Smart but Scattered: Helping Children and Adolescents with Executive Dysfunction at Home and at School

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Introduction to the Field

Not a lot of consensus
- The name: executive functions vs. executive skills
- How many skills we're talking about: range = 1 – 33
- What the specific skills are

What Are Executive Skills?

- Executive skills refer to the cognitive processes required to plan, organize, and execute activities.
- They are frontal lobe functions that begin to emerge shortly after birth but take a full 25 years to fully mature. In students with attention disorders, they tend to develop more slowly than normal achieving peers.
- WHY DO THEY TAKE SO LONG?!

An interesting take on child development…

Alison Gopnik runs the Cognitive Development and Learning Lab at UC Berkeley and is in both the philosophy and the psychology departments, and is part of the A.I. working group.

Food for thought…from Alison Gopnik

I think a really deep idea that comes out of computer science originally — in fact, came out of the original design of the computer — is this idea of the explore or exploit trade-off is what they call it. So if you're thinking about intelligence, there's a real genuine tradeoff between your ability to explore as many options as you can versus your ability to quickly, efficiently commit to a particular option and implement it. And it turns out that even if you just do the math, it's really impossible to get a system that optimizes both of those things at the same time, that is exploring and exploiting simultaneously because they're really deeply in tension with one another.

Food for thought…from Alison Gopnik

So you've got one creature that's really designed to explore, to learn, to change. That's the child form. And then you've got this other creature that's really designed to exploit, as computer scientists say, to go out, find resources, make plans, make things happen, including finding resources for that wild, crazy explorer that you have in your nursery. And the idea is that those two different developmental and evolutionary agendas come with really different kinds of cognition, really different kinds of computation, really different kinds of brains, and I think with very different kinds of experiences of the world.

Food for thought…from Alison Gopnik

So what you'll see when you look at a chart of synaptic development, for instance, is, you've got this early period when many, many, many new connections are being made. And then you've got this later period where the connections that are used a lot that are working well, they get maintained, they get strengthened, they get to be more efficient. And then the ones that aren't are pruned, as neuroscientists say. They kind of disappear. The consequence of that is that you have this young brain that has a lot of what neuroscientists call plasticity. It can change really easily, essentially. But it's not very good at putting on its jacket and getting into preschool in the morning. It's not very good at doing anything that is the sort of things that you need to act well. And it's especially not good at things like inhibition.

Executive Skills that Underlie School Success

Foundational Skills

- Response Inhibition
- Working Memory
- Emotional Control
- Flexibility
- Sustained Attention
- Task Initiation

Advanced Skills

- Planning/Prioritizing
- Organization
- Time Management
- Goal-Directed Persistence
- Metacognition

Response inhibition

The capacity to think before you act – this ability to resist the urge to say or do something allows us the time to evaluate a situation and how our behavior might impact it.
https://www.youtube.com/watch?v=9PnbKL3wuH4

Working Memory

The ability to hold information in memory while performing complex tasks. It incorporates the ability to draw on past learning or experience to apply to the situation at hand or to project into the future

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Supports for students with weak working memory

Emotional Control

The ability to manage emotions in order to achieve goals, complete tasks, or control and direct behavior.

Ask kids what they're feeling
(or identify their feelings for them)

Putting Feelings Into Words Produces Therapeutic Effects In The Brain

Date: June 22, 2007

Source: University of California - Los Angeles

Summary: A new brain imaging study by psychologists reveals why verbalizing our feelings makes our sadness, anger and pain less intense. A second study combines modern neuroscience with ancient Buddhist teachings to provide the first neural evidence for why "mindfulness" -- the ability to live in the present moment, without distraction -- seems to produce a variety of health benefits.

Flexibility

The ability to revise plans in the face of obstacles, setbacks, new information or mistakes. It relates to an adaptability to changing conditions.

Sustained Attention

The capacity to maintain attention to a situation or task in spite of distractibility, fatigue, or boredom.

Attention Self-Monitoring

Attention Self-Monitoring

Task Initiation

The ability to begin projects without undue procrastination, in an efficient or timely fashion.

Task: _____ Date: _____

√	Obstacle	Strategy
	I don't understand the assignment.	
	I can't think of how to start the assignment.	
	I could probably do the assignment, but it will take a lot of work and just the thought of that hurts my brain.	
	The task is way too boring for me even to contemplate doing it.	
	This assignment is pointless. I would get nothing out of doing it.	
	The conditions for working aren't perfect—when they are, I'll get started.	
	I have way too many things to do and don't know how to prioritize my time.	
	It's going to take way too long, and I don't want to commit that amount of time.	
	There are other things I'd rather be doing that are more fun or more important to me.	
	Wait, what assignment? When I leave school at the end of the day I put school behind me (i.e., the cues that remind me to do schoolwork are missing).	
	The assignment isn't going to affect my grade so why bother	
	Perfectionism—I'm not going to start because I know I won't be able to do work that meets my (impossibly) high standard.	
	I'm stressed out about other things (either internal or external) and can't focus because of these preoccupations. I'll do better if I wait until my life calms down.	
	I'm too tired. I don't have the energy to do this now.	
	I don't *think* I can do it—because I've always failed in the past—so why should I try?	
	I'm so far behind now, I'll never catch up!	
	I don't want to do this because if I accomplish this, I'm scared of what comes next.	

Planning/Prioritizing

The ability to create a roadmap to reach a goal or to complete a task. It also involves being able to make decisions about what's important to focus on and what's not important.

The ability to create and maintain systems to keep track of information or materials.

The capacity to estimate how much time one has, how to allocate it, and how to stay within time limits and deadlines. It also involves a sense that time is important.

