

The background is a dark blue gradient with a subtle pattern of white dots. On the left side, there are several circular and semi-circular graphic elements. One prominent feature is a large circular scale with tick marks and numbers ranging from 140 to 260. Other elements include dashed lines, solid lines, and arrows, some of which are curved, suggesting movement or rotation. The overall aesthetic is technical and scientific.

SUPPORTING EXECUTIVE FUNCTIONING IN INFANTS AND TODDLERS

PRESENTED BY HOLLY HIGGINS WILCHER

FOR BETTER BRAINS FOR BABIES

THURSDAY, SEPTEMBER 24, 2015

LEARNING OBJECTIVES

- Identify skills that constitute *executive functioning*
- Identify how the infant brain shapes executive functioning and related skills
- Identify risk factors that can disrupt executive functioning skill development
- Explore how to nurture executive functioning skill development in young children



POLL: WHO IS HERE?

Early Childhood
Teachers

Early Childhood
Program
Administrators

Early
Intervention
Specialists

Home Visitors

Early Childhood
Mental Health
Specialists

Higher
Education
Faculty

Trainer/Adult
Educators

Technical
Assistance
Specialists

Policy Makers

Others?

The Brain's Executive Functions

ACTIVATION

- Organizing
- Prioritizing
- Getting to work

FOCUS

- Tuning in
- Sustaining focus
- Shifting attention

EFFORT

- Regulating alertness
- Sustaining effort
- Adjusting processing speed

EMOTIONS

- Managing frustration
- Modulating emotions

MEMORY

- Holding on and working with information
- Retrieving memories

ACTION

- Monitoring and regulating one's actions

WHAT ARE EXECUTIVE FUNCTIONS?

<http://www.smartspeechtherapy.com/the-executive-functions-test-elementary-what-slps-and-parents-need-to-know/>

Executive function and self-regulation skills depend on three types of brain function: working memory, mental flexibility, and self-control. These functions are highly interrelated, and the successful application of executive function skills requires them to operate in coordination with each other.



<http://developingchild.harvard.edu/science/key-concepts/executive-function/>

Center on the Developing Child at Harvard University (2011). *Building the Brain's "Air Traffic Control" System: How Early Experiences Shape the Development of Executive Function: Working Paper No. 11*. Retrieved from www.developingchild.harvard.edu.

SOCIAL EMOTIONAL AND EXECUTIVE FUNCTIONING



“Soft Skills”, Emotional Intelligence, etc.

- Conscientiousness
- Perseverance
- Curiosity
- Sociability
- Self-Confidence
- Cooperativeness
- Empathy
- Emotional Stability, Self-Regulation

POLL: WHAT EXECUTIVE FUNCTIONS AND/OR SOFT SKILLS DO YOU RELY ON MOST TO DO YOUR JOB?

