Attention and Executive Functioning

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Agenda

• Background

- o Definition
- o Neurodevelopment
- o Disorders of Attention & Executive Function

• What you can do

- Interventions for Home & School
- Professional Intervention
- Resources
- o Comments / Questions











What are Executive Functions?

- The functions of our brains and thought processes that help us regulate our behavior, set goals and meet them, and balance demands and desires, wants and needs
- Higher-order functions of the brain that allow humans to perform daily tasks
- Interrelated with other cognitive functions



Executive Function Defined

- Allocation of Attention
 - Capacity to harness attention to task at hand in spite of distractibility, boredom, fatigue
- Inhibition
- Ability to think before acting
- Control impulses, pace actions, follow rules, manage distractions
- Working Memory
 - Ability to hold information in short term memory while performing complex tasks

Executive Function Defined

- Self-Initiation
 - Independently initiate activities efficiently and with minimal prompting, seek and search for information, persistence
- Planning
 - Spontaneous planning of behaviors in novel tasks, Anticipate future events, Prioritizing information.
- Goal Setting
 - Intermediate and long-term
- Organization of Materials
 - Ability to arrange things systematically in one's work or play area

Executive Functions Defined

• Shifting

- Demonstrate variations in behaviors, consider a variety of solution, transition between tasks / situations easily.
- Ability to change and adapt from one situation/ activity/or problem according to task demands to solve a problem flexibly

Emotional Control

• Ability to manage and regulate emotions that are appropriate to the context at hand

Awareness & Self-monitoring

- Age-appropriate insight of strengths and weaknesses.
- Independently assess and change behaviors/ responses as needed.







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Development of Executive Function			
Primary School Years	 Emerging ability to consider variables and act accordingly strategize, and control impulses 		
• Age 15	 Working memory, inhibitory control ,sustain and shift attention, increase in self-monitoring integration of information to make informed decision 		
• Adulthood	 Peaks 20-29, Outside influences are weighed with internal drives to develop the best outcomes 		



Disorders of Attention & Executive Function

- 3 5% of all school aged children
 Can be identified in pre-school
 With school entrance, more evident
- More common in males that females

 - May be different presentation Disruptive behavior vs. inattention & social/emotional problems
- Risk Factors

 - Family history / genetics Neurological: prematurity, epilepsy, spina bifida Prenatal history: nicotine/alcohol/drug exposure
- 3 primary ADHD presentations
- Predominantly hyperactive/impulsivePredominantly inattentive
- Combined

Disorders of Attention & Executive Function

• Course

- Preschoolers:
 - × Difficult behaviors
 - Hyperactive/impulsive/distractible
- Early Elementary:
 - Hyperactivity/Impulsivity persists
 - × Inattention and Executive Function more evident
 - × Social Problems

Disorders of Attention & Executive Function

• Course

- o Late Childhood
 - × More defiant, conduct problems
 - Increased executive dysfunction / self-regulation
 - × Impact on adaptive skills
- o Adolescence
 - \times Decline in hyperactivity, but still greater level than controls
 - × Familial conflict
 - × Impact on judgment/choices more evident

Co-occurring Problems

• Higher rates

- Underachievement
- o Learning Disabilities
- Psychiatric Problems
 - × Oppositional Defiance
 - × Conduct
 - × Substance Use
 - × Mood
- o Social Difficulties
- o Underemployment





You Can Do Something!

- The Good News: You can help your child improve attention & executive functions
- Parents/teachers assume role of prefrontal cortex
- Helpful for ALL children; necessary for those with ADHD & learning challenges
- BUT...it will take real work and lots of practice and patience to build new habits



Guiding Principles

- Teach Attention/EF in a fashion similar to other skills
- Caregivers & teachers are key
- Active learning through in-vivo practice, rehearsal, & coaching
- Assist the child in developing their own independent skills for the long-term

Guiding Principles

1. In-vivo

• Capitalize on everyday activities to develop skills in context

2. Systematic & Gradual

- Parents/teachers: High support → Low support
- o Kids: Effortful → Automatic





Guiding Principles

3. Structure the Environment

• Setting up for success & plan for setbacks

4. Development of Meta-cognitive Skills

- Recognizing strengths & weaknesses
- Self-evaluation through monitoring
- Learning when/where to apply skills