Assignment Name:_____ Due Date: May 2, 2018
(6 writing blocks)

What do I need to do?	How long do I think it will take?	Check when done.	How long did it take?
Step 1 Decide your position (for or against being a Loyalist)	7.5 minutes		
Step 2 Plan (complete your organizer)	60 minutes (1.5 writing classes)		
Step 3 Write your introduction	20 minutes		
Step 4 Body Paragraphs (3--2 argument/1counter-argument)	80 minutes		
Step 5 Conclusion	20 minutes		
Step 6 Edit (peer edit/self -edit) and make corrections	40 minutes		
Step 7 Print and turn in	5 minutes		

Developed by Lisa Berthiaume

Goal-Directed Persistence

The capacity to have a goal, follow through to the completion of the goal and not be put off or distracted by competing interests.

Classroom example: Focusing on goal-directed persistence

One teacher's experience with a challenging class:

- This class had multiple failures at the end of Semester 1, the lowest percentage of work turned in, and was consistently 1 day behind my other 5 classes. This class was off task constantly and my other class management strategies that work beautifully with everyone else completely fail for this group of students.

- Before you introduced me to goal-directed persistence, I was having a conversation with a team member on what to do with this class and that I had to do something, but didn't know what. I felt like a lost puppy thirsty for water while walking in the desert.

- It has now been 9 weeks since you introduced me to the idea of goal-directed persistence. The results I have seen in this class are phenomenal. They are now the most on-task class with the highest percentage work completion rate and 90% of the students consistently come to class prepared. For Quarter 3, I had no failing grades in this class and 85% of that class achieved their grade goal on their summative.

- Some of the things I am doing consistently to keep them aware of their behaviors and how they impact reaching or not reaching their goal, is I have them write their grade goal on their desk with dry erase marker. It serves as a consistent reminder throughout our 1 hour 35 minute class period of what choices they need to make to achieve their goals. We also talk about things that could hinder them from reaching their goal and how they can overcome those things. This has made a difference for these students; not only their learning environment, but their confidence in their own ability to succeed!

~Sandy Moldanado
6th grade teacher, Imagine International Academy of North Texas

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End of year follow-up

- Students completed a short end of year reflection and one question I asked them was what learning strategy was the most helpful in achieving their goals, the response I received the most was writing their grade goal on their desk daily. How fantastic for educators to have a seemingly small task that makes such a positive impact!

  I had 1 out of 22 students fail for this second semester, and it was because he didn't turn in work (he passed the first semester), and I had no repeat failures from the first semester. The first semester I had 4 out of 22 fail my class. One of my students that received a 50 in the first semester was able to achieve his grade goal of an 87 in second semester!!!! This is one of my students that has ADHD and dyslexia!! He tested at a 3.5 reading level first semester and brought it up to a 5.5 by our last benchmark. Whoo Hoo!!!
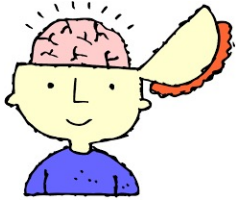
Metacognition

The ability to stand back and take a birds-eye view of oneself in a situation. It is an ability to observe how you problem solve. It also includes self-monitoring and self-evaluative skills (e.g., asking yourself, "How am I doing? or How did I do?").

CORE CONCEPTS IN THE SCIENCE OF EARLY CHILDHOOD DEVELOPMENT
Experience Shapes Brain Architecture by Over-Production of Connections Followed by Pruning

BIRTH   6 YEARS   14 YEARS

2 Neural proliferation and pruning is a normal, healthy part of brain development: connections that are not used are pruned away.

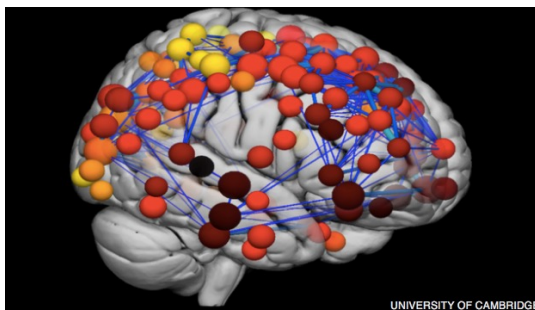UNIVERSITY OF CAMBRIDGE

Areas with many attachments to other parts of the brain develop fast in teenagers

Use Self-Reflections to Encourage Metacognition

Weekly Sustained Attention Work Report

Week 1:

Task:	Effort Rating (1- easiest task, 10- hardest task):	Sustained Attention Rating (1- very distracted, 10- totally focused):

If you were distracted during this task, what could you have done better to maintain focus?

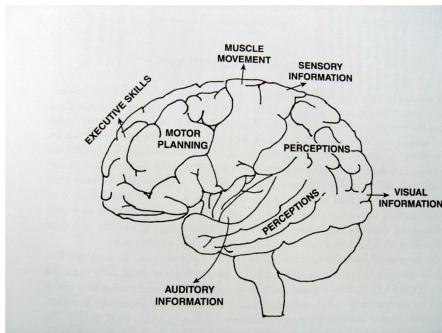If you were totally focused during this task, what did you do or why do you think you were so focused?

