

Activities and Strategies that Support Executive Function in Young Children

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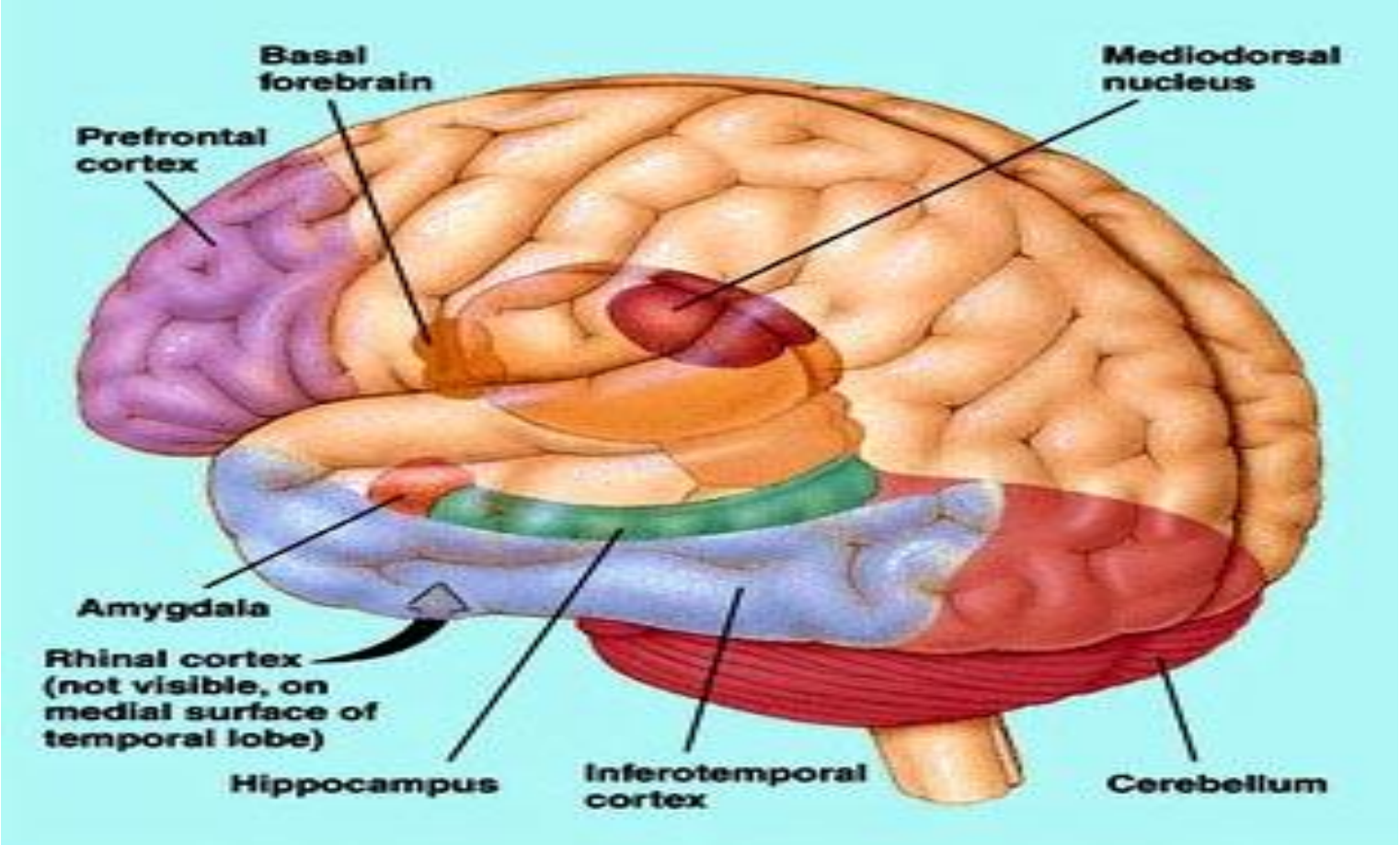
Learner Objectives

- Participants will gain knowledge of executive function (EF) as cognitive capacity and how to improve skills for young children.
- Participants will learn how strategies addressing components of EF may help to strengthen EF skills and buffer or ameliorate learning difficulties in young children prior to school-age.



Chief Executive Officer

She's the CEO of her brain



Executive Functioning Birth to 3

- Refers to a group of neurocognitive processes in the brain that direct, connect, and organize information that is manifested in planned behavior.