Getting Started

- 1. Identify specific goals that are impacting functioning at home, school, etc.
- Set a goal, identify possible obstacles and ways to overcome them, make a plan
- 2. Identify a range of positive reinforcers or rewards to maintain the child's interest
- 3. Integrate goals from home at school as well as integrate goals from school at home
 - Progress reports
 - o Initiate parent-teacher meetings

Attention

- Increase independent play & work completion
- Praise child for listening for short intervals o "I'm glad you're still listening"
- Practice sessions to "train" attention/task completion
- Eliminate distractions
- Specify target behavior & amount of time
- "I want you to work on these problems until the timer goes off"
- o Reinforce success
- o Gradually increase time interval/range of behaviors

Initiation

- Develop a list of tasks • Define & model what you expect
- Develop a schedule for routines
- · Start the task with the child
- Prompt child before each step of multi-step tasks
- Establish a system of verbal/non-verbal signals to cue the routine
- Environmental cues
- o Use of technology

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The night before			In the morning	
	Task			Task
х	Put homework in backpack		х	Get out of bed after no more than 1 "snooze"
X Put other things in backpack (supplies, permission slips, etc.)	Put other things in			Take 10 minute shower
	permission slips, etc.)			Get dressed
	Set alarm			Eat breakfast
	Get clothes ready for AM			Brush teeth
	Parents check			Ready to leave by
	Lights out 9:30pm			7:00am



Planning & Organization

- Verbalize an approach
 Older children/teens: verbalize multiple approaches & identify best option
- Break down task into smaller parts
 Clearly define the "goal" of each component
 Give list of instructions/steps
- Establish a reasonable timeline • Goals for accuracy & time
- Evaluate success • What worked/didn't work
- Model Time Management • Reasonable time for work & play

	Но	mework Plan	
History Report			
	Task	Timeline	
х	Select Topic	3 days	
х	Gather Sources	1 week	
	Summarize Sources		
	Write outline		
	Write Intro		
	Write Sections 1-3		
	Write Conclusion		
	Proofread & Edit		

Conquering Avoidance

- Change goal from perfection to completion of tasks.
- Reinforcing efforts rather than getting it "right" on the first attempt
- Give permission both to yourself and the child to perform at an average level.
- Do not make what a child accomplishes more important than who they are as a person.
- Address the fear that if they are not perfect, failure is assured.
- Think of mistakes as proof of learning and growing instead of failure.

Working Memory

- The mind's internal note pad
- We store info we will need for use next, but not for a long time
- Weak working memory = note pad can't hold as much as others
- Impact on task persistence & completion, adherence to task rules/goals,
- We can take a variety steps to help our children

Six Strategies to Expand the Internal Note pad

- 1. Modify the presentation of material so it is more easily remembered
- 2. Use multisensory strategies
- 3. Teach compensatory techniques
- 4. Provide templates for procedures or routines that are repeated
- 5. Teach the use of concrete storage systems
- 6. Accommodate working memory weaknesses

Modify the Presentation of Information

- Obtain attention first
- Slow rate of presentation
- · Have child restate what they heard
- Simplify and repeat as needed
- · Chunk and organize directions for complex tasks:
 - "Time to get your backpack ready for school".
 - "Check you folder pockets for homework".
 - "Put your folder and books in the backpack".
 - "Check for pencils, pens, and notices I need to sign".
- Distributed Learning
 - Prime learning before instruction
 - Review take-home points

Concrete Storage Systems

- Draw a picture of steps for getting ready for bed
- Keep an electronic To Do list on a cell phone and/or laptop computer
- Child/Teen dictates instructions or homework assignments into a digital recorder
- Write it on your hand to remember it (low tech, but it works!)

Multisensory Strategies

- Get as many senses as possible involved in learning
- Read aloud while memorizing for a test
- · Recite steps aloud
- Create visual reminders & charts

Shifting Strategies

- Create a consistent, predictable environment
- Create visual cues for transitions
- Provide additional support & time during transitions
- Prepare the child for changes through mental rehearsal and practice
- Model flexibility
- Provide self-calming place if a meltdown occurs

Transitional Statements

- "In 5 minutes we are going to start homework"
- · Reduces likelihood of negative reaction to ending an enjoyable activity
- Tell child how much time they have before they have to do something else
- Use a timer for younger children or clock for older children
- Can wait until the end of an activity
- Only use if you are willing to wait until the end o "When you finish that puzzle, it will be time to..."