Conscientiousness

Perseverance

Curiosity

Sociability

Self-Confidence

Cooperativeness

Empathy

Emotional
Stability, Self-
Regulation

EXECUTIVE FUNCTIONING RELIES ON THREE TYPES OF BRAIN PROCESSES

Working
Memory



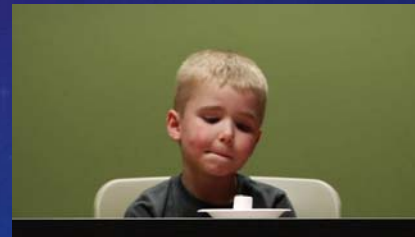
Cognitive
Flexibility



Inhibitory/
Self Control

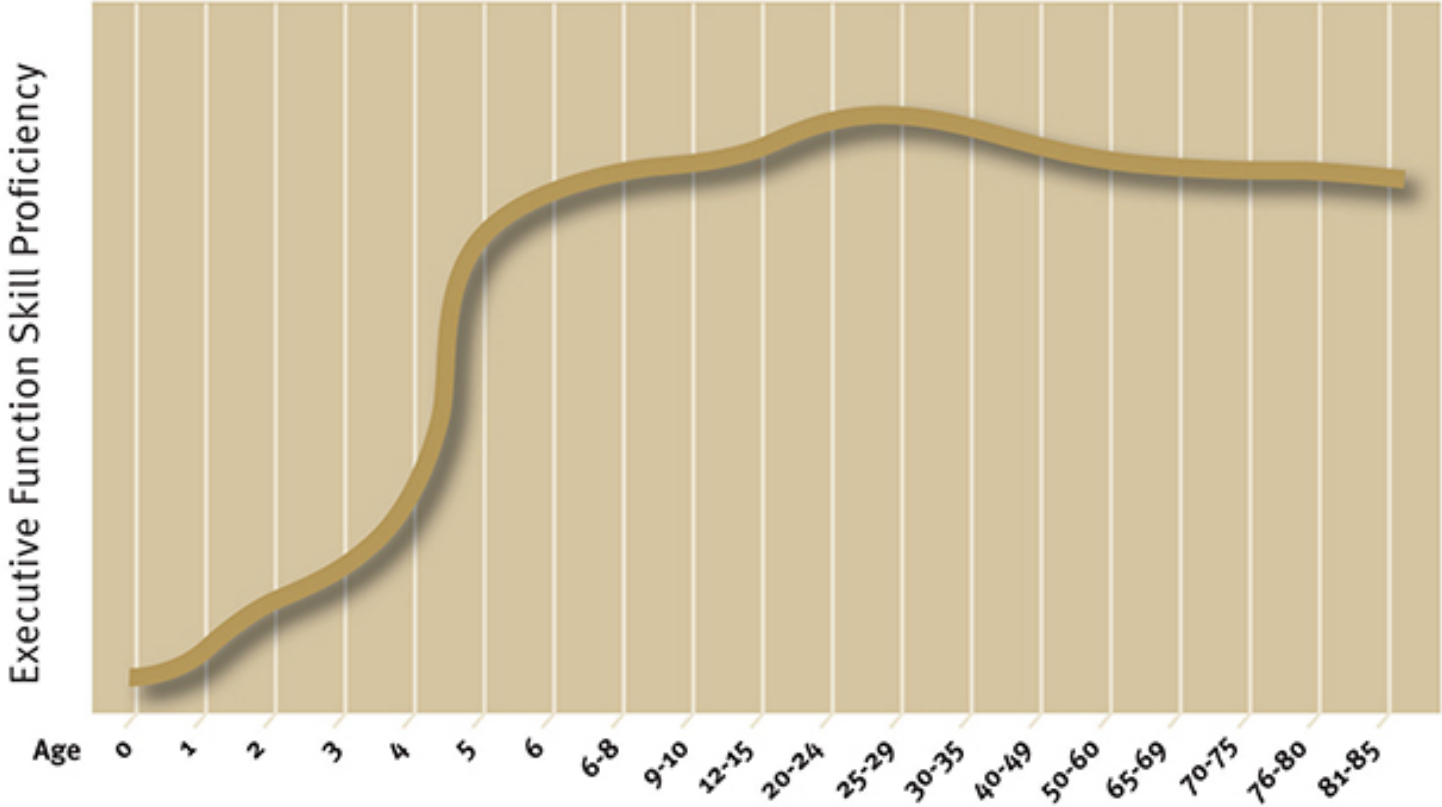


Executive
Functioning





Executive Function Skills Build Into the Early Adult Years



Center on the Developing Child (2012). *Executive Function* (InBrief). Retrieved from www.developingchild.harvard.edu.

Why is Executive Functioning Important?

**School
Readiness
and
Achievement**

**Positive
Behaviors**

Good Health

**Successful
Work**

POLL: TRUE OR FALSE

In a 2006 study
teamwork was identified
as more important to
potential employers than
reading proficiency.