Where in the brain are executive skills located? In the frontal lobes (just behind the forehead)
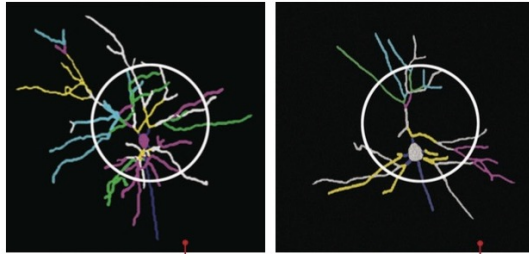

CORE CONCEPTS IN THE SCIENCE OF EARLY CHILDHOOD DEVELOPMENT
Toxic Stress Damages Developing Brain Architecture

Typical neuron: many connections — *Neuron damaged by toxic stress: fewer connections*

Scientists now know that chronic, unrelenting stress in early childhood, perhaps caused by extreme poverty, neglect, repeated abuse, or severe maternal depression, for example, can be toxic to the developing brain. While positive stress (moderate, short-lived physiological responses to uncomfortable experiences) is an important and necessary aspect of healthy development, toxic stress is the strong, unrelieved activation of the body's stress management system in the absence of the buffering protection of adult support. This image depicts the structure of neurons in the areas of the brain that are most important for successful learning and behavior in school and the workplace—the hippocampus and prefrontal cortex. The neuron on the right, which has been subjected to toxic stress, clearly displays underdeveloped neural connections, or weaker brain architecture.

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And let's consider ADHD

- Experts maintain that kids with ADHD lag about 30% behind typically developing peers in terms of executive skills.
- Stop and do the math: at your grade level, a student with ADHD is functioning at what age level?
- What's going on in the brains of kids with ADHD that contributes to their problems in school?

Biological underpinnings of ADHD

A study published by the Journal of the American Medical Association (JAMA) has found differences in dopamine processing in the reward pathways in the brains of subjects with ADHD compared to non-ADHD controls. The study focused on the nucleus accumbens (a brain structure involved with reinforcement and reward) and suggests that people with ADHD may release dopamine at a lower rate compared to normal controls or might have a net dopamine deficit.

Biological underpinnings

Because dopamine enhances the level of interest a person attaches to a stimulus, people who release dopamine at a lower rate might find it more difficult to work up the enthusiasm to act on stimuli they don't find naturally appealing.

Implication: students with ADHD find it much more difficult to apply themselves to tasks that are not intrinsically interesting to them.

Ways to Build Movement into the School Day

ScienceDaily
Your source for the latest research news

Brain scans show children with ADHD have faulty off-switch for mind-wandering

Date: January 10, 2011

Source: Wellcome Trust

Brain scans of children with attention-deficit/hyperactivity disorder (ADHD) have shown for the first time why people affected by the condition sometimes have such difficulty in concentrating. The study, funded by the Wellcome Trust, may explain why parents often say that their child can maintain concentration when they are doing something that interests them, but struggles with boring tasks.

Using a 'Whac-a-Mole' style game, researchers from the Motivation, Inhibition and Development in ADHD Study (MIDAS) group at the University of Nottingham found evidence that children with ADHD require either much greater incentives -- or their usual stimulant medication -- to focus on a task. When the incentive was low, the children with ADHD failed to "switch off" brain regions involved in mind-wandering. When the incentive was high, however, or they were taking their medication, their brain activity was indistinguishable from a typically-developing non-ADHD child.

ADHD is the most common mental health disorder in childhood, affecting around one in 50 children in the UK. Children with ADHD are excessively restless, impulsive and distractible, and experience difficulties at home and in school. Although no cure exists for the condition, symptoms can be reduced by medication and/or behavioural therapy. The drug methylphenidate (more often known by the brand name Ritalin) is commonly used to treat the condition.

Previous studies have shown that children with ADHD have difficulty in 'switching-off' the default mode network (DMN) in their brains. This network is usually active when we are doing nothing, giving rise to spontaneous thoughts or 'daydreams', but is suppressed when we are focused on the task before us. In children with ADHD, however, it is thought that the DMN may be insufficiently suppressed on 'boring' tasks that require focused attention.
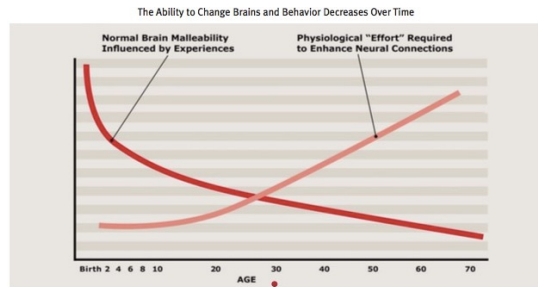
What can the 13-year old brain do?

4 years old

13 years old

What can the 13-year old brain do?

13 years old

21 years old

The Ability to Change Brains and Behavior Decreases Over Time

Normal Brain Malleability Influenced by Experiences

Physiological "Effort" Required to Enhance Neural Connections

7 As the maturing brain becomes more specialized to assume more complex functions, it is less capable of reorganizing and adapting. For example, by the first year, the parts of the brain that differentiate vocal sounds are becoming specialized to the language the baby has been exposed to and are already starting to lose the ability to recognize important sound distinctions found in other languages. As the brain prunes away the circuits that are not used, those that are used become stronger and increasingly difficult to alter over time. Declining plasticity means it's easier and more effective to influence a baby's developing brain architecture than it is to rewire parts of its circuitry in the adult years. In other words, we can "pay now" by ensuring positive conditions for healthy development, or "pay more later" in the form of costly remediation, health care, mental health services, and increased rates of incarceration. *Graph Source: P. Levitt (2009)*

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ASSESSMENT PROCEDURES

- Parent and teacher interviews

  - Behavior rating scales

    - Formal assessment

  - Behavior observations

  - Informal assessment

ASSESSMENT OF EXECUTIVE SKILLS

Behavior Rating Scales

- **Child Behavior Checklist/Teacher Report Form.** (ASEBA.org)

- **Behavior Rating Inventory of Executive Function-2 (BRIEF-2).** *Available from PAR (parinc.com).*

- **ADHD Rating Scales-V.** (guilford.com)

- **Brown ADD/Executive Function Scales.**(pearsonclinical.com)

ASSESSING EXECUTIVE SKILLS

Informal Measures

- Parent interview (look for specific examples of problems in areas likely to be affected by executive skill deficits, including problems with homework, chores, following directions, social interactions, organizational skills, etc.).

