



Executive Functioning: Critical Skills for Goal Achievement

Webinar #3

Facilitated by:

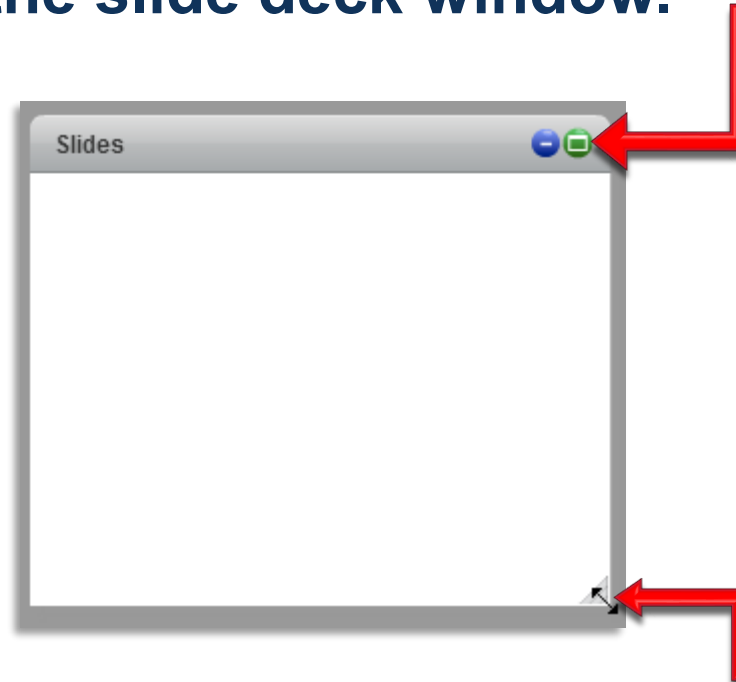
Silvia Bunge, Building Blocks of Cognition Laboratory

LaDonna Pavetti, Center on Budget and Policy Priorities

August 30, 2017 2:00 – 3:00 p.m., PT

Expand Event Windows

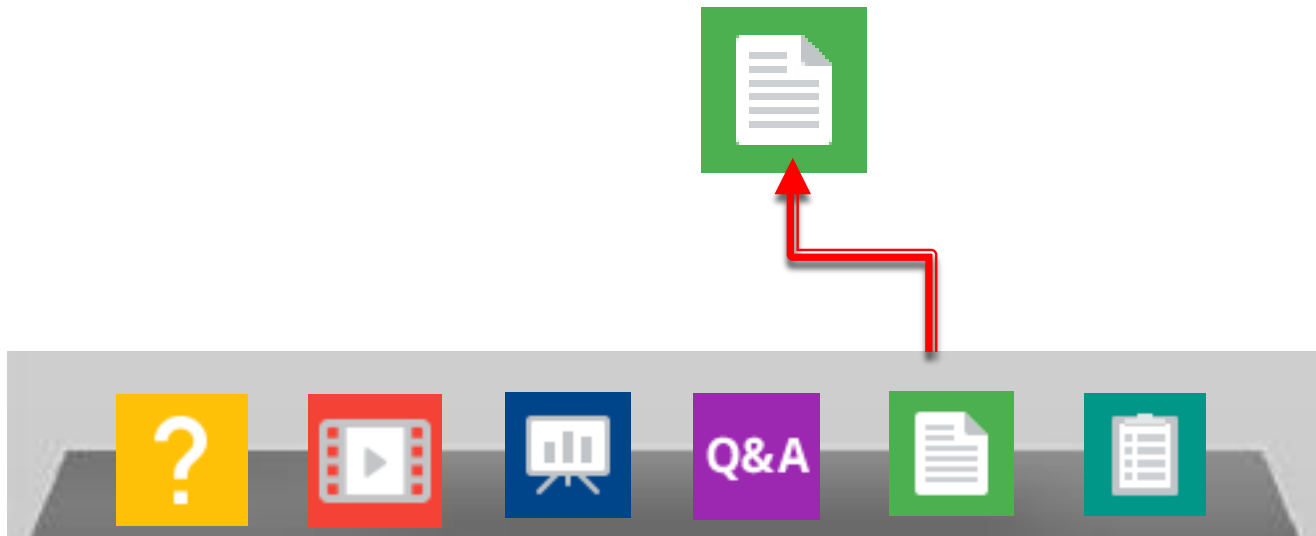
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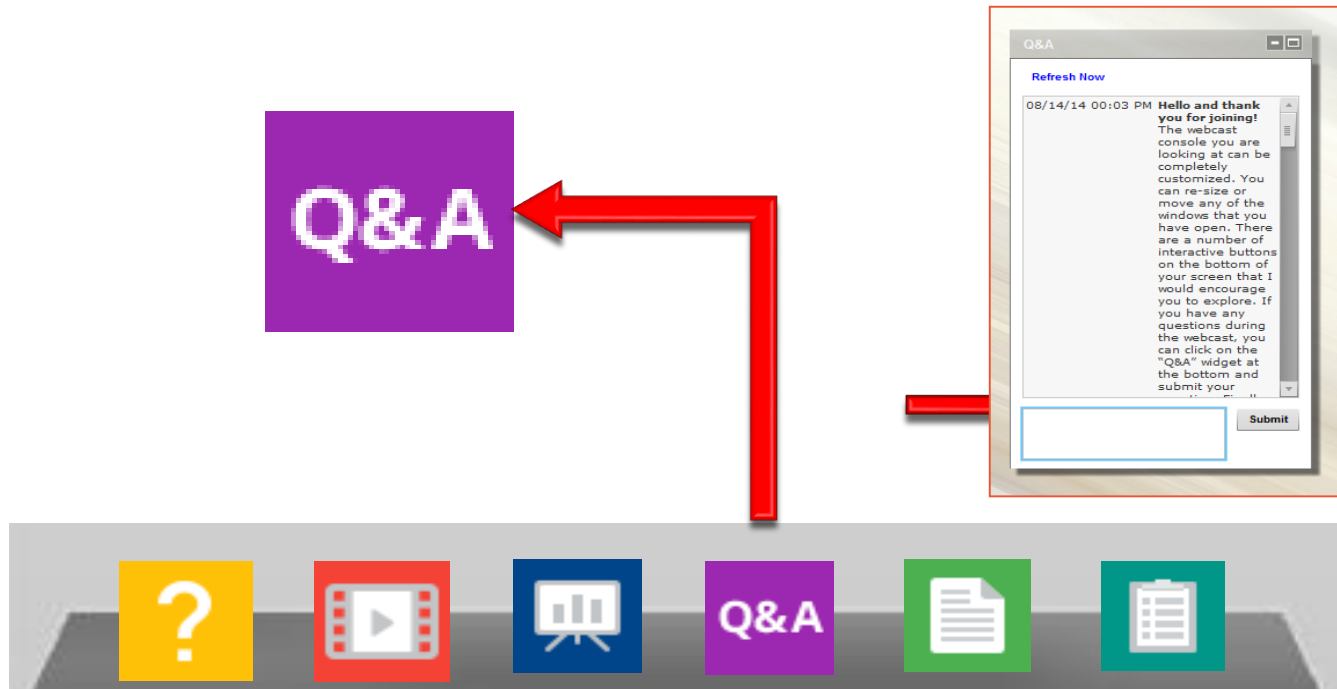
Event Materials and Recording

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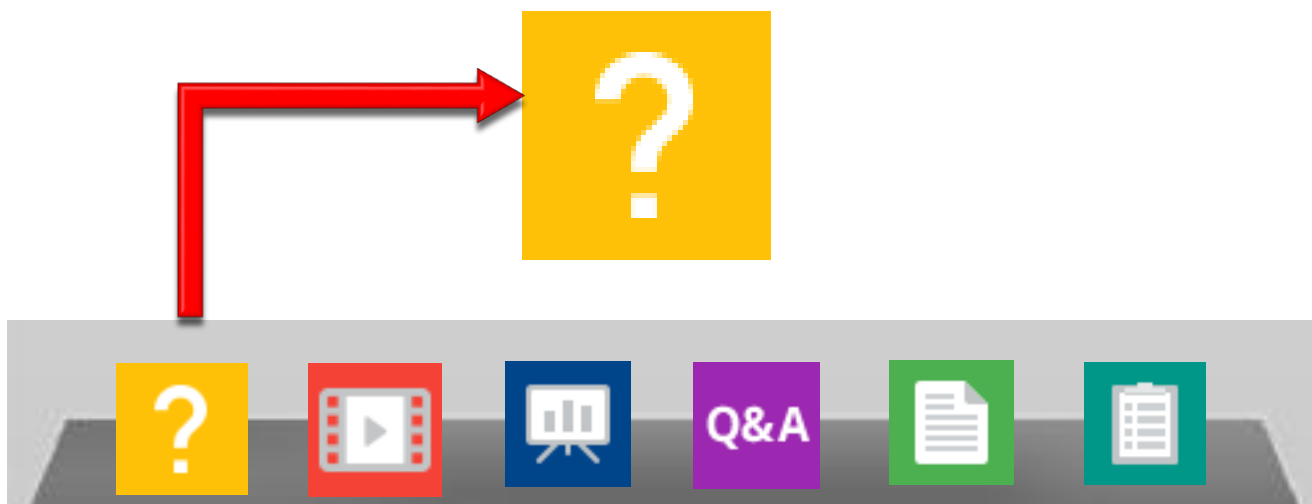
Q&A

- To pose a question to the presenters or the group at any time, click on the Q&A widget at the bottom and submit your question.
 - *Please note: your questions can only be seen by our presentation team and are not viewable by other attendees.*



Technical Assistance

- If you are experiencing technical difficulties, please visit our Webcast Help Guide by clicking on the Help widget below the presentation window.
- You can also click on the Q&A widget to submit technical questions.



