

What Were You THINKING?!

Understanding the "Command and Control"
Center of Your Child's Brain

presented by Sandi Cimino
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Our Road Map

- What is Executive Function?
- How does it develop?
- How do I identify strengths and weaknesses in these skills?
- How can parents and early childhood professionals help children develop these skills?



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Executive Function is...

- brain based
- responsible for executing tasks
- the group of skills necessary to function independently

Executive Function is not...

- intelligence (IQ)
- the avenue for intake of information
- responsible for organizing inputs



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Understanding Executive Function

- capacity is biological
- development is experiential
- order of emergence
- organization of skills can be developmental or functional

} Growth + Pruning = Executive Skills



Understanding Executive Function

1. response inhibition
2. working memory
3. emotional control
4. sustained attention
5. task initiation
6. planning/prioritizing
7. organization
8. time management
9. goal-directed persistence
10. flexibility
11. metacognition



Understanding Executive Function

Cognitive Skills

Working Memory • Planning/Prioritizing • Organization
Time Management • Metacognition

Behavioral Skills

Response Inhibition • Emotional Control • Sustained Attention
Task-Initiation • Goal-Directed Persistence • Flexibility



How Executive Function develops

impacts to typical development of EF:

- genetics
- ACEs/trauma/environmental influences
- diagnoses – ADD/ADHD, Autism Spectrum

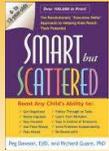


Developing Executive Function Skills

- Identify strengths and weaknesses
- *Explicitly* teach weaker skills
- Start from the outside in
- Modify tasks to match child's capacity for effort
- Use incentives
- Provide just "enough" support for long "enough" for the child to achieve mastery



Resources



[Smart but Scattered: The Revolutionary "Executive Skills" Approach to Helping Kids Reach Their Potential](#)

Peg Dawson, EdD & Richard Guare, PhD



[Executive Function in the Classroom: Practical Strategies for Improving Performance and Enhancing Skills for All Students](#)

Christopher Kaufman



Executive Skill Definitions

- **Response Inhibition:** The capacity to think before you act – this ability to resist the urge to say or do something allows us the time to evaluate a situation and how our behavior might impact it. In the young child, waiting for a short period without being disruptive is an example of response inhibition while in the adolescent it would be demonstrated by accepting 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, for example can hold in mind and follow 1-2 step directions while the middle school child can remember the expectations of multiple teachers.
- **Emotional Control:** The ability to manage emotions in order to achieve goals, complete tasks, or control and direct behavior. A young child with this skill is able to recover from a disappointment in a short time. A teenager is able to manage the anxiety of a game or test and still perform.
- **Sustained Attention:** The capacity to maintain attention to a situation or task in spite of distractibility, fatigue, or boredom. Completing a 5-minute chore with occasional supervision is an example of sustained attention in the younger child. The teenager is able to attend to homework, with short breaks, for one to two 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 high school student 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’s important to focus on and what’s 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. An adolescent 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 high school student 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 in order to get to recess. A teenager can earn and save money over time to buy something of importance.
- **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 high school student can accept an alternative such as a different job when the first choice is not available.
- **Metacognition:** The ability to stand back and take a birds-eye view of oneself in a situation. It is an ability to observe how you problem solve. It also includes self-monitoring and self-evaluative skills (e.g., asking yourself, “How am I doing? or How did I do?”). A young child can change behavior in response to feedback from an adult. A teenager can monitor and critique her performance and improve it by observing others who are more skilled.
- **Stress Tolerance:** the ability to thrive in stressful situations and to cope with uncertainty, change, and performance demands.

**EXECUTIVE SKILLS QUESTIONNAIRE FOR CHILDREN—
PRESCHOOL/KINDERGARTEN VERSION**

For each item below and then rate that item based on how well it describes your child. Add the three scores in each section. Find the three highest and three lowest scores.

- 5 Strongly agree
- 4 Agree
- 3 Neutral
- 2 Disagree
- 1 Strongly disagree

Score

Acts appropriately in some situations where danger is obvious (e.g., avoiding hot stove).

Can share toys without grabbing.

Can wait for a short period of time when instructed by an adult.

TOTAL SCORE:

Runs simple errands (e.g., gets shoes from bedroom when asked).

Remembers instructions just given.

Follows two steps of a routine with only one prompt per step.

TOTAL SCORE:

Can recover fairly quickly from a disappointment or change in plans.

Is able to use nonphysical solutions when another child takes toy away.

Can play in a group without becoming overly excited.

TOTAL SCORE:

Can complete a 5-minute chore (may need supervision).

Can sit through preschool "circle time" (15-20 minutes).

