



**Thompson Center**

For Autism & Neurodevelopmental Disorders

**University of Missouri**

# Understanding Executive Functioning Skills of Students with Autism Spectrum Disorder

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# Overview

- Executive Functioning Skills & Autism
- Goal Writing & Instructional Planning
- Strategies to Support Skill Development



Executive  
Functioning  
& ASD

# What are Executive Functions (EF)?

An umbrella construct that includes a collection of functions responsible for **regulating** (guiding, directing and managing) **cognitive**, **emotional** and **behavioral** functions during an active problem-solving situation (Gioia et al, 2015).

The “thinking” & “doing” skills

*These functions often go unnoticed **unless there are deficits.***

# When they are working for students:

The ability to accurately adjust your time between classes and route to accommodate new knowledge that people are gathered for a pep rally performance in the main hall.

(Cognitive Function)

The ability to select an appropriate emotional reaction to constructive feedback provided by the teacher.

(Emotional Function)

The ability to NOT say the first thing that comes to mind when a peer asks for an opinion on a new haircut.

(Behavioral Function)



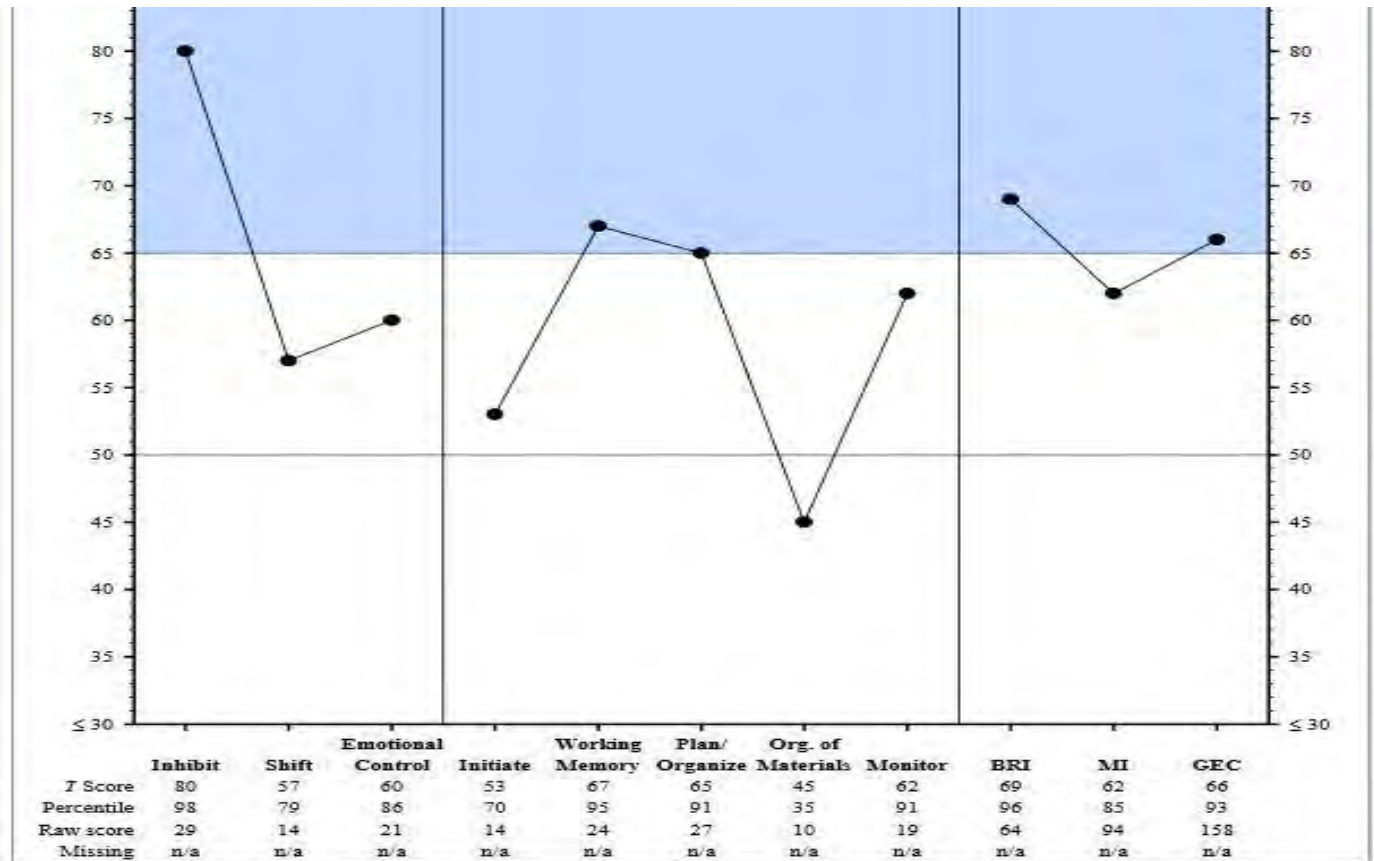
# School-based Measures of EF

- Behavior Rating Index of Executive Function (BRIEF)
- Child Behavior Checklist & Teacher Report Form (CBCL)
- Behavior Assessment System for Children, Third Edition (BASC-3)
- NEPSYII (Korkman, Kirk, Kemp, 2007)
- Cognitive Assessment System (Naglieri Das, 1997)

# School-based Measures of EF

## Behavior Rating Index of Executive Function (BRIEF):

- Teacher and Parent rating forms
- Provides standardized scores for all Executive Function subdomains
- Most widely used in school settings



# EF Skills

## Cognitive Domain

Response Inhibition

Working Memory

Task Monitoring:  
Quality

Emotional Control

Organization,  
Planning, and  
Prioritizing

Time Management

Flexibility / Shift

Task Initiation

Self-monitoring



# EF Skills

## Emotional Domain

Response Inhibition

Working Memory

Task Monitoring:  
Quality

Emotional Control

Organization,  
Planning, and  
Prioritizing

Time Management

Flexibility/ Shift

Task Initiation

Self-monitoring



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# EF Skills

## Behavior Domain

Response Inhibition  
(sustained attention  
to task)

Working Memory

Task Monitoring:  
Quality

Emotional Regulation

Organization,  
Planning, and  
Prioritizing

Time Management

Flexibility

Task Initiation

Self -Monitoring