- Teacher interviews (again, look for specificity of examples in relevant areas, e.g., following complex directions, task initiation, handling long-term assignments, response to open-ended tasks, social interactions, responses to classroom/school rules, etc.).

Name: _____   Person(s) interviewed: _____

PRESENTING CONCERNS:

SCHOOL HISTORY: • **Possible tests**

Academic—
Behavioral/Social—
Previous evals/teacher concerns—
Special Ed or 504—
How does the child feel about school?

HOME ISSUES:

HOMEWORK/EXECUTIVE SKILLS:

Daily routines (morning, bedtime, etc.)—
Chores—
Mood/behavior/fears/anxieties—
Sleep issues—
Sensory issues (appetite, clothing, stimulation)—
Medical issues—
Siblings—
Friends—
Spare time—
Any organized activities—
Family history of related problems?
Other family issues (conflicts, significant events)—
Previous/current counseling—

Limitations of Formal Assessment

Feature	Executive skill affected
Examiner cues child to begin	Task initiation
Tasks are brief	Sustained attention
Examiner's presence communicates that performance is being monitored	Task initiation, sustained attention, goal-directed persistence
Most standardized tests involve closed-ended tasks (i.e., 1 correct answer)	Flexibility, metacognition

Limitations of Formal Assessment

The most complex cognitive task within any psychologist's repertoire is less complex than real world demands on executive skills, and there is no way of determining with any certainty how well these tests map on to the real world.

Thus, in the parlance of neuropsychologists, *absence of evidence is not evidence of absence*.

How do we describe these kids…

Does this pupil have any illness or disability (either physical or mental)?   ☐ No   ☐ Yes— please describe

What concerns you most about this pupil?
That he is lazy and not working to his potential.

Please describe the best things about this pupil:
He is sweet and has a good sense of humor.

A better way…

Instead of calling students this:	Describe them as having challenges in this:
• Lazy	• Task initiation
• Unmotivated	• Sustained attention
• Not working to potential	• Response inhibition
• Disruptive	• Emotional control
• Oppositional	• Flexibility
• Messy	• Organization
• Tardy	• Time management
• Forgetful	• Working memory
• Absent-minded	• Goal-directed persistence
• Lacking a work ethic	

3 Key Strategies for Managing Executive Skill Weaknesses

- Intervene at the level of the environment

- Intervene at the level of the child by—
  1. Teach the child the weak skill
  2. Motivate the child to use the skill

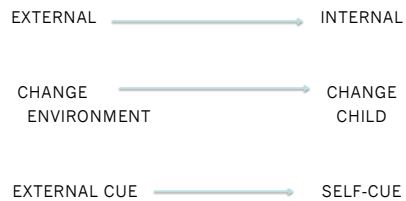## Move from external to internal: critical dimensions

EXTERNAL ———————→ INTERNAL

CHANGE ———————→ CHANGE
ENVIRONMENT   CHILD

EXTERNAL CUE ———————→ SELF-CUE

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Begin by modifying the environment

What do we mean by "modify the environment?"

Environmental modifications are any changes we make that are external to the child.

Strategies for modifying the environment

1. Change the physical or social environment

2. Modify the tasks we expect the student to perform

3. Change the ways adults interact with the student

Who benefits from environmental modifications?

Kids with ASD
Typical school environments/demands often overwhelm these kids. Use their behavior as a barometer to tell you when you have to make modifications. Meltdowns and tantrums are the most obvious cues.

Environmental Modifications for Kids with ASD

- Alternatives to high stim-environments (e.g., cafeteria, playground)
- Build social interactions that work for them (e.g., structured settings where the activity drives the interaction or supervised lunch/recess)
- Closed-ended tasks/minimize choice; provide scripts; make steps more explicit; alternate between preferred/non-preferred activities ("First work, then play").

Open-Ended Tasks
An open-ended task is one where:

- There are multiple possible correct answers;

- There are multiple possible ways to achieve the correct answer;

- The task has no obvious starting point; or

- The task provides no feedback about whether or when it is complete.

Make steps more explicit
Example: Math problem solving

Steps for Problem Solving using Model Drawing - Possible Scoring

(Singapore Math)

_____ Reads the entire problem and underlines the question. (1pt.)

_____ Rewrites the question in sentence form, leaving a space for the answer. (1)

_____ Determines who and/or what is involved in the problem. (1)

_____ Draws the unit bar(s). (1)

_____ Chunks the problem and adjusts the unit bars to match the information in the problem.

_____ Fills in the question mark? (3)

_____ Correctly computes and solves the problem. (2)

_____ Writes the answer in the blank in the sentence. (1)

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2 end-of-day routines

The numbered items are the steps created for a child on the autism spectrum. The items with checkmarks are those a general education teacher would use with her class. Children on the spectrum need the steps spelled out more explicitly.

