



# **EARLY CHILDHOOD: EXECUTIVE FUNCTIONING & AUTISM**

Arizona Department of Education:

Early Childhood Education

&

Exceptional Student Services Units

# OBJECTIVES

**Define and recognize Executive Functioning and dysfunction in the Early Childhood setting**

**Understand the impact of Executive Dysfunction in Early Childhood and how it can be predictive of future academic achievement and social skills**

**Learn strategies and tools to support the development of Executive Function skills in early childhood, to affect the student's lifelong learning**

Look at the chart and say the **COLOR** not the word

**YELLOW**   **BLUE**   **ORANGE**

Once a level of decoding proficiency is established, the brain insists  
on reading the word.

# THE STUDY OF EXECUTIVE FUNCTIONING

The Brain's  
Executive  
Functions

**Began in the field of neuropsychology in the late 1980's.**

**Through the study of brain injuries learned that EF activity takes place primarily in the pre-frontal cortex.**

**Multiple ways to organize and represent the skills involved in Executive Functioning. Some say there are 27 separate skills, others have narrowed it to three main skills.**



# EXECUTIVE FUNCTIONING BASICS



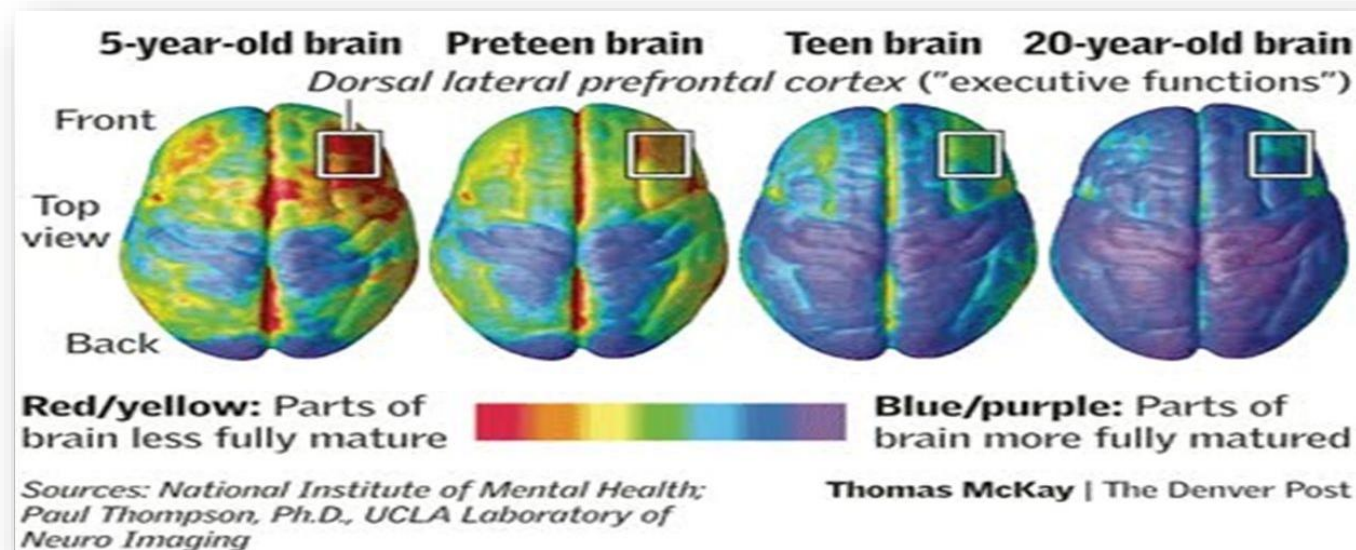
**Executive Function skills help us plan, organize, make decisions, shift between situations or thoughts, control our emotions and impulsivity, and learn from past mistakes.**

**EF has less to do with possessing intellectual knowledge than it does with being able to reason—to use knowledge purposefully and put it into practice.**

**Executive Functioning issues are not considered a disability on their own. They are weaknesses in a key set of mental skills (which we will review...).**

# EXECUTIVE FUNCTIONING BASICS

**Children aren't born with Executive Functioning skills—they are born with potential to develop them. Skills are malleable, meaning they can change and are influenced by both positive and negative experiences. Development continues well into the 20's.**



