Executive Functioning: Advanced Assessment and Interpretation

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TEAMWORK
A FEW HARMLESS FLAKES WORKING TOGETHER CAN
UNLEASH AN AVALANCHE OF DESTRUCTION.
Agenda

- Executive Functioning is...
- Red Flags
- Assessments
- Executive Functions How To
  - What it is
  - What it looks like
  - What measures it
  - What an intervention might be
  - SMART goal sample
- Questions on parking lot, future directions
Outcomes and material availability

The outcome will be to increase knowledge of available tools to assess executive functioning and how to effectively respond to identified deficits.

Materials will be available at: bit.ly/17t2Lvf
Executive Functioning is...

SELF CONTROL
LEVEL: EXPERT
Many models
No agreed upon definition
Lots of debate about their structure
The more we study how the brain works...
...the more complicated it gets
Important to remember

Executive Functioning skills develop through early childhood into adulthood

- The skills we expect change as a child ages (test reflect that)
- Dysfunction can be addressed and these capabilities continue to develop as children age
It's important because...

• Visible Learning (2009, p.297)
  o **Metacognitive strategies** are ranked #13 overall on influences of student achievement
  o Ranked #8 out of the teaching domain (so within what teachers can control).
  o Effect size of $d=0.69$ (anything $> 0.4$ is considered significant; anything $0.7$ or $>$ is the equivalent to an increase of a grade level or more in achievement
Red Flags

- Things heard in a RtI, Care Team, or RED meeting that should make you think of EF dysfunction
Red Flags

- Not knowing how or when to start a project or assignment
- Not using a checklist or planner to keep track of assignments, even when one is available
- Taking a long time to make a transition
- Number of reminders necessary from teacher or peers to make a transition
- Making careless errors
Red Flags

- Inability to follow a conversation, keep track of details
- Difficulty completing multi-step instructions without reminders
- Trouble waiting in line, waiting his or her turn
- Ignoring distractions or being side-tracked by distractions during instruction
- Not reading directions before beginning task
Red Flags

- Giving the same answer to different questions, says the same thing repeatedly
- Not realizing how long they’ve been off-task
- Loses materials, homework
- Low frustration tolerance
- Shutting down/melting down
- Reacting more strongly to situations than peers
Assessment Tools

• Rating scales, pre-referral screening questions - Nathan
• Observation and Interview - Joanna
• WISC integrated – Julie
• D-KEFS – Elissa
• NEPSY- Scott
Pre-Referral Screening

Task-Related Behaviors Screening Form

- Similar format to the Home/Adaptive Behaviors Checklist in the SSD Initial Referral Packet (i.e. ‘no concern’, ‘some concern’, ‘great concern’)
- Based on a discussion about Executive Functioning by the 2011-12 SSD School Psych Cohort
- Connects specific behaviors to areas of Executive Functioning

Task-Related Behaviors Screening Form

<table>
<thead>
<tr>
<th>Student Name:</th>
<th>Grade:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher/Team:</td>
<td>Building:</td>
</tr>
</tbody>
</table>

**Inhibition:**

<table>
<thead>
<tr>
<th>This behavior is of . . . . . . . . . . . . .</th>
<th>No Concern</th>
<th>Some Concern</th>
<th>Great Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waits to be called on before answering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stops to process before answering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raises his/her hand to be called on</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Pre-Referral Screening (cont’)

• Checklist For Intervention For Individuals With Executive System Impairment and Organizational Impairment
  • General Considerations
  • Appropriateness
    • Level of Development & Level of Recovery
  • Self-Awareness of Strengths and Needs
  • Goal Setting
  • Planning & Organizing
  • Self-Initiating
  • Self-Inhibiting
  • Self-Monitoring and Evaluating
  • Problem Solving & Strategic Thinking
Pre-Referral Screening (cont’)

• AIMsWeb Behavior Measures

  • Prosocial Scale (SSIS-P)
    • Communication or cooperation skills (Functional Communication)
    • Initiating and sustaining conversations / interactions in an age-appropriate manner (Attention / Hyperactivity)
    • Self-control (Impulsivity / Inhibition)
    • Concern for others (Monitor)

  • Motivation Scale (SSIS-M)
    • Engagement in instructional activities (Initiate / Monitor)
    • Staying on task to complete an activity (Monitor / Attention)
    • Effort when confronted with difficult work (Inhibition / Emotional Control)
    • Attentiveness (Attention)
Pre-Referral Screening (cont’)

- AIMsWeb Behavior Measures (cont’)

  - BESS-T & BESS-S
    - Attention (Attention / Working Memory)
    - Organization (Planning & Organizing / Organization of Materials)
    - Assignments done incorrectly b/c not follow instructions (Attention / Monitor)
    - Distractability (Attention)
    - Study habits (Planning & Organizing / Monitor)
    - Trouble sitting still (Hyperactivity)
Rating Scales