“VERY IMPORTANT” TO EMPLOYERS

	College Graduates	High School Graduates
1. Oral Communication	95%	70%
2. Teamwork	94%	72%
3. Work Ethic	94%	80%
4. Written Communication	93%	53%
5. Critical Thinking	92%	58%
6. Reading	88%	62%
7. Ethics/Responsibility	86%	63%
8. Leadership	82%	29%
9. Information Technology	81%	53%
10. Creativity/Innovation	81%	36%
11. Self-Direction	78%	43%
12. Diversity	72%	52%
13. Mathematics	64%	30%
14. Science	33%	9%

(Casner-Lotto & Benner, 2006)

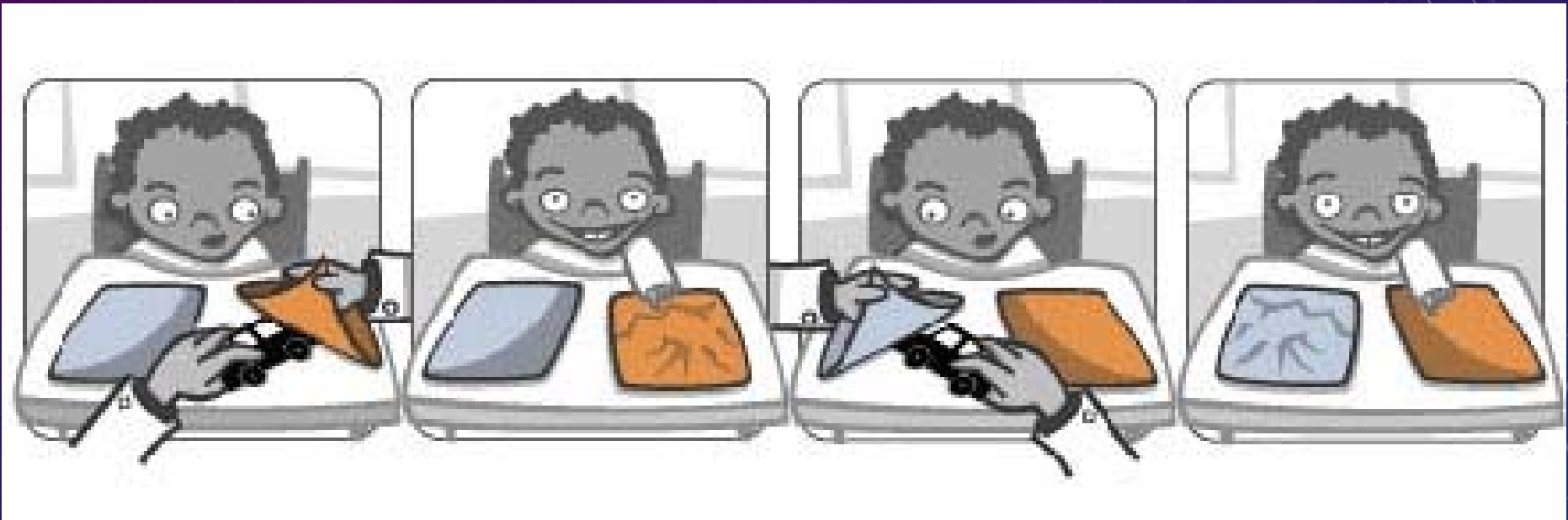
POLL: TRUE OR FALSE

Babies are born
with executive
function skills.

