- ☐ Has difficulty checking their own work or may not do it at all
- ☐ Has trouble following multiple-step directions
- ☐ Forgets what they are saying/doing in the middle of a task
- ☐ Forgets the details of what they read soon after finishing
- ☐ Gets frustrated with changes in schedule or daily routines
- ☐ Has difficulty transitioning from one activity to another
- ☐ Struggles to differentiate information that is literal vs. figurative, past vs. present, etc.
- ☐ “Gets stuck” during a task and can’t move forward
- ☐ Becomes easily frustrated and/or overwhelmed
- ☐ Has difficulty controlling impulses; often reacts without thinking
- ☐ Often talks out of turn and/or interrupts in conversation

Source: [ForDyslexia](#)



## DIGITAL TOOLS

With over one million apps available at the tap of a finger, searching for one can be overwhelming. These websites offer helpful search tools that allow you to browse through thousands of disability-specific apps to find one that fits your child’s needs.

[Tech Finder](#) from Understood.org

[Special Needs APPS Review](#) from The Friendship Circle

## Mind Mapping

Mind mapping—a form of notetaking that literally “maps” out your ideas—uses diagrams to represent tasks, concepts, or items linked to a central concept or subject. Mind maps are helpful for students with EF issues because they can improve working memory, and assist in organizing and prioritizing tasks or information. Here are a few popular mind-mapping tools for computers and mobile devices. Note: Some apps may require payment.

- [XMind](#)
- [Coggle](#)
- [MindNode](#)
- [Freemind](#)



# PHYSICAL ACTIVITY CAN BOOST EXECUTIVE FUNCTION

According to [a review article](#), aerobic exercise impacts EF skills in a positive way by supporting and even enhancing the brain's connections responsible for EF. The study revealed that prolonged aerobic exercise that involves engaging various thought processes is the type of exercise that has the greatest impact on EF. This type of exercise engages the brain and enhances the parts of the brain essential to learning. Organized sports and group games such as tag provide quality opportunities for



children to cooperate with others, anticipate behavior, problem-solve, make decisions, and adapt to changing demands. Any type of physical activity is beneficial to the development of a child's EF skills and, while the type and intensity of exercise will vary by age (i.e. Simon Says for younger children versus team games with rules and strategy for older youth).

Continued research regarding the positive effects of video games on EF shows that a class of video games referred to as "exergames" (video games requiring children to move while mentally engaged in a goal-oriented task) appear to have the same effect as traditional aerobic exercise. As the amount of time for instruction has increased and opportunities for physical activity in school have decreased, it is even more important for parents and educators to be aware of the benefits aerobic exercise has on a child's development, especially in the area of EF skills.

Source: [Dev Rev. 2010 Dec; 30\(4\): 331–551.](#)

The brain is a complex and constantly developing part of the human body. Different parts of the brain experience growth spurts at different times in a child's life and contribute to the development of EF skills. For instance, in early childhood a child begins to develop an understanding of the world around them and how to manage their own thinking and behavior. As children enter adolescence they begin to participate in quality interaction with others, make sense of their emotions, learn from past experiences, understand others' viewpoints, and refine their decision making skills and working memory. The development of these EF skills depends largely upon the quality of relationships and experiences a child has; the more negative the interactions, the greater the risk of having deficits in these skills. Childhood trauma is one experience that can affect a child's ability to learn EF skills and can increase their risk for substance abuse, teen pregnancy and paternity, suicidality and criminal activity.

## Stressed Brains Can't Learn

As mentioned on the previous page, children who have experienced trauma and/or have a diagnosis of PTSD often exhibit EF skill deficits; [research has shown](#) that EF skill deficits are also common with diagnoses of oppositional defiance disorder, emotional disturbance, and eating disorders. Trauma can significantly reduce a child's ability to self-regulate and control their behavior, causing them to act impulsively, aggressively, and in a controlling manner. The ability to cope with trauma is also reduced. Instead of using productive coping strategies such as counseling, exercise, rest, or supportive relationships, a child may resort to self-injurious behavior, make unhealthy sexual decisions, or use alcohol or drugs. Overcoming trauma can be a vicious cycle, as it affects the skills necessary for a child to adapt, cope and recover from a traumatic event. The effects of trauma can last long after the event itself, the absence of well-developed EF skills and supportive, sustaining relationships, the amount of stress on the brain increases, as do the risks to one's overall health. For more information, watch [Brain Builders](#), an animated video on brain development provided by the [Alberta Family Wellness Initiative](#).