- Behavior Rating Inventory of Executive Function (BRIEF)
Rating Scales (cont’)

• BRIEF

- Behavioral Regulation
- Meta-Cognition
  - Emotional Control
  - Shift
  - Inhibit
  - Monitor
  - Organization of Materials
  - Plan/Organize
  - Working Memory
  - Initiate
Rating Scales (cont’)

- Behavior Assessment System for Children – Second Edition (BASC-2)
Rating Scales (cont’)

• BASC-2
  • TRS/PRS/SRP Externalizing Problems Scales
    • Hyperactivity
  • TRS/PRS/SRP School Problems Scales
    • Attention
  • TRS/PRS Adaptive Skills Scales
    • Adaptability & Functional Communication
  • TRS/PRS Content Scales
    • Emotional Self-Control & Executive Functioning
    • Negative Emotionality & Resiliency
Rating Scales (cont’)
• Conners – Third Edition (Conners 3)
Rating Scales (cont’)

• Conners 3
  • P/T/SR Scales
    • Inattention
    • Hyperactivity/Impulsivity
  • P/T Scales
    • Executive Functioning
# Rating Scales – Strengths and Weaknesses

<table>
<thead>
<tr>
<th>Rating Scale</th>
<th>Ages</th>
<th>Admin Time</th>
<th>Parent Form</th>
<th>Teacher Form</th>
<th>Self-Report Form</th>
<th>Consistency Index/Inconsistency Scale</th>
<th>F Index/Negativity Scale/Negative Impression</th>
<th>L Index/Positivity Scale/Positive Impression</th>
<th>V Index</th>
<th>Response Pattern Index</th>
<th>Internal Consistency</th>
<th>Test-Retest Reliability</th>
<th>Inter-Rater Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRIEF</td>
<td>5-18 yrs</td>
<td>10-15 min</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>.80-.98</td>
<td>.82 (P) &amp; .88 (T)</td>
<td>.30 (P-T) &amp; .50 (S-P) &amp; .25 (S-T)</td>
</tr>
<tr>
<td>BASC 2</td>
<td>2-21:11 yrs</td>
<td>10-30 min</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Attention Problems: 0.80</td>
<td>Hyperactivity: 0.70</td>
<td>.60-0.85</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adaptive Skills: 0.82 (P) &amp; Attention Problems: 0.90</td>
<td>Hyperactivity: 0.91</td>
<td>0.57-0.86 (P) &amp; Attention Problems: 0.85-0.93</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adaptive Skills: 0.87 (T)</td>
<td>Individual Scales: .70s</td>
<td>.82-.93</td>
</tr>
<tr>
<td>Conners 3</td>
<td>6-18 yrs</td>
<td>10-20 min</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>.77 to .97</td>
<td>.71 to .98</td>
<td>.52 to .94</td>
</tr>
</tbody>
</table>


### Conners 3
- **Ages**: 6-18 yrs
- **Admin Time**: 10-20 min
- **Parent Form**: Yes
- **Teacher Form**: Yes
- **Self-Report Form**: Yes
- **Consistency Index/Inconsistency Scale**: Yes
- **F Index/Negativity Scale/Negative Impression**: Yes
- **L Index/Positivity Scale/Positive Impression**: Yes
- **V Index**: No
- **Response Pattern Index**: No
- **Internal Consistency**: .77 to .97
- **Test-Retest Reliability**: .71 to .98
- **Inter-Rater Reliability**: .52 to .94

### BRIEF
- **Ages**: 5-18 yrs
- **Admin Time**: 10-15 min
- **Parent Form**: Yes
- **Teacher Form**: Yes
- **Self-Report Form**: Yes
- **Consistency Index/Inconsistency Scale**: Yes
- **F Index/Negativity Scale/Negative Impression**: Yes
- **L Index/Positivity Scale/Positive Impression**: Yes
- **V Index**: No
- **Response Pattern Index**: No
- **Internal Consistency**: .80-.98
- **Test-Retest Reliability**: .82 (P) & .88 (T)
- **Inter-Rater Reliability**: .30 (P-T) & .50 (S-P) & .25 (S-T)
Rating Scales – Strengths and Weaknesses (cont’)

- **Strengths:**
  - Integrative approach to the assessment of children, adolescents, and young adults across multiple informants
  - Easy to administer and score
  - Can be filled out in a short amount of time
  - Generate a comprehensive portrayal of both the child’s strengths and weaknesses
  - Include a variety of validity indices