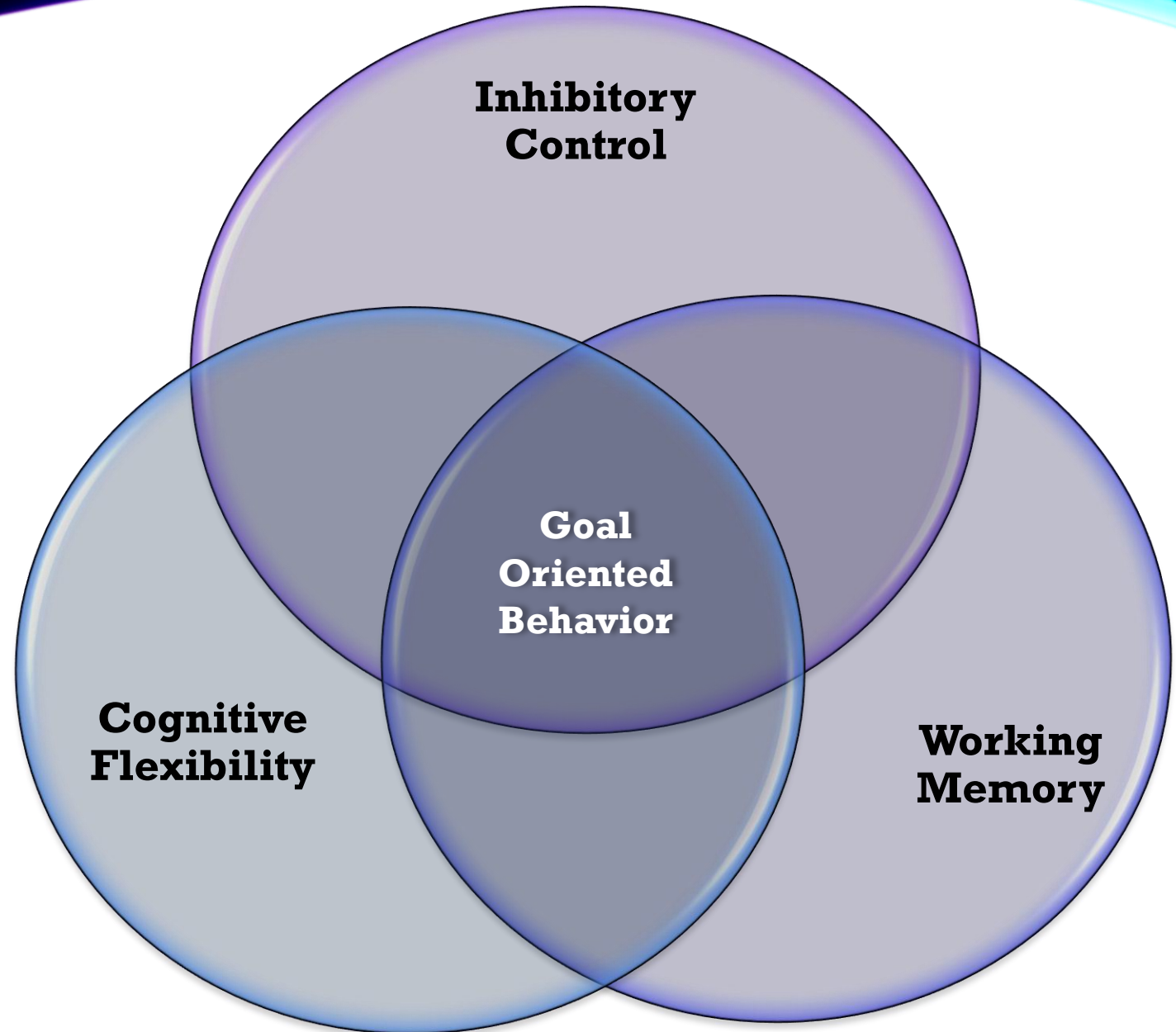
**Providing support to children to build EF skills in the home, in early childcare settings and in educational programs is one of society's most important responsibilities.-Center on the Developing Child, Harvard University**

# CORE EXECUTIVE FUNCTIONS SKILLS

Early Childhood 0-5

The preschool aged brain is not as differentiated for EF skills—there is a great deal of overlap that can make it difficult to decide if the challenges are due to IC, CF, or WM.

Luckily, many preschool activities can support development of these skills simultaneously.



# EARLY CHILDHOOD EDUCATORS CAN MAKE A DIFFERENCE

## Success in School

Top 10 Skills as identified by a survey of 8,000 teachers:

- ❖ Listens to others
- ❖ Follow the steps
- ❖ Follow the rules
- ❖ Ignore distraction
- ❖ Take turns when talking
- ❖ Ask for help
- ❖ Get along with others
- ❖ Stay calm with others
- ❖ Be responsible for your behavior
- ❖ Do nice things for others

-Gresham & Elliot, 2006





# EXECUTIVE FUNCTIONING PREDICTORS

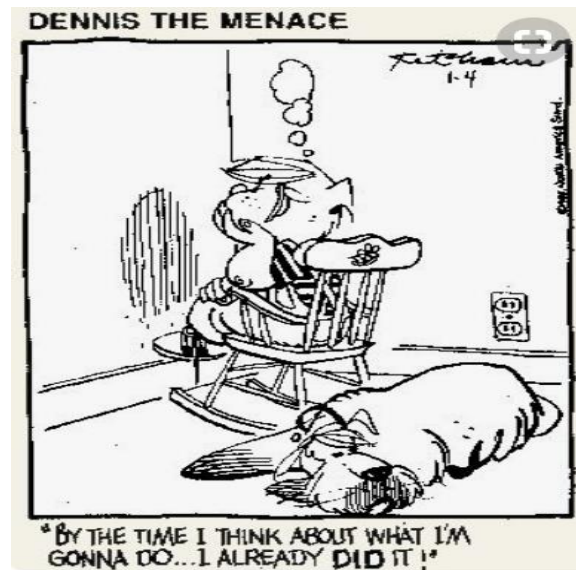
When measuring individual characteristics such as working memory, inhibitory control, and cognitive flexibility:

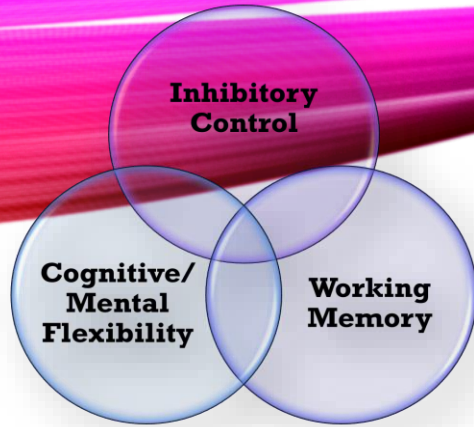
- EF mattered more than IQ
- EF skills at age 5 predicts 5th grade academic skills
- High EF connected to high math and reading skill, low EF to low math and reading skill
- Limited evidence to show that working on academic skills early will improve later academic outcomes



# EXECUTIVE FUNCTIONING EARLY CHILDHOOD

8:30 - 9:00 Arrival and Centers		11:30 - 12:00 Lunch	
9:00 - 9:30 Outside (or gym)		12:30 - 1:30 Rest Time	
9:30 - 10:00 Small Groups (includes snack)		1:30 - 2:00 Quiet Activities	
10:00 - 11:00 Centers		2:00 - 2:15 Afternoon Snack Time	
11:00 - 11:30 Clean Up, Storytime Large Group		2:15 - 2:30 Pick Up/Dismissal	



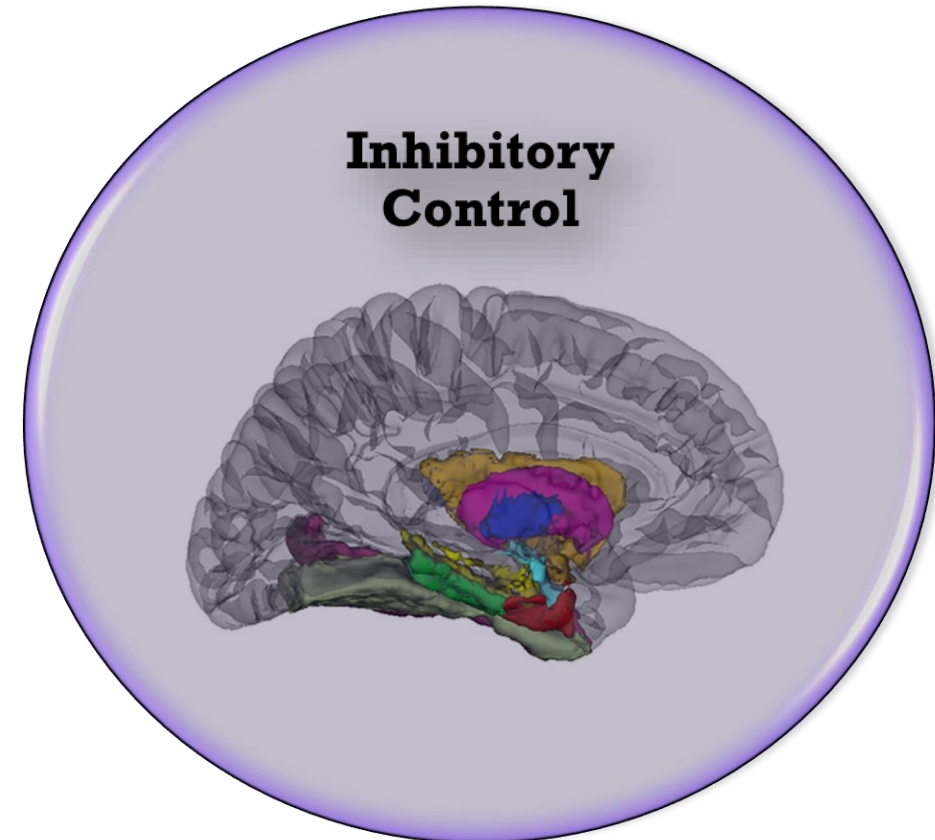


# **INHIBITORY CONTROL:** IS THE ABILITY TO RESIST ENGAGING IN A HABITUAL RESPONSE AS WELL AS THE ABILITY TO IGNORE DISTRACTING INFORMATION

- ❖ Ability to control automatic verbal or physical reactions
- ❖ Ability to shift during activities
- ❖ Ability to plan and set goals
- ❖ Ability to self regulate

## Weak Cognitive Flexibility

- ❖ Difficulty understanding and using academic rules
- ❖ Difficulty understanding abstract concepts
- ❖ Difficulty with rigid thinking