BABIES AREN'T BORN WITH THESE SKILLS

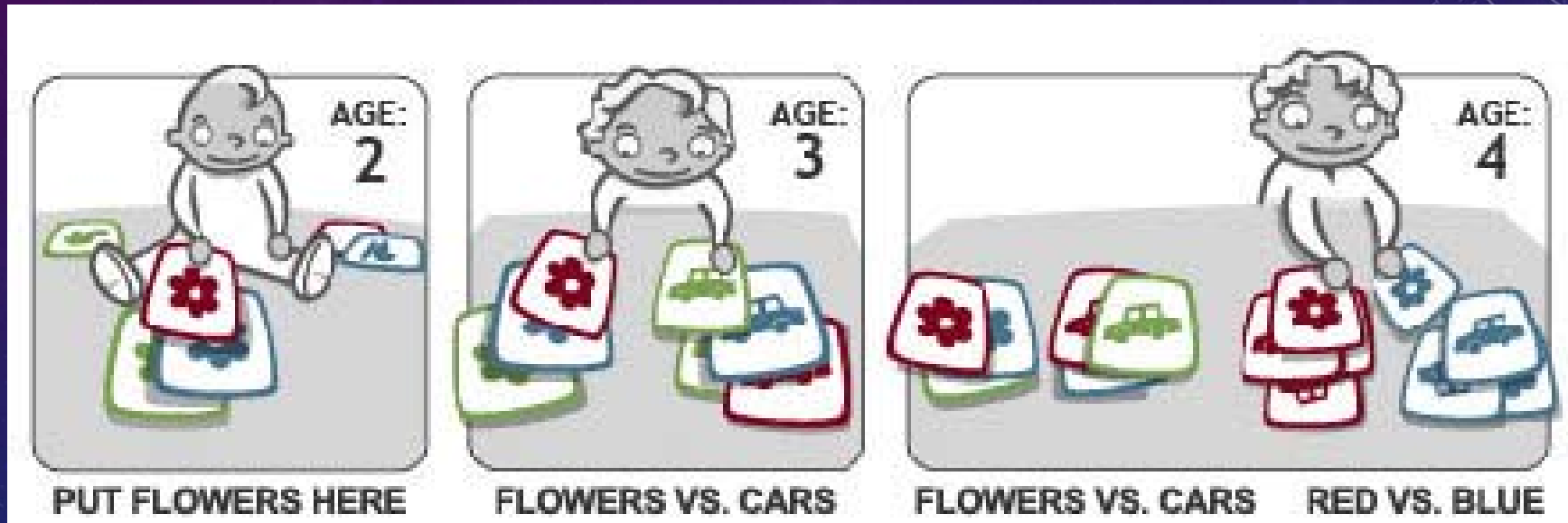


A- NOT-B TASK

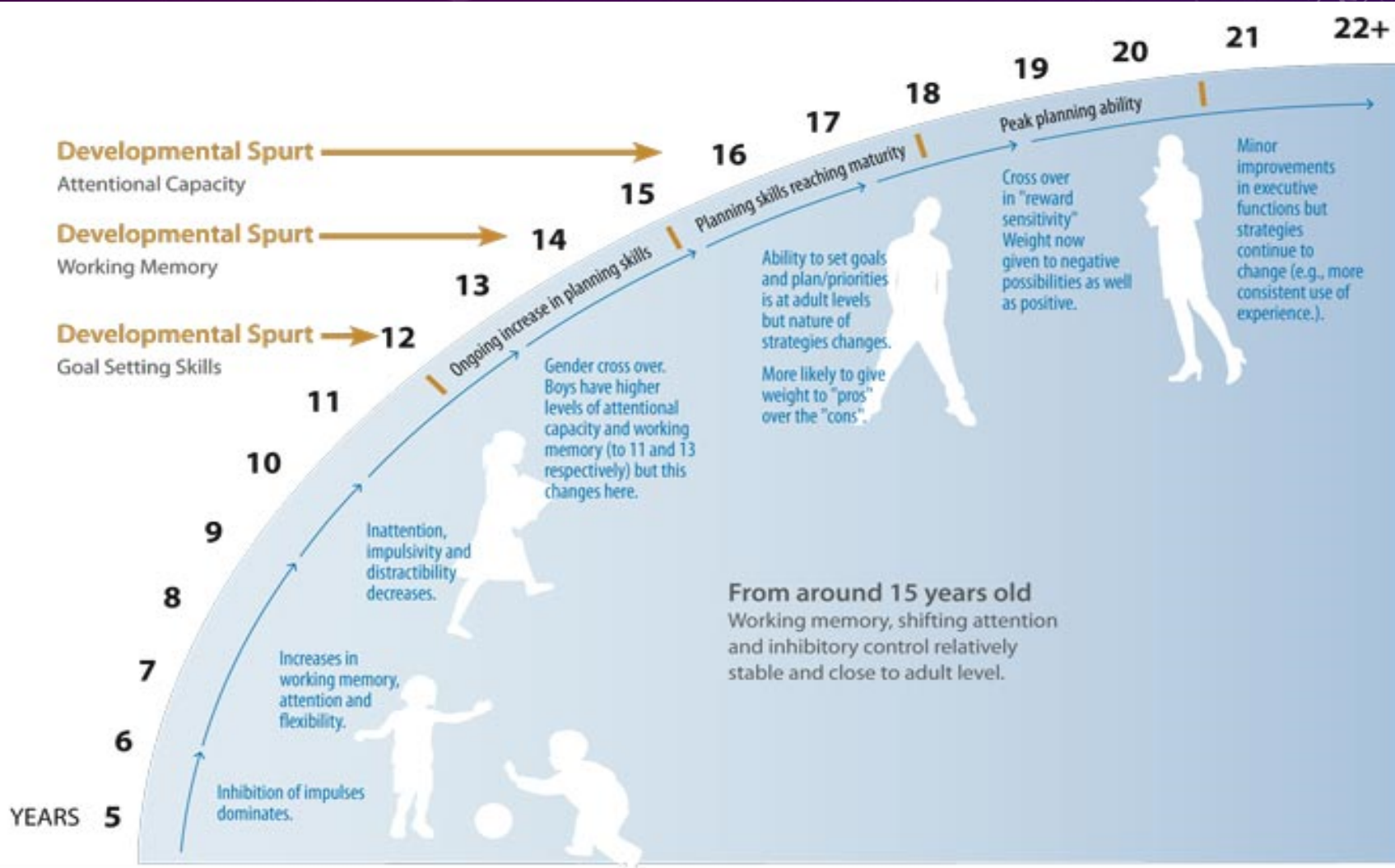


<http://www.aboutkidshealth.ca/En/News/Series/ExecutiveFunction/Pages/Executive-Function-Part-Two-The-development-of-executive-function-in-infancy-and-early-childhood.aspx>

DIMENSIONAL CHANGE CARD SORT TASK



<http://www.aboutkidshealth.ca/En/News/Series/ExecutiveFunction/Pages/Executive-Function-Part-Two-The-development-of-executive-function-in-infancy-and-early-childhood.aspx>