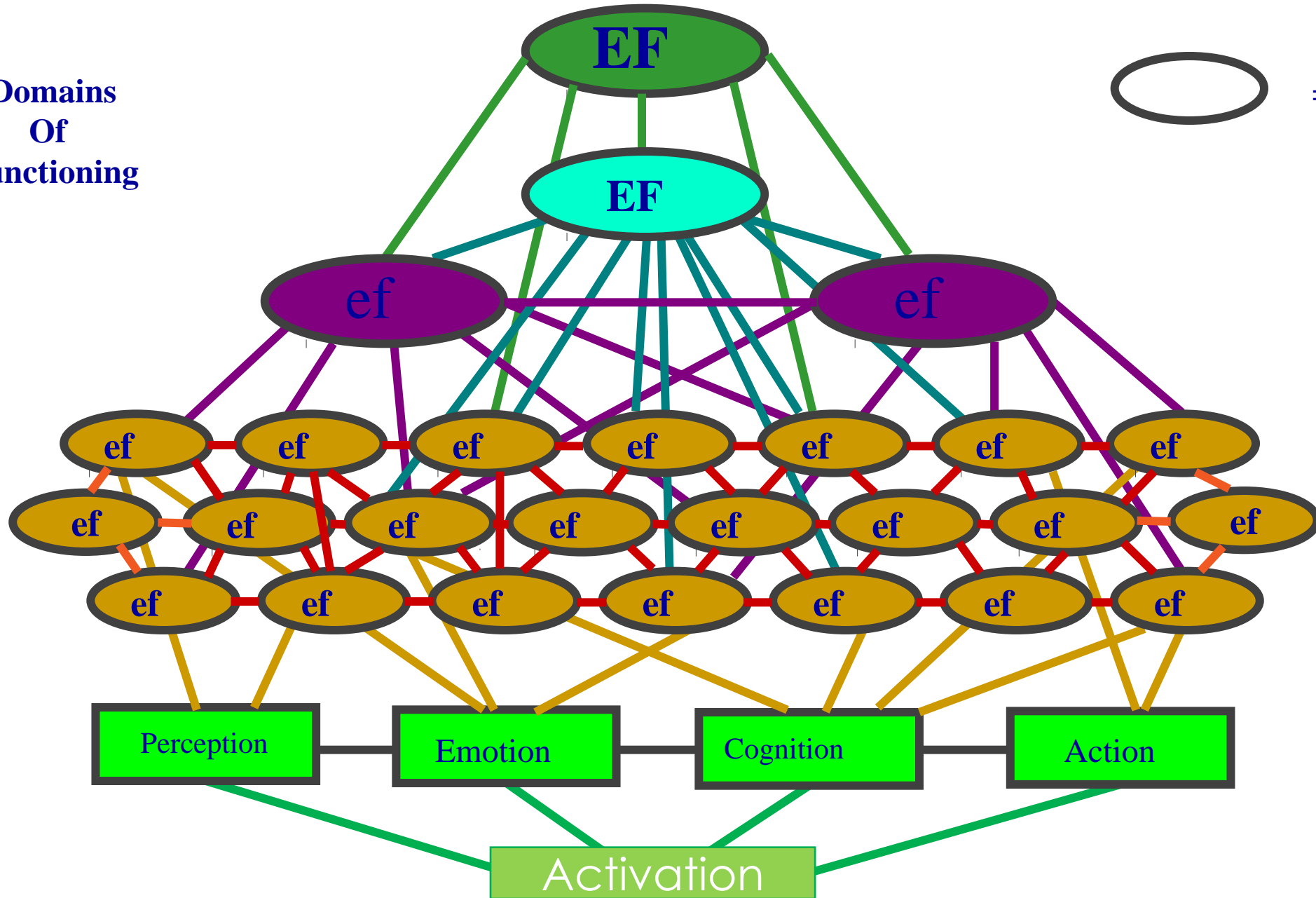
Co-Conductors in a Hierarchy of EF



=Domains
Of
Functioning



=Executive
Function
Capacity





Neurocognitive Processes



- Self Regulation
- Inhibition
- Working Memory
- Cognitive Flexibility
- Goal Selection
- Planning and Organization

Early Childhood and EF

- Components follow their own developmental trajectory
- Growth spurts in the last half of the first year and then from 3 to 6 years of age

