* Executive Functioning
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* Objectives
1. Learn the definition of executive functioning.
2. Be able to list the actions involved in executive functioning.
3. Understand how executive functioning deficits affect children with ADHD.
* Executive Functions
* Definition
	+ - A set of mental skills that help you get things done
			* Help us analyze, organize, decide, and execute things on time
			* Those cognitive abilities needed for goal-directed action
	+ Executive Functions
		- Manage time
		- Pay attention
		- Plan and organize
		- Remember details
		- Avoid saying or doing the wrong thing
		- Do things based on past experience
* Specific tasks
* 1. Analyze a task
* 2. Plan how to address the task
* 3. Organize the steps needed to carry out the task
* 4. Develop timelines for completing the task
* 5. Adjust or shift the steps, if needed, to complete the task
* 6. Complete the task in a timely way

Book report

* The teacher assigns the class a book to read and writes the due date for the book report on the board.

The student must:

* Remember to write down the assignment
* Determine where to get the book
* Determine how long s/he thinks it will take to finish reading it
* Keep the report format in mind as s/he reads the book and takes notes
* Allot enough time to write a rough draft
* Get help from teachers or parents, if needed
* Write a final draft by the due date
* Turn in the final report

Seven skills of executive functioning:

1. Inhibition
2. Resistance to distraction
3. Self-awareness
4. Verbal working memory
5. Non-verbal working memory
6. Emotional self-control
7. Self-motivation
* 1. Self-awareness: self-directed attention.
* 2. Inhibition: Also known as self-restraint.
* 3. Non-Verbal Working Memory: The ability to hold things in your mind.
	+ visual imagery
	+ how well you can picture things mentally.
* 4. Verbal Working Memory:
	+ Self-speech
	+ internal speech
	+ “inner monologue.”
* 5. Emotional Self-Regulation: The ability to take the previous four executive functions and use them to manipulate your own emotional state. This means learning to use words, images, and your own self-awareness to process and alter how we feel about things.
* 6. Self-motivation: How well you can motivate yourself to complete a task when there is no immediate external consequence.
* 7. Planning and Problem Solving: How we work with information in our minds to come up with new ways of doing something.

Development of Executive Functions

1. Self-awareness – infancy up to 10 years old
2. Inhibition - along side #1
3. Nonverbal working memory (visual spatial) – a few months later.
	* Visual imagery
4. Verbal working memory – 3-5 years = self-speech, initially out loud. Internal by age 10
5. Self-regulation – using all 4 above
6. Motivation
7. Planning and problem solving – manipulating information in our mind – late childhood/early adolescence
* Executive *Dys*function
	+ “a brain-based impairment that impacts a person’s ability to analyze, organize, decide, and execute things on time. It causes assignments to be lost, deadlines to be missed, and projects to overwhelm.” - Larry Silver, M.D.
	+ Impairment in the abilities to handle frustration, start and complete tasks, recall and follow multi-step directions, stay on track, plan, organize, and self-monitor.
* ADHD – a disorder of executive functions
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* “ADHD is not about knowing what to do, but about doing what one knows.”
	+ Russel Barkley, Ph.D.
* not using what they know at crucial points of performance
* problem of when and where, not how or what
* ADHD = time blindness
	+ - ADHD minds are trapped in “now”
		- Too much present not enough future
		- “By the time you feel it, it’s too late.”
		- Can’t find the beginning

Book report

* The student must:
* Remember to write down the assignment
* Determine where to get the book
* Determine how long s/he thinks it will take to finish reading it
* Keep the report format in mind as s/he reads the book and takes notes
* Allot enough time to write a rough draft
* Get help from teachers or parents, if needed
* Write a final draft by the due date
* Turn in the final report
* With ADHD:
* Gets distracted, doesn’t write down the assignment
* Doesn’t need the book right now
* Has no idea how long it may take
* Can’t remember the report format
* Forgets to take notes
* Rough draft?
* Remembers the night before – it’s due NOW
* Forgets to turn it in

ADHD at Point of Performance

* + Knowledge vs. performance
	+ ADHD separates those functions
		- knowledge is not able to guide performance.
	+ Disorder of performance, not skill
		- “doing what you know not knowing what to do”

Point of performance

* The place and time (situation) where a person uses their knowledge or past experience
* Mental health and education professionals convey knowledge – how to change
* Need changes in the environment to facilitate performance
* Conveying more knowledge is not as helpful as changing the environment at the point of performance

Solutions

* Teaching skills not adequate alone
* Behavior is under the control of the immediate context.
* Take charge of that immediate context and fill it with physical cues
* Provide accommodations or scaffolding in the environment to boost executive abilities
* Change the environment:
	+ Calendars, lists, timers, charts, posters, planners, etc

Solutions

* 1. “Externalize” working memory - visual aid at point of performance for those who are impaired in internalization of behavior
* 2. Make time externally represented - EF deficits create problems with time and timing. “Temporal myopia” delayed consequences not recognized. more immediate consequences
* 3. Deficits in internal motivation – externalize rewards, may be needed throughout the performance of a task or goal-directed behavior.
* 4. Medication: results in improvement or normalization of the underlying neurological deficits which results in improvement or normalization in EF – temporary – only while medication is active.

Write it down!

* Post tasks on the board
* Read assignments out loud
* Have kids repeat them
* Appoint a row captain to check that everyone has written down the assignment
* Teach note-taking skills
* Use color and put different tasks on different color cards

Make time visible

* Clocks
* Calendars
* Reminders and alarms
* Timers
* Lists
* Charts
* Posters
* Planners

Motivation

1. internalized, self-generated forms of motivation are weak at initiating and sustaining goal directed behavior
2. externalized sources of motivation, often artificial, must be arranged within the context at the point of performance
3. these compensatory, prosthetic forms of motivation must be sustained for long periods.

Motivation

* External motivators
	+ Immediate rewards/consequences
	+ May be needed throughout a long or repeated task
* Visualize rewards/outcomes
* Self-affirming statements
* Experiencing positive emotions
	+ Rewards
	+ Praise/pep-talks
* Show compassion

Physiologic

* Each task involving EF, or prolonged tasks deplete limited resources
* Less capable of performing subsequent tasks or sustaining effort during prolonged tasks
* More likely to fail in subsequent or prolonged tasks
* More vulnerable to distractions or immediate gratification

Physiologic

* Medication: results in improvement of the underlying neurological deficits which results in improvement EF
	+ temporary – only while medication is active
* Break large/long tasks into smaller/shorter ones
* Short frequent breaks
* Move between work stations
* Physical activity
* Small amounts of sugar
* Fidget toy

Summary

* Executive function: A set of mental skills that help you get things done
* Manage time
* Pay attention
* Plan and organize
* Remember details
* Avoid saying or doing the wrong thing
* Do things based on past experience

Summary

* Executive *Dys*function: Impairment in the abilities to
	+ handle frustration
	+ start and complete tasks
	+ recall and follow multi-step directions
	+ stay on track
	+ Plan
	+ Organize
	+ self-monitor.
* Solutions:
	+ Externalize important information at key points of performance
	+ Externalize time and time periods related to tasks and important deadlines – make time tangible
	+ Break lengthy tasks or ones spanning long periods of time into many small steps
	+ Externalize motivation – privileges, rewards, tokens, etc
	+ Externalize mental problem-solving – mind maps, talk through steps, lists
	+ Replenish/restore resource pool (fuel tank)- increase rewards and positive emotions (self-pep talks), frequent breaks (3-10 min), visualize goals, routine physical exercise frequently and daily
	+ Blood glucose regulation – protein rich diet; snacks/drinks during tasks that require a lot of self-regulation