



A School-Based SLP's Guide to Executive Functions

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Disclosures

Reed Senter is a doctoral student and graduate assistant at Virginia Commonwealth University. He has no relevant financial disclosures.

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Learner Outcomes

Participants will be able to:

- Define “Executive Function” and its various components, and describe how it impacts behavior regulation and language development in school-age children
- Implement interventions and strategies to support students with executive dysfunction in direct therapy
- Collaborate with classroom teachers to provide accommodations to students based on their academic needs

What are executive functions?





Executive Functions

- Plan
- Organize
- Do (execute)

Used for goal-directed behavior; also when goals conflict

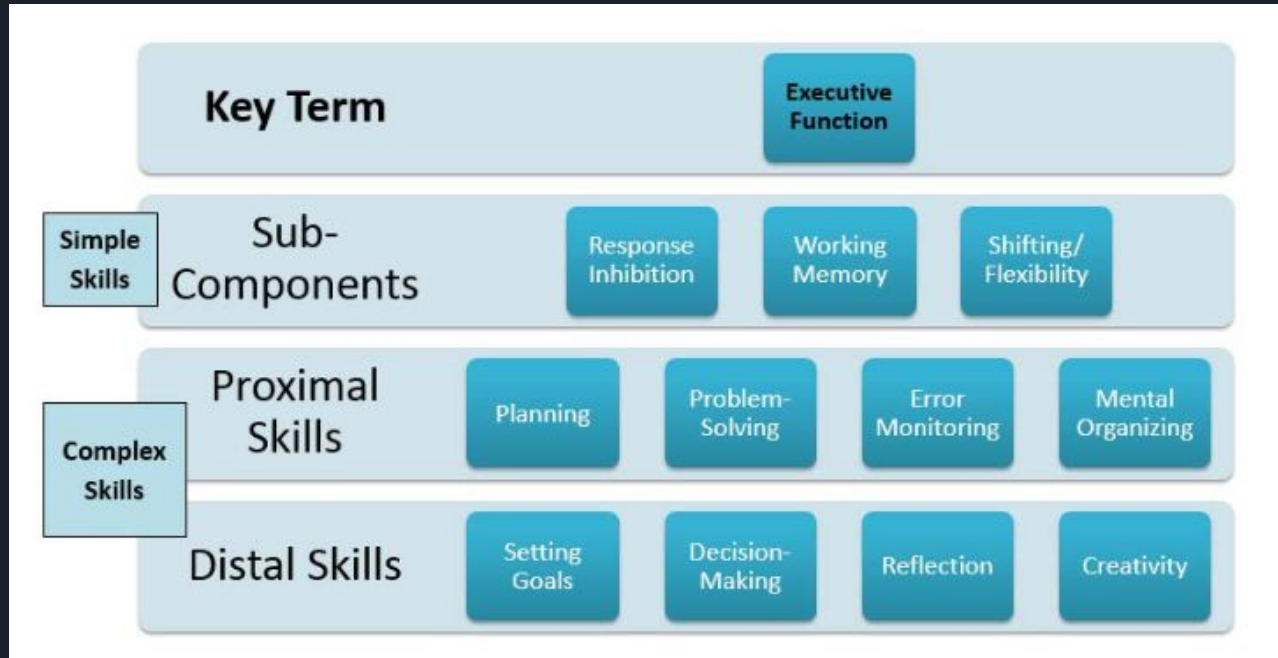
EF Components

“Traditional model” (see Baddeley, Miyake)

- Working Memory
- Inhibition
- Shifting

And sometimes...

- Attentional Control





Executive Functions: The “Smart but Scattered” model

(Dawson & Guare, 2009)

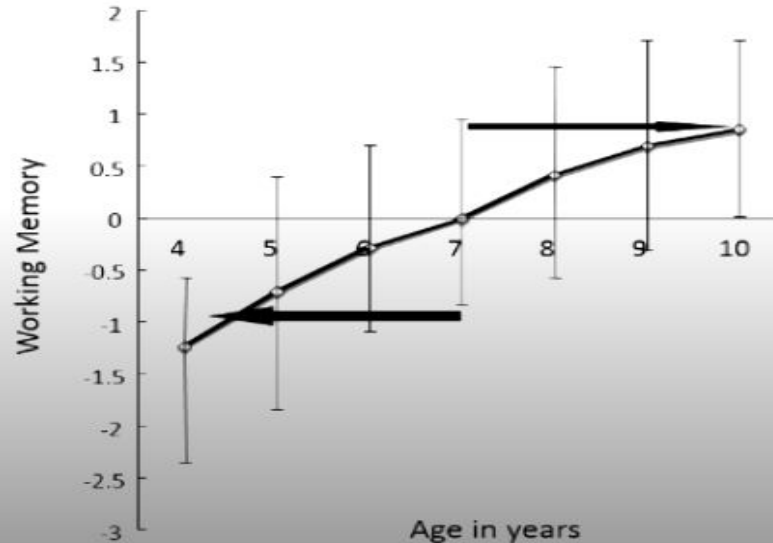
- Response Inhibition
- Working Memory
- Emotional Control
- Sustained Attention
- Task Initiation
- Planning/Prioritization
- Organization
- Time Management
- Goal-Directed Persistence
- Flexibility
- Metacognition