Welcome and Introductions



LaDonna Pavetti

Center on Budget and Policy Priorities

Co-Principal Investigator CalWORKs Strategic Initiative

Webinar Series

This third webinar is designed to give you a better understanding of executive function skills and how they relate to a goal achievement framework.

The remaining webinars will explore evidence behind the new tools and resources and encourage county-to-county sharing on issues beyond the tools and resources.

Webinar Wednesdays - 2 p.m.

Today	Executive Functioning: Critical Skills for Goal Achievement
September 20	Using Science to Understand and Improve Adult Capabilities
October 11	Using SAWS Data to Manage Programs
October 25	Engagement Strategies to Help Families Stay in Compliance

Review: The Goal Achievement Framework Underlying CalWORKs 2.0

- **G**oal: What do you want to accomplish?
- **P**lan: What will it take to get there?
- **D**o: How will I successfully execute the plan?
- **R**eview: How did I do?
- **R**evisе: What will I change?



Connection to Our Work

- **CalWORKs 2.0 = Goal Achievement Framework**
- **Responses from Webinar 2: What challenges do you anticipate using goal achievement tools?**
 - “Motivate the participant once the goal is set.”
 - “Customers feel failure if they don’t meet the goal.”
 - “Sustained follow through when they get home and life’s problems get in the way.”

Review: The Science Behind Goal Achievement

- **Achieving a goal is an effortful process that draws on a foundational set of capacities—executive function or self-regulation skills—that help us to:**
 - Focus
 - Make decisions with the information available to us
 - Set goals
 - Make and execute plans
 - Revise and adjust
 - Control impulses
- **Living in poverty degrades executive function and self-regulation skills**
 - How we design and deliver services matters
- **Evidence that process matters**
 - How goals are set
 - How plans are developed
 - When obstacles and solutions are identified
- **Last webinar we focused on process; today we will focus on understanding the executive function skills that individuals draw on to set and achieve their goals**

During This Webinar We Will:

- **Connect Executive Function (EF) skills to the CalWORKs 2.0 Goal Achievement Framework**
- **Examine what EF skills are and why they matter**
- **Reflect on the EF skills of current customers**
- **Explore when and how EF skills develop**
- **Identify ways that programs and staff can support EF skill-building in adults**

Questions

- Ask a question at any time during the webinar using the Q&A box.
- We will respond during the webinar or afterward.
- We might answer some of your questions in future webinars.



Executive Function Skills

- This webinar will highlight that there are reasons for behaviors that can show up as lack of motivation.
- Executive Function Skills refer to processes needed to regulate our behavior and override immediate demands in favor of long-term goals.

Presenter



Silvia Bunge

**Director, Building Blocks of Cognition Laboratory
Professor, Department of Psychology &
Helen Wills Neuroscience Institute
University of California at Berkeley**

Outline

**What are EFs,
and why do
they matter?**



**When & how
do EFs
develop?**



**Which factors
influence EFs?**

Self-Reported Executive Functioning

Items from the Dysexecutive Questionnaire (DEX):

1. I have trouble making decisions, or deciding what I want to do
2. I have difficulty thinking ahead and planning for the future
3. I find it difficult to keep my mind on something, and am easily distracted
4. I act without thinking, doing the first thing that comes to mind
5. I lose my temper at the slightest thing
6. I am unaware of/unconcerned about how others feel about my behavior
7. I have difficulty realizing the extent of my problems

Poll Question

Which challenge do you see most often in your customers?

- Trouble with making decisions
- Difficulty planning ahead
- Easily distracted
- Acting without thinking
- Losing temper
- Unaware how others see their behavior
- Realizing the extent of problems
- None of the above

Our behavior lies along a continuum

Reactive
Impulsive



Proactive
Goal-directed

Right now! ← **Time Orientation** → **Future**

One ← **Factors considered** → **Multiple**

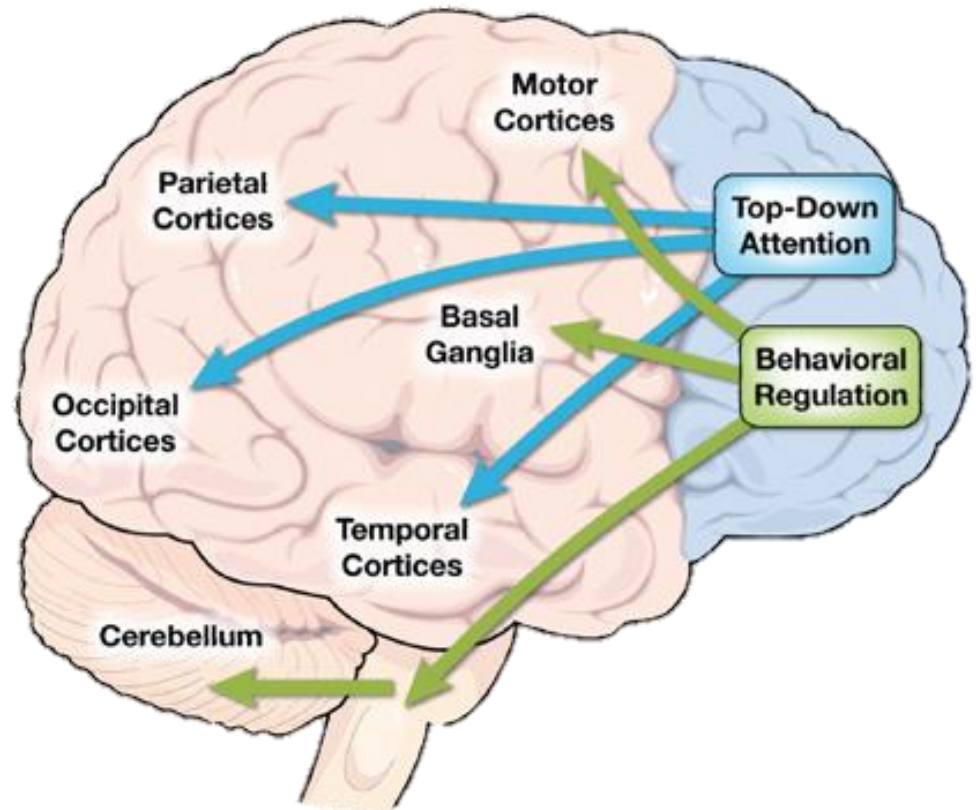
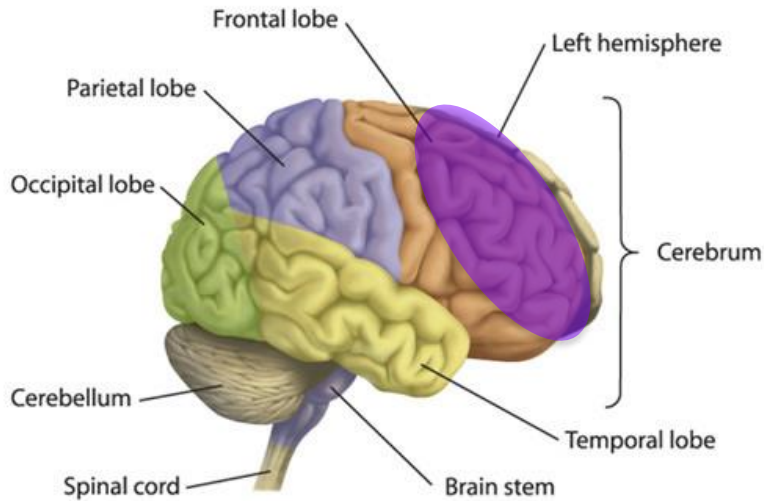
Self ← **Focus** → **Self & others**