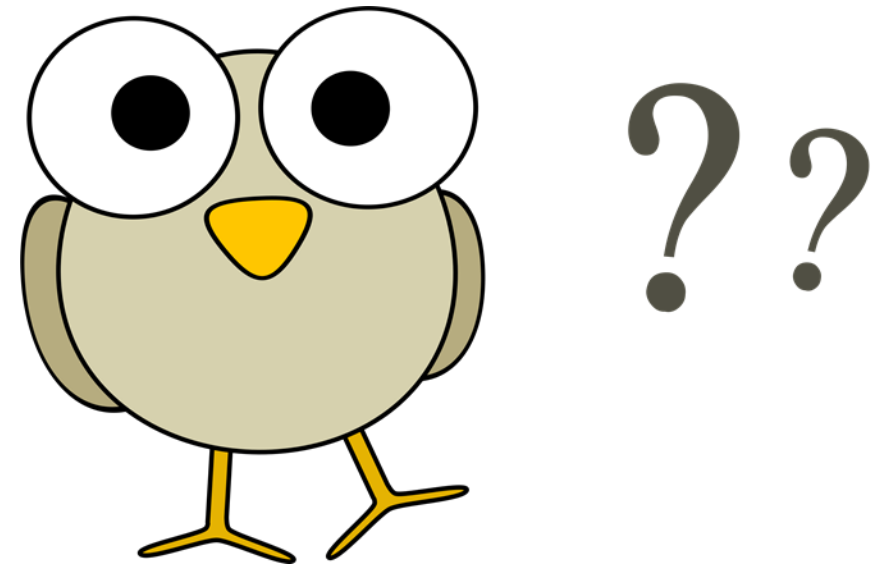


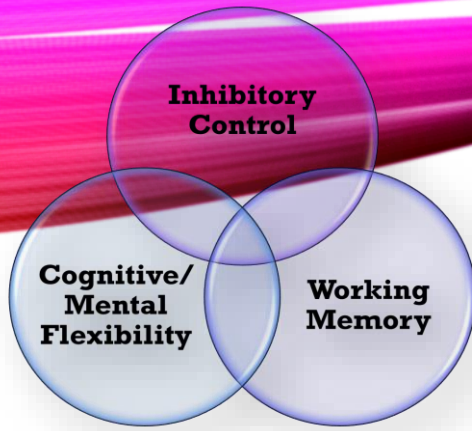
# ACTIVITY TO SUPPORT INHIBITORY CONTROL

## Island Game



- What inhibitory controls did you use?
- What was difficult?
- What was easy?



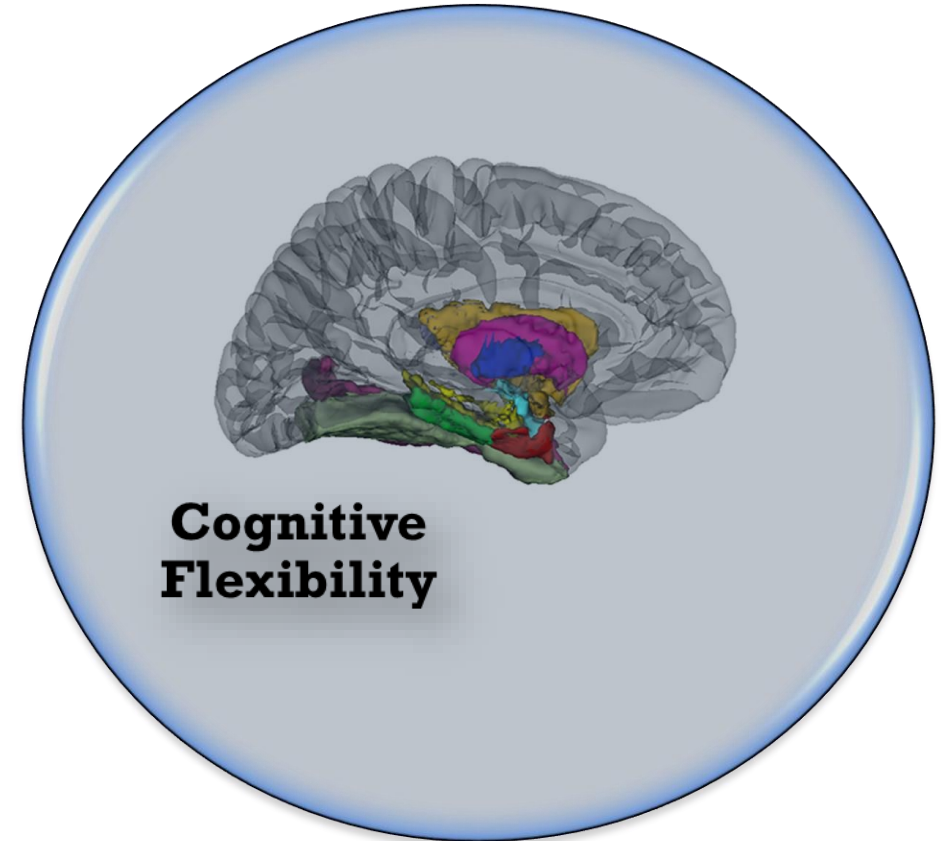


# **COGNITIVE FLEXIBILITY:** IS THE ABILITY TO SHIFT ATTENTION FROM ONE ACTIVITY TO ANOTHER OR TO ACTIVELY SWITCH BACK AND FORTH BETWEEN IMPORTANT COMPONENTS OF A TASK