- **Weaknesses:**
  - Measure a limited number of psychopathology, behavioral, and personality domains
  - Structure sometimes makes comparison of child self-ratings from parents and teachers difficult
  - Must be somewhat familiar with student (i.e. at least one month)
  - Questions sometimes require clarification or to be read aloud to informants
Observations & Interviews

McCloskey Book

Have you checked the modules on the CD?
• observation tools
• parent interview
• child interview
• handouts

Who at SSD has this book?
OBSERVATION

Classroom Observations

• Observe student’s executive functions
• Observe the external supports in the environment
  o Classroom or Lesson structure/organization
  o Visual reminders of rules/routines/expectations
  o Teacher cues - verbal, physical, visual
  o Peer cues - helpful?
OBSERVATION

Testing Observations (create your own code)

- Repetition of test items/instructions (R)
- Inattention/daydreaming (InAtt)
- Off-topic conversation (OffTop)
- Response to redirection (+ or - to Redirect)
- Impulsive responding (Imp)
- Difficulty shifting between subtests (Shift)
- Excessive motor movement (M)
- Self-corrections (SC)
INTERVIEW with STUDENT

• Determine a loose structure
  o McCloskey: Executive Functions
  o Sinha: Math, Read, Write, Relationships/conflicts at Home, Relationships/conflicts at School

• Conversation-style vs. Structured interview

• Note their EF behaviors during interview

• Process-oriented questions: many students have never done this before
READING: Tell me about the last book that you read. Possible question probes: How did you choose it? What did you like about that book? Is there a place at school or at home that you like to read? Do you get distracted when you read? By what? Do you find yourself reading a page and then having to re-read that page? Tell me about what is happening for you when you read. Does your mind wander to other topics, which topics? Do you find it is difficult to sit still for an extended period of time? Do others/sounds/sights distract you when you are reading? Do you remember what you have read? Which do you prefer and why: reading silently or out loud? Do you use any strategies to help you remember what you have read? Sometimes when reading there are words that you might not know, what do you do when that happens? What helps you figure out what the main point of the passage is? How do you manage your time when you are given a long reading assignment? Has a teacher ever done something that helped you with reading?
WISC-IV INTEGRATED

Process Approach
Data from ADHD, AU and TBI groups
Correlational studies with D-KEFS
VCI

- Comprehension and Comprehension Multiple Choice – pulls for impulsive responding

- Similarities and Similarities Multiple Choice – pulls for impulsive responding

- Picture Vocabulary Multiple Choice – pulls for impulsive responding.
PRI

- **Elithorn Maze** – designed to measure executive function. Sensitive to moderate to severe but not mild executive functioning deficits. Requires planning, self-monitoring and inhibitory control.

- **Block Design** - mild executive functioning effects. Requires a systematic, organized approach and efficient motor response.
WMI

- Letter-Number Sequencing - requires both working memory and cognitive flexibility.

- Spatial Span Forward – lower for TBI and ADHD groups. Motor execution component under time pressure effects score.
PSI

- Cancellation Random – Requires organized response strategy without an obvious structure.
Executive Functioning Index?

- Comprehension Multiple Choice
- Elithorn Mazes
- Spatial Span Forward
- Cancellation Random
Executive Functioning Index

- If one or more of the previously mentioned subtests is lower than would be expected, completing the four additional subtests in the Executive Functioning Index can provide some information about the existence of deficits. Further testing is required to identify the nature and source of the deficits.
Executive Functioning Index

- Should be reported by skill area. One score cannot fully explain the diversity of executive functioning.
Delis-Kaplan Executive Function System
D-KEFS

- Comprehensively assesses higher level cognitive functions in both children and adults, ages 8-89.
- Measures executive functions such as attention, language and perception.
D-KEFS

- 9 Subtests
- Subtests overlap to allow for subtle distinctions
- Verbal and Nonverbal distinctions
- Provides information to support language deficits
- High Ceiling/Low Floor
- Well normed
D-KEFS

Complex to administer

Complex to score
Trail Making Test

Requires a student to create a trail with their pencil by connecting numbers, letters, and then alternating numbers and letters. A measure of connecting dots (motor speed) is also included.
Trail Making Test

Measures: Cognitive Switching (Flexibility), Inhibit: the ability to not respond to Capture Stimuli, Establishing and Maintaining Cognitive Set and Working Memory (retaining the alphabet in order).
Verbal Fluency Test

• Requires a student to generate words by first letter, by category and then by alternating between two categories.

