Executive Functioning Strategies to Keep Individuals with ASD Organized and On-Target

Objectives
• Describe how executive functions impact individuals with autism spectrum disorder
• Become familiar with interventions that support executive functioning difficulties

Typical Morning Routine?

Executive Functions
• A set of brain functions
• Intentional, goal-directed behavior
• Required for daily living and success in work
• Compared to an air traffic control system in a busy airport
  – Many controllers managing input/output of many things in many areas at one time
  – Requires focus, monitoring, quick decision making, planning, organizing, revision and impulse control

Typical Morning Routine?

Executive Functions
• Most academic skills, social skills, and motor skills require multiple EFs
• Many EF deficits are not a lack of learning but an inability to demonstrate what has been learned, especially as children get older
  – Recognized and addressed later than learning deficits
  – Often attributed to laziness, motivation or behavior problems

www.developingchild.harvard.edu
"Building the Brain’s Air Traffic Control System"
Executive Functions:
Early Childhood through Adolescence

Executive Functions and Autism
- EFs are not specifically included in DSM-5 criteria for ASD
- Approx. 15% of TD children demonstrate some difficulty
- Research suggests that EF deficits are:
  - More common in individuals with ASD
  - More significant in some areas of EF; during some developmental periods; and as individuals approach adulthood

Inhibition and Emotion Regulation
- Response Inhibition (Self-Control)
  - The ability to inhibit, resist or not act on an impulse
  - The ability to think before one acts; stop one’s behavior at the appropriate time
- Emotional Self-Regulation
  - Initiating, inhibiting, or modulating one's state or behavior in a given situation
  - Tendency to focus one's attention to a task and the ability to suppress inappropriate behavior under instruction

Inhibition and Emotion Regulation
- Starts by demonstrating the ability to delay a preferred item or object
- Requires child to inhibit one response and produce an alternative response
- Difficulty may result in inability to control thoughts and emotions → maladaptive behavior
- Especially challenging when rules are arbitrary AND must be verbally encoded

Inhibition and Emotion Regulation Supports
- Hot (involves doing)
  - Inhibition
  - Emotion Regulation
  - Set Shifting
  - Flexibility
- Cool (involves thinking)
  - Working Memory
  - Fluency
  - Planning
  - Organization

HOT
COOL
Power Card

A Power Card is a visual aid that incorporates the individual's special interest in teaching appropriate social interactions including routines, behavior expectations, and meaning of language, and the hidden curriculum.

When Can You Use a Power Card?

- If the individual lacks understanding of what he/she is supposed to do
- The individual does not understand he/she has choices
- The individual does not understand the cause and effect relationship in a situation
- The individual has difficulty understanding what to do without a prompt
- The individual does not understand another's perspective

Two Parts

1) A short scenario, written in the first person, describing how the hero or special interest solves a problem

2) A small card (the Power Card) which recaps how the individual can use the same strategy to solve a similar problem

HOT (involves doing)
Inhibition
Emotion Regulation
Set Shifting
Flexibility

COOL (involves thinking)
Working Memory
Fluency
Planning
Organization

Shifting and Flexibility

- The ability to move freely from one situation, activity, or aspect of a problem to another as the circumstances demand
- Includes ability to transition successfully, problem solve flexibly, switch or alternate attention, and change focus from one mindset or topic to another
Shifting and Flexibility

- Becomes necessary when solving problems and understanding other’s POV
- Difficulties may contribute to perseverative behavior and trouble with change
- Children with ASD are highly likely to use one approach to a situation or problem, and are often unable to move beyond a specific disappointment or unmet need

Sheldon’s Sitting Spot

A little deal is something that:
• Can be mildly bothersome
• You can ignore
• Requires a small change in plans
• Does not change anything really important
• Is a temporary problem

A BIG DEAL is something that:
• You cannot get over quickly
• You cannot ignore
• You cannot develop an alternative for
• Changes something really important for a long time
• Means you lose something you cannot get back

Big Deal/Little Deal 1-10 Scale
**Working Memory**

The ability to temporarily hold and manipulate information for cognitive tasks performed in daily life.

- Working memory holds information for a few seconds, it is temporary.
- Working memory is limited by capacity.
- Working memory is dependent on control of attention and mental effort.

**Permanent Improvement vs. Strategy Development**

- **Working Memory Training**
  - Training + Brain Plasticity = new skill
- **Recent research**
  - Brain training may increase ability to hold information in mind
  - Does not benefit type of intelligence that assists in reasoning and problem solving

**Reduce Working Memory Load**

- Break information into small chunks with time to process 1 chunk before moving on to another
- Be brief and specific with verbal/written directions
- Have student read directions before and after doing an assignment
- Give one step at a time and have individual write it down before giving another
- Use audio or video recording that can be stopped and started

**Build Upon Existing Skills**

- Know individual strengths and use them
  - **Visual Spatial Strengths**
    - Teach to use visual diagrams for word problems
    - Teach to use a planner for assignments/activities
    - Write steps of directions/chores in different colors
    - Teach to use checklists with pictures
  - **Self-Advocacy Skills**
    - Teach to ask for information in a different way
    - Desire for routines and rituals
    - Be consistent with routines they have helped establish
    - Utilize technology

