

Executive Function 101: A Guide to Understanding and Utilizing EF Skills

What Are The Executive Functions?

Task Initiation: The ability to organize one's thoughts well enough to get started on a particular task without having to be asked multiple times.

Flexibility: Learning to adapt by shifting one's focus and pace as various situations unfold.

Sustained Attention: The ability to focus long enough and accurately enough to learn important information. By extension, attention also involves the ability to block distraction.

Organization: The ability to manage space, belongings, and ideas.

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's important to focus on and what's not important.

Working Memory: The ability to retain information long enough for it to be stored in long-term memory.

Self-awareness: Pertains to having both sufficient self-knowledge and an ability to perceive how others see you. This information is essential for making purposeful choices about how to act in situations where one wants to avoid unintended consequences.

Regulating emotions: means expressing one's feelings in proportion to the events that elicited them. When a child under or over-reacts, she is out-of-sync with people or particular events. Socially, people tend to ignore a silent recluse, and run away from an erupting volcano.

Time management: The capacity to estimate how much time one has, how to allocate it, and stay within deadlines.

Goal Directed Persistence: The capacity to have a goal, follow through to completion, and not be distracted.

Did You Know?...

- Boys are diagnosed with ADHD 3 times more than girls.
- Girls generally have better verbal skills than boys.
- Children with EF deficits are on average 30% behind typical peers in the area of self-regulation.
- Frontal lobe continues to develop until the early thirties.

- Scaffolding needs to be developed and used for life.

How Do Executive Functions Develop?

The brain is made up of two types of matter, grey matter and white matter. The grey matter is the cells (neurons) that make up the brain, and the white matter is the connective tissue that carries messages around the brain. Chemicals called neurotransmitters travel around the brain, and are what the brain uses to communicate. The ADHD brain differs from a normal brain in a few ways. Children with ADHD are born with less white matter, which makes it more difficult for messages to travel around the brain.

The ADHD brain also has an imbalance of neurotransmitters. If there is an imbalance of neurotransmitters, the brain does not function normally. ADHD brains have less of the neurotransmitter called dopamine. This imbalance makes someone with ADHD have trouble with things like staying attentive, resisting distraction, sticking to tasks, and completing tasks.

In general, executive function development mirrors brain growth, with most executive functions primitively manifesting during infancy. Brain growth happens in spurts, and after one of these growth spurts executive functioning improves dramatically. However, even after the brain is done growing it continues to develop well into adulthood, and executive functions continue to develop as well.

What Do The Executive Functions Do?

They are like the air traffic control system of the brain; they manage our ability to perceive, feel, think and act. They are most understandable in the context of problem solving. There are four steps to solving any problem:

- Identifying what the problem is and what is stopping you from fixing it.
- Coming up with a plan to solve that problem.
- Executing that plan.
- Evaluating if, and how well, the plan solved the problem.

Executive functions involve the coordination and execution of these four steps. If there is a deficit in executive function, completing these steps can be difficult.

Executive Function Abilities To Expect At Different Ages (Normal Development):

Ages 6-8	<ul style="list-style-type: none"> ● Able to resist distraction ● Can use visual imagery to guide behavior in the present ● Able to resist temptation for an immediate reward for a few minutes to wait for a later reward ● Can do a two to three step task ● Can remain focused in class for extended periods of time
-------------	--

	<ul style="list-style-type: none"> • Can maintain school supplies with the occasional check-in from an adult • Able to maintain stable emotional state (example: no temper tantrums)
Ages 9-12	<ul style="list-style-type: none"> • Able to control impulses • Can manage daily school/home routine and schedule • Can adjust behavior to reach a goal if the initial approach fails • Can talk to themselves in their mind as a form of self-guidance • Can carry out long-term projects and achieve long-term goals
Ages 13-15	<ul style="list-style-type: none"> • Can follow rules even when there is no visible authority • Planning and organization skills are being fine-tuned and improved • Can manage more demanding academic work and schedules • Can establish and refine long-term goals and make plans for meeting that goal • Can make good use of leisure time • Can inhibit reckless and dangerous behaviors

Sources:

Barkley, R. A. (2012). *Barkley Deficits in Executive Functioning Scale - Children and Adolescents (BDEFS-CA)*. New York, NY: The Guilford Press.

Dawson, P., Ed.D, & Guare, R., PhD. (2009). *Smart but Scattered*. New York, NY: The Guilford Press.

Dawson, P., & Guare, R. (2010). *Executive Skills in Children and Adolescents (2nd ed.)*. New York, NY: The Guilford Press.

Diane Dempster & Elaine Taylor-Klaus. (n.d.). *The Parents' Guide To Motivating Your Complex Kid [Brochure]*. Author. Retrieved December 1, 2016, from www.imapctadhd.com

Luciana, M., Conklin, H. M., Hooper, C. J., & Yarger, R. S. (2005). The Development of Nonverbal Working Memory and Executive Control Processes in Adolescents. *Child Development*, 76(3), 697-712. doi:10.1111/j.1467-8624.2005.00872.x

McCloskey, G., Perkins, L. A., & Van Divner, B. (2009). *Assessment and Intervention for Executive Function Difficulties*. New York, NY: Taylor & Francis Group, LLC.

Zeigler Dendy, C. A., M.S. (2011). *Teaching Teens with ADD, ADHD & Executive Function Deficits (2nd ed.)*. Bethesda, MD: Woodbine House.