• Measures: Verbal knowledge, systematic retrieval of lexical items; Monitoring, Cognitive Switching (Flexibility), and Establishing and Maintaining Cognitive Set.
Design Fluency Test

Requires a student to create unique designs by using exactly four straight lines to make connections among 10 dots. Dots are filled or empty. The task builds from single fills (only empty or only filled) into a switching task of between filled dots and empty dots.
Design Fluency Test

Measures: Cognitive Switching (Flexibility), Inhibition.
Color-Word Interference Test

Requires a student to: Condition 1: name colors, Condition 2: read color words, Condition 3: look at color names that are printed in different color ink (the word red in blue ink) and name the color of the ink instead of reading the word, and Condition 4: switch between reading the ink color or reading the color word name. (Stroop test)
Color-Word Interference Test

Measures: Monitoring, Inhibition and Cognitive Switching (Flexibility), and Establishing and Maintaining Cognitive Set.
Sorting Test

Requires a student to take a set of cards and repeatedly sort and describe the cards based on attributes of shape, color, writing or word meaning. The second part of this test requires the child to describe examiner created sorts.
Sorting Test

Measures: Verbal and Non Verbal conceptual-reasoning skills, Generate, Cognitive Flexibility, Inhibit.
Twenty Questions

• Requires the student to look at an array of pictures and ask up to 20 yes/no questions to guess which picture the examiner has chosen.

• Measures: Establish and maintain cognitive set, monitoring, categorization, ability to use feedback (Correct), Capture Stimuli (Inhibit)
Word Context

• Requires the student to use verbal cues to deduce to meaning of made-up words.
• Measures: Deductive reasoning, integrating multiple bits of information, hypothesis testing (Generation), Flexibility.
• Can be a measure of linguistic skills and not EF
Tower Test

• Requires the student to use verbal cues to deduce the meaning of made-up words.

• Measures: Deductive reasoning, integrating multiple bits of information, hypothesis testing (Generation), Flexibility.

• Can be a measure of linguistic skills and not EF.
Proverb Test (16+)

• Requires students to interpret proverbs.
• Measures: verbal abstract thinking, semantic integration, and generalization.
NEPSY-II

- The NEPSY-II is a neuropsychological assessment for children ages 3-16
- Assesses 6 cognitive domains
  - Attention and Executive Functioning
  - Language
  - Memory and Learning
  - Sensorimotor
  - Social Perception
  - Visuospatial Processing
NEPSY-II

- Clinical Groups
  - ADHD
  - Asperger’s Disorder
  - Autistic Disorder
  - Emotional Disturbance
  - Deaf/Hard of Hearing
  - Language Disorder
  - Mathematics Disorder
  - Reading Disorder
  - Intellectually Disabled
  - Traumatic Brain Injury
NEPSY-II

- 32 subtests and four delayed tasks
- Flexible administration and subtest selection is the intent
- The subtests within each domain vary widely in terms of stimulus presentation, administration requirements, response type, and scoring emphasis.
- Use the Assessment Planner when starting out
<table>
<thead>
<tr>
<th>Subtest</th>
<th>Ages</th>
<th>Scaled Scores</th>
<th>Process Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal Sorting</td>
<td>7-16</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Auditory Attention/Response Set</td>
<td>5-16</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Clocks</td>
<td>7-16</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Design Fluency</td>
<td>5-12</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Inhibition</td>
<td>5-16</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Statue</td>
<td>3-6</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>
NEPSY-II Subtest Composition

Auditory Attention/Response Set
NEPSY-II Subtest Composition

Inhibition
NEPSY-II Additional Subtests

• Affect Recognition
• List Memory
• Narrative Memory
• Speeded Naming
• Word Generation
• Theory of Mind
NEPSY-II

- No composites, only subtest interpretation
- Error analysis and base rates
- The NEPSY-II tends to work well with kids that more impaired or have other cognitive difficulties (e.g. unable to read) because the tasks a little easier.
Executive Functions How To

- Inhibition – Joanna
- Monitoring – Nathan
- Transition/Shift/Cog Flexibility – Julie
- Working Memory – Elissa
- Planning/Organization – Scott

For each: What it is, What it looks like, What measures it, What an intervention might be, SMART goal sample
INHIBITION

**Inhibit** – the Inhibit function cues resistance to, or suppression of, urges to perceive, feel, think, or act on first impulse. (McCloskey)

**ALSO KNOWN AS:**
- Self-control
- Impulse-control
- Response inhibition
- Antonym: Impulsivity
How do I explain Inhibition to others?

Inhibition is...

...the ability to voluntarily control a response.

To think before you act.
To think before you feel.
To resist impulsive responding.
Kind of a big deal

From the book *Smart but Scattered*:

“Inhibition is a fundamental skill that enables all other executive skills to develop. A child at the mercy of his impulses can’t initiate, sustain attention, plan, organize or problem solve effectively.”
What does Inhibition look like?

