Executive Functions: Language, Memory, Study Skills and School Success

PRESENTED BY
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You are having a dinner party in your home for ten people. You have one week to prepare.
Why is this person overwhelmed?
What did he do differently?
What 2 questions get you started?
George, age 16

“With writing and talking, too much information floods my mind at once. I don’t know how to present it in a clear way. I especially have a hard time when I lose focus of what I want to say or when I lose my organization… I often only ‘half bake’ an argument.”

- Are these solely language-based issues?
- Is academic tutoring going to work?
- Is there a relationship between emotions, organization, higher-level language?
- Do we manage or directly teach (1) self-questioning and (2) whole-to-part strategies?

(Singer & Bashir, 1999)
Due to a developmental language disorder, George experiences problems with effective communication and performance in the classroom.

- difficulty communicating ideas verbally
- difficulty communicating written ideas
- difficulty organizing ideas
- difficulty with whole-part analysis
- difficulty initiating actions
- difficulty identifying actions to take
- difficulty shifting actions
- teacher’s misperceive a mastery of classroom content

There exists a reciprocal interaction between language deficits and executive functioning deficits. (Singer & Bashir, 1999)
Definitions of Executive Functioning

- The ability to engage in purposeful, organized, strategic, self-regulated, and goal-directed behavior.

- Processes required to plan and organize activities, include task initiation and follow through, working memory, sustained attention, performance monitoring, inhibition of impulses, and goal-directed persistence.

(McClosky, 2006)
Definitions of Executive Functioning

● Producing-oriented abilities versus cognition

● EFs explain the maintenance and generalization of behaviors across time settings.

● Efficient EF leads to the transfer of strategies across dissimilar settings and domains of expertise.
Conductors of the Brain’s Orchestra

- Executive functioning oversees the use of other cognitive processes.

- Tangential abilities versus cognitive abilities
  - driver
  - conductor

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School Success

● What are the characteristics of a successful student?

● What are the characteristics of a struggling student?

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Student Profile: Meta Activities

- Perceived as classic underachievers
- Difficulty regulating emotions
- Difficulty getting started on tasks
- Lose papers/assignments
- Forget to bring materials home and hand in homework
- Rush through work and makes careless mistakes
- Not know where to begin on long-term assignments
- Misjudge time needed and begin an assignment at the last second
- Lack of a system for keeping track of materials
- Minimal routines – tracking materials, planning HW, monitoring…
- Difficulty problem-solving when an obstacle presents itself

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Executive Functioning – Many Routes…

- Cognitive Processes

- Components
Cognitive Processes

- **Attention**: activation, arousal, and effort (getting started, paying attention, finishing work)

- **Emotional Regulation**: tolerating frustration, thinking before acting/speaking

- **Working Memory**: holding facts in mind while manipulating info. and accessing facts stored in long-term memory

- **Internalizing Language**: “self-talk” to guide behavior

- **Whole-to-Part Analysis**: taking issues apart, analyzing the pieces, and generating novel higher-level solutions

(Dendy, 2002)
Emotional Regulation

Poor Inhibition + Anxiety = Emotional Flooding

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Self-Regulation

This drives the whole EF process

- If a child/adult is not self-regulated, then he/she cannot be expected to “step back”, plan, reflect, and delay gratification.
Working Memory: The ability to hold and manipulate information long enough to execute a desired action
Can executive functions be initiated without inner-talk?
Self-Talk: Limited Internal Speech Leads To LIMITED…

(Singer & Bashir, 1999)

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Executive functioning and self-regulation are meta activities.

“Metacognitive strategies, by and large, consist of routines that are mediated with language.

“Vygotsky argued that speech plays a central role in the development of self-control, self-direction, problem-solving, and task performance.”

Over time, this internalization of speech facilitates the development of rules, problem-solving strategies, self-monitoring, self-instruction, and metacognition.

(Singer & Bashir, 1999)
Self-Talk: Verbal Mediation of EF

(Singer & Bashir, 1999)

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EF Components

- Self-Regulation
- Goal Selection
- Planning & Organizing
- Initiation & Persistence
- Flexibility
- Execution & Goal Attainment

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Goal Selection

- Anticipate consequences/predict outcomes

- Goal based on:
  - importance
  - prioritization
  - limitations
  - expectations
  - Who, What, Where, When, Why?
Planning & Organizing

- Whole-to-part analysis
- Sequential steps
- Materials required
- Information needed
- Self-advocacy
- Time management
- Self-Monitoring: Am I meeting my goal?
Initiation & Persistence

- How do I get my child to start?

- Well…What’s getting in the way?
  - anxiety
  - self-regulation: starting and intrusions
  - whole-to-part
  - attention
  - working memory

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Flexibility

- Rigid thinking versus flexible thinking
- Shifts between activities
- “Lock your suitcase” for later

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Good News!