Zelazo, P. D. (2010, May 28). *Executive Function Part One: What is executive function?* Retrieved December 01, 2016, from <http://www.aboutkidshealth.ca/En/News/Series/ExecutiveFunction/Pages/Executive-Function-Part-One-What-is-executive-function.aspx>

My Child Has ADHD, What Does This Mean For Their Executive Functioning?

ADHD delays brain and executive function development by an average of 30% (about three years delayed). This means the development of your child's executive functions does not match their physical age. For instance, your child might be twelve but their executive functioning ability might be that of a nine year old. Expectations need to match their executive function age, not their physical age.

It is important to keep this in mind: ADHD is a disorder of performance not skill. Your child is able to perform tasks, they just get lost in the execution. Even though ADHD creates a diminished capacity for executive functioning, your child is still accountable for their actions. As stated before, they are able to perform tasks; the problem lies in their ability to execute.

Executive Function capabilities are also separate from intelligence of IQ. A child with a high IQ can have poor executive functioning, and a child with a lower IQ can have a good level of executive functioning.

Executive Function coaching helps your child build a support structure for themselves, like scaffolding. That scaffolding consists of tools and techniques your child can use to be successful in anything they do, and scaffolding will need to be in place for the rest of your child's life.

How To Teach Executive Functioning At Home

- Ask don't tell: Asking a question makes the problem solving part of the frontal lobe engage.
- Ask her if she knows why you are asking. "Why do you think I ask you to wash your hands before eating?"
- Ask her to explain what she thinks the consequences would be of an action. "What would happen if you did/did not..."
- Ask her how she will go about completing an action or a task.
- Explain rather than dictate: Give an explanation behind your commands or instructions. The more we understand about a given situation the more we can find our own way of solving the problem or motivate ourselves to use the solution laid out for us. Answer any question the first time they ask but don't explain further, asking for explanations might be used as a stall tactic.
- Let your child know that you understand what he's feeling and why he feels that way.
- Encourage your child to evaluate his own performance during a task (midpoint evaluation) and after the task has been completed. This allows him to come up with his own solutions for his problems.
- Family Activities: Daily home activities are loaded with good examples of executive functioning skills.
- Enlist kids in activities that are important for the family: cooking, shopping, planning activities. These activities have built-in incentives: buy or eat what you chose, do things you want while on vacation.
- Be active and available when your child is involved in these activities, so you can model the correct behavior and supervise.
- Give your child decision-making choices, let her the rules beforehand, and then follow through with what she decides.
- Design an activity with your child's interest, attention span, and endurance in mind. You want to set them up for success not failure.
- Let your child know in advance that you want their involvement.
- Encourage him to be as involved in the process as he'd like
- Pick a time when she isn't already engaged and ask if it is a good time
- Keep the activity short and only have concrete choices if the child is young
- When she starts to lose interest, end the task and thank her for the help
- Acknowledge the child's involvement to others

How Can I Motivate My Child?

- With your child, figure out what motivates them better: reward or consequence. Then, figure out what specific reward or consequence to use.
- Incorporate the motivators. When trying to get your child to focus, inform them of the reward that they will receive when the task is complete, or of the consequence if it does not get completed. Rewards and punishments need to be administered as soon as possible, waiting to deliver will reduce the effect.
- Teach your child to create motivators for them so they can take responsibility. For instance, ask them what reward they'll give themselves for completing a task instead of you deciding for them. That way they'll be able to motivate themselves in the future.

Direct Intervention By Providing Behavior Replacement:

Step 1: Identify the problem

- Specifically identify the problem rather than using general descriptions. For instance, you may call them a slob, but the specific problem is that they leave their belongings all over the house.
- Clarify the lesson you want to teach and make each lesson have an achievable goal. It's easier to teach them to keep belongings off of the floor rather than teach them to not be a slob in general.

Step 2: Goal setting and awareness

- Set smaller goals that will build into achieving the larger goal.
- Take current behavior and make the smaller goal by agreeing upon a baseline and work to meet or exceed the new goal. Examples:
 - Estimate time needed between giving a direction and action. Time her and give feedback.
 - Have your child estimate how long it will take to complete a task. Time how long it takes to actually complete the task.
 - Pick one behavior to replace, count the number of times the behavior occurs and set a goal for using the replacement behavior, follow up with positive feedback.
 - Have your child estimate the number of reminders he will need to complete a task, then keep track of the number of reminders it takes for him to actually complete the task, and then provide feedback.

Step 3: Create a plan

- With your child, outline the steps need to achieve the goal. Example: "what are the tasks that need to be done to achieve the overall goal of getting to school on time? Step one brush teeth, step two..."

Step 4: Procedure

- Turn the steps into a procedure (a checklist or to-do list) that can be followed, and decide with your child the incentives that will be used as motivation.

Step 5: Practice

- Make sure to do a practice run of the procedure. Practice makes perfect, and it will make them feel more comfortable about actually using the procedure in the future.

Step 6: Fade supervision

- Gradually fade supervision as your child begins to manage his own behaviors.

Additional Resources

These websites have lots of information on ADHD if you would like to learn more. They also have plenty of parenting tips and tools you can use at home.

1. <http://impactadhd.com>
2. <http://understood.org>
3. <http://additudemag.com>
4. <http://smartkidswithld.org>