

EXECUTIVE FUNCTION SKILLS:



Approaches To Learning for Infants & Toddlers

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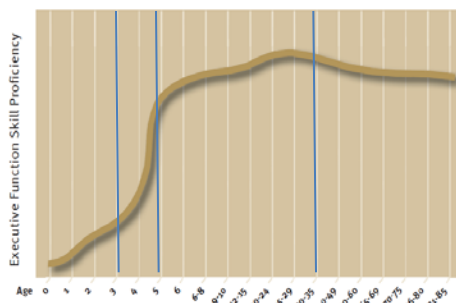
Session Objectives:

- Understand what **Executive Functions** are.
- Understand why they are important.
- Learn strategies for helping infants and toddlers develop and improve their executive functions.

Executive Function skills :

- cognitive control abilities that are initiated in the pre-frontal cortex.
- cognitive control functions involved in goal-oriented behaviors.
- intentional behaviors that begin to evolve in infancy, supported by nurturing relationships.
- Crucial building blocks for early development of both cognitive and social capabilities.
- More predictive for school readiness and school success than IQ, entry-level math or reading test scores.
- Important for job success, including increased productivity and success finding and keeping a job.
- Impeded by the stresses of poverty.
- Begin in infancy, develop rapidly in early childhood and begin to fall off after around age 30.

Executive Function Skills Build Throughout Childhood and Adolescence



A range of tests measuring different forms of executive function skills indicates that they begin to develop shortly after birth, with ages 3 to 5 providing a window of opportunity for dramatic growth in these skills. Growth continues throughout adolescence and early adulthood; proficiency begins to decline in later life.

Source: Wentraub et al. (in Pexis)⁷⁷

Executive Function Skills:

- Often appear in the category of Approaches to Learning in developmental frameworks because they focus on **HOW** children acquire skills rather than **WHAT** skills they are learning.

Core Executive Functions:

- Inhibitory Control (self-control, self-regulation)
- Working memory
- Cognitive Flexibility

Higher Order Executive Functions

- Problem Solving
- Reasoning
- Planning

Executive Functions in Infants and Toddlers are beginning to develop in the areas of:

- Inhibitory control
- Self-regulation
- Attention
- Curiosity
- Information gathering
- Memory
- Persistence
- Problem solving

Inhibitory control: The ability to resist a strong inclination to do one thing and instead do what is most appropriate or needed. Components of inhibitory control include

- **Focus:** Inhibitory control includes the ability to focus even when there are distractions.
- **Persistence:** The ability to stay on task and complete the task, even in the face of temptation or frustration.
- **Self-Control:** The third inhibitory control skill involves the exercise of self-control by considering a response before acting—controlling behavior, responses, and language (thinking before you speak).
- **Effortful Control-** suppression of one response in order to demonstrate another

Self-Regulation: Self-Regulation refers to brain processes that help children regulate their thoughts, emotions, and behaviors. The ability of young children to regulate their own emotions and keep attention focused. Children who cannot regulate anxiety or emotions effectively are not as inclined to feel safe and curious enough to take on new cognitive challenges, or to practice the skills required for cognitive development.

Babies who have good self-regulation skills are:

- Able to comfort self.
- Able to communicate when uncomfortable or unhappy
- Able to discover and use environment to help calm down—sucks on blanket hand or pacifier,
- Can be comforted or calmed by making eye contact or hearing the soft voice of a trusted caregiver.
- Able to remember and even repeat basic rules—like don't touch-it's hot.
- Able to recognize a few basic emotions by name.

Supporting Self-Regulation

For Infants:

- Stay calm—babies tune in to your emotions
- Provide routines and predictable schedules
- Acknowledge self-soothing behaviors.
- Anticipate needs and respond quickly.
- Especially when they are not calm, a calm adult can help infants manage strong emotions.
- Routines and predictable schedules provide comfort for babies. Change them with the baby's needs but keep them as consistent as possible.
- Acknowledge their self-soothing behaviors with language "You found your thumb –now you feel better" Would you like to hold your blanket?"
- Use words to let a child know you have heard him even if you can't get to him quickly. "I will get your bottle and heat it up. I will be right there and we'll sit together while you drink."

For toddlers:

- Change is hard. Toddlers need preparation to move from one thing to the next.
- Give simple but valid choices but only give choices that are both acceptable.
- Supervise the child, but don't rescue them or comfort them too soon. Give them words to express their feelings.
- Slow Down! Give them a chance to solve their own problems. Give them words to help them describe what is going on. "She took the toy from you and it made you mad, but you went to get another toy. What a great way for you to solve a problem!" With older toddlers, ask them how they want to solve the problem themselves.
- Support transitions with warnings.
- Allow children to work through emotions and give them the words to express their feelings.
- Comment on their attempts to handle challenges.