**Examples:**

- Keeping cool and thinking in an emotionally charged situation
- Raising hand before answering a question in class
- Waiting for turn to play in a game or to speak during a conversation
- Ignoring distractions while working on homework
- Putting a helmet on before getting on a bike
- Reading the directions before starting an assignment
- Responding to a younger sibling who is annoying
- Waiting in line at school or at a store
- Keeping oneself from falling back asleep in the morning
- Not talking back to parents/teachers when upset
Measuring Inhibition

- BASC-2: Sensation Seeking, Impulsivity
- BRIEF: Inhibit
- DKEFS Color-Word Interference test (Stroop)
- DKEFS/NEPSY: Tower Test
- Classroom observation
- Impulsive or quirky responding in testing
- Research: Stop signal task, Go/no-go task
Playful ways to increase Inhibition

- **Choose Your Own Adventure Books**: help student to recognize how each decision made can lead to a distinct consequence.
- **Playing board games** (e.g. Trouble, Chutes and Ladder, Candyland): turn taking
- **Dance Dance Revolution and Guitar Hero**: Concentration and thinking before acting
- **Simon Says**: practice delaying an action until the appropriate cue is heard
- **Freeze Tag**: encourages the stop-and-start action of appropriate behaviors as well as the delaying of impulsive action
- **Reading with a partner**: alternating turns to allow for practice in waiting for one's turn and patience.
Inhibition: SMART goal

● Goal
  ○ CHILD will exhibit inhibition (e.g. raising hand, waiting in line, and taking turns in games and conversation) in classes and school activities with 80% accuracy as measured by weekly time-sampling observations and teacher report form.
Monitoring

- Definition: The ability to check work to assess one’s own performance and keep track of the effect of one’s own behavior on other people

- Task-Oriented Monitoring or Work-Checking Habits
  - Whether a child assesses his or her own performance during or shortly after finishing a task to ensure accuracy or appropriate attainment of a goal

- Self-Monitoring or Interpersonal Awareness
  - Whether a child keeps track of the effect that his or her behavior has on others
Monitoring (cont’)

• If a child has **high** monitoring skills, he/she may . . .

  • Tend to be more cautious in their approach to tasks or assignments
  • Often notice and/or check for mistakes
  • Voluntarily ask for help
  • Modify their work or study habits to meet goals

  • Often be aware of their own behavior and the impact this behavior has on their social interactions with others
  • Be highly responsive to social cues and their situational context, and thus change their behavior in order to fit different situations
  • Appear to function better socially in groups
Monitoring (cont’)

• If a child has **low** monitoring skills, he/she may . . .

  • Demonstrate variable performance on assignments/tests based on their mood/feelings at the time
  • Require one or more prompts to focus on instruction
  • Complete similar tasks or assignments incorrectly

  • Exhibit expressive controls congruent with their own internal states (i.e. beliefs, attitudes, and dispositions) regardless of social circumstance
  • Tend to consider expressing a self-presentation dissimilar from their internal states as a falsehood and undesirable
  • Appear to function better socially in more intimate relationships or in one-on-one interactions
Measures of Monitoring Skills

- **BRIEF**
  - Monitor Scale

- **BASC-2**
  - Adaptability Scale
  - Executive Functioning Scale

- **Conners-3**
  - Executive Functioning Scale

- **AIMsWeb Behavior Measures**
  - Item analysis on SSIS-P, SSIS-M, BESS-T, BESS-S
Measures of Monitoring Skills (cont’)

- D-KEFS
  - Design Fluency Subtest
  - Tower Subtest

- NEPSY-2
  - Animal Sorting
  - Design Fluency
**Intervention for Task-Oriented Monitoring Example**

- **Description**
  - Teacher analyzes a particular student's pattern of errors commonly made when solving a math algorithm (on either computation or word problems)
  - Teacher develops a brief error self-correction checklist unique to that student
  - Student uses this checklist to self-monitor—and when necessary correct—his/her performance on math worksheets before turning them in

- **Materials**
  - Customized student math error self-correction checklist
  - Worksheets or assignments containing math problems matched to the error self-correction checklist

- **Steps**
  - 1) Develop the checklist, 2) Introduce the checklist, 3) Provide performance feedback, praise, and encouragement, 4) Provide reinforcement for checklist use [Optional], 5) Fade the intervention
Intervention for **Task-Oriented Monitoring Sample**

