EXECUTIVE FUNCTIONING AND DEAF AND HARD OF HEARING STUDENTS: DEFINITIONS, INTERVENTIONS, AND MODIFICATIONS

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PURPOSE OF TODAY’S PRESENTATION

- Become familiar with executive functioning
- Generate ideas for accommodations/interventions for a student with EF difficulties or for the entire classroom
- Discuss modifications for students with dysfluency or other disabilities
Cognitive processes that enable individuals to engage in and sustain goal-directed or problem-solving behaviors for future actions.

Planning, organizing, strategizing, remembering details, managing time, feedback

Requires these elements to work together:
- Working Memory
- Inhibitory Control
- Mental Flexibility
- Self-Regulation?

Apt metaphor
- Air-traffic controller of brain
Executive functioning is developed over time

- Nature and nurture, biopsychosocial
- Early experiences influence EF
  - Adult-child interactions: "scaffolding"
  - Adverse conditions
  - Through play, children practice skills
- Foundation for learning
- Need EF for everyday tasks – children and adults

Air traffic controller metaphor (Center on the Developing Child from Harvard University, 2011).
Working Memory
- Hold and manipulate information
- Visuospatial and phonological
- Writing, spelling
- Mental math
- Playing
- Everyday tasks
- Distraction, too much information, and challenging tasks inhibit working memory
Inhibitory Control

- Control and filter thoughts and impulses
- "Ability to resist a strong inclination to do one thing and instead to do what is most appropriate or needed." (toolsofthemind.org)
- Marshmallow Test
- Social: Taking turns (video), choosing appropriate thing to say
- Everyday tasks
  - Driving, work
Mental Flexibility
- Switch gears and adjust to changed demands
- Know which rules apply to which settings
  - Driving example
  - Recess vs. Math
  - Coworker vs. board meeting
- Monitoring one’s mistakes and fixing them
- Take in new information and revise strategies
Self-regulation is also mentioned frequently with executive functioning

- EF is the necessary base for self-regulation
- Can be easily intertwined
  - Diet example from Barkley (2012)
  - Possible student example
- Marshmallow study
  - In order to achieve the end goal, use your EF skills to distract self from the desired object. Delayed gratification.
- Implications for interventions


 Aren’t ADHD and EF deficits the same thing? If a student has problems with EF, they have ADHD, right?
  - Definition of ADHD, Combined Type
  - ADHD – EF dysfunction underlying
  - Knowledge versus performance

 Some children diagnosed with ASD have EF difficulties similar to those with ADHD.
Executive functioning is correlated with language ability for deaf and hearing individuals.

- Working memory – phonological loop, better for sequential information
- Self-talk
- Incidental learning and models
  - Visually responsive caregivers

With language delay, can see deficits in impulsivity and initiation

- Deaf children with hearing parents (90-95%)
- Deaf children with deaf parents demonstrated age appropriate EF on behavioral assessments and parent report.
Bilingualism and mental flexibility
- Found some indicators of increased mental flexibility in toddlers
- Older people who have been bilingual since birth faster on these types of tasks

Visual attention enhanced

Signers
- Results vary.
Language delays

Language and interactions between hearing adults and deaf children

Focus on challenging task (learning language) inhibits EF

ADHD

Autism
  - Most recent estimate is 1 in 59 (Szymanski et al., 2012)
  - Hearing estimate is 1 in 88 (CDC)
Think about your own students or children you work with...