Diamond, 2006

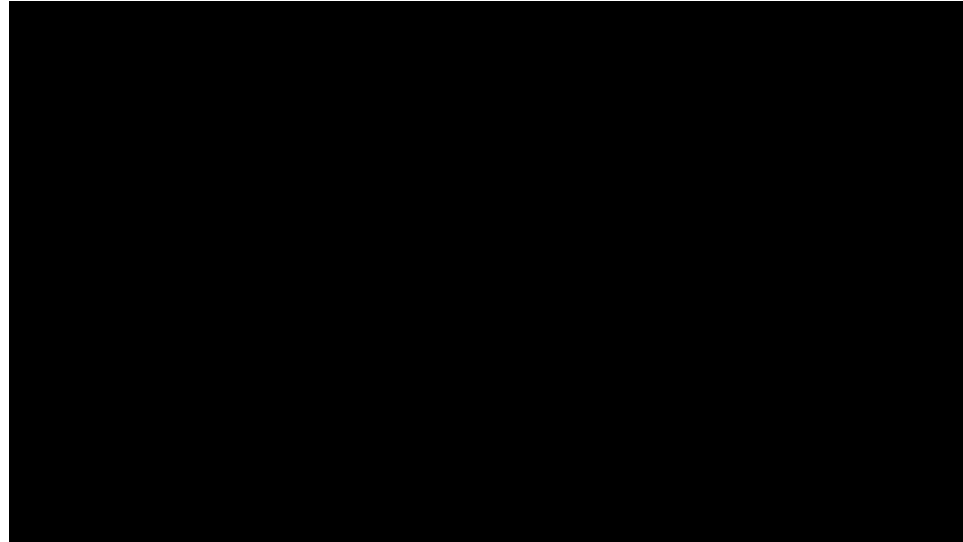
Why are these so important in Early Childhood?

- Inability to plan and organize actions, maintain attention to tasks, and recall past experience to apply to new learning experiences may lead to:
- Developmental delays
- Learning disabilities (LD) as well as problems with Attention-deficit/hyperactivity disorder (ADHD)

First Year of Life

- By 12 months, infants should be able to:
 - Engage in a simple problem-solving task requiring working memory of an item (find a hidden toy under a cloth)
 - A not B task (Shift)
 - Regulate behaviors (inhibit actions, waking, sleeping, eating, etc)

A not B Task



Self-Regulation



Self-regulation functions are developing from the first years of life on throughout a person's entire lifetime.

Marshmallow Test



Toddler (24 months)

- Spatial Reversal

Concealed behind screen, reward under one of two cups, side of hiding reversed

- Multilocation Search (A not B)

Object hidden at one of three or more locations

Three years and up



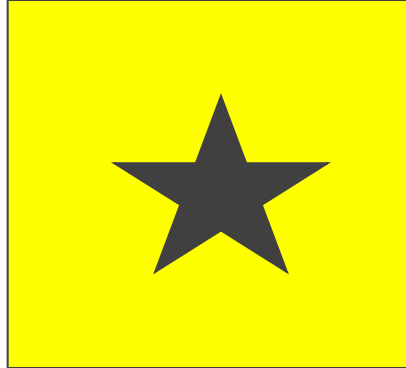
- Dimensional Card Category Sort (DCCS)

Cards depicting colored shapes

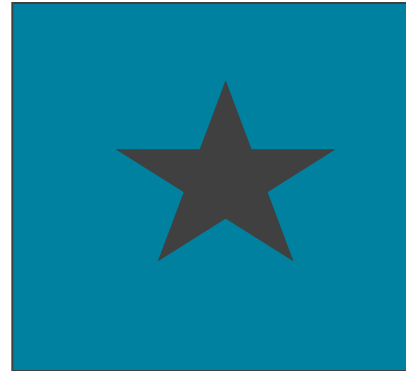
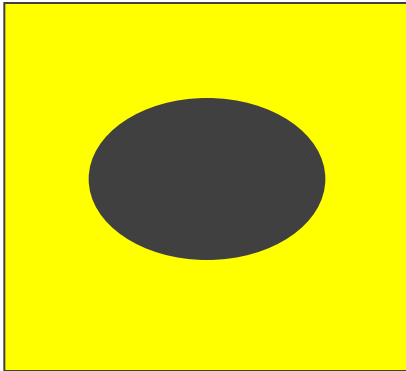
Child sorts cards by 1 dimension then another

Dimensional Change Card Sort- Separated Task

Rule: Sort by
Color



Rule: Sort by
Shape



Three years and up



- Knock tap

Child knocks when Examiner taps

Knock Tap



National Children's Study



- There are no standardized assessment of all the components of EF
- There are individual assessments of components (e.g., A not B)

Need for Measurement tools



- Executive functioning is important to cognitive development during the birth to three years.
- Comprehensive measures of executive functioning are needed for infants and toddlers.

Researchers have demonstrated that aspects of executive functioning can be improved in infants and toddlers with intervention.

The Behavior Rating Scale of Executive Functioning – Preschool version (BRIEF-P)

- A 63 item rating form for parents or caregivers to rate a child's executive functions within the context of his or her daily environments
 - Gioia, Espy & Isquith, 2002

EF Touch



<http://eftouch.fpg.unc.edu/>



Let's Try It

Name the Ink Color Out loud....

- Red

- Green

- Yellow

- Red

- Green

- Blue

- Yellow

- Red

- Green

- Blue

- Red

- Blue

- Yellow

- Red

- Blue

- Green

Name the Ink Color Out loud....