Directions: To the Student: **BEFORE YOU START:** Look at each of these goals for careful math work before beginning your assignment. **AFTER EACH PROBLEM:** Stop and rate **YES** or **NO** whether you performed each goal correctly.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Problem#1</th>
<th>Problem#2</th>
<th>Problem#3</th>
<th>Problem#4</th>
<th>Problem#5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I underlined all numbers at the top of the subtraction problem that were smaller than</td>
<td><em>Y</em> _N</td>
<td><em>Y</em> _N</td>
<td><em>Y</em> _N</td>
<td><em>Y</em> _N</td>
<td><em>Y</em> _N</td>
</tr>
<tr>
<td>their matching numbers at the bottom of the problem.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did the student succeed in this behavior goal?</td>
<td><strong>YES</strong></td>
<td><strong>YES</strong></td>
<td><strong>YES</strong></td>
<td><strong>YES</strong></td>
<td><strong>YES</strong></td>
</tr>
<tr>
<td>[ ] <strong>YES</strong> [ ] <strong>NO</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I wrote all numbers carefully so that I could read them easily and not mistake them</td>
<td><em>Y</em> _N</td>
<td><em>Y</em> _N</td>
<td><em>Y</em> _N</td>
<td><em>Y</em> _N</td>
<td><em>Y</em> _N</td>
</tr>
<tr>
<td>for other numbers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did the student succeed in this behavior goal?</td>
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<td>I lined up all numbers in the right place-value columns.</td>
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<td>I rechecked all of my answers.</td>
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Intervention for **Self-Monitoring** Example

- **Description**
  - Behavioral expectations defined
  - The student measures and records his or her own behavior
  - The student compares that recorded behavior to a pre-determined standard

- **Materials**
  - Customized student behavior self-monitoring form
  - Monitoring cue

- **Steps**
  - 1) Define behavior target(s) to self-monitor, 2) Choose method for recording self-monitoring data, 3) Select self-monitoring schedule, 4) Decide on a monitoring cue, 5) Choose rewards for successful behavior change [Optional], 6) Conduct periodic accuracy checks, 7) Fade the intervention
## Intervention for **Self-Monitoring** Sample

I plan to complete this behavior checklist on the following schedule:

<table>
<thead>
<tr>
<th>Behaviors: I engaged in these behaviors...</th>
<th>1</th>
<th>2</th>
<th>3</th>
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SMART Goals for Monitoring

• Task-Oriented Monitoring
  • __________ will finish __ out of __ of his/her long-term assignments with ___% completion by breaking them down into smaller pieces, setting up blocks of time for completion of each part, and recording and monitoring progress towards objectives.
    • The number of pieces and time allotment to complete objectives would be reviewed by the instructor.
    • A schedule is set up by the student and instructor to promote accountability.

• Self-Monitoring
  • __________ will demonstrate the ability to recognize expected and unexpected behaviors as well as rate his own behavior as part of his/her self-monitoring system with ___% accuracy as compared to teacher ratings of behavior on __ out of __ opportunities.
    • Examples of expected/unexpected behaviors: using inappropriate language, drumming on his/her desk, leaving his/her seat, etc.
    • The self monitoring system would allow the student to describe his/her behavior as well as the event(s) and emotion(s) preceding the behavior, as well as rate his/her response on a quantitative scale.
Transition/Shift/Cognitive Flexibility

- The ability to switch attention between two different activities or concepts and to think about multiple concepts simultaneously.
Transition/Shift/Cognitive Flexibility

- What does it look like?

- If the child has cognitive flexibility
  - Will learn from experiences and change behavior in response to errors.
  - Interpret information in multiple ways

- If the child does not have cognitive flexibility
  - Repeat the same mistake over and over
  - Must have his/her own way
Transition/Shift/Cognitive Flexibility

Measures of Transition/Shift/Cognitive Flexibility

D-KEFS Trail-Making switching
D-KEFS Design Fluency switching
D-KEFS Verbal Fluency category switching
D-KEFS Color-Word Interference switching
D-KEFS Sorting Test
NEPSY-II Auditory Attention and Response Set
Transition/Shift/Cognitive Flexibility

- Interventions:
  - Use perspective-taking to increase reading comprehension
  - Use self-monitoring and checking to help learn self-regulation
  - Teach students what types of errors to look for
  - Teach students how to look for errors
  - Teach students how to correct errors
  - COPS-check work for Capitalization, Organization, Punctuation, and Sentence structure.
Transition/Shift/Cognitive Flexibility

● Goal

○ _____ will transition effectively between classes, between activities, from bus to school, etc. with ____ frequency as measured by ______.
Working Memory

• The capacity to hold information in mind in order to complete a task, encode and store information, or generate goals
Working Memory in the Classroom

• Difficulty following multi-step verbal or written directions
• Distraction: Attention wanders because the student has lost track of the class discussion
• Difficulty sticking with a task to completion
• Difficulty copying from the board
Working Memory in Math Class

• Difficulty following the routine to solve multi-step math problems

• Difficulty finding the pertinent information in a word problem and then remembering what operation to use
Working Memory in Com. Arts