**EFs: skills that support
goal-directed behavior**

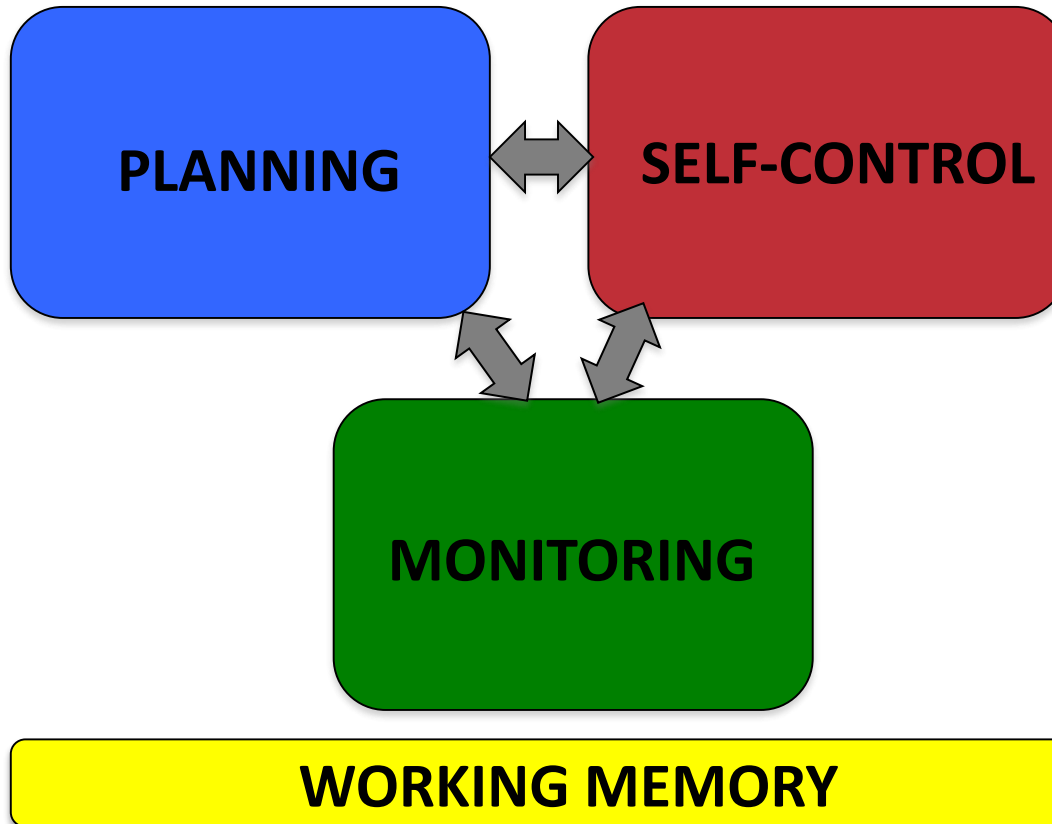
EF skills depend on prefrontal cortex

Prefrontal cortex



Adult EF skills

- Framework based on adults' daily life challenges
- Informed by neuroscience
- Slightly different from framework used to describe EF skills in children

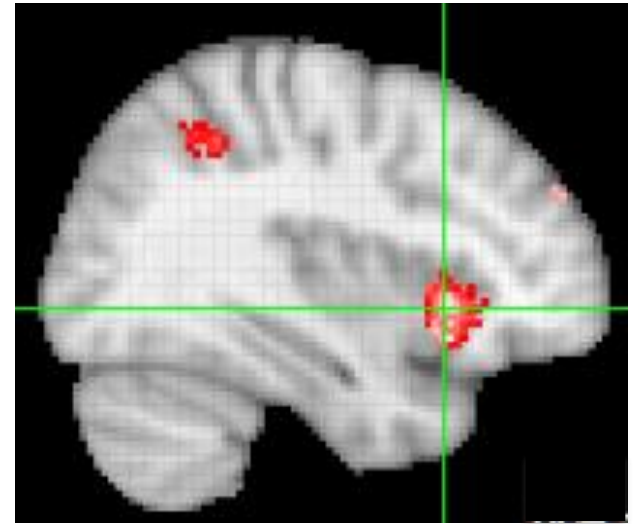


SELF-CONTROL

Controlling one's

- Thoughts
- Feelings
- Behavior

... so that it is appropriate for the context & fits with our goals



Meta-analysis conducted with Neurosynth

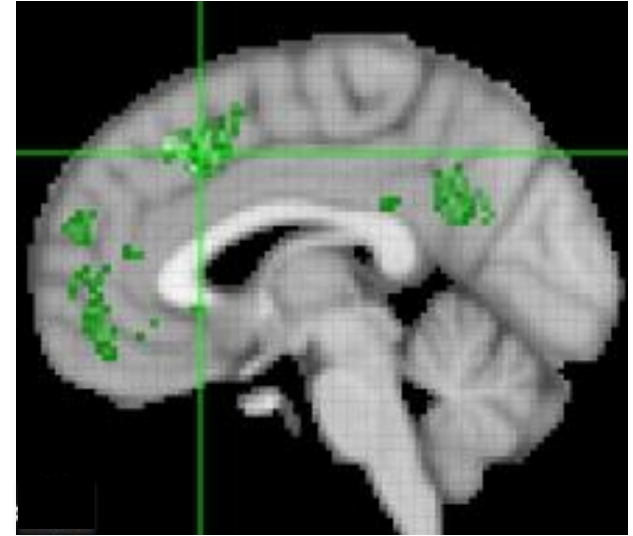
Examples:

- Not getting distracted from a goal
 - Not making an impulse purchase
 - Not getting angry
-
- I find it difficult to keep my mind on something, and am easily distracted
 - I act without thinking, doing the first thing that comes to mind
 - I lose my temper at the slightest thing

MONITORING

Moment-by-moment awareness of...

- Thoughts, feelings, behavior
- Performance, progress
- Surroundings, context
- Others' behavior



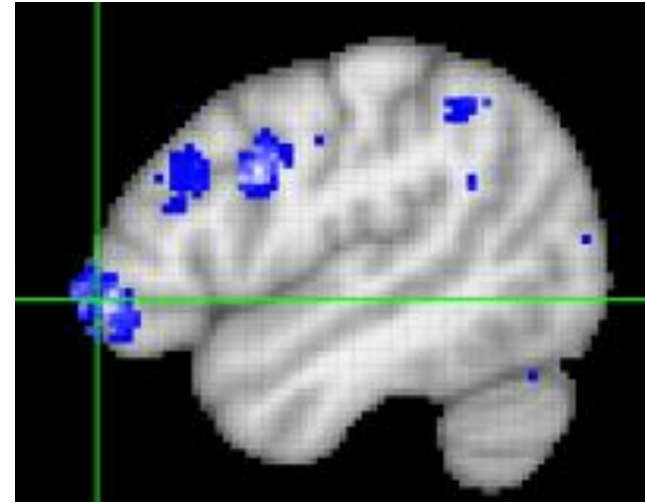
Meta-analysis conducted with Neurosynth

Examples:

- Am I doing what I should be doing right now?
 - How well am I doing it?
 - How is my behavior affecting others?
-
- I am unaware of/unconcerned about how others feel about my behavior
 - I have difficulty realizing the extent of my problems

PLANNING

- Identifying long-term goals
- Identifying obstacles and possible solutions
- Specifying steps needed to achieve goals
- Setting appropriate deadlines & reminders



Meta-analysis conducted with Neurosynth

Examples:

- Drafting a household budget
 - Identifying steps needed to prepare a job application
 - Making arrangements for child-care
-
- I have trouble making decisions, or deciding what I want to do
 - I have difficulty thinking ahead and planning for the future