- ❖ Ability to switch gears and look at things differently
- ❖ Ability to “unlearn” old ways of doing things.
- ❖ These abilities are a key role in all types of learning

## Weak Cognitive Flexibility

- ❖ Difficulty understanding and following academic rules
- ❖ Difficulty understanding abstract concepts
- ❖ Difficulty with rigid thinking

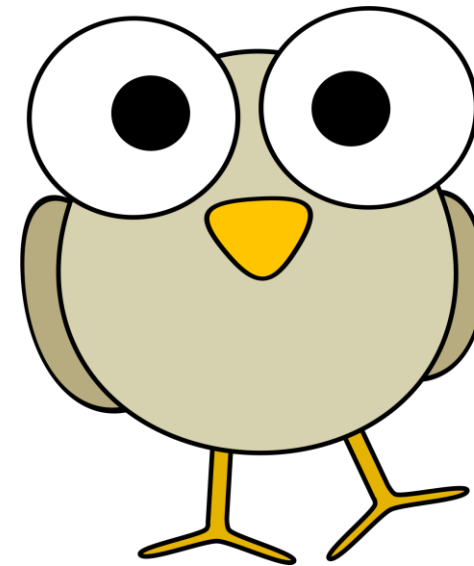


# ACTIVITY TO SUPPORT COGNITIVE FLEXIBILITY

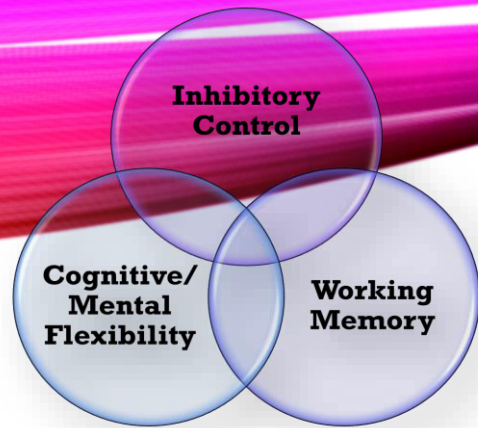
- **Apple Scramble Game**



- What cognitive flexibility was needed?
- What was difficult?
- What was easy?



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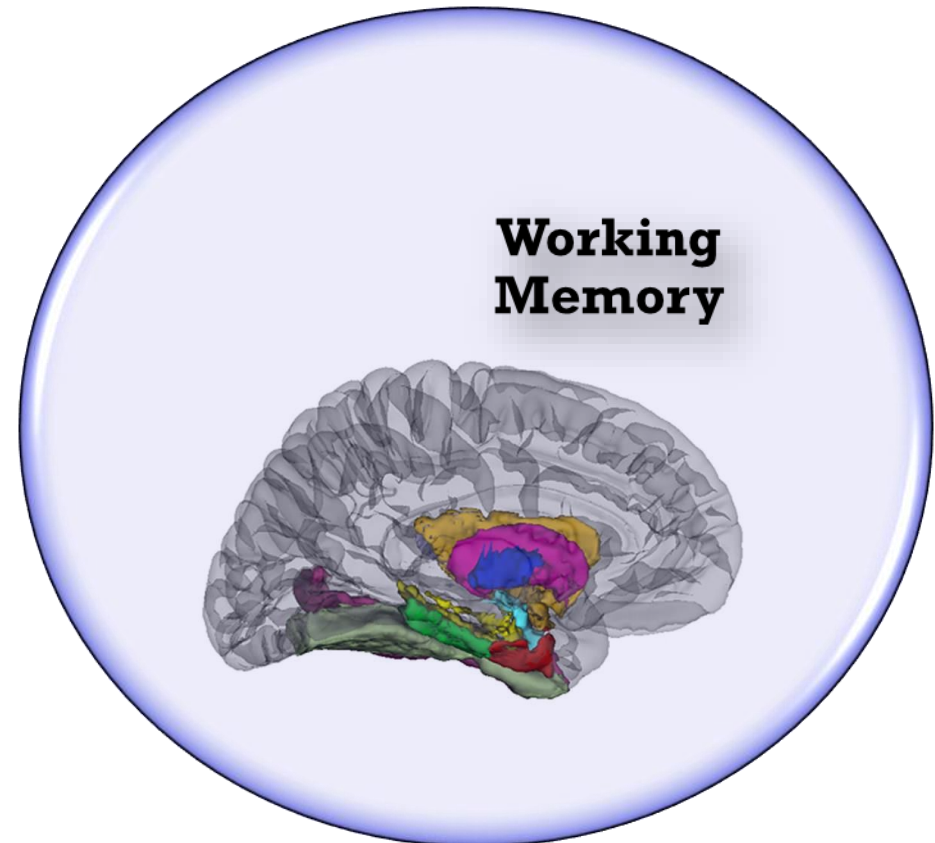


**WORKING MEMORY:** IS THE CAPACITY FOR HOLDING INFORMATION IN MIND WHILE WORKING WITH PART OF THAT INFORMATION

- ❖ Ability to keep track of short-term information
- ❖ Ability to move short term into organized long term memory
- ❖ Ability to use together your auditory memory and visual-spatial memory