• Difficulty writing a coherent paragraph or sentence because they lose track of their thoughts
• Difficulty answering comprehension questions because the student does not remember recently read materials
Working Memory Socially

• Difficulty following conversation threads
• Difficulty telling jokes
• Forgetting their task when sent on an errand
Tests that Measure Working Memory

• **WISC-IV integrated**
  - Digit Span: Backward
  - Letter-Number Sequencing Process Approach
  - Spatial Span: Backward

• **BRIEF**

• **NEPSY**
  Memory for Designs
  Memory for Faces,
  Memory for Names,
  Narrative Memory
  Sentence Repetition

• **D-KEFS:** Trail Making
Working Memory Interventions

• Teacher agrees to repeat directions as necessary
• Student parrots or paraphrases directions
• Directions are provided in a written format:
  – On the board or on paper
• Directions Buddy: peer assigned to restate directions as necessary
• Separate tasks so that they are given one at a time
• Teacher reviews work in progress for accuracy “Check-ins”

Teacher/ Peer buddy provides notes

Planners/Schedules/Checklists
Working Memory Interventions

• Written Work: Task Cards

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<tbody>
<tr>
<td>I have capital letters.</td>
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<tr>
<td>I have end marks.</td>
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<tr>
<td>Basic words are spelled correctly; I used my word list to help me.</td>
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<tr>
<td>I used the question in my answer.</td>
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<tr>
<td>I supported my answer with details from the passage.</td>
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<tr>
<td>I used my personal best handwriting.</td>
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<tr>
<td>I read my work in a whisper to myself or my partner.</td>
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</tbody>
</table>
Working Memory Intervention

• Reading Chapter Books:
  • Student writes brief (10-15 word) summary (main idea) on a sticky note every two pages and places it in the chapter book. This allows the student to solidify their understanding as they read and jog their memory for comprehension tasks later.
Working Memory Goals

- Student will increase task related skills by following two step verbal directions with ____ accuracy, as measured by ____.
- Student will increase task related skills by following three step written directions with ____ accuracy, as measured by ____.
Planning and Organization
- What is it?

The ability to plan ahead and organize behavior across time and space in order to fulfill goals and intentions

- It is important to note the difference between the Organize and the Foresee/Plan cues. It is possible to effectively use the Foresee/Plan cue to realize that anticipation of future events is necessary, but not follow this with the use the Organize cue to assure that planning for the future is carried out in an organized manner (McCloskey, 2009).
Planning and Organization
- What is it?

Foresee/Plan (Short-term) – the foresee/plan function cues the anticipation of conditions or events in the very near future, such as the consequences of one’s own actions, or cues the engagement of the capacities required to identify a series of perception, feelings, thoughts, and/or actions, and the likely or desired outcome that would result from carrying them out in the very near future.

Organize – the organize function cues the use of routines for sorting, sequencing, or otherwise arranging perceptions, feelings, thoughts, and/or actions, to enhance or improve the efficiency of experience, learning or production.
Planning and Organization
- Looks Like

Difficulties with the Foresee/Plan cue are reflected in a lack of anticipation of conditions despite adequate capacities that would enable such anticipation to occur. (surprised by obvious event or sequence leading to an event)

Difficulties with the Foresee/Plan cue often result in haphazard and ineffective functioning, poorly conceived ineffective functioning, or inefficient approaches to novel problem-solving and/or routine activities. (consistently doing things the hard way when obvious more efficient alternatives are available)
Planning and **Organization** - Looks Like

Difficulties with the organize cue can result in the **lack of the use of sequencing abilities when they are necessary for success**, even though the child has demonstrated the ability to effectively sequence information when initially registering, manipulating, storing, and retrieving information and/or carry out actions. (using an outline before writing, completing tasks out of order)
Planning and Organization
- Measures

- WJ-III COG: Planning, Number Matrices
- WISC-IV Integrated: Elithorn Mazes, Block Design
- WIAT-III or KTEA-II: Essay written expression tasks
- PAL 2 Report Writing
- Any classroom observation with very diminished response latency
- KABC-II: Rover, Pattern Reasoning, Story Completion
- D-KEFS: Tower Test, Sorting, 20 Questions
- NEPSY-II: Clocks, Block Construction
- Poor planning could also be a result of poor inhibition
Goal Setting

○ Understand and envision the endpoint of a task. Having a well-defined target helps to focus students efforts.

○ Set **proximal** goals, e.g., goals that can be accomplished in the near future.