DISRUPTIONS IN EXECUTIVE FUNCTION

Toxic Stress

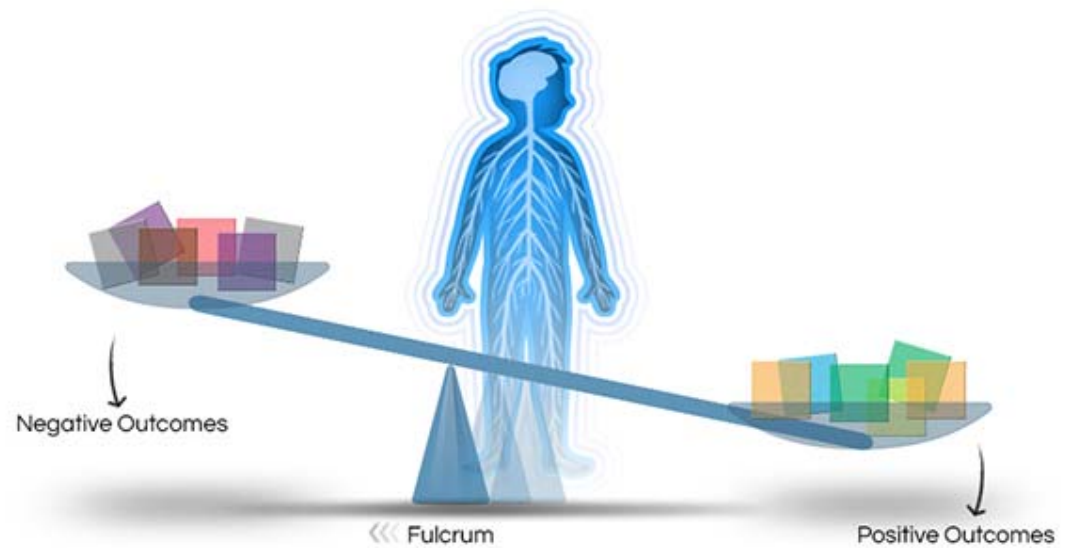
Neglect

Abuse

Lack of and/or
Unhealthy
Relationships

Anything that
Disrupts Healthy
Development of
Brain Architecture

DEVELOPING RESILIENCE



<http://developingchild.harvard.edu/science/key-concepts/resilience/>

POLL: WHICH OF THE FOLLOWING DOES RESEARCH SHOW IS THE STRONGEST PROTECTIVE FACTOR IN SUPPORTING RESILIENCE OF CHILDREN AT RISK