Adult EF skills are inter-related

Long-term goal: Get healthier

Specific goal: Exercise after work

PLANNING

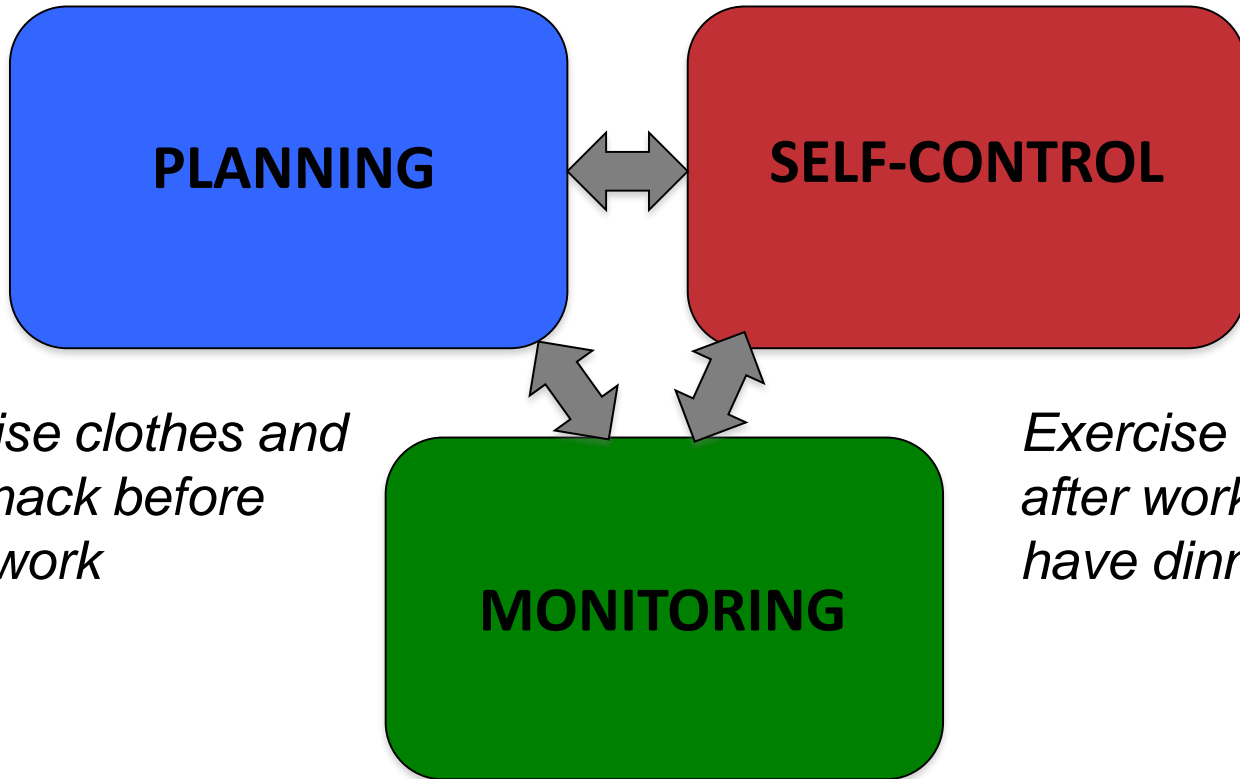
SELF-CONTROL

*Pack exercise clothes and
a healthy snack before
leaving for work*

*Exercise right
after work (don't
have dinner yet!)*

MONITORING

*Did I pack a snack? Why am I headed
towards the restaurant? Wrong direction!*



Outline

**What are EFs,
and why do
they matter?**



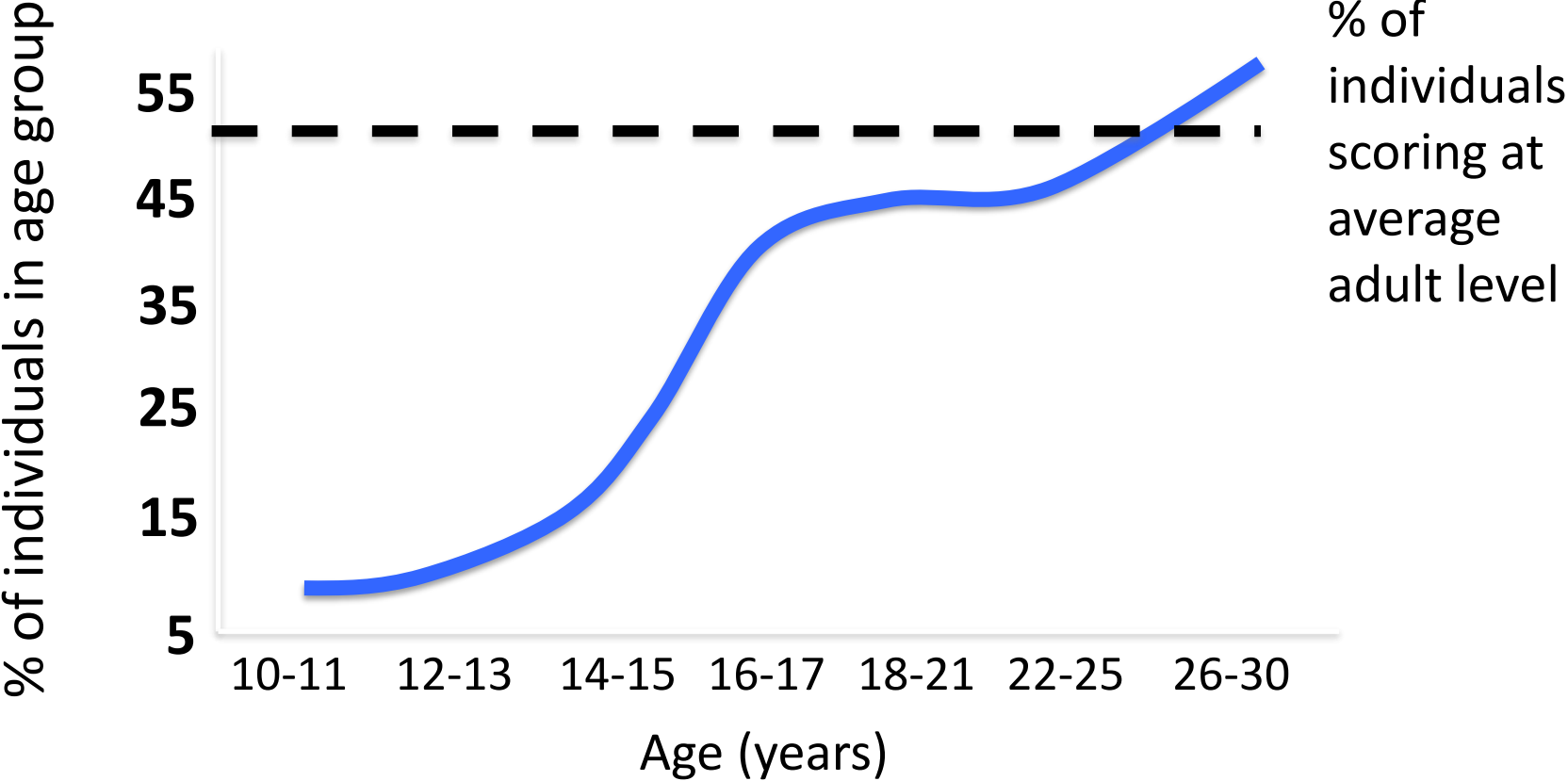
**When & how
do EFs
develop?**



**Which factors
influence EFs?**

Development of EF-dependent behaviors

Tests of cognitive functioning
(including working memory)