Make steps more explicit
Example: How to listen
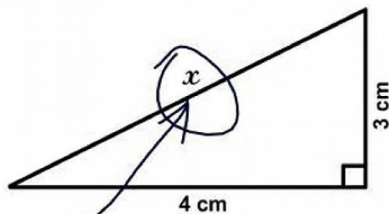
Some kids have trouble making inferential leaps

Some kids have trouble making inferential leaps
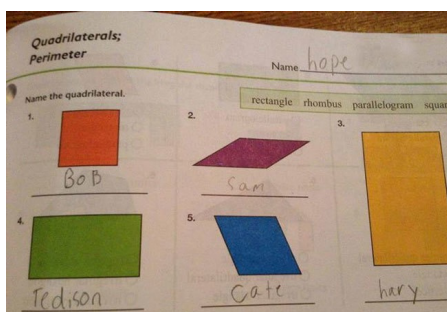
Who benefits from environmental modifications?

Kids with ADHD

If you make kids with ADHD sit still or remain seated for long periods of time, their ability to learn diminishes. Kids with ADHD often receive more negative feedback from both peers and adults than their peers do.

"When a parent or a teacher sees a child who can sit perfectly still in one condition and yet over here they're all over the place, the first thing they say is, 'Well, they could sit still if they wanted to,'" said Mark Rapport, director of the Children's Learning Clinic at the University of Central Florida. "But kids with ADHD only need to move when they are accessing their brain's executive functions. That movement helps them maintain alertness."
https://www.youtube.com/watch?v=167se17RNHw

Environmental Modifications for Kids with ADHD

- Seating arrangements; classroom design
- Short tasks or build in frequent breaks; give kids choice or responsibility; minimize worksheets; provide cues/reminders; use checklists (with rewards)
- Increase supervision (unstructured situations)
- Work for a ratio of 3:1 positives to corrective feedback

Effective Praise:

1. Is delivered immediately after the display of positive behavior;
2. specifies the particulars of the accomplishment (e.g., *Thank you for cleaning off your desk right away after I asked you*);
3. provides information to the child about the value of the accomplishment (e.g., *When you get ready for the first activity quickly, it makes the morning go so smoothly!*);
4. lets the child know that he put in effort to accomplish the task (e.g., *I saw you working hard to control your temper!*); and
5. orients the child to better appreciate their own task-related behavior and thinking about problem-solving (e.g., *I like the way you thought about that and figured out a good solution to the problem*).

TEACH deficient skills

Don't expect the youngster to acquire executive skills through observation or osmosis.

Embedding Executive Skills into Classroom Lessons

1. Describe the lesson being taught.
2. Identify the executive skills the lesson requires students to use.
3. Identify potential obstacles that might prevent the student from using those skills effectively.
4. With the student, decide on a strategy to use to overcome the obstacle.

Lesson Examples

Lesson/ Assignment	Executive Skill(s)	Obstacle	Strategy
Math Subtraction with Regrouping	• Organization • Working Memory	• Poor spacing/messy handwriting • Forgetting steps	• Use large grid graph paper • Use checklist with each step numbered or color-coded
English Learning Vocabulary Words	• Working Memory • Metacognition	• Difficulty retaining meanings (ineffective study habits)	• Make up "silly sentences" for each word • Use flash cards-word on side 1, definition with cartoon drawing on side 2

Clinical Examples

Problem Situation	Executive Skill(s)	Obstacle	Strategy
Fighting with older brother	• Emotional control • Response inhibition	• Brother "pushes her buttons"	
Plays video games instead of doing homework	• Response inhibition • Task initiation	• Can't say no when friends ask him to play • Can't stop once he's started playing	

The formula for teaching executive skills

1. Embed the skill in a daily routine
2. List the steps in the routine
3. Walk the child through the steps repeatedly
4. Create a visual that outlines the routine
5. Fade the prompts by having the child use the visual to follow the routine

Using every day routines as a way to teach executive skills

Examples

- Bedroom cleaning
- Making homework plans
- Classroom organization

Example 1:
Goal: A clean room

Directive from parent: *Clean your room*

Response from child with executive skill deficits:

Example 1:
Goal: A clean room

Directive from parent: *Clean your room*

Response from child with executive skill deficits:

Nothing

Intervention Plan

Step 1: The parent acts as an external frontal lobe that works with the child to perform the following functions:

- Develop *a plan,* an organizational scheme, and a specific set of directions.

- Develop a way to monitor performance.

- Problem solve when something doesn't work.

- Provide encouragement/motivation and feedback about the success of the approach.

- Decide when the task is completed.

Intervention Plan

Step 1: Sample statements:
- *Are we ready to start? OK, let's get started.*
- *Where did you decide your trucks would go? Was it the box?*
- *How about your dirty clothes? In the laundry?*
- *And we decided you could put your books on the bookshelf.*
- *There are two toys under the bed. It doesn't look like all those toys will fit in that one box; Where did the other trucks go? What do you think we can do?*
- *You're almost finished. Is your plan to play with your friends?*
- *This is a hard job but you're almost done! Great work!*
- *You've finished your job for the day*

Intervention Plan

Step 2: Provide the same information without being the direct agent: create a list, picture cues, audio tape, etc. to cue the child.
Parent says to child: Look at your list.

Jack's Clean Room Checklist

My Clean Desk
- ☑ garbage is cleared and thrown away
- ☑ desk items are placed in the appropriate drawers

My Clean Bed
- ☑ bed is made (sheets and pillows in place, blanket spread evenly)

My Clean Shelves
- ☑ toiletries are put away
- ☑ clothes are folded and in correct place
- ☑ shirts are on hangers

My Clean Floor
- ☑ dirty laundry is picked up and in the hamper
- ☑ all other items have been put away
- ☑ garbage has been thrown out
- ☑ there is nothing on the floor

Intervention Plan

Step 2: Provide the same information without being the direct agent: create a list, picture cues, audio tape, etc. to cue the child.

Parent says to child: Look at your list.