**Klingberg, T. Trends in Cognitive Sciences (2010)**
Engle, R., Psychology Science, (October, 2013)

**Klingberg, T. Trends in Cognitive Sciences (2010)**

**Stuart, A. National Center for Learning Disabilities**
**Fluency**

- Contributes to:
  - Retention and maintenance of a skill
  - Endurance
  - Application
- Frees attention for application, creativity and problem solving
- Builds independence, satisfaction, and self-esteem


**Achieving Fluency**

- Modeling
- Practice that is
  - focused repetition of *important* skills
  - efficient – with a goal in mind
  - chunked – fluency of small elements first
  - short in duration – maintains attention, performance, motivation
  - consistent
  - monitored with data and modified if needed


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**HOT**

(involves doing)

- Inhibition
- Emotion Regulation
- Set Shifting
- Flexibility

**COOL**

(involves thinking)

- Working Memory
- Fluency
- Planning
- Organization

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**When teaching a new skill or behavior, the goal is:**

A. 100% Accuracy  
B. Completion of Task  
C. Timely Completion of Task  
D. Mastery  

- Mastery: Full command of a skill or topic that is accurate, smooth and timely  
- Fluency: Performance of a task that is accurate, timely and with no hesitation

Building Fluency Starts with Teaching

Social Behavior Map for: walking in the hall

<table>
<thead>
<tr>
<th>Expected Behavior</th>
<th>How others feel about that behavior</th>
<th>Positive Outcome For You</th>
<th>How you feel about yourself</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiet Mouth</td>
<td>Happy</td>
<td>I get smiles</td>
<td>Happy</td>
</tr>
<tr>
<td>Hands to yourself</td>
<td>Calm</td>
<td>I get praise</td>
<td>Proud</td>
</tr>
</tbody>
</table>

Quiet
Mouth
Hands
to
yourself
Happy
Friendly
Happy
Liked
Proud

Fluency Requires Practice

<table>
<thead>
<tr>
<th>Expected Behavior</th>
<th>Unexpected Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking in Hall</td>
<td>Shouting</td>
</tr>
<tr>
<td>Quiet Mouth</td>
<td>Shouting Running</td>
</tr>
<tr>
<td>Hands to yourself</td>
<td>Eyes on speaker</td>
</tr>
<tr>
<td></td>
<td>RAISE hand to talk</td>
</tr>
</tbody>
</table>

Expected Behavior
Participating
Unexpected Behavior
Participating

Planning and Organizing

• Distinct in meaning
  – Planning
    • Thinking of activities needed to accomplish goal
    • Method
  – Organizing
    • Arranging activities so they can be performed optimally
    • Structure
• Compliment each other
  – Organization is meaningless without a plan
  – Planning is ineffective without organization

HOT (involves doing)
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Fluency
Planning
Organization

Planning and Organization

• Increasingly important as tasks/behaviors become more complex
  – As students advance in school, and/or as ideas/independence progress in learning domains
    • Cognitive – Remembering → Creating
    • Affective – Awareness → Internalizing values
    • Psycho-motor – Imitation → Naturalization
• Difficulty area for most individuals with ASD

Bloom's Revised Taxonomy of Learning Domains (Anderson, 2000); Krathwohl, Bloom, Masia, (1973); Daves, 1975
Information Processing Speed (IPS)

- IPS & EF overlap substantially in fluid performance of daily functions
- Slower processing speed leads to increased attention demands and increased travel time for neural signals, which results in decline in Executive Functions (Walhouft & Fjell, 2007)

Van Winkle, P.E., Executive Functions in Young Adults
Teacher Strategies to Assist With Information Processing Deficits

- Consider connection between challenging and ineffective processing
- Language consideration – simple, consistent
- Adjust pacing of activities
- Consider what the process is that you are asking when giving information – rote vs. processing

Montana Autism Education Project Seminar
Bozeman, MT, Ph.D.

Story Board

<table>
<thead>
<tr>
<th>STYLE OF STORY</th>
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<th>AND THEN</th>
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Self-Regulation

Required for Independence, Complex Learning and Emotional Well Being

Perceive Flexible Shift
Hold Manipulate Organize
Anticipate Plan Generate
Associate Choose Initiate
Inhibit Adjust Gauge
Focus Attn Focus Effort Sustain Attn
Sustain Effort Stop/Interrupt Balance
Store Retrieve Pace
Time Sense Time Mgt Execute
Monitor Correct

Assessment and Intervention for Executive Function Difficulties
McCloskey, Perkins and Van Diviner (2008)

CARD Albany is on Facebook
www.facebook.com/cardalbany

Required Coursework for Special Education Professionals now online – “Responding to the Needs of Students with ASD”
http://www.albany.edu/autism/nysed_autism_training.php

Online Distance Learning Training
http://www.albany.edu/autism/33452.php
For More Information/Training

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