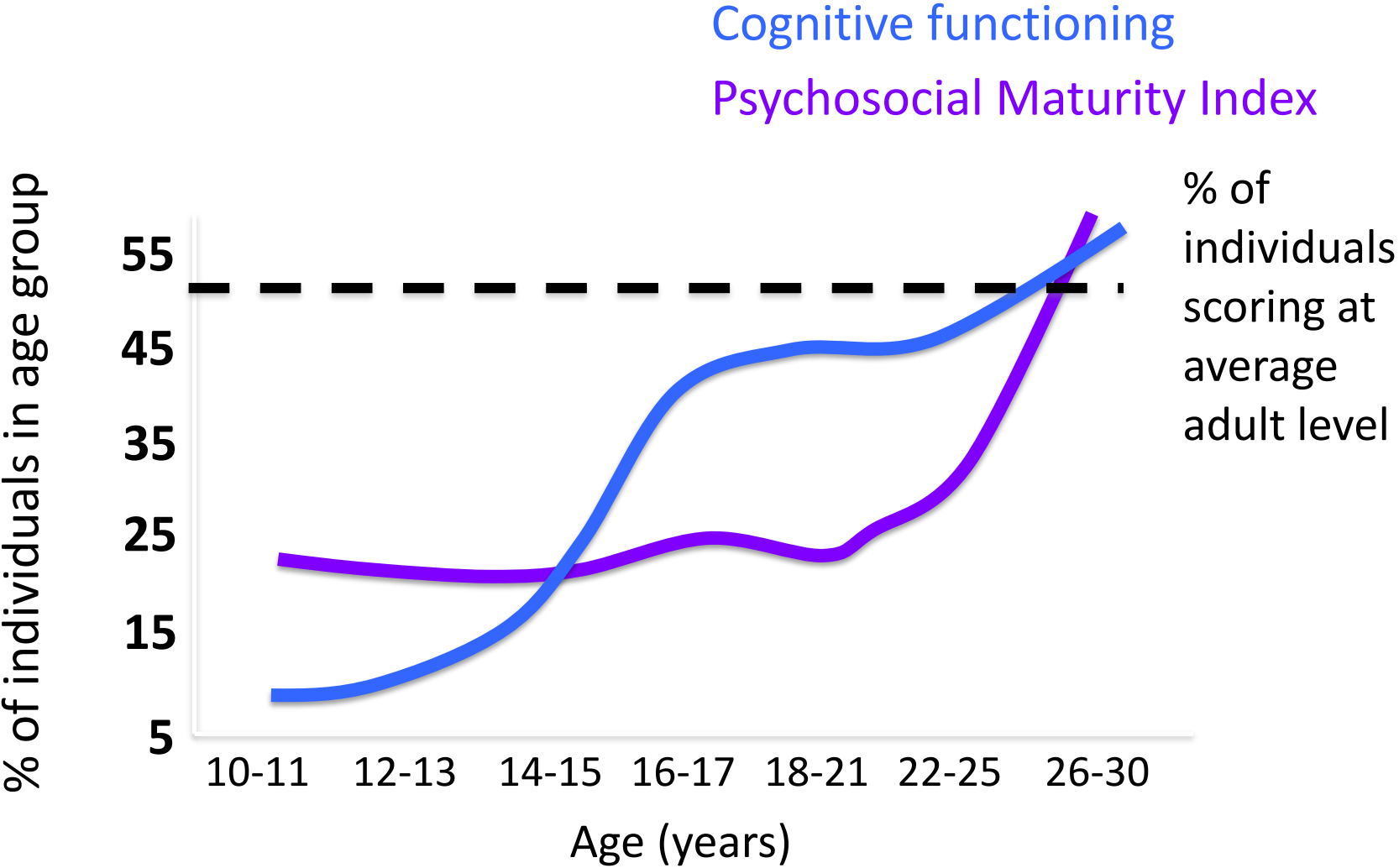


Psychosocial Maturity Index

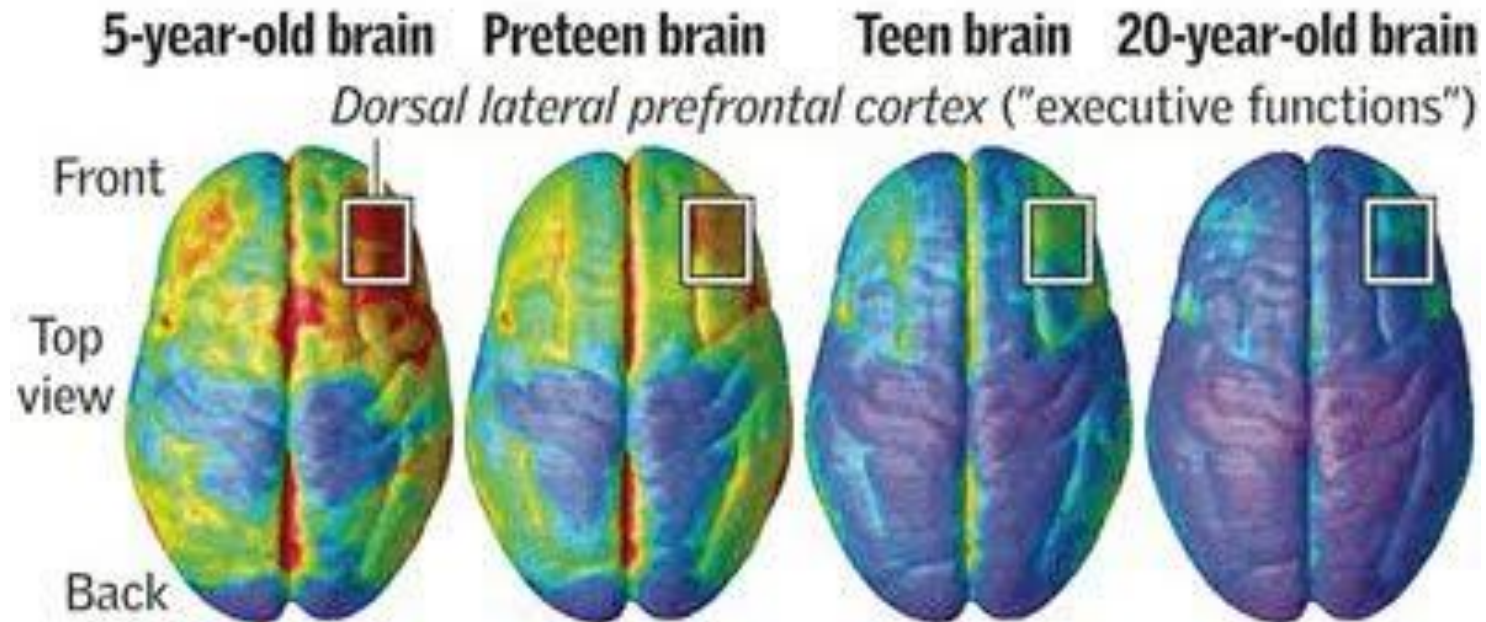
Steinberg et al., 2007

Impulsivity	“I do things without thinking.”
Sensation Seeking	“I sometimes like to do things that are a little frightening.”
Risk Perception	“If you did this activity (e.g., had unprotected sex), how much are you at risk for something bad happening?”
Resistance to Peer Influence	“Some people think it's better to be an individual even if people will be angry at you for going against the crowd. BUT Other people think it's better to go along with the crowd than to make people angry at you.”
Future Orientation	“Some people take life one day at a time without worrying about the future BUT Other people are always thinking about what tomorrow will bring.”

Development of EF-dependent behaviors



Why do EFs develop so late? 1) Because prefrontal cortex is still maturing until our mid-twenties



Red/yellow: Parts of brain less fully mature

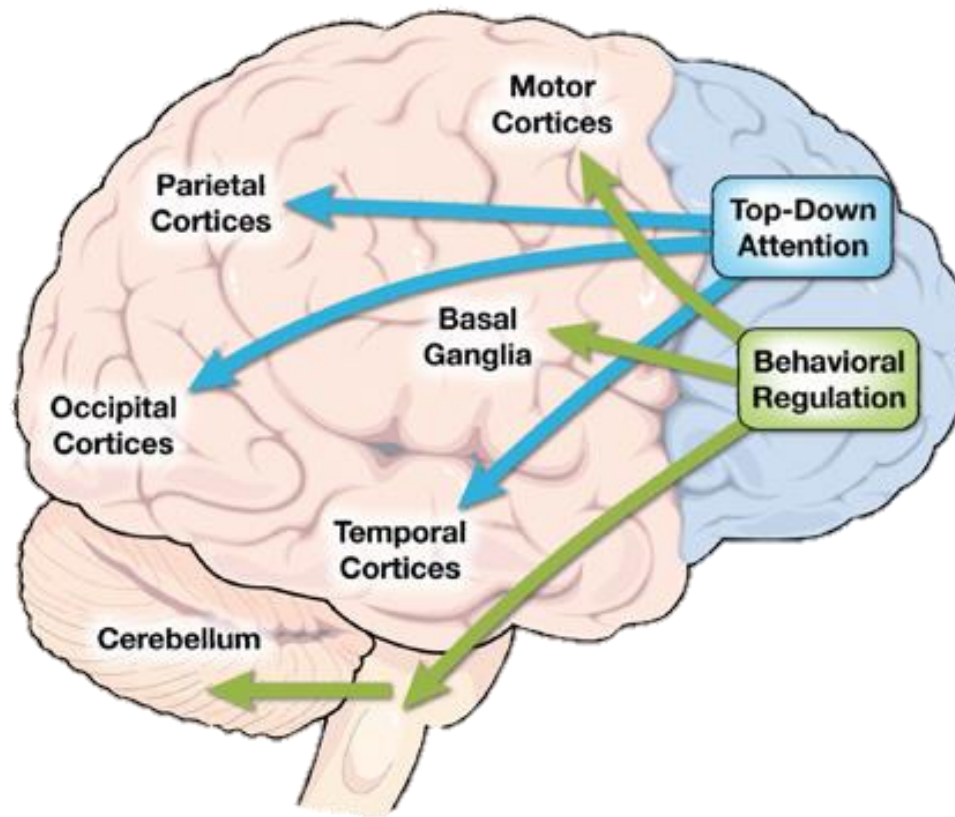


Blue/purple: Parts of brain more fully matured

*Sources: National Institute of Mental Health;
Paul Thompson, Ph.D., UCLA Laboratory of
Neuro Imaging*

