EXECUTIVE FUNCTION
AKA
HOW YOU DO WHAT YOU DO
WHAT ARE EXECUTIVE FUNCTION SKILLS

Mental processes used to plan, organize, initiate and complete tasks while managing time, attention and emotions.
EXECUTIVE FUNCTION SKILLS

Thinking:
• Meta-cognition
• Visualizing the future
• Plan backwards
• Breaking tasks into parts
• Anticipate obstacles / troubleshooting
• Flexibility / shifting
• Working memory – verbal & non-verbal
• Impulse control / delay gratification
• Attending to details
• Decision making

Doing:
• Initiating
• Planning & Organizing
• Using time
• Managing emotions
• Transitioning
• Execute forwards
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ATTENTION</strong></td>
<td>Measures how well a youth can avoid distractions, concentrate on tasks and sustain attention</td>
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<tr>
<td><strong>EMOTION REGULATION</strong></td>
<td>Measures a youth’s control and management of emotions</td>
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<td><strong>FLEXIBILITY</strong></td>
<td>Describes how well a youth can adapt to circumstances including problem solving ability</td>
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<tr>
<td><strong>INHIBITORY CONTROL</strong></td>
<td>Reflects a youth’s control over behavior or impulses</td>
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<tr>
<td><strong>INITIATION</strong></td>
<td>Describes a youth’s ability to begin tasks or projects without being prompted</td>
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<tr>
<td><strong>ORGANIZATION</strong></td>
<td>Describes how well a youth manages personal effects, work or multiple tasks</td>
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<tr>
<td><strong>PLANNING</strong></td>
<td>Reflects how well a youth develops and implements strategies to accomplish tasks</td>
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<tr>
<td><strong>SELF-MONITORING</strong></td>
<td>Describes a youth’s self-evaluation of his / her performance or behavior</td>
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<td><strong>WORKING MEMORY</strong></td>
<td>Reflects how well a child / youth can keep information in mind that is important to knowing what to do and how to do it, including remember important things, instructions &amp; steps</td>
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DORSOLATERAL PREFRONTAL CORTEX (DLPFC)

Connects to many other parts of the brain (orbitofrontal cortex, thalamus, basal ganglia, hippocampus, neocortex, dorsal pathway – which affects interactions with stimuli

Executive functions – working memory, cognitive flexibility, planning, inhibition, attention, abstract reasoning, as well as motor planning, organization and emotional regulation.

DLPFC is not exclusively responsible for the executive functions. Complex mental activity requires the additional cortical, subcortical and brain stem connects with which the DLPFC is involved.

Note: The Prefrontal Lobe continues to develop into the mid-20's
TYPICAL DEVELOPMENT OF EXECUTIVE FUNCTION SKILLS

AGES 3-4
• Complete one-step errands
• Clean and put items away with minimal assistance
• Perform simple chores and self-care tasks with reminders and physical assistance if needed; clear dishes from table, brush teeth, get dressed
• Inhibit unsafe or inappropriate behaviors; don't touch a hot stove; don't run into the street

AGES 5-7
• Complete 2-3 step errands
• Tidy bedroom or playroom independently
• Initiate and perform simple chores and self-help tasks, but may need reminders; making the bed
• Bring papers to and from school
• Complete homework assignments (20-minutes maximum). Decide how to spend their money
• Inhibit behaviors; follow safety rules, use appropriate language (e.g. not swearing or using potty talk when not appropriate), raise hand before speaking in class, and keep hands to self

TYPICAL DEVELOPMENT OF EXECUTIVE FUNCTION SKILLS

AGES 8-11

- Run errands, including those involving a time delay, such as remembering to bring something home from school without reminders
- Perform chores that take 10-30 minutes: setting the table, dusting
- Bring books, papers, assignments to and from school
- Keep track of belongings when away from home
- Complete the majority of homework assignments without assistance (1 hour minimum)
- Plan simple school projects such as book reports: select book, read book, write report
- Remember changes in daily schedule including different after school activities
- Save money for desired objects and plan how to earn money
- Inhibit / Self-regulate behaviors; maintain composure when teacher is out of the classroom; inhibit temper tantrums and bad manners

TYPICAL DEVELOPMENT OF EXECUTIVE FUNCTION SKILLS

AGES 12-14

• Help out with chores around the house, including both daily responsibilities and occasional tasks that may take 60-90 minutes to complete: emptying dishwasher, raking leaves, etc.

• Able to safely babysit younger siblings

• Appropriately use a system for organizing school work

• Independently follow complex school schedule involving multiple transitions with teachers and classrooms

• Plan and carry out long-term projects including tasks to be accomplished and a reasonable timeline to follow

• Plan time effectively including after school activities, homework, family responsibilities

• Inhibit rule breaking in the absence of visible authority

TYPICAL DEVELOPMENT OF EXECUTIVE FUNCTION SKILLS

HIGH SCHOOL

• Manage schoolwork effectively on a day-to-day basis including completing and handing in assignments on time, studying for tests and creating and following timelines for long-term projects

• Establish and refine a long-term goal and make plans for meeting that goal; collegiate or other vocational goals

• Independently organize leisure time activities including obtaining employment or pursuing recreational activities during the summer

• Avoid reckless or risky behaviors (e.g. use of illegal substances, sexual acting out or vandalism)

AREAS IMPACTED BY EF DEFICITS: SOCIAL-EMOTIONAL, BEHAVIOR

- Self monitoring (awareness of behavior and how it affects others)
- Transitions / changes to routine
- Overwhelmed / overstimulated in larger groups
- Problem solving
- Emotional regulation
- Overreacts to small problems

- Lack of flexibility
- Gets “stuck” in disappointment / anger
- Outburst for little reason
- Appear unmotivated
- Peer interactions
AREAS IMPACTED BY EF DEFICITS: LANGUAGE AND LEARNING

• Time management
• Following directions
• Disorganization
• Difficulty following routines
• Last to start / last to finish
• Cause / effect
• Learn from past mistakes

• Overwhelmed with academic work
• Unprepared for class
• Scattered conversations
• Short attention span
AREAS IMPACTED BY EF DEFICITS: ACADEMICS

- Decoding (working memory)
- Comprehension (working memory)
- Multiple meaning words
- Idioms and generalizations
- Brainstorming
- Identifying mistakes
- Skip over directions
- Miss math signs
- Only one approach to problem solving
- Not recognizing multiple representations of same material
- Multi-step problems