Importance of Praise

- Reinforcement ≠ bribery
- Pay attention to the behavior you want to see MORE of
- o Don't just focus on mistakes or behavioral infractions
- Natural Consequences
- · Behavioral rewards charts
 - Accumulate points, stamps, or stickers for good behavior and paying attention
 - Redeemed for larger rewards or privileges
 - Helpful for learning new/challenging skills
 - Target 2-3 behaviors at a time

School Supports

- · Minimize distractions to the greatest extent possible
- Frequent check-in's for challenging tasks
- Reduce attentional demands
 - Permit student to audio-record lessons
 - Copies of teacher notes/outlines
- Pre-teaching
 - Students allowed to preview material at home (read ahead) to prepare for future lessons.
- Teach self-help skills
 - Review assignments with teacher before/after class
 - Identify peers/study groups
- Communication
 - Parents have access to missing assignments
 - Teachers sign off on assignments

Considerations for ADHD

· Need to address cross-situational impairments

• Implement treatments in all settings in which child shows impairment

School behavior

- o 504 plan/IEP
- o Daily Report Cards
- o Classroom behavior contingency management
- Parents often cannot coordinate this on their own

Daily Report Cards

- Helpful for disruptive behavior at school
- Used to monitor observable target behaviors
- Way of increasing communication between home and school
- Sample rewards
- o Daily
 - × Being the line leader
 - ×15 minutes computer time
- Weekly
 - × Feeding the classroom pet
 - × Special activity with parent/teacher



 $\label{eq:http://ccf.fiu.edu/for-families/resources-for-parents/printable-information/how to establish a school drc.pdf$

Professional Intervention

• Behavior Therapy

- Generally not sufficient alone
- o Needs parent involvement and teacher support
- Reduces need for medication
- Additive benefits
 - Family function
 Behavioral co-morbidities
- Medication
 - Psychostimulants most effective
- Other formulations (e.g., Strattera)
- Best is COMBINED treatment
- Multimodal Treatment Study of Children with ADHD (MTA), 1992; Preschool ADHD Treatment Study series 2006 --- Sponsored by NIMH and US Dept. of Education

Professional Intervention

• Neuropsychological Evaluation

- Provide diagnostic clarification
- Assess for underlying cognitive & learning issues
- o Understand pattern of cognitive strengths/weaknesses
- Inform treatment & intervention
- Executive Function/ADHD Coaches
- Assist students and families with organizational strategies, time management, completion of HW
- Consultative vs. ongoing support
- Particularly helpful for adolescents

Treatments without strong research support

· Individual therapy with young children

- Caregivers are key for behavioral change but important to have buy-in from kids
- <u>Is helpful</u> when addressing co-occurring issues (mood, social problems)
- ${\rm \circ}\,$ More effective for teens/young adults
- Diet changes
 - May not hurt but won't necessarily help
- Biofeedback
- Mixed support: computer based "brain training"

• Effects do not generalize to other environments

Attention & Behavior Resources

- Young children:
 - 123 Magic, Effective Parenting for Children 2-12, by Thomas Phelan;
 - Parenting the Strong Willed Child by Rex Forehand and Nicholas Long
- School-age to adolescence:
 - Taking Charge of ADHD, Third Edition by Russell Barkley
 - Making the System Work for Your Child with ADHD by Peter Jensen
 - National Resource on ADHD: CHADD Organization (www.chadd.org).

Executive Function Resources

- Smart but Scattered: The Revolutionary "Executive Skills" Approach to Helping Kids Reach their Potential by Peg Dawson, & Richard Guare.
- Smart but Scattered Teens by Richard Guare & Peg Dawson.
- Late, Lost, and Unprepared: A Parents' Guide to Helping Children with Executive Functions by Joyce Cooper-Kahn & Laurie Dietzel. Bethesda, MD: Woodbine House
- Bright Kids Who Can't Keep Up by Ellen Braaten, and Brian Willoughby

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