#### Weak Working Memory

- ❖ Difficulty with getting frustrated easily
- ❖ Difficulty with following directions
- ❖ Difficulty with doing things a certain way
- ❖ Difficulty with answers questions in detail

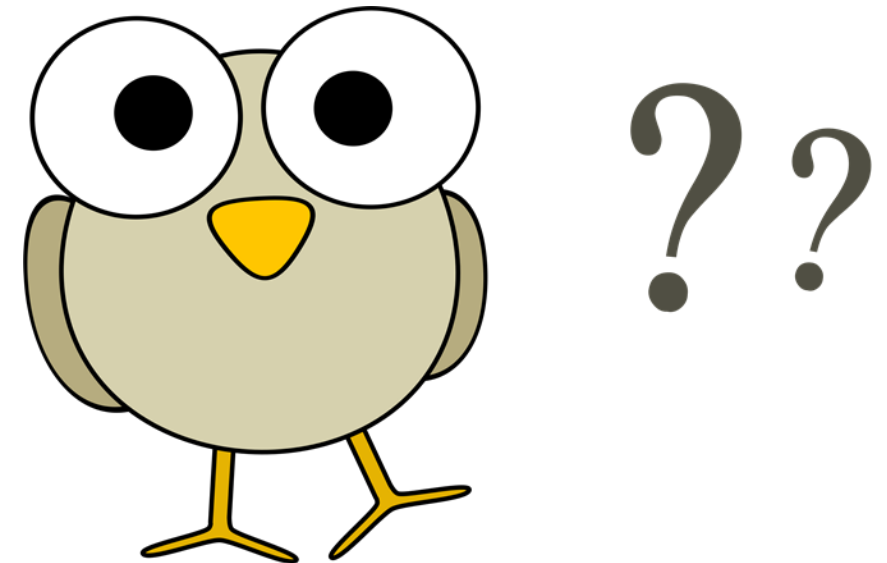


# ACTIVITY TO SUPPORT WORKING MEMORY

- Dice Roll: What can your body do?



- What working memory did you use?
- What was difficult?
- What was easy?





# AUTISM STRENGTHS AND CHALLENGES

**Some sources say that up to 80% of those with autism suffer from executive function disorders**

[https://youtu.be/E\\_mKAjNC5SQ](https://youtu.be/E_mKAjNC5SQ)



## Some Struggles with Autism :

Conversation  
Turn-taking  
Attention to expressions  
Failure to recognize social cues  
Initiation  
Preoccupations  
Rigidity  
Social communication

## Some Strengths in Autism:

Attention to detail  
Uniquely skilled areas  
Deeply skilled areas  
Big picture thinking  
Visual processing  
Direct communicator  
Loyalty  
Honesty  
Non-judgmental listener

# IMPACT OF AUTISM & EF

I can make a plan but it won't take in the social needs of others...

I can pay attention to objects or activities for longer periods of time than to people...

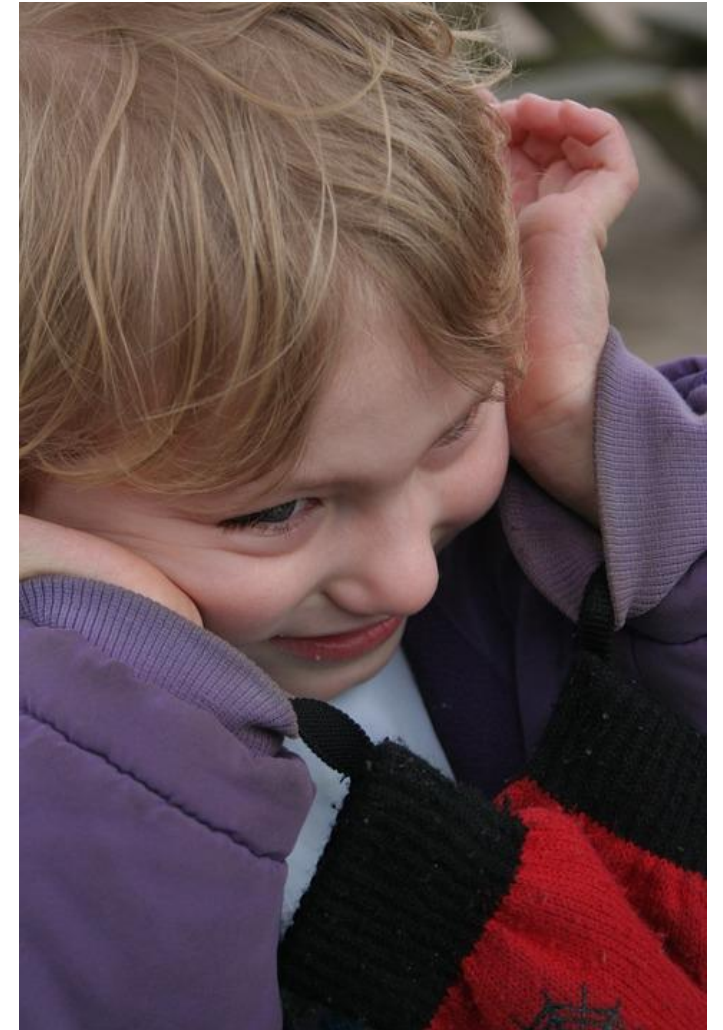
I can be frustrated by others' apparent lack of skill...