# EF Deficits in Students with ASD

Executive Function deficits seen in individuals with ASD are typically associated with the core symptoms of ASD:

- Impaired social interaction and communication

- Restricted areas of interest

- Repetitive behaviors

While EF deficits in all subdomains have been found in children with ASD, predominant EF deficits were identified in earlier studies related to a need for sameness, a difficulty switching attention, a tendency to perseverate and a lack of impulse control (Baddeley and Wilson, 1988).

# EF Deficits in Students with ASD

Multiple studies have reiterated prevalent EF deficits in the areas of **Plan/Organize**, mental flexibility (**Shift**) and **Inhibit/Inhibition** (Hill, 2004).



Goal Writing  
&  
Instructional  
Planning

# Executive Functioning

## Defiance vs. Deficit:

Executive functioning deficits are often interpreted as defiance

Example:

A middle school student turns in homework in his math class but struggles to turn in projects or papers in his history class. The history teacher may feel the student is being defiant, when he may actually be struggling with organizing his ideas, and/or managing his time to meet deadlines.

When a task requires multiple executive skills (thinking or “doing”), a breakdown is more likely

# Program Planning

## Approach program planning at every stage of the A-B-C Contingency

- Antecedent: Modify the environment to make the desired skill more likely to occur
- Behavior: Systematically and directly teach the skill
- Consequence: Reinforce each step of skill acquisition

# Antecedent Program Planning: Environmental Modifications

- Make changes to the environment
  - Add visuals
  - Add in self-management supports
- Make changes to the task
  - Shorten length
  - Link to reinforcement
- Make changes in the way you interact with the student
  - Pre-corrects
  - Prompts and prompt fading
  - Attitude



# Antecedent Program Planning: Environmental Modifications

## Making decisions on...

- When to modify the environment:
  - Is this specific skill one that will be needed in the future?
- When to provide accommodations:
  - Are there acceptable accommodations adults use for this skill?
- When to teach a new skill:
  - Is the student developmentally ready to learn the necessary replacement skill?

# Behavior Program Planning: Planning for and Teaching Skills

*Goals should not focus solely on  
academics!*

# Behavior Program Planning: Planning for and Teaching Skills

Goal Priorities: *Plan with the future in mind*

- What skills does the student need to develop to increase independence?
- What skills does the student need to develop in order to be successful in employment?
- What are the student's strengths and weaknesses as related to future employment?