Step 3: Parent begins to transfer responsibility to child:

Parent says to child: What do you need to do?

Step 4: Transfer complete.

Child now asks himself/herself. What do I need to do?

Example 2: Teaching children to make homework plans

STUDY PLAN

Date: _____

Task	How long will it take?	When will you start?	Where will you work?	Actual start/stop times	Done (√)

If this is more than you want to do, try this

Ask kids to write down what time they're going to do the homework assignment and where they will do it…

- On the assignment itself, or
- In their assignment book, or
- As an alarm in their smart phone

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Example 3:
School-wide example
Teaching Organizational Skills

Salina Kansas Model

Curtis.Stevens@usd305.com

We can impose executive skill instruction and strategies *on* kids

OR
we can help students figure out how to *grow their own* executive skills—
we call this a *student-centered* intervention

How to implement a student-centered intervention

1. Start by identifying the student's strengths.
2. Describe the problem behavior or the problem situation.
3. Identify the executive skill(s) that might be contributing to the problem.
4. Determine the setting in which the behavior is most likely to occur.
5. Decide what to address first. In other words, select one setting or activity or change one small part of the student's behavior that, if successful, would lead you to say, "This is better."

How to implement a student-centered intervention

6. Obtain buy-in from the student:
   - Describe the problem in a non-judgmental way.
   - Talk about why it's a problem and what positive effect might come from trying to change the behavior.
   - You might ask the student to observe another student in the class who handles the situation successful and then have them share their observations with you.
   - Ask the student if they're willing to work with you to come up with a strategy to solve the problem.

How to implement a student-centered intervention

7. With the student, brainstorm possible strategies for handling the problem.
   - Think about environmental modifications that might work.
   - Talk about whether there's an incentive that might make it easier to work on improving the skill.
   - Consider ways to briefly practice the skill.
   - If the student can't come up with ideas on their own, make a few suggestions and see if they're willing to choose one to try.
8. Decide on a way to measure progress (e.g., chart, graph, checklist, behavior count, rating scale, tracking grades on tests or assignments).

How to implement a student-centered intervention

8. Decide on a way to measure progress (e.g., chart, graph, checklist, behavior count, rating scale, tracking grades on tests or assignments).

9. Come up with a game plan for implementing the intervention
   - Walk through the steps from start to finish (mentally, verbally or physically rehearse it).
   - Check in with the student just before the target situation.
   - Prompt during the target situation if necessary.
   - Debrief afterwards (always find something to praise).

10. Continue as long as necessary; trouble-shoot when problems arise; change strategies if necessary.

Additional Resources

https://www.dropbox.com/sh/whlg4tmcus
b1fle/AACpXFuquCJZwkD2PjptABb9a?dl=0
(ES Supplementary Materials)

The Cookie Problem

Problem to be solved: Which girl wore which color?

Clues:

- **Rachel, Linda, and Eve were friends sitting in a circle on the grass. Rachel passed three chocolate chip cookies to the person in blue. *Who wore which color?***

- **Eve passed three macaroons to the person who passed her cookies to the person wearing green. *Who wore which color?***

- **Each person passed three cookies to the friend on her left. *Who wore which color?***

- **Rachel, Linda, and Eve were dressed in red, blue, and green, but not necessarily in that order. *Who wore which color?***

- **The person who was wearing green did not get a macaroon. *Who wore which color?***

- **The person wearing red passed along three oatmeal cookies. *Who wore which color?***

Taken from: Get It Together: Math Problems for Groups Grades 4-12, published by EQUALS, Berkeley, CA, 1989.

Executive Skills Questionnaire —

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Step I: Read each item below and then rate that item based on the extent to which you agree or disagree with how well it describes you. Use the rating scale below to choose the appropriate score. Then add the three scores in each section. Use the Key on page 2 to determine your executive skill strengths (2-3 highest scores) and weaknesses (2-3 lowest scores).

Strongly disagree	1	Tend to agree	5
Disagree	2	Agree	6
Tend to disagree	3	Strongly agree	7
Neutral	4		

Item	**Your score**
1. I don't jump to conclusions	____
2. I think before I speak.	____
3. I don't take action without having all the facts.	____
YOUR TOTAL SCORE:	____
4. I have a good memory for facts, dates, and details.	____
5. I am very good at remembering the things I have committed to do.	____
6. I seldom need reminders to complete tasks	____
YOUR TOTAL SCORE:	____
7. My emotions seldom get in the way when performing on the job.	____
8. Little things do not affect me emotionally or distract me from the task at hand.	____
9. I can defer my personal feelings until after a task has been completed	____
YOUR TOTAL SCORE:	____
10. No matter what the task, I believe in getting started as soon as possible.	____
11. Procrastination is usually not a problem for me.	____
12. I seldom leave tasks to the last minute	____
YOUR TOTAL SCORE:	____
13. I find it easy to stay focused on my work.	____
14. Once I start an assignment, I work diligently until it's completed.	____
15. Even when interrupted, I find it easy to get back and complete the job at hand.	____
YOUR TOTAL SCORE:	____
16. When I plan out my day, I identify priorities and stick to them	____
17. When I have a lot to do, I can easily focus on the most important things.	____
18. I typically break big tasks down into subtasks and timelines.	____
YOUR TOTAL SCORE:	____
19. I am an organized person.	____
20. It is natural for me to keep my work area neat and organized.	____
21. I am good at maintaining systems for organizing my work.	____
YOUR TOTAL SCORE:	

Strongly disagree	1	Tend to agree	5
Disagree	2	Agree	6
Tend to disagree	3	Strongly agree	7
Neutral	4		