Can listen to one to two stories at a sitting.

TOTAL SCORE:

Will follow an adult directive right after it is given.

Will stop playing to follow an adult instruction when directed.

Is able to start getting ready for bed at set time with one reminder.

TOTAL SCORE:

Can finish one task or activity before beginning another.

Is able to follow a brief routine or plan developed by someone else (with model or demo).

Can complete a simple art project with more than one step.

TOTAL SCORE:

(cont.)

Executive Skills Questionnaire—Preschool/Kindergarten Version (cont.)

19. Hangs up coat in appropriate place (may need one reminder).

20. Puts toys in proper locations (with reminders).

21. Clears off place setting after eating (may need one reminder).

TOTAL SCORE:

22. Can complete daily routines without dawdling (with some cues/reminders).

23. Can speed up and finish something more quickly when given a reason to do so.

24. Can finish a small chore within time limits (e.g., make bed before turning on TV).

TOTAL SCORE:

25. Will direct other children in play or pretend play activities.

26. Will seek assistance in conflict resolution for a desired item.

27. Will try more than one solution to get to a simple goal.

TOTAL SCORE:

28. Is able to adjust to change in plans or routines (may need warning).

29. Recovers quickly from minor disappointments.

30. Is willing to share toys with others.

TOTAL SCORE:

31. Can make minor adjustment in construction project or puzzle when first attempt fails.

32. Can find novel (but simple) use of a tool to solve a problem.

33. Makes suggestions to another child for how to fix something.

TOTAL SCORE:

KEY

Items	Executive skill	Items	Executive skill
1-3	Response inhibition	4-6	Working memory
7-9	Emotional control	10-12	Sustained attention
13-15	Task initiation	16-18	Planning/prioritization
19-21	Organization	22-24	Time management
25-27	Goal-directed persistence	28-30	Flexibility
31-33	Metacognition		

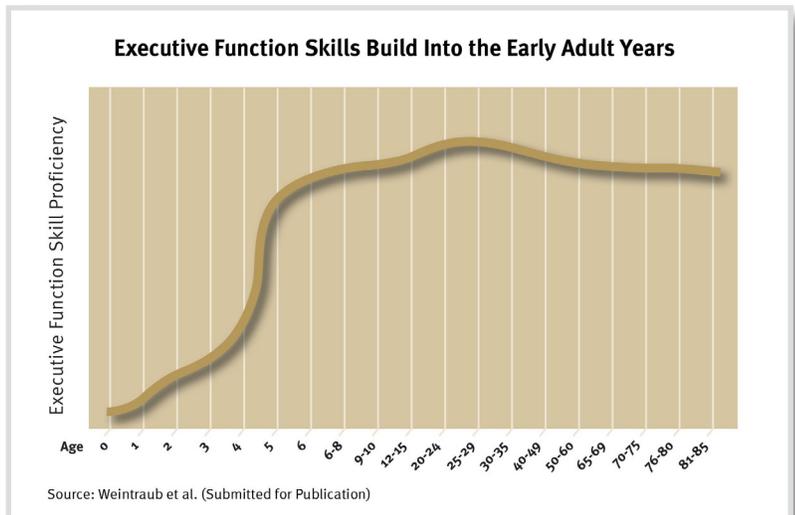
Your child's executive skill strengths
(highest scores)

Your child's executive skill weaknesses
(lowest scores)

A series of brief summaries of essential findings from recent scientific publications and presentations by the Center on the Developing Child at Harvard University.

Research on the developing brain shows us that early childhood experiences build the foundation for a skilled workforce, a responsible community, and a thriving economy. A new evidence base has identified a set of skills that are essential for school achievement, for the preparation and adaptability of our future workforce, and for avoiding a wide range of population health problems.

In the brain, the ability to hold onto and work with information, focus thinking, filter distractions, and switch gears is like an airport having a highly effective air traffic control system to manage the arrivals and departures of dozens of planes on multiple runways. Scientists refer to these capacities as executive function and self-regulation—a set of skills that relies on three types of brain function: working memory, mental flexibility, and self-control. Children aren’t born with these skills—they are born with the potential to develop them. The full range of abilities continues to grow and mature through the teen years and into early adulthood. To ensure that children develop these capacities, it’s helpful to understand how the quality of the interactions and experiences that our communities provide for them either strengthens or undermines these emerging skills.



Tests measuring different forms of executive function skills indicate that they begin to develop shortly after birth, with ages 3 to 5 a window of opportunity for dramatic growth in these skills. Development continues throughout adolescence and early adulthood.

1 When children have had opportunities to develop executive function and self-regulation skills successfully, both individuals and society experience lifelong benefits.