Thomas McKay | The Denver Post

Why do EFs develop so late? 2) Because prefrontal cortex is still strengthening connections with other parts of the brain





OCT, 1935. OFF/AFP/GETTY IMAGES



C. 1936. UNDERWOOD ARCHIVES/GETTY IMAGES



SEPT, 1936. TCI/EYEON/UIG VIA GETTY IMAGES



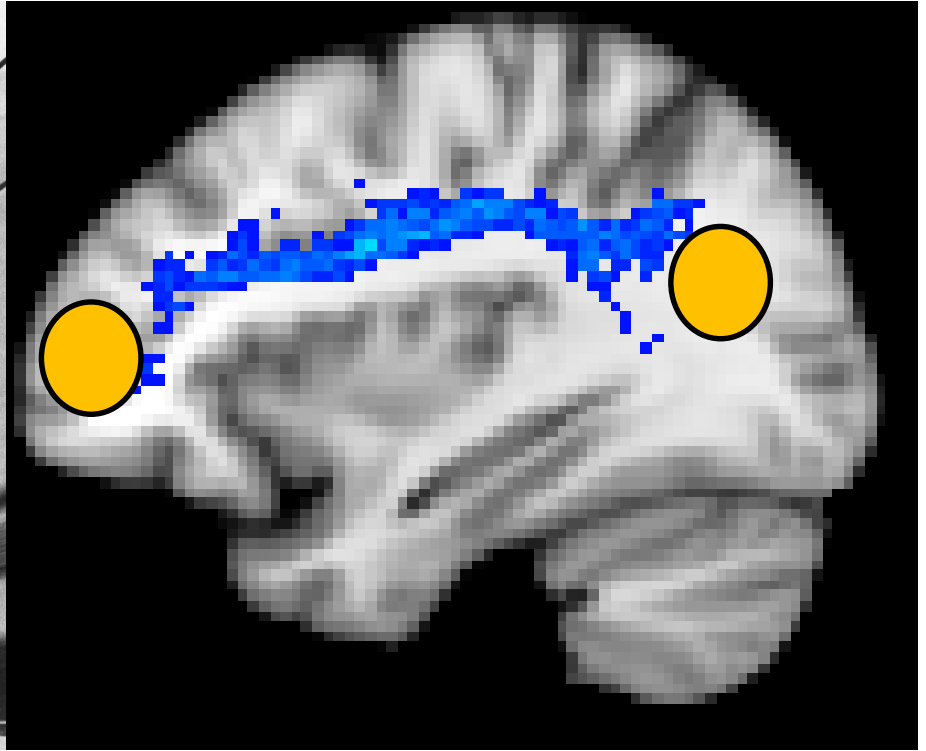
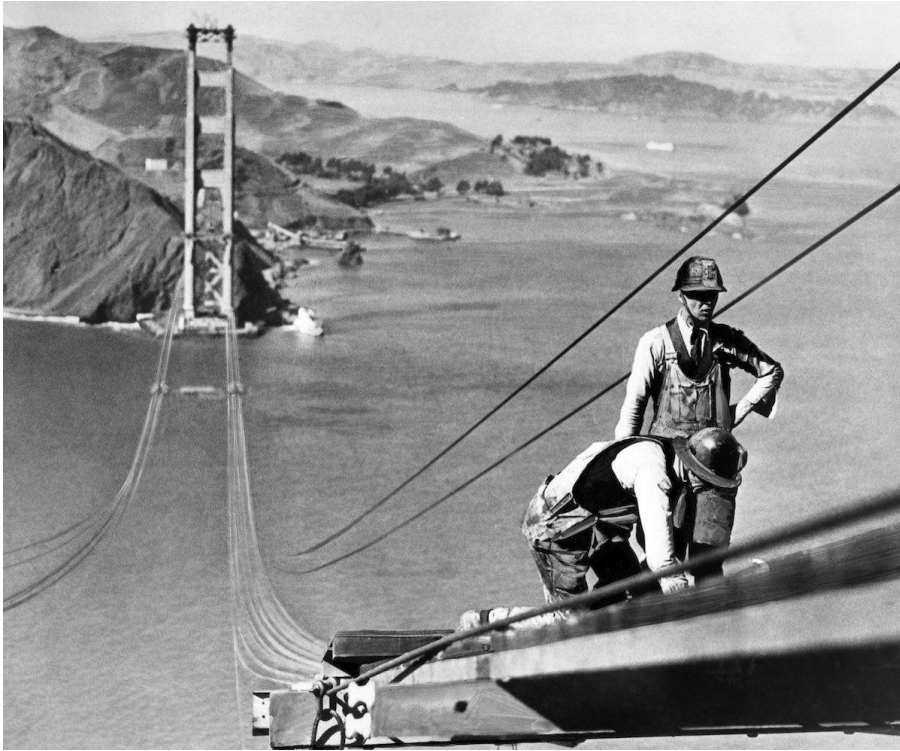
1937.

FREI/ULSTEIN BILD VIA GETTY IMAGES



JUNE 1937. IMAGNO/GETTY IMAGES

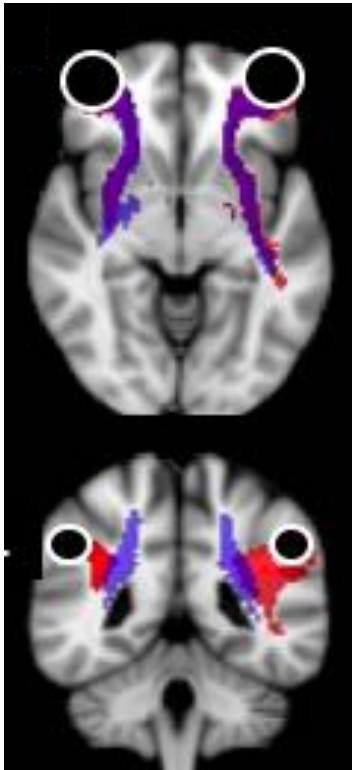
Measuring brain 'wiring'



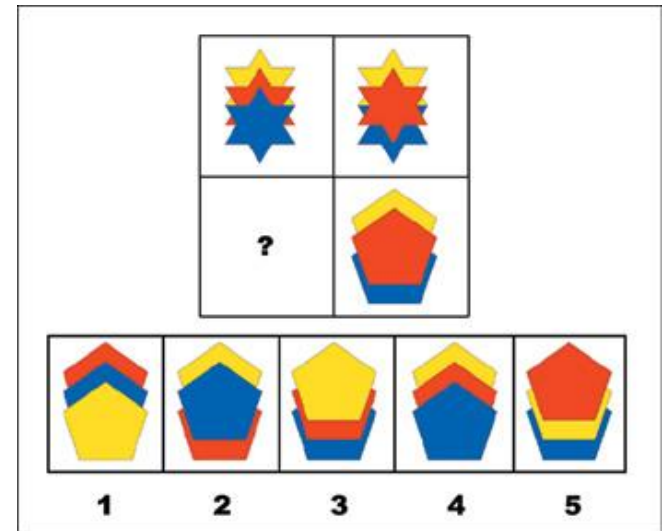
White matter tracts,
measured with brain imaging

Building a strong brain architecture during childhood is important

Stronger 'wiring' between front & back of the brain



Stronger brain communication & reasoning skills later



Wendelken et al., *J Neurosci*, 2017

Psychology Today post (08/09/17): How children's brains learn to reason

County Sharing Question:

Given both the importance of building strong executive functions in children and the CalWORKs whole-family vision, please share some examples of how you engage the whole family in your work today.

Post your answers in the Q&A box.