- “Hot” EFs
- “Cold” EFs

EF Development

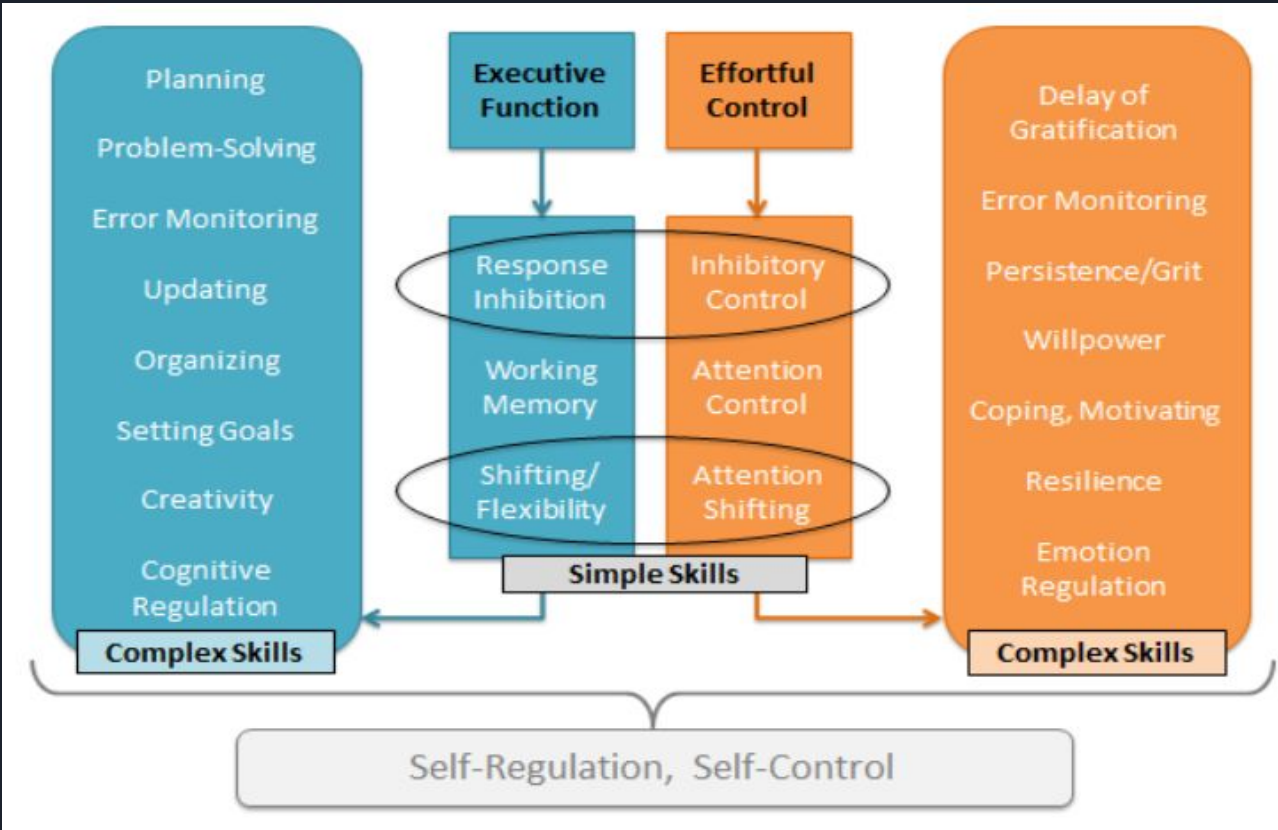
- Roughly follows this progression of skills; start developing in first few months, continue through ~25 years
- Response Inhibition
- Working Memory
- Emotional Control
- Sustained Attention
- Task Initiation
- Planning/Prioritization
- Organization
- Time Management
- Goal-Directed Persistence
- Flexibility
- Metacognition