- Red
- Green
- Yellow
- Red
- Green
- Blue
- Yellow
- Red
- Green
- Blue
- Red
- Blue
- Yellow
- Red
- Blue
- Green

How can we help?

Inhibit

- Stop, redirect activity

Inability to inhibit

- does not notice when his/her behaviors cause negative reactions
- talks in places too loudly
- Engages in inappropriate behavior

Cognitive Flexibility (Shift)

- Moving from one idea/activity to another
- Difficulty:
 - becomes upset in new situations
 - has trouble changing activities
 - resist changes in routine, foods, places
 - acts overwhelmed or overstimulated in crowded and/or noisy environments

Small Group Activity



- Please take a few minutes and discuss how you currently address components of EF.

Emotional Control

Ability to control frustration, think before acting

- Difficulty with:
- overreacts to small problems
- after having a problem will stay disappointed for a long time
- has outbursts for little reason
- small events trigger big reactions

Working Memory

Holding information in mind and recalling it

Difficulty with:

- has trouble with activities or tasks that have more than one step
- cannot stay on the same topic when talking
- has a short attention span
- unable to finish describing an event, person, or story

Planning and Organizing

- Mastery Motivation
- Difficulty with:
 - does not complete tasks even after given directions
 - when instructed to clean up put things away in a disorganized/random fashion
 - trouble following established routines for sleeping, eating, and/or play activity

Inhibit Interventions



- Frequent Breaks
- Environmental Structure
 - Limit distractions
- Behavior programs
- Frequent Redirection and Limit Setting
- Smaller Student-Teacher Ratio

Shift Interventions



- Displaying a daily schedule
- Development of positive routines
- “Two minute warning”
- Working in small groups

Emotional Control Intervention



- Preview social situations
- Review rules
- Behavioral management techniques

Working Memory Interventions

- Establishing Eye Contact
- Frequent, brief, breaks
- Reduce distractions
- Increase Supervision/Aide
- Time of Day important
- Encourage verbalization, paraphrasing, repetition
- Memory, Number-Letter Sequencing, Songs

Planning and Organizing Interventions

- Increase external structure
- Parent/Teacher modeling
- Provide examples
- Present information in an organized fashion
- Book of common routines

“Get Ready for Outdoor Play”

What do we need?

- Coat
- Hat
- Water bottle
- Boots

Check the Weather
Make a list / visuals



Organizational Skills



- Plastic containers are a great way to organize different toys, especially the smaller ones that can fit in one drawer.

Organizational Skills



- Picture/label the toys inside and have children return materials to the right drawer.
- Use a large picture calendar of daily routines or storyboard

Organizational Skills

- Teach the children how to place lunch plates or cups in a designated place after a meal
- Use a fun folder that the child picks out to pass notes back and forth with family

Organizational Skills

- Videotapes on cell phone to remind child of daily routines
- Talk about past and future events
- Use visual strips or book to help child with routines

Executive Function Intervention

- 12 months
- Use a shape sorter, show the child how to insert a simple shape circle, provide them the opportunity to place the same shape. Now ask them to place other shapes. Watch the child for signs of frustration or lack of interest. If the task is too challenging, reduce the number of shapes.

Executive Function intervention

- 24 Months
- Find six pair of socks and place them singularly in a basket. Ask the child to find the matching sock and put them together. To add a challenge use small and large socks so the child has to match both color and size. To add a fine motor component, have the child clip the matching socks together with a large clipper for snacks.

Executive Function Intervention

- 36 months
 - Build a road with blocks and make an obstruction. Ask the child to rebuild the road without the obstruction. Let the child experiment with problem-solving as they try to rebuild the road.

Preschool Executive Functions

Perform simple chores and self-help tasks with reminders (e.g., clear dishes from table, brush teeth, get dressed).

- Inhibit behaviors: knows not to touch a hot stove; knows not to run into the street; knows not to grab a toy from another child; hit, bite, or push, etc.

EF: Kindergarten – Grade 2

- Kindergarten
 - Complete errands (two to three step directions; more complex).
 - Organize bedroom or playroom toys (put in bin, etc.).
 - Perform simple chores, self-help tasks; may need reminders (e.g., throw tissue in trash).

EF: Kindergarten – Grade 2

- Bring backpack to and from program.
- Complete simple assignments (20-minute maximum).
- Decide how to spend money (allowance).
- Inhibit Behaviors: follow safety rules, raise hand before speaking, keep hands to self.

Organization of Materials for K – 2nd Grade

- Talk with child about goals, plan of approach, and provide appropriate guided approach
- Parents and teachers should help in reviewing materials needed
- Provide organization time at the end of the school day

The End



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Thank You!