Outline

**What are EFs,
and why do
they matter?**

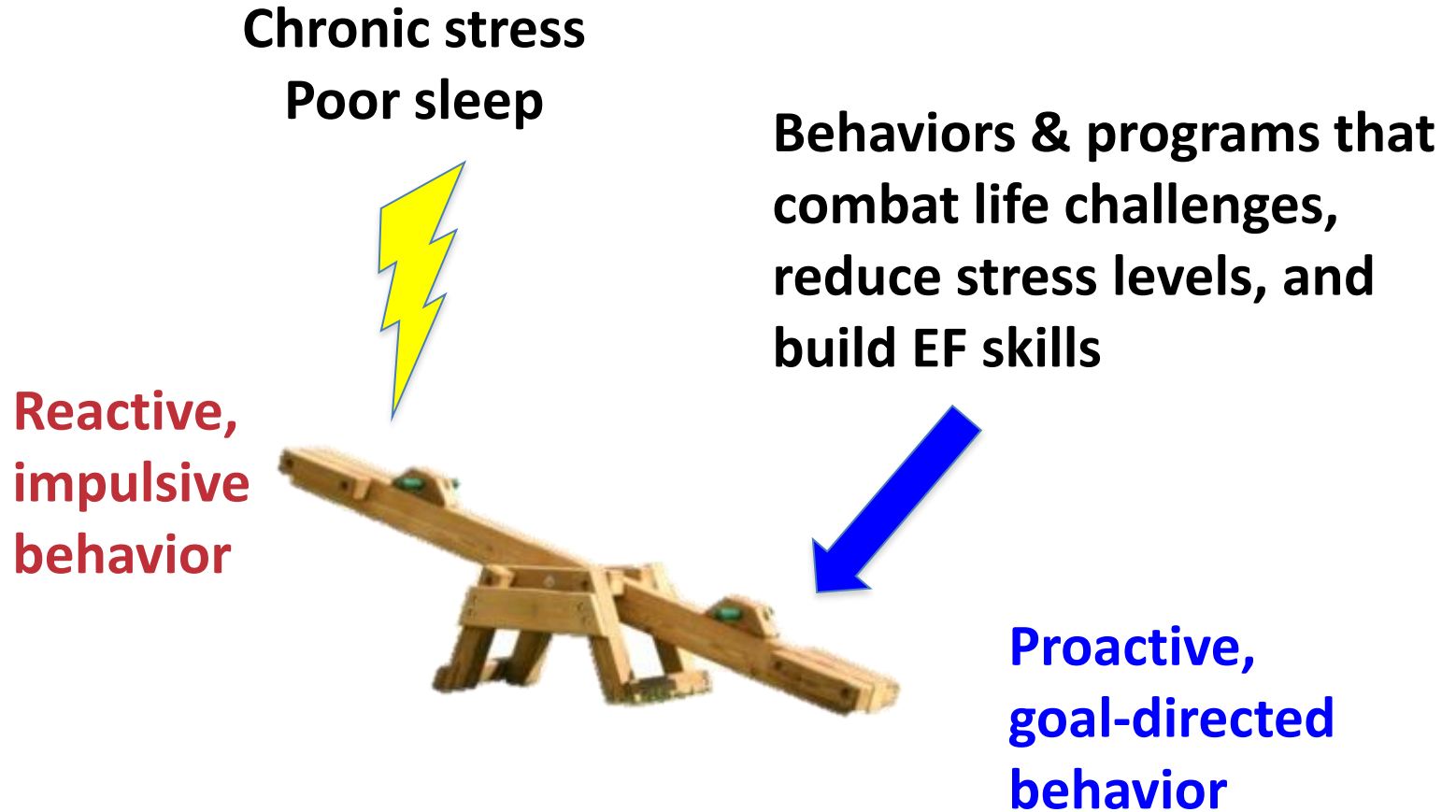


**When & how
do EFs
develop?**



**Which factors
influence EFs?**

Factors that influence behavior



Factors that influence EFs over the long term

- Factors that influence *brain development* can have long-lasting effects
- We know a lot more about the negative influences than positive ones

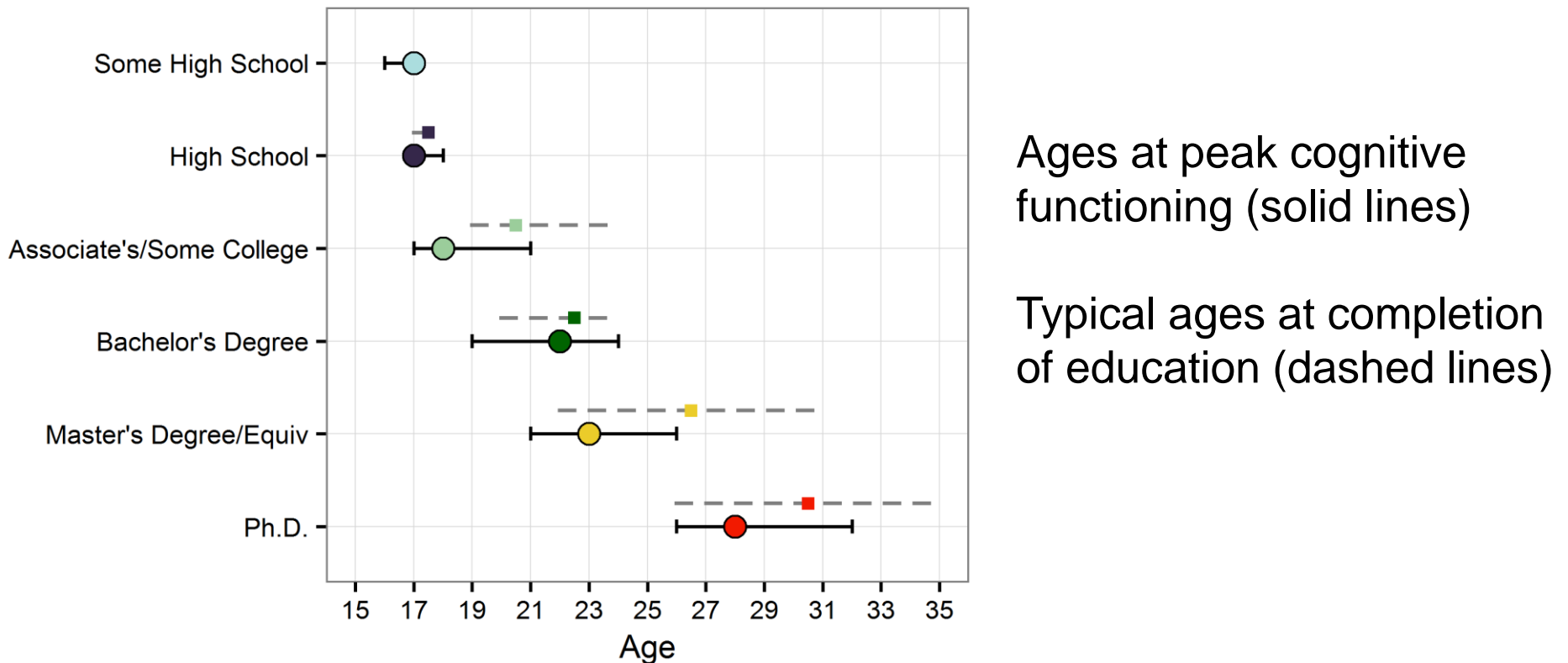


Negative influences

- Chronic stress
- Malnutrition
- Exposure to drugs, toxins
- Neglect, abuse
- Brain injury

Mackey, Raizada, & Bunge (2012)

Education seems to help build strong EF skills

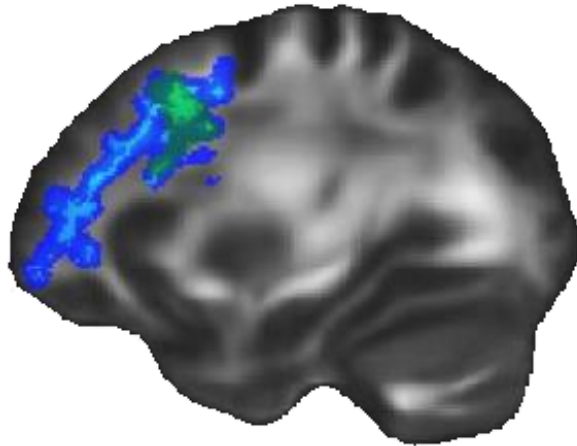


Guerra-Carrillo, Katovitch, & Bunge, *PLoS One*, in press
Psychology Today post (08/30/2017): This is your brain on first grade

Prefrontal cortex is sensitive to experience even in adulthood: Effects of 3 months of reasoning training

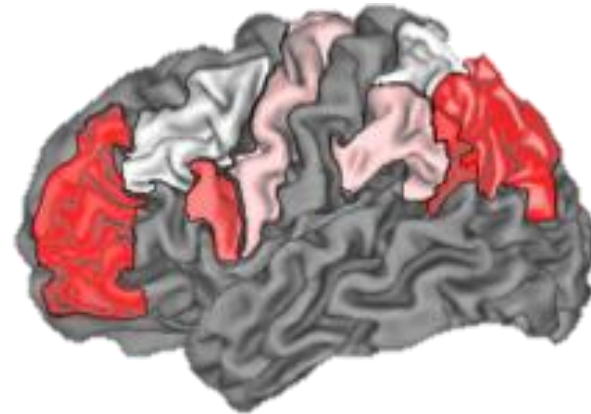
Structural changes

Changes in prefrontal white matter tracts



Functional changes

Increased communication between prefrontal cortex and other regions

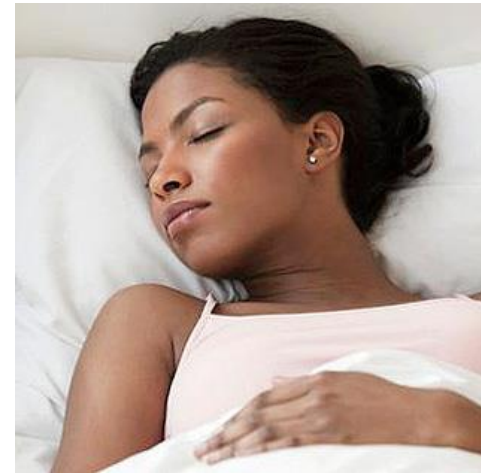


Mackey et al., 2012; 2013

<https://blogs.scientificamerican.com/beautiful-minds/reasoning-training-increases-brain-connectivity-associated-with-high-level-cognition/>

Promising approaches to EF skill development in adults

Positive Factor: Good Sleep



Good sleep promotes...