Source: [National Child Traumatic Stress Network](#)

### **[Smart but Scattered Teens: The "Executive Skills" Program for Helping Teens Reach Their Potential](#)**

by Richard Guare, Ph.D., Peg Dawson, EdD., & Colin Guare

Clever strategies for getting around your teen's creative resistance to making changes.

### **[Late, Lost, and Unprepared: A Parents' Guide to Helping Children with Executive Functioning](#)**

by Joyce Cooper-Kahn, Ph.D. and Laurie Dietzel, Ph.D.

Explores the world of executive functioning and provides recommendations for helping children and young adults better manage their learning and problem solving.

# Executive Function and Academic Success

So, exactly *how* do EF skills help your child succeed in school? According to LD OnLine, [EF skills assist learning](#) by allowing students to keep track of time, work in small groups, ask for help, finish work on time, seek information, reflect on their work, take turns, and use what they already know to support what they are learning. Students who experience EF difficulties may struggle to brainstorm ideas for a project and find it difficult to initiate the project. They may have a hard time repeating a story or remembering an event from their day in specific detail and in sequential order. Remembering to bring home textbooks and assignments or turning in completed work can be a challenge for some students with weaker EF skills, as well.

In addition, EF skills play a critical role in a student's behavior and self-monitoring skills. As children grow, they are constantly testing boundaries, and slowly they begin to understand what the expectations are for varying situations. In school, students are expected to sit quietly and attentively for a large majority of their day. They are thrown together with other children they don't know and are expected to respect and trust a new teacher every year. There are high expectations for students to display appropriate behavior in school. Those students with strong EF skills are able to control their behavior, impulses, and emotions, adjusting them to different situations. For students with EF challenges, keeping their behavior in check may be too much to handle. They may experience frustration and stress and engage in disruptive behavior such as talking loud or out of turn. The severity and type of behavior a student shows is different for every child and is affected by a number of factors (i.e. amount of supports, other health issues) but a student's *ability* to deal with behavior issues depends upon the development of their EF skills.

Iowa's Area Education Agencies, consider EF skills a component of the *adaptive behaviors* domain and is considered one of the areas for [evaluation](#). Any comprehensive evaluation should consider an evaluation of adaptive behaviors to fully identify all needs and services a child may require. It is also important to note that an IEP can include specialized instruction in executive functioning which sets the foundation for learning and assists students in their life-long learning.

Research has shown that a child's EF is a better predictor of school success than is traditional intelligence testing. Students who start school with strong EF skills are more likely to show greater improvement in math, reading, and social skills than children with EF deficits. If these students are not given the opportunity to interact with adults who model these skills and provide the necessary supports, they will lack a good foundation for academic success and may be at risk for truancy, suspension, expulsion, or eventually dropping out of school.

## STRATEGIES TO SUPPORT STUDENTS WITH EF DEFICITS

### TEACHING

- ✓ Give simplified instructions and have student repeat them.
- ✓ Before giving instructions, prepare the student by saying, "[This is important to know because...](#)"
- ✓ Stick to a daily [routine](#).
- ✓ Check in frequently to make sure the student understands the work.

### IN THE CLASSROOM

- ✓ Provide written and verbal directions, assignments, and schedules.
- ✓ Simplify complex written instructions.
- ✓ Highlight key words and ideas on worksheets.
- ✓ Give the student colored strips to place under sentences when reading.

### ORGANIZATION & TIME MANAGEMENT

- ✓ Use [organizers](#) and [mind-mapping software](#).
- ✓ Break down big projects into smaller pieces with more deadlines.
- ✓ Create checklists of steps for complex projects.

### HOMEWORK & TEST-TAKING

- ✓ Keep a daily to-do list on the desk so the student can check off assignments.
- ✓ Create an assignment notebook for teacher and parents to check.
- ✓ Provide a rubric that describes what a successful assignment contains.
- ✓ Allow different ways to answer questions, such as circling or saying them.
- ✓ Give the student the test format ahead of time so they can focus on content.

Source: [Understood.org](#); [Child Mind Institute](#)

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