Inhibitory control: Attention

"The ability to maintain focus on a person, object or event, or become deeply involved in an activity or interaction even when there are internal or external distractions"

How long a baby can pay attention is directly related to the activity and relationship of the person or event and whether there are distractions. The general rule varies from around 3-5 minutes per age of the child, but it is also directly influenced by the child's "regulation state"—comfort, alertness, sleepiness and temperament.

Even newborns can focus for as long as 4 minutes-especially on a parent or caregiver's face.

Supporting Attention

- Provide **space** and **time** for babies to use materials in their own way and to repeat actions and activities.
- Play games that involve repetition-like peek-a-boo.
- Observe what toys increase interest. Expand on that. Is the box more interesting than the toy that came in it? Go for the box!
- Use children's names often to get their attention.
- Limit the number of toys provided at once and rotate for novelty.
- Make experiences comfortable and enjoyable.
- Make up stories about the child and familiar situations and tell the story over and over in an animated and compelling voice.
- Face time. Children, especially very young babies are fascinated by the face of a familiar person with whom they have a special relationship.

Curiosity

- Encourage children to react and move.
- Enliven the senses.
- Expose them to varied environments during the day—Avoid Swings or walkers!
- Watch and listen for cues that they are thinking, wondering or trying to discover something and respond enthusiastically.
- Provide a safe environment that encourages exploration.
- Say “yes”, not “no!” Create a Yes environment.
- Offer open-ended toys that children can manipulate in many ways.
- Let babies try, fail and try again before rescuing them. This also helps build resilience.

Memory

- *Object Permanence*: Remembering people or things even after they can no longer be seen.
- *Working Memory*: Holding information in mind and using it to accomplish something
- *Long-term memory*: Remembering familiar routines or phrases over time.

Supporting Memory for Infants and Toddlers:

- Play simple hide and seek games from home or school.
- Memory games using matching pictures.
- Talk about events that happened earlier in the day. Use family photos and talk about them and events that involved the child.
- Consistency—keep things the same until you see that the child is losing interest. Then rotate or change.
- Repetition—reading and re-reading books.
- Predictable routines and schedules—illustrated with pictures.

Persistence: Working toward a specific goal despite obstacles or failures.

- Babies might use certain behaviors to get adult’s attention.
- Grasp and release an object over and over.
- Fill and dump a container with small objects repeatedly.
- Try shapes in a shape sorter over and over until it finally fits and drops in.
- Try to dress themselves, working buttons or zippers with determination until they get it.

Supporting Persistence:

- Offer emotional support with language
- Provide help (scaffolding) but not too much.
- Watch for signs of frustration and provide encouragement.
- Keep looking for challenges to help maintain interest but not so challenging that it will cause more frustration.

Cognitive Flexibility: The ability to easily and quickly switch perspectives of the focus of attention, flexibly adjusting to changed demands or priorities—being able to apply different rules in different settings. Thinking about new ways to solve problems.

Babies might demonstrate this skill by:

- Exploring objects with their hands and mouths
- Repeating actions many times to cause the desired effect. . Have you ever seen a baby look directly to you and push something off the high chair tray onto the floor to see what you will do? –This is definitely a goal-oriented behavior. She is testing to see what you will do.
- Pushing a ball or hitting a knob to make a bell ring—exploring cause and effect.
- Saying goodbye to a parent knowing that the parent will return.
- Using objects as they are intended for a specific purpose, such as sweeping with a broom.

Supporting Cognitive Flexibility:

This supports the higher-order skill of planning and encourages mindfulness or intentionality as children think about what they are doing and what they want to do next.

- Remember the strategies that support persistence—they are connected with problem solving!
- Provide “scaffolding”- ask open-ended questions such as “what else can you do?” or “How can you get that toy car out of your boot? Perhaps you could shake it...”
- Point out problems in books and real life and talk about how they get solved.
- Provide interesting toys with different textures for babies to explore.
- Pretend play that allows children to explore functions of common objects.

Parents and Executive Function Skills:

- Research indicates that about half of the effects of poverty in early childhood relate to family and parenting factors.
- If we can promote effective parenting and family functioning in early childhood, we may be able to prevent lifelong problems for children

Brain Games can help develop EF skills in parents and older siblings:

Try “Simon Says” to support *effortful control*. Say a command like “Simon Says put your hand on your head.” Players are only to follow the command if you said “Simon says” first. If you say the command without saying Simon Says first, the players must not follow the command. Anyone who does not follow these rules is out of the game. The last one in the game wins.

Try Simon for *working memory*: <http://www.freegames.ws/games/kidsgames/simon/simon.htm>

Try The Stroop Color Word Test to test your *cognitive flexibility*:
<http://faculty.washington.edu/chudler/java/ready.html>

To test your *focus*, try this on-line activity.

<http://www.nytimes.com/interactive/2010/06/07/technology/20100607-distraction-filtering-demo.html? r=0>

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