Rate of EF Development Varies



(Alloway et al., 2006)

Executive Function & Behavior

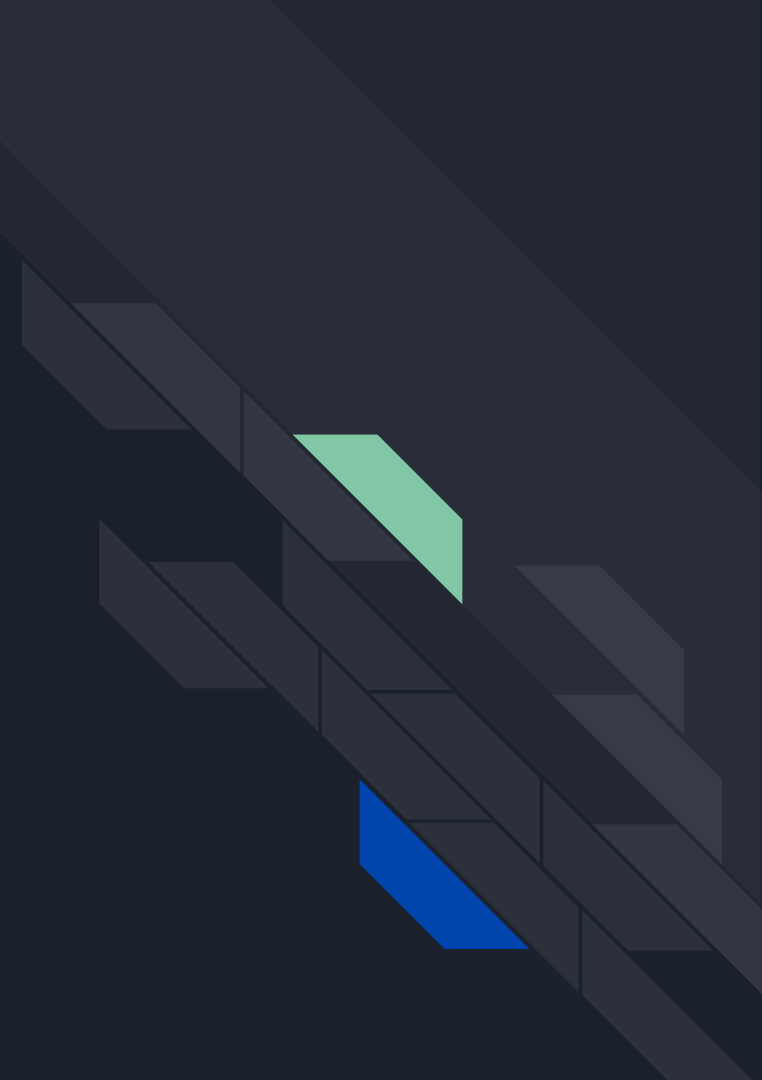




Executive Function and Language

EF domain	Difference between SLI and typically-developing	Source
Working Memory (phonological)	-1.27 SDs	Graf Estes et al., 2007
Working Memory (visuospatial)	-0.63 SDs	Vugs et al., 2013
Inhibitory control	-0.56 SDs	Pauls & Archibald, 2016
Flexibility	-0.27 SDs	Pauls & Archibald, 2016

How can SLPs support
students with EF
deficits?





Intervention Approaches

Pharmacology	X - Effective, but out of our control
Computerized programs	X - Questionable effectiveness, generalization
Neurofeedback	X - Unrealistic equipment requirements
Metacognitive / Cognitive-behavioral	YES - Older children and adolescents benefit more, but young children can improve attention, working memory, flexibility
Combination approaches	<i>May lead to superior outcomes</i>



Interventions, cont.

- Strong support for movement-based mindfulness (e.g., t'ai chi, taekwondo)
- Promising school programs:
 - Attention Academy
 - Chicago School Readiness Program
 - MindUP
 - Montessori
 - PATHS
 - Tools of the Mind
- Key components:
 - Rapport with trainer
 - Entertaining training activity
 - Meaningful and relevant activity



Interventions, cont.

What DOESN'T work?