- EFs are one of the last cognitive functions to develop
- EFs begin maturing in middle school
- Continue through early adulthood

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I understand EF, but what EXACTLY do with my student/child?
DON’T

● Power struggle
● Show them who runs the house
● Teach them b/c they are disrespectful
● Teach them b/c that’s how the real world is
● Make them happy

ALWAYS…

REPAIR

REWARD THE EFFORT NOT THE OUTPUT
School Interventions

- Physical Materials: To and From School
- HW Planning
- Study Skills
- Written Expression

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3-Pronged Action Plan

- Design
  - Keep it Simple!

- Self-
  - Inner-Talk

- Routine
  - Automatic habits to START

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Physical Organization

- 1-Binder system
- “When I leave school, I know…”
- “When I come to school, I know…”
- Increases predictability, decreases anxiety, increases sense of self
- Whole-to-part, questioning, routine

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Homework Planning

- Multi-Step Routine
- Same time, same place every day
- Reflection stage
- Increases predictability, decreases anxiety, increases sense of self
- More is less
- Whole-to-part, questioning, routine

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Empowerment! “Mom, see I got it!”

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**First - Deductive Reasoning
(When can't I do my school work?)**
Study Skills and Memory

What is the relationship?
Study Skills – Overview

Basics:

- Students are often poor studiers
- Studying is a task to be learned/taught – not absorbed
- Students allocate only 68% of time needed to studying
- Repetition is not studying
- Flipping through a book is not studying
- Students need to understand how memory and studying relate

Studying is the residue of thought
Does This Sound Familiar?

- “I really studied for the test.”
- “I knew the material.”
- “The teacher is impossible.”

- “I studied!” said Johnny
  “You were only up there 20 minutes!” said parent
  “I know it – we did it at school!” yelled Johnny
Questions For Us

● If they reviewed the material, what went wrong?

● What does research say about good study habits?
What is Good Studying?  
(What are good memory strategies?)

- Memory is the RESIDUE OF THOUGHT
- Memory is MEANINGFUL THINKING
- MEANINGFUL THOUGHT:
  - Test yourself
  - Overlearn
  - Know the puzzle

(Willingham, 2008)
What Stuff Is Remembered?

- First President?
- State I live in?
- The most popular cell phone?
- What’s the person’s name?

You Can’t “want” to remember stuff

“Wanting” to remember doesn’t work

A student’s intention to learn does not work

(Willingham, 2006)
What Works

- Meaningful Thought Process
- More you “think” about it, the more you learn
- Don’t memorize – “think” about it
- Residue of “thinking”
- A distinctive cue brings back the info for recall
- Recall of the info. is based on the quality of the cue
- Overlearning: Spelling example
What Doesn’t Work? (Shallow Processing)

- Repetition: Flashcards
  Ex: What does a Penny look like?

- Familiarity: Did it so think you know it.
  I know some stuff so I know it.

Ex: How does a toilet work?
Ex: Rereading – this is familiarity not recollection

(Willingham, 2006)
4-Step Study

What is the DATA?

What are the CATEGORIES? How is this CONNECTED?

What is the structure of the ESSAY?

What are TEST questions?
Written Expression – Is there a need for better methods?

National Center for Educational Statistics (2008)

“Proficient level or Above”

- 2002 - 4th graders – 28%
- 2007 – 8th graders - 33%
- 2007 – 12th graders – 24%

“Advanced Level”

- 2007 – 8th graders – 2%
- 2007 – 12th graders – 1%
What Skills do You Need to Be an Effective Writer?

- Self-Questioning
- Whole-To-Part Analysis
- Working Memory
- Activation
- Long-Term Memory
- Verbal Mediation
Thought Organizer: W-P, WM, SQ, VM, LT
Q Card: Self-Questioning

**SQ Write™ Q Card**

**Subtopics**

**What? + MAIN TOPIC**
What did I do on my summer vacation?

**Extended Topic**

**What?** do 3 SUBTOPICS have in common besides MAIN TOPIC
What do amusement park, summer camp, and Grandma's farm have in common besides being places I visited this summer?

**Detail**

**What? + SUBTOPIC + MAIN TOPIC + EXTENDED TOPIC**
What did I experience at Great America over summer vacation that made me more independent and responsible?

**Detail Bridge**

**Why? + DETAIL + SUBTOPIC**
Why does making new friends at camp over summer vacation prove that I am more independent or responsible?

**Evidence**

**What?** event/example demonstrates how DETAIL proves or supports MAIN TOPIC + EXTENDED TOPIC
What event shows how caring for the animals on Grandma's farm made me more independent or responsible?

**W? + EVENT/EXAMPLE**
What event did you have to do to feed the chickens and pigs?

**Self-Question??**

**Answer**

**Rehearse**

**Write**

**Key Phrase**

**Summer Break**

**Self Questions**
What did I do during my summer break? Who was with me on my summer break? Where did I go for summer break? When did I take my summer break? Why did I go there for summer break?
References

**Understanding Executive Function**
Reading Comprehension and Executive Function


ADHD and Executive Function

Parent Information Sheet on Executive Function

References

Written Expression and Executive Function