○ Set **specific** goals, e.g., goals that describe the actual outcome, as opposed to a reminder to “Do your best.”
Planning and Organization - Intervention

- Goal Setting
  - Provide rubrics and samples of completed work to help students visualize the end product.
  - Use calendars to help students schedule and pace the tasks that lead to completion of the project.
  - Use graphic organizers to synthesize and summarize key concepts.
  - Set appropriately challenging goals, e.g., goals that are based on the student's tolerance for stress and engagement.
Planning and Organization - Intervention

- Planning and Prioritization
  - Practice estimating how long a task might take to complete. Compare the actual length of the activity and the estimation.
  - Prioritize tasks by categorizing them as: Obligations (“have to”), Aspirations (“want to”) and Negotiations (“choose to”). Then allocate time according to the category.
Planning and Organization
- Intervention

● Planning and Prioritization
  ○ Rearrange schedules to accommodate unexpected occurrences. This is a difficult aspect of time management due to lack of students’ experience with time allocation. It is a critical executive function for college and career.
Planning and Organization - Intervention

- Organization of Materials
  - Break down tasks into component parts and provide a checklist for each component, e.g., what materials are needed to complete each part?
  - Develop templates for repetitive procedures, e.g., homework in a designated folder, daily update of assignment calendar, etc.
  - Mentally walk through the planning process, e.g., what materials are needed for each class at school and/or at home?
Planning and **Organization** - Intervention

- **Organization of Materials**
  - Use technology to assist organizational skills, e.g., email completed assignment to teacher; download finished product onto flash drive and print in school; use alarm app to remind student of due dates or for time management.

- **Organizing Spaces**
  - Provide examples of well-organized spaces.
  - Schedule regular opportunities to sort and delete materials from learning spaces.
Organizations and Intervention

- Organization of Ideas
  - Sort and categorize ideas using graphic organizers
  - Use semantic maps to identify similarities and differences among concepts. Seeing relationships between concepts assists vocabulary acquisition, reading comprehension and analysis.
  - Practice identifying the main idea of paragraphs, chapters, works of literature. Determine if the main idea "fits" the details provided
Planning and Organization - Intervention

- Organization of Ideas
  - “PLEASE” writing strategy: Pick a topic, List your ideas, Evaluate your list, Activate
  - the paragraph with a topic sentence, Supply supporting sentences, Evaluate your list.
  - “TREE” writing strategy for persuasive essays: Topic sentence, Reasons, Examine each reason, Ending.
  - (Graham & Harris, 1989)
Planning and Organization - Intervention

● Organization of Ideas
  ○ “STOP” writing strategy for persuasive essays: Suspend judgment, Take a side, Organize ideas, Plan more as you write. (De La Paz & Graham, (1997). in Journal of Educational Psychology, 89, 203-222.)
  ○ “DARE” writing strategy for persuasive essays: Develop a topic sentence, Add supporting details, Reject arguments for the other side, End with a conclusion. (De La Paz & Graham, (1997). Ibid.)
Planning and **Organization** - Intervention

- **Organization of Ideas**
  - "PROVE" strategy and template for writing a thesis and counterarguments: Present your knowledge, Reveal information, Offer examples/explanations, Verify your knowledge, Express your knowledge in a summary statement. (Scanlan, D. (2002). in Teaching Exceptional Children, 34(4), 50-54.)
Planning and **Organization**

- Intervention

- Organization of Ideas
  - “Pieces of a Thesis” Strategy for organizing analytical writing: The template helps students map their ideas using a graphic organizer starting with the topic that leads to three or more strands, each of which tracks the evidence for each strand and culminates in a conclusion. (Meltzer, 2006)
Planning and Organization - SMART Goal

- _____ will be able to describe their social skills goal by _____ with ____% accuracy
- _____ will have all required assignments in their calendar for the next month with ____% accuracy on the first school/work day of the month
- _____ will be able to accurately estimate the time to complete components of a project with 20% variance
Planning and Organization
- SMART Goal

- Within a week of being given a project, ____ will have written down all required components of the project to be completed in order using an organizer ____% of the time.

- ____ will apply the ____ strategy at the beginning of a writing assignment ____% of the time.
Overview of what to do

- Determine the nature of problem (i.e., lack of awareness, knowledge, or practice).
- Ensure that students understand what executive skills / strategies are.
- Ensure that students understand what the strategy is used for.
- Help students understand when to use the strategy.
- Help students understand how to use the strategy.
- Model the strategy for students and use verbal mediation.
- Incorporate external control measures (e.g., reminders) to support internalization of strategy use.
- Ask students to try using a specific strategy, either as a whole class, in pairs, or in small groups (i.e., practice).
- Have students reflect on how well the strategy worked for them as learners.
- Support internalization of executive capacities.

You made it!
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bit.ly/17t2Lvf
Feedback

https://docs.google.com/forms/d/1VlzC6aASDdqg7l1jqOmFlcH1OUmh6G88zrxIHXVmQnE/viewform
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