Item   **Your score**

22. At the end of the day, I've usually finished what I set out to do.   ____
23. I am good at estimating how long it takes to do something.   ____
24. I am usually on time for appointments and activities.   ____

                                YOUR TOTAL SCORE: ____

25. I take unexpected events in stride.   ____
26. I easily adjust to changes in plans and priorities.   ____
27. I consider myself to be flexible and adaptive to change.   ____

                                YOUR TOTAL SCORE: ____

28. I routinely evaluate my performance and devise methods for
    personal improvement.   ____
29. I am able to step back from a situation in order to make objective
    decisions.   ____
30. I "read" situations well and can adjust my behavior based on the reactions of others.   ____

                                YOUR TOTAL SCORE: ____

31. I think of myself as being driven to meet my goals.   ____
32. I easily give up immediate pleasures to work on long-term goals.   ____
33. I believe in setting and achieving high levels of performance.   ____

                                YOUR TOTAL SCORE: ____

34. I enjoy working in a highly demanding, fast-paced environment.   ____
35. A certain amount of pressure helps me to perform at my best.   ____
36. Jobs that include a fair degree of unpredictability appeal to me.   ____

                                YOUR TOTAL SCORE: ____

KEY

Items	Executive Skill	Items	Executive Skill
1 - 3	**Response Inhibition**	4 - 6	**Working Memory**
7 - 9	**Emotional Control**	10 - 12	**Task Initiation**
13 - 15	**Sustained Attention**	16 - 18	**Planning/Prioritization**
19 - 21	**Organization**	22 - 24	**Time Management**
25 - 27	**Flexibility**	28 - 30	**Metacognition**
31 - 33	**Goal-Directed Persistence**	34-36	**Stress tolerance**

Strongest Skills   **Weakest Skills**

_____   _____

_____   _____

_____   _____

Executive Skill Definitions

- **Response Inhibition:** The capacity to think before you act – this ability to resist the urge to say or do something allows us the time to evaluate a situation and how our behavior might impact it. In the young child, waiting for a short period without being disruptive is an example of response inhibition while in the adolescent it would be demonstrated by accepting a referee's call without an argument.
- **Working Memory:** The ability to hold information in memory while performing complex tasks. It incorporates the ability to draw on past learning or experience to apply to the situation at hand or to project into the future. A young child, for example can hold in mind and follow 1-2 step directions while the middle school child can remember the expectations of multiple teachers.
- **Emotional Control:** The ability to manage emotions in order to achieve goals, complete tasks, or control and direct behavior. A young child with this skill is able to recover from a disappointment in a short time. A teenager is able to manage the anxiety of a game or test and still perform.
- **Flexibility:** The ability to revise plans in the face of obstacles, setbacks, new information or mistakes. It relates to an adaptability to changing conditions. A young child can adjust to a change in plans without major distress. A high school student can accept an alternative such as a different job when the first choice is not available.
- **Sustained Attention:** The capacity to maintain attention to a situation or task in spite of distractibility, fatigue, or boredom. Completing a 5-minute chore with occasional supervision is an example of sustained attention in the younger child. The teenager is able to attend to homework, with short breaks, for one to two hours.
- **Task Initiation:** The ability to begin projects without undue procrastination, in an efficient or timely fashion. A young child is able to start a chore or assignment right after instructions are given. A high school student does not wait until the last minute to begin a project.
- **Planning/Prioritization:** The ability to create a roadmap to reach a goal or to complete a task. It also involves being able to make decisions about what's important to focus on and what's not important. A young child, with coaching, can think of options to settle a peer conflict. A teenager can formulate a plan to get a job.
- **Organization:** The ability to create and maintain systems to keep track of information or materials. A young child can, with a reminder, put toys in a designated place. An adolescent can organize and locate sports equipment.
- **Time Management:** The capacity to estimate how much time one has, how to allocate it, and how to stay within time limits and deadlines. It also involves a sense that time is important. A young child can complete a short job within a time limit set by an adult. A high school student can establish a schedule to meet task deadlines.
- **Goal-directed persistence:** The capacity to have a goal, follow through to the completion of the goal, and not be put off by or distracted by competing interests. A first grader can complete a job in order to get to recess. A teenager can earn and save money over time to buy something of importance.
- **Metacognition:** The ability to stand back and take a birds-eye view of oneself in a situation. It is an ability to observe how you problem solve. It also includes self-monitoring and self-evaluative skills (e.g., asking yourself, "How am I doing? or How did I do?"). A young child can change behavior in response to feedback from an adult. A teenager can monitor and critique her performance and improve it by observing others who are more skilled.
- **Stress Tolerance:** the ability to thrive in stressful situations and to cope with uncertainty, change, and performance demands.

**PLANNING SHEET FOR DESIGNING STRATEGIES
TO OVERCOME EXECUTIVE SKILL OBSTACLES**

Lesson/Assignment/ Problem Situation	Executive Skill(s)	Obstacle	Possible Strategies

Classroom Routine Planning Form

Identify 2-3 possible classroom routines that would address a classroom or student problem, incorporates 1 or more executive skills, and that would take no more than 5-10 minutes a day or no more than 15 minutes once a week to implement. An example has been provided.

Problem situation	Executive Skill(s)	Routine	Est. time required
Students forgetting to hand in homework	Working memory	Stand by door at end of class and accept completed homework.	3-5 minutes

What steps would be involved in implementing the routine?

Homework example:
1. Explain to class that at the end of class on days homework has been assigned, teacher will stand by door to accept completed homework.
2. Tell students that if they don't have the assignment, they will be asked to go to the end of the line and come up with a plan for how/when they will get the homework to the teacher.
3. Optional: ask the class to set a class goal (% of students handing in homework on time) and come up with an activity reward for reaching the goal.