I've seen it done this way, so that's how I'll do it from now on...

It's hard to be flexible and try something new or do something at a different time or place...

I have a hard time inhibiting thoughts, actions and words...

**So, what's getting in the way?**



# EXECUTIVE FUNCTION AND THEORY OF MIND



- Infants understand other's goals and intentions
- By 36 months children can infer mental state of someone by the look in that person's eyes
- Children recognize that others have their own thoughts at around the age of 4-5



# EXECUTIVE FUNCTIONING AND AUTISM

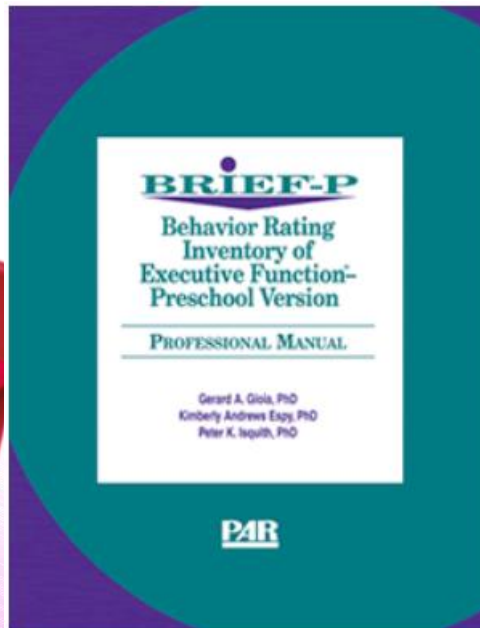


- ❖ EF skills (i.e., inhibition, shifting, cognitive flexibility) are related to Theory of Mind—the ability to take the perspective of others.
- ❖ Most goal related activity takes place in the context of interacting socially with others.
- ❖ For kids with developmental delays, such as those with autism spectrum disorders (ASD), Theory of Mind may take a little longer to develop, and some higher level skills may not be reached at all.
- ❖ Interventions targeting social competence have positive effects on executive functioning in children with autism and other developmental disabilities.

# ASSESSING EXECUTIVE FUNCTIONING

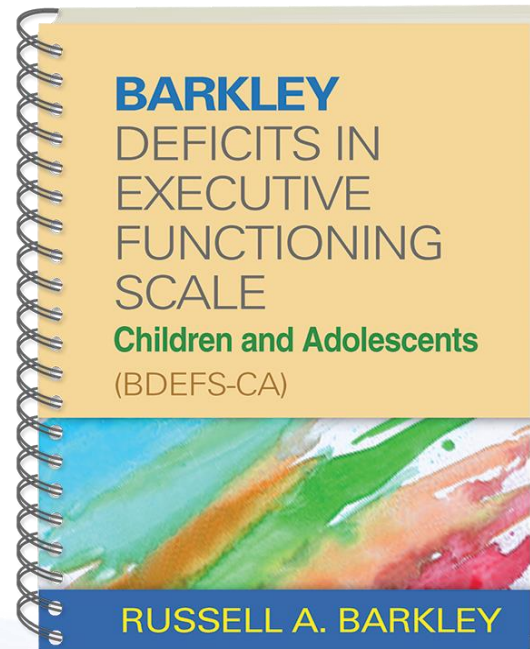
## BRIEF® -P

Behavior Rating  
Inventory of Executive  
Function® —Preschool  
Version  
Age Range: Preschool



## (BDEFS-CA)

Barkley Deficits in  
Executive Functioning  
Scale—Children and  
Adolescents  
Age range 6-17



## CEFI®

Comprehensive Executive  
Function Inventory™  
Jack A. Naglieri, Ph.D. ,  
Sam Goldstein, Ph.D.  
Age range 5-18



# ADDITIONAL INSTRUCTIONAL RESOURCES AND STRATEGIES FOR IMPROVING EF

## Social Skills

Expected and  
Unexpected  
Behaviors

Self Regulation and  
the “Unthinkables”