- “WM training exercises”
- Computerized Working Memory Training
- Memorizing strings of numbers forwards and backwards



Principles of Intervention

(Singer & Bashir, 1999)

1) Getting started

- **Assessment:** identify strengths and needs
- **Discuss with student:** self-identified strengths and needs; role of setting, context, demands
- **Review:** results of assessment. Help student recognize benefits of intervention



Principles of Intervention

(Singer & Bashir, 1999)

2) Establish intervention framework

- Understand processes, guide strategies, create new habits
- Base intervention on teaching self-reflection (self-monitoring, self-evaluation)
- Address language underpinnings of metacognitive function
- Address self-efficacy and motivation



Principles of Intervention

(Singer & Bashir, 1999)

3) Select & implement components of intervention

- Address language, EF, self-regulation, strategic learning
- Understand context-specific strategies
- Support students to take risks, adapt their own strategies
- Help reflect on growth, needs, goals



Design an Intervention

Dawson & Guare, 2010

- Identify *one* EF that would improve performance
- Provide explicit instruction of strategies

- 1) Teach
- 2) Modify
- 3) Monitor
- 4) Fade



Principles for Instruction

- Teach self-assist strategies
 - Use of self-talk scripts (Barkley, 2013 / Dawson & Guare, 2010)
 - See the future / What's my problem?
 - Say the future / What's my plan?
 - Feel the future / Am I following the plan?
 - Make the future / How did it go?
 - Use language to support development
 - Have children repeat, paraphrase, tell a friend
 - Consider written prompts

Model Intervention - Sarah Ward's "Get Ready, Do, Done"

<p>3. Get Ready: What do I need?</p>	<p>2. DO What steps do I need to take to be done? How long will each step take?</p>	<p>1. What will it look like when I am DONE ? Future Sketch/Picture</p>
<p>4. What materials do I need to do the steps? Prepare my Space</p>	<p>5. Sketch the time, create time markers and $\frac{1}{2}$ way checkpoint. Set timer to alert $\frac{1}{2}$ way point. Do My Work! Check in at the $\frac{1}{2}$ way point and Determine if there are any time Robbers: Identify/Remove/Replan</p>	<p>6. Know when to STOP. Close out the Task. Review: What Worked? What did not Work?</p>



Working Memory

Chunking / Mnemonics

- Mature WM capacity holds 5-7 items; child's WM holds fewer (2-4?)
- Chunking allows more items to be stored by “encoding” them together
 - Numbers: *193982831*
 - Words: *Elephant purple bicycle tulip dance pizza truck*
- Easier to remember “like” items
 - Phonology: *cheese, chicken, chalk* is easier than *milk, turkey, pencil*
 - Semantics: *cow, chicken, horse* is easier than *turnip, python, bottle*



Working Memory

Visualization

- Similar to chunking
 - Words: *Elephant purple bicycle tulip dance pizza truck*
- Recruits nonverbal working memory (may be relative strength)
- “Mime-It” - mimetic ideational information processing
- Combine with language self-talk - “see the future, say the future...”

How can we collaborate
with teachers to support
students with EF deficits in
the classroom?





Executive Functions

- Leaky bucket analogy of EFs
 - “Holes”
 - Fatigue/hunger
 - Distraction
 - Negative self-talk
 - “Plugs”
 - Off-loading cognitive demands
 - Limit difficulty, quantity, variety

Offloading Cognitive Demands

Improve supports:

- Use language to promote awareness
- Visual activity schedules
- Graphic organizers
- Agendas, planners, to-do lists
- Time visualization
- “Help” cards and other nonverbal signals



Offloading Cognitive Demands

Reduce demands:

- Linguistic
- Organizational
- Balance content, time, EF demands



Resources

Sarah Ward's team:

<https://efpractice.com/>

The screenshot displays the Cognit website homepage. The top navigation bar includes the Cognit logo, a home icon, a star icon, a calendar icon, a 'Resources' dropdown menu, a briefcase icon, an information icon, and a shopping cart icon. A 'Sign Up Now' button is located in the top right corner.

The 'Resources' dropdown menu is open, showing the following options: Suggested Readings, Links, Videos, FAQs, Social Media, Games, Additional Handouts from Lectures, and CHADD.

The main content area features several blue tiles with white text and images:

- Professional Education**: Includes the text 'read more' and an image of a pencil.
- Latest Resources**: Includes the text 'read more' and an image of a clock.
- Creators of the Innovative 360 Thinking™**: Includes an image of a clock.
- Services**: Includes an image of a clock.

At the bottom of the page, there is a section titled 'View Now! On Demand Webinar on Teaching Students HOW to Schedule their Time' with a subheading 'Teaching the Transition from Recording Homework to'. To the right of this section is a 'Site Search' box with a search input field and a search button. Below the search box are radio buttons for 'Local', 'Web', and 'Blogs'.