- Learning & memory
 - Remodeling of connections in the brain
 - New neurons in a key memory structure (the hippocampus)
- Executive functioning
 - Self-control: emotion regulation, healthy habits
 - Important for mental health

See talks on YouTube by Profs. Matthew Walker and Allison Harvey

Positive Factor: Exercise



Short-term benefits (same-day)

- Increased blood flow to the brain, bringing vital nutrients to cells
- Effects on mood, stress, and EFs that last for several hours

Long-term benefits (after several months)

- Leads to formation of new connections in the brain, & new neurons in the hippocampus
- Improves resilience to stress, lowering hormonal response to stressors

Take care of yourself before trying to take care of others



2 types of programs that target adult EF skills

Type of program	Field-based	
Origin	Designed with constituents in mind	
Target	Address real-world challenges that customers face (not specifically focused on EF skills)	
Focus	Comprehensive services	
Method of delivery	Face-to-face interactions	
Evaluation	Sometimes	

Promising field-based interventions

Two examples on Promising Practices section of website:

- EmPATH (see Ted Talk)
- MOMS partnership



[Background](#)

[Resource Library](#)

[Tools](#)

[CalWORKS Stories](#)

Promising Practices

[Home](#) > [Resource Library](#) > [Promising Practices](#)

[Behavioral Science in Human Services](#)

[Coaching](#)

[Executive Function](#)

[Family Stress Reduction](#)

[Goal Achievement](#)

[Two Generation Programs](#)

2 types of programs that target adult EF skills

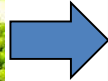
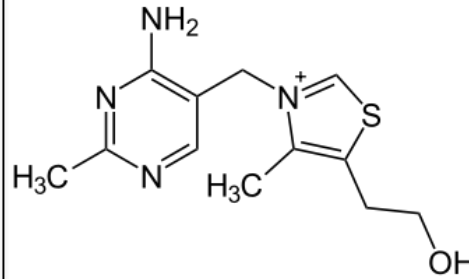
Type of program	Field-based	Lab-based
Origin	Designed with constituents in mind	Built on years of research
Target	Address real-world challenges that customers face (not specifically focused on EF skills)	Specific skills that support goal-directed behavior
Focus	Comprehensive services	Intensive, narrowly focused interventions
Method of delivery	Face-to-face interactions	Often computerized
Evaluation	Sometimes	Rigorous

Nutrition science

Isolation of essential nutrients

Thiamine (Vitamin B1)

- First identified in 1926
- Functions in brain & body are now well-understood
- Can diagnose & treat B1 deficiency, preventing illness & death

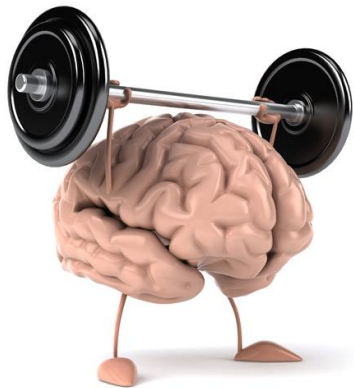
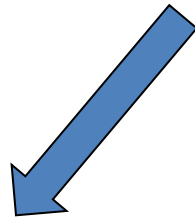
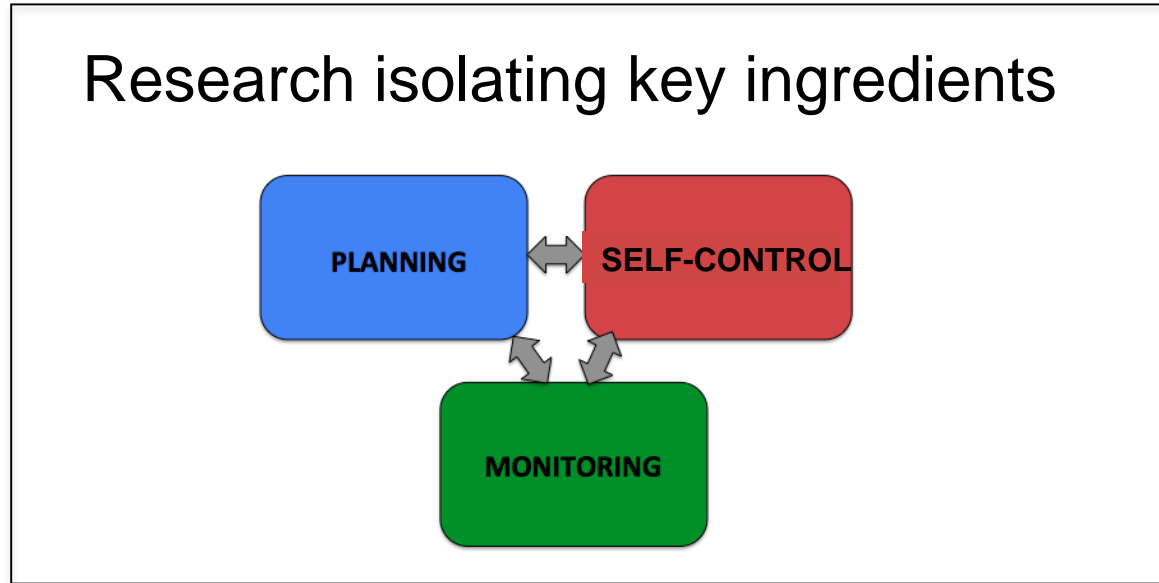
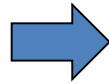


Vitamin craze



‘Whole food’ movement – we can recommend foods rich that are rich in particular nutrients, **and** also provide supplements to people with specific nutritional deficiencies

EF Skill Development




EF skill-building



Provide comprehensive services *and* also work to address individuals' specific challenges

Promising approach to EF skill development

- 
- Combine the strengths of field- and lab-based interventions
 - Form partnerships between scientists, practitioners, and industry to identify, develop, & test interventions that build on existing science to address real-world problems

Example:

- Science shows that EF skills are essential ingredients for life, and that they can be strengthened with practice
- Two-generational approaches to EF skill development in parents & their children may produce sustainable change

CalWORKs' new tools are designed to help strengthen EF skills

My Goal-Plan-Do-Review

Name: _____ Date: _____

GOAL What do I want to do?
Why do I want to do it?

PLAN How will I do it? When? Where?
What might get in my way?

DO What small first step will I take?
How will I reward myself?
Who will I check in with?

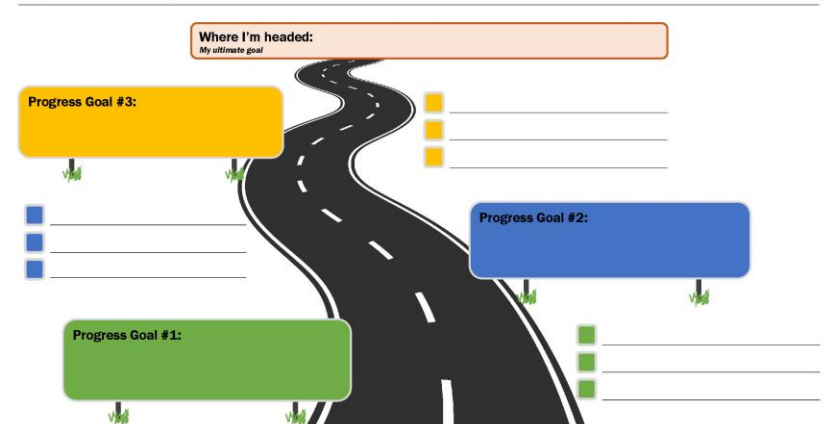
I will do it by: _____

**REVIEW
REVISE**

How did it go?

What could I do differently next time?

My Road Map



Open Time for Q&A