Routine steps:
1.

2.

3.

4.

5.

Possible start date: _____

Strategies for Specific Executive Skills

Executive Skill	Possible Strategies	
Response Inhibition	- Post home or classroom rules and review regularly - Arrange for in vivo practice or behavioral rehearsal - Wristband reminder (e.g., to raise hand to talk) - Talking stick (cue to talk) - Sticky notes to write something down rather than interrupting - Sit near teacher	- Prompts in advance about expected behavior - Sit near teacher - Prompts in advance about expected behavior - Visual cue on desk to remind them to work quietly - Prompts in advance about expected behavior - Help student build in technology breaks rather than combining homework with technology use
Working Memory	- To-do lists (paper, white board to post prominently) - Colored wristbands to remind student of homework assignments - Post-it reminders - Laminated lists (e.g., by door at home or on inside of locker door) to remind kids what they need to take with them - Songs and rhymes as memory aids - Ask student what cues they think work for them (e.g., how they might use smart phone to provide cues)	Teach Principle of "off-loading" **Off-loading:** This refers to the idea that the brain doesn't have to work as hard when you can find a way to "off-load" some of the tasks we're asking it to do. Examples: the brain doesn't have to allot space to remembering homework assignments when we write them down. It doesn't have to work at remembering something we have to do after school if we build an alarm into our smart phone to remind us…
Emotional Control	- Help student write a script to follow - Have a "cooling off" space - Prepare student by asking them to predict what will happen/how they will handle it - Review expectations in advance - Teach students to label emotions - Teach kids: "respond don't react"	- Teach kids to recognize situations or early signs - Teach coping strategy - Rehearse the strategy repeatedly until it is internalized - Teach mindfulness meditation - Self-talk to plan in advance (If/Then: If this happens, then I will….)

Executive Skill	Possible Strategies	
Flexibility	• "Normalize" errors • Preview changes in schedule • Praise kids for being flexible • Role play handling situations that require flexibility	• Use language to showcase flexibility (stuck/unstuck; big deal/little deal; Plan B) • Do It Later folder (for kids who have trouble leaving a task undone)
Sustained Attention	• Reduce distractions (seating arrangements, white noise) • Modify/limit task length or demand (end in sight) • Build in variety/choice • Help student choose best time of day to work on effortful tasks • Use fidget toys such as stress balls • Movement breaks • Wiggle cushions/study carrels; dead headphones; listen to iPod; quiet desk/noisy desk/standing desk; "theraband" on front two legs of chair to allow movement	• Time Timer (make time visible) • Sand timer (real or app) • Identify distractors and figure out how to remove or work around them Have the child identify something to look forward to doing after work is done • Teach to track time on task using index card or sticky note • Have students set goals (how long can you go before you need a break?)
Task Initiation	• Establish set time to do non-preferred tasks • Teach 1-2-3-Start strategy (student lists the first 3 things they need to do in a work session and then they do them in order) • Make a list and break into bite-sized chunks • Use alarm on smart phone to remind student to start (If they're not ready to start, have them hit "Snooze" rather than turning the alarm off)	• Help student make a plan for doing the task and include the start time • Practice getting started in isolation—start with a short, easy task and just practice starting it at the planned start time • Help student figure out what's preventing them from getting started and design an appropriate strategy (see Form in Appendix XXX, p. YYY)
Planning	• Teach to use a planning template • Help student design a plan/template • Start with big picture; plan backwards • Help student find planning tools that work for them (calendar, agenda book, apps) • Break task down with a visual (e.g., dividing reading assignment into pages per day)	• Make a road map • Help student select a graphic organizer that meets the need • Walk through the planning process (use a template) • Have them plan a simple task and gradually prompt to do more of the planning themselves • Ask questions to get student to prioritize (What do you need? What should you do first?)

Executive Skill	Possible Strategies	
	• Put each step of a project on a separate index card or post-it and rearrange to create the right sequence	
Time Management	• Create a color-coded chart showing student their weekly schedule and where the discretionary time is (school; sports or extracurricular activities; travel to and from school; chores or family obligations; study time) • Practice estimating how long it takes to do something.	• Write each task on a post-it and place it on a large dry erase calendar so that it can be moved as needed. • Use a dry erase board for planning with columns for Task, This Month, This Week, Today, Done. Have student move post-its from left to right.
Goal-Directed Persistence	• Make sure the goal or benchmark is in sight—post it visually (e.g., a picture of the reward they're working for) • Help them set "Personal Best" goals (i.e., incremental improvement) and teach them about Outcome Goals ("Last week I got a 75 on my math quiz. This week I'll shoot for a 78.") and Process Goals ("Last week I studied 20 minutes for my math quiz. This week I'll study for 30 minutes.") Talk about the advantage of focusing on Process Goals.	For students who are resistant to goal-setting: • Define a goal as something that people want to get better at or to change. • Start with helping them set a goal for something they want to do outside of school. • Skip the word "goal" and talk with them about making a plan (starting with one thing they want to do before the next coaching session) •

Metacognition	• Help student create sample to match or error monitoring checklist
	• Embed metacognitive questions into instruction/conversations
	• Help student decide on how performance will be evaluated
	• Have the student evaluate their own performance
	• Model thinking aloud to solve problems
		• Use different strategies—ask kids to evaluate which worked best
		• Use Problem Solving Template (Appendix XXX p. YYY)
		• Teach students to ask questions
		   o What's my problem?
		   o What's my plan?
		   o Am I following I my plan?
		   o How did I do

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