- **School Achievement**—Executive function skills help children remember and follow multi-step instructions, avoid distractions, control rash responses, adjust when rules change, persist at problem solving, and manage long-term assignments. For society, the outcome is a better-educated population capable of meeting the challenges of the 21st century.
- **Positive Behaviors**—Executive functions help children develop skills of teamwork, leadership, decision-making, working toward goals, critical thinking, adaptability, and being aware of our own emotions as well as those of others. For society, the outcome is more stable communities, reductions in crime, and greater social cohesion.
- **Good Health**—Executive function skills help people make more positive choices about nutrition and exercise; to resist pressure to take risks, try drugs, or

have unprotected sex; and to be more conscious of safety for ourselves and our children. Having good executive function primes our biological systems and coping skills to respond well to stress. For society, the outcome is a healthier population, a more productive workforce, and reduced health care costs.

- **Successful Work**—Executive function skills increase our potential for economic success because we are better organized, able to solve problems that require planning, and prepared to adjust to changing circumstances. For society, the outcome is greater prosperity due to an innovative, competent, and flexible workforce.

2 The critical factors in developing a strong foundation for these essential skills are children’s relationships, the activities they have opportunities to engage in, and the places in which they live, learn, and play.

Relationships—Children develop in an environment of relationships. This starts in the home and extends to caregivers, teachers, medical and human services professionals, foster parents, and peers. Children are more likely to build effective executive function skills if the important adults in their lives are able to:

- **Support** their efforts;
- **Model** the skills;

- **Engage** in activities in which they practice the skills;
- **Provide** a consistent, reliable presence that young children can trust;
- **Guide** them from complete dependence on adults to gradual independence; and
- **Protect** them from chaos, violence, and chronic adversity, because toxic stress caused by these environments disrupts the brain circuits required for executive functioning and triggers impulsive, “act-now-think-later” behavior.

Activities—Building these abilities in young children requires communities and caregivers to provide and support experiences that promote emotional, social, cognitive, and physical development broadly, including a range of strategies that:

- **Reduce stress** in children’s lives, both by addressing its source and helping them learn how to cope with it in the company of competent, calming adults;
- **Foster social connection** and open-ended creative play, supported by adults;
- **Incorporate vigorous physical exercise** into daily activities, which has been shown to positively affect stress levels, social skills, and brain development;
- **Increase the complexity** of skills step-by-step by

finding each child’s “zone” of being challenged but not frustrated; and

- **Include repeated practice** of skills over time by setting up opportunities for children to learn in the presence of supportive mentors and peers.

Places—The home and other environments where children spend most of their time must:

- Feel (and be) **safe**;
- Provide space for **creativity, exploration, and exercise**;
- Be **economically and socially stable** in order to reduce the anxiety and stress that come with uncertainty or fear.

3 If children do not get what they need from their relationships with adults and the conditions in their environments—or (worse) if those influences are sources of toxic stress— their skill development can be seriously delayed or impaired. That said, science shows that there are opportunities throughout development to provide children, adolescents, and the adults who care for them with the relationships, environments, and skill-building activities that will enhance their executive function capacities. It’s just easier, less costly, and more effective to get them right from the start.

POLICY IMPLICATIONS

- **Efforts to support the development of these skills deserve much greater attention in the design of early care and education programs.** Policies that emphasize literacy instruction alone could increase their effectiveness by including attention to the development of executive function skills.
- **Teachers of young children would be better equipped to understand and address behavioral and learning challenges in their classrooms if they had professional training in the development of executive function skills.** Teachers are often the first to recognize serious problems with a child’s ability to control impulses, focus attention, stay organized, and follow instructions. The consequences of mislabeling these problems as “bad behavior” can lead to a highly disrupted classroom, preventable expulsions, or the inappropriate use of psychotropic medications.
- **For young children facing serious adversity, policies that combine attention to executive function and reducing the sources of toxic stress would improve the likelihood of success in school and later in life.** Adverse conditions such as abuse, neglect, community violence, and persistent poverty can disrupt brain architecture and place children at a disadvantage with regard to the development of their executive function skills. Lessons learned from interventions that have successfully fostered these skills hold considerable promise for incorporation into home visiting, parent education, and family support programs.
- **Adult caregivers need to have these skills in order to support their development in children.** Programs such as job-skills training that intentionally build executive function and self-regulation capacities in adult caregivers not only help them become more economically secure, but they also enhance their ability to model and support these skills in children.

For more information, see “Building the Brain’s ‘Air Traffic Control’ System: How Early Experiences Shape the Development of Executive Function” and the Working Paper series from the Center on the Developing Child at Harvard University. www.developingchild.harvard.edu/resources/

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