## Working Memory

Eight Working  
Memory Boosters

Timers and Visual  
Schedules

## Inhibitory Control

Token Board

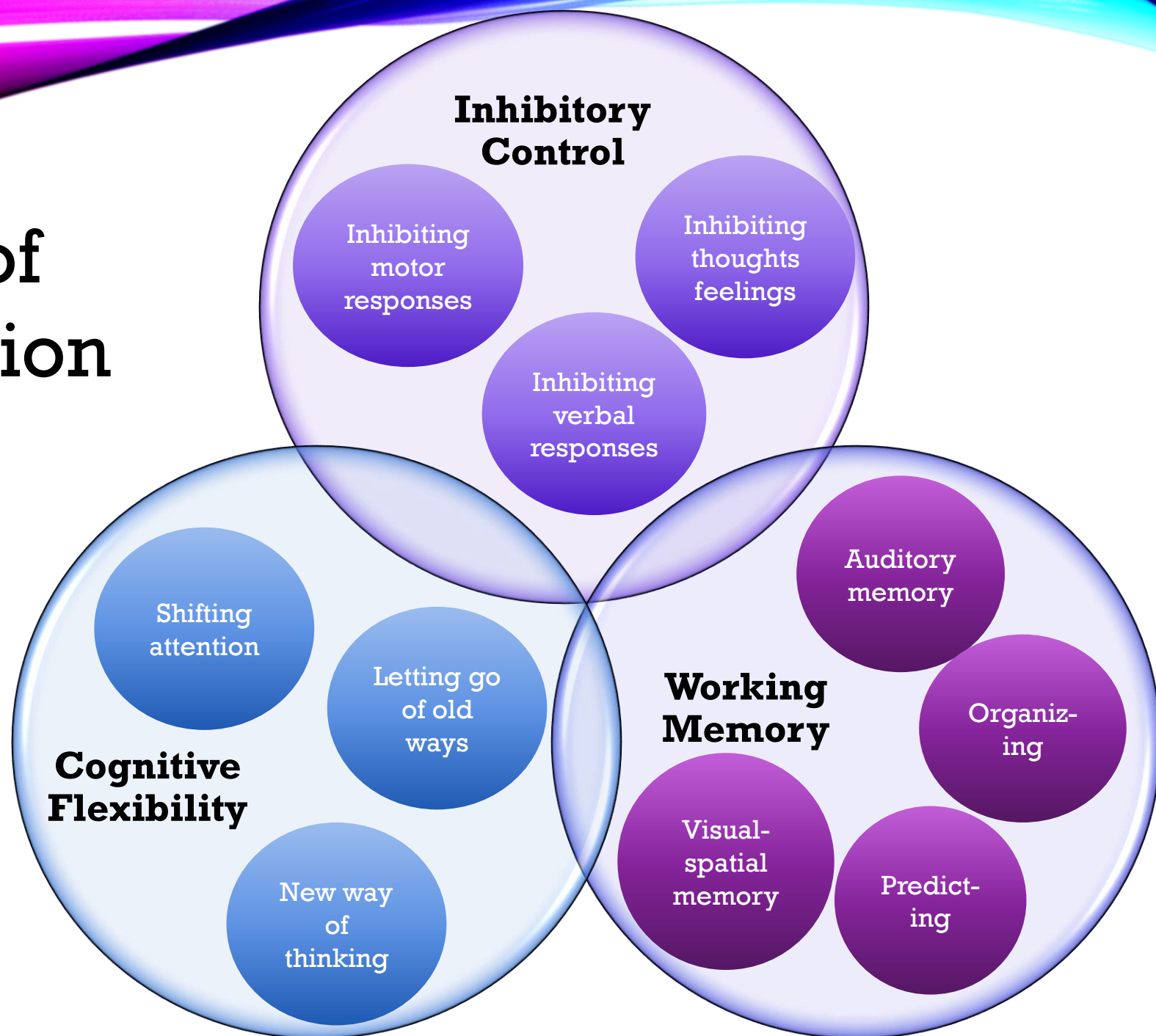
First-Then Schedules

Whole Body Listening

“Those who most need improvement benefit the most.”

# Diversification of Executive Function Skills

Middle Childhood,  
6-12 years old



## Executive Function: Brain's Control Center





# RESOURCES

- Texts and Professional Development:
  - Social Thinking by Michelle Garcia-Winner.  
[https://www.socialthinking.com/Products#f:age=\[ages%204-7\]](https://www.socialthinking.com/Products#f:age=[ages%204-7])
- Web based Resources:
  - Understood, resources for parents to support learning and attention issues and a partnership with 15 non-profit partners. <https://www.Understood.org>
  - Enhancing and Practicing Executive Function Skills with Children from Infancy to Adolescence  
<https://46y5eh11fhgw3ve3ytpwxt9r-wpengine.netdna-ssl.com/wp-content/uploads/2015/05/Enhancing-and-Practicing-Executive-Function-Skills-with-Children-from-Infancy-to-Adolescence-1.pdf>
- Videos and interactive web sites:
- [https://youtu.be/efCq\\_vHUMqs](https://youtu.be/efCq_vHUMqs)
  - <https://archive.nytimes.com/www.nytimes.com/interactive/2008/09/15/health/20080915-brain-development.html>
  - <https://archive.nytimes.com/www.nytimes.com/interactive/2010/06/07/technology/20100607-distraction-filtering-demo.html>

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- <https://www.psychologytoday.com/us/blog/socioemotional-success/201707/theory-mind-understanding-others-in-social-world>
- <https://news.vanderbilt.edu/2007/09/27/top-10-social-skills-students-need-to-succeed-58465/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4084861/>
- Social Skills Intervention Participation and Associated Improvements in Executive Function Performance  
<https://www.hindawi.com/journals/aurt/2017/5843851/>

The background features a row of colorful silhouettes of children holding hands, with speech bubbles above them containing the text 'Thank you!'. The silhouettes are in shades of pink, yellow, green, purple, red, blue, and orange. The speech bubbles are in matching colors. The overall theme is gratitude and community.

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