- What kind of EF difficulties and strengths do you see?
- Source of burnout and frustration

Some indicators that you can look for in students who may have deficits in EF. Difficulties with:

- Organizing thoughts for writing tasks
- Organizing materials or things for activities or homework
- Time management difficulties
- Only follows first instruction or gets part of it consistently
- Socially, has a hard time taking turns or may say inappropriate things, upsetting classmates

Need for referral
EF difficulties can lead to (just to name a few):  
- Acting out  
- Left out of play  
- Falling behind  
- Lower quality of work  
- Giving up  
- Feel negative about school/self  
- Effects seen in jobs, relationships, etc.  
  - “productive members of society”
Consider the following before selecting and trying an intervention:

- Class-wide or individual?
- How will you assess what your class or he/she needs?
- Age group
- Language ability (average) – how will it be modified for those lower or higher than the average
- Can you fit it in with existing activities/curriculum or does it need to be a stand-alone activity?
- What resources does your school or classroom already have that you can use? Will you need other resources to implement?
- How will you monitor its success or lack thereof?
- Student and teacher accountability
GENERAL THOUGHTS ABOUT ACCOMMODATIONS

- Focus on the positive!
- Consider reinforcements
- Make it fun and personal
  - Visual song, poem
  - Pictures of kids by the rules, make it their own
- Challenge your students!
- Keep it fresh
Repeat information as required
Visuals
Teach students steps of using visuals or other cues and remind them as needed
Students need to learn self-advocacy skills
Make it meaningful or familiar to what they already know
Routines
Break it down for them
Technology
- Reminders
- Storage of information
OTHER ACCOMMODATIONS

Shifts
- Plan and structure transitions and shifts in activities
- “Listen up! Important information!”

Managing time
- Before starting task, take 5 or more minutes to plan it out
- Checklists with estimated time for each part of the task
  - Older students can do a backwards timeline
- Visual timer – high tech or low tech
- Visual calendar – due dates for each task
- Technology – reminders
- Due date on each assignment
Managing space and materials
- “A place for everything and everything in its place.”
- Build in time to clean and organize the work space.
- Organized and neat – students’ desks and little visual clutter in classroom
- Planner, color coding

Managing work
- Break down each step of the task for the student in a checklist form. Start at the level of the student. Is “get your pencil out” on the list or not? Determined by student’s current level.
- Build in feedback/management loop. Students with difficulties can have set weekly meetings.
- Homework buddy

GET PARENTS INVOLVED!
BE THE MODEL

- Model for your students
  - Organized, planned, etc.
  - Think aloud, ask questions, say how you’re feeling

- Human aspect
  - Making mistakes, it’s okay, how to get back on track

- Programs exist to train teachers to model and coach EF behaviors, research-based

- Be consistent
Concentrated fun!!!!

- Sports
- Martial arts, yoga
- Music or dance classes
- Minesweeper
  - High school students
  - They can help each other
Label feelings, your own and others’. Ask them to guess how others are feeling.

Sequential events

Make “experience books” to talk about past events

Have them practice EF skills
  ▪ Plan their play. Before they go into a center, have them tell you what they plan to do.

Guessing games

Open-ended questions with prompts as needed
OLDEN STUDENTS

- Peer or parent tutoring
  - 1-on-1, immediate feedback, active responding
- Self-monitor with rewards
- Playing 20 questions or guessing games
- Strategy games
  - Checkers
  - Chess
  - Battleship
- Personal best
  - Set their own goals
- Activities match their interests
Program for preschoolers and kindergarteners
Research-supported intervention for young children
- Academic task engagement
- Attention skills
- Better control of impulsive behavior
- Extends to social and academic performances
Costs associated with the program
MODIFYING ACCOMMODATIONS

- Tailor-made
- Some of the same
  - Organized workspace
  - Rules posted in the classroom
- Language
  - Brief
  - Concrete
  - Use same signs each time (consistency)
  - Different modalities
- More repetition, expect it to take longer
- Priorities
MORE MODIFICATIONS

- Strengths
  - Particular subject
  - Social skills
- More structure
- Explicitly teach generalization
- Modeling
- Immediate feedback
MORE ON MODIFYING

- May need to hide or cover up items that are distracting
- More visual aids, not as much language attached to the visual
- Pictures attached to different areas
- Use existing resources to link to EF skills
- Motivate student to attempt new activities with highly desired reinforcements
REFERENCES

REFERENCES, PART TWO