Resources

Peg Dawson & Richard Guare:

<https://www.smartbutscatteredkids.com/>

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Assessment Tool](#)[Tips for Remote Schooling
during the Coronavirus
Pandemic](#)

Print Articles

Below is a list of PDF articles, research, and publications that Drs. Dawson and Guare have authored.

- [Tips for Caregivers on Schooling at Home – What Role Do Executive Skills Play?](#)
Written guide by Dr. Peg Dawson
- [Executive Skills Coaching Parent Handout](#)
Executive Skills Coaching – What Parents Should Know
- [Coaching Teenagers \(and Younger Children\)](#)
A coaching model to help teenagers with attention disorders and executive skill deficits be more successful in school and reach the career goals.
- [Homework: Problems and Solutions](#)
Of all the challenges parents face as they guide their children through school, homework is, for many, the most daunting. This handbook is written for parents who struggle with children who struggle with homework.
- [Daily Homework Planner](#)
Use this tool with your student to manage their workload.
- [Incentive Planning Sheet](#)
A homework contract and incentive planning tool.
- [Best Practices in Assessing and Improving Executive Skills](#)
Chapter written by Dr. Peg Dawson.
- [How to Set Up a Tier 1 Intervention for Promoting Executive Skill Development](#)
Embedding Executive Skills into Daily Classroom Routines and Instruction
Written guide by Dr. Peg Dawson
- [Some Thoughts on Task Initiation](#)
Some Thoughts for Teachers on Helping Teenagers Develop Task Initiation
Written guide by Dr. Peg Dawson

Smart but Scattered Kids

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In over 30 years of clinical practice, Drs. Peg Dawson and Richard Guare have worked with thousands of children who struggle at home and in school. At the center of their struggles are weak **executive skills**, and through our writing and now this website, we spotlight these skills...

[< Learn More >](#)

Now Available – ESQ-R

A self-report assessment instrument that students complete to help them (and their teachers or coaches) understand their executive skill strengths and challenges.

▶ Take the ESQ-R and get results immediately!

Resources

Bonnie Singer and Anthony Bashir:

<https://www.architectsforlearning.com/schools-teachers/resources/>



The screenshot shows the 'Resources' page of the Architects For Learning website. The header includes the logo and tagline 'BUILDING STRONG LEARNING FOUNDATIONS', a navigation menu with 'Home', 'Trainings', 'Resources', 'Blog', and 'Contact', and a secondary menu with 'ABOUT US', 'SERVICES', and 'SUCCESS STORIES'. The main heading is 'Resources'. Below it, a section titled 'Check out these helpful resources:' lists four categories: 'Interesting Articles', 'Training Information', 'Teacher Reflections', and 'Publications'. The 'Interesting Articles' section is expanded, showing a list of articles with their titles and PDF links.

Architects For Learning
BUILDING STRONG LEARNING FOUNDATIONS

Home Trainings **Resources** Blog Contact

ABOUT US SERVICES SUCCESS STORIES

Resources

Check out these helpful resources:

Interesting Articles Training Information Teacher Reflections Publications

Interesting Articles

- Why: Why kids struggle and what to do about it (Singer, 2017) (PDF)
- You are what you say to yourself (Singer, 2017) (PDF)
- What are executive functions and self-regulation, and what do they have to do with Language Learning Disabilities? (Singer & Bashir, 1999) (PDF)
- Assisting students with becoming self-regulated writers (Bashir & Singer, 2006) (PDF)
- Wait...What??? Guiding intervention principles for students with verbal working memory limitations (Singer & Bashir, 2018) (PDF)
- Measures of oral and silent reading fluency in children who stutter vs. controls: A case study. (Scaler-Scott, K, Howland, K., Singer, B., et al., 2016). (PDF)

Resources

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

Content in This Guide

Step 1: Executive Function 101

- Executive Function & Self-Regulation
- Executive Function: Skills for Life and Learning

Step 2: The Science of Executive Function

- Building the Brain's "Air Traffic Control" System
- Video: How to Build Core Capabilities for Life

Step 3: Building Executive Function Skills

- **You Are Here:** Activities Guides: Practicing Executive Function Skills
- Building the Core Skills Youth Need for Life
- Building the Skills Adults Need for Life



Enhancing and Practicing Executive Function Skills with Children from Infancy to Adolescence

An activities guide for building executive function

[Download PDF >](#)



Activities for 6- to 18-month-olds

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Activities for 18- to 36-month-olds

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References

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Thank you!

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