- A. IQ
- B. **One stable and committed relationship with a supportive parent, caregiver, or other adult**
- C. Genetic Predisposition
- D. Birth Order

STACK THE SCALES



Supportive
Adult-Child
Relationships



Self-Efficacy
and Perceived
Control



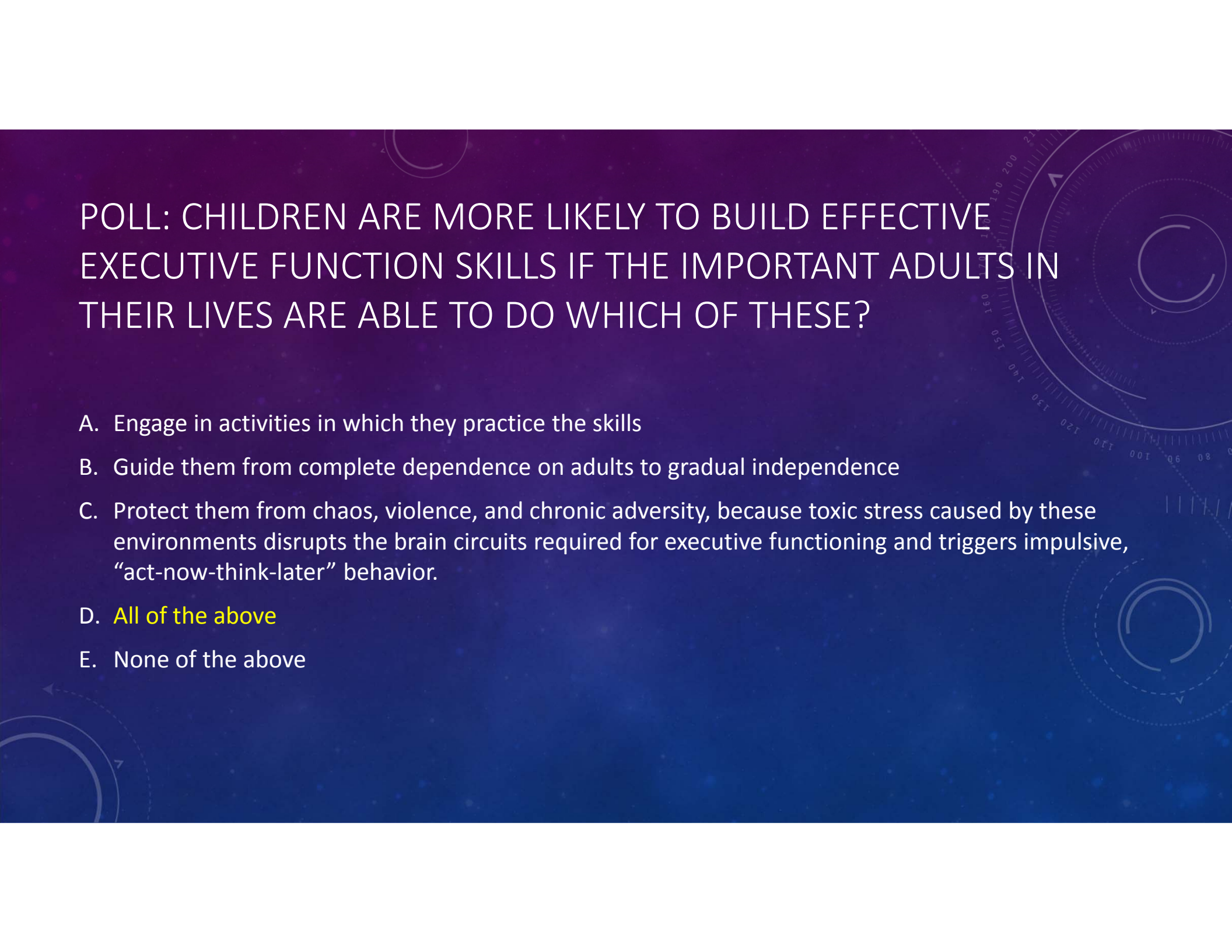
Adaptive Skills
and Self-
Regulatory
Capacities



Faith, Hope,
and Cultural
Traditions

RECENT RESEARCH

- First evidence that abilities in infancy predict executive functions at age 11. (Rose, *et al.*, 2012)
- Impact of prenatal risk on toddler effortful attention at age 27 months became nonsignificant once the model considered genetic influences were (Leve *et al.*, 2013)
- EF skills at the beginning of preschool are a significant predictor of receptive vocabulary skills at the end of preschool, controlling for receptive vocabulary at the beginning of preschool (Weiland, *et al.*, 2014)
- Maternal positive affect and infant frontal brain electrical activity measured when the children were 10 months jointly and uniquely predicted both preschool and post-kindergarten EF. (Kraybill & Bell, 2013).
- When well taught and when practiced regularly, it has been shown to be capable of improving mental health and well-being, mood, self-esteem, self-regulation, positive behavior and academic learning (Flock, *et al.*, 2015; Weare, 2013).



POLL: CHILDREN ARE MORE LIKELY TO BUILD EFFECTIVE EXECUTIVE FUNCTION SKILLS IF THE IMPORTANT ADULTS IN THEIR LIVES ARE ABLE TO DO WHICH OF THESE?

- A. Engage in activities in which they practice the skills
- B. Guide them from complete dependence on adults to gradual independence
- C. 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.
- D. **All of the above**
- E. None of the above

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.

CRITICAL FACTORS FOR BUILDING EXECUTIVE FUNCTIONING SKILLS



Children's
Relationships



Engagement
Opportunities



Live, Learn and
Play Places



HOW CAN ADULTS PROMOTE THE DEVELOPMENT OF SKILLS THAT SUPPORT INFANT AND TODDLER EXECUTIVE FUNCTION?



Establish Dependable Routines

Model Prosocial Behavior

Create and Maintain Supportive, Reliable Relationships

Offer Activities that Foster Creative Play & Social Connection

Teach Children How to Cope with Stress

Encourage Vigorous Exercise

Provide Opportunities for Autonomous Decision Making

EXECUTIVE FUNCTION ACTIVITIES FOR 6- TO 18-MONTH-OLDS

Lap Games for Younger Infants

- Peek-a-boo
- Trot, Trot to Boston; This is the Way the Farmer Rides; Pat-a-Cake

Hiding Games

- Hide a toy under a cloth
- Hiding another object
- Having older infants hide themselves

Imitation or Copying Games

- Waving
- Placing toy animals in a barnyard

Simple Role Play

- Taking turns with any activity

Conversations

- Mapping Words to Objects

Finger Plays

- Ensy Weensy Spider
- Where is Thumbkin

EXECUTIVE FUNCTION ACTIVITIES FOR 18- TO 36-MONTH-OLDS

Active Games

- Follow the Leader
- Freeze Dance
- Hokey Pokey

Conversations and Storytelling

- Have children identify the feelings and emotions of characters

Matching and Sorting Games

- Simple puzzles and sorting shapes and colors

Imaginary Play

- Sweeping
- Cooking in the pot
- Asking children questions while they're pretending

RESOURCES AND APPLICATION OPPORTUNITIES



RESOURCE - Enhancing and Practicing Executive Function Skills with Children from Infancy to Adolescence
An activities guide for building executive function

[Download PDF](#)

<http://developingchild.harvard.edu/resources/enhancing-and-practicing-executive-function-skills-with-children-from-infancy-to-adolescence/>

RESOURCES AND APPLICATION OPPORTUNITIES

<http://developingchild.harvard.edu/>



RESOURCES AND APPLICATION OPPORTUNITIES

http://deltraining.com/courses/Executive_Function/content-frame.htm

Executive Functioning
Online Learning Module

RESOURCES AND APPLICATION OPPORTUNITIES



<http://www.mindinthemaking.org/category/activities/#>

RESOURCES AND APPLICATION OPPORTUNITIES



<http://www.zerotothree.org/early-care-education/school-readiness-interactive-birth-to-3/>

CLOSING THOUGHTS, COMMENTS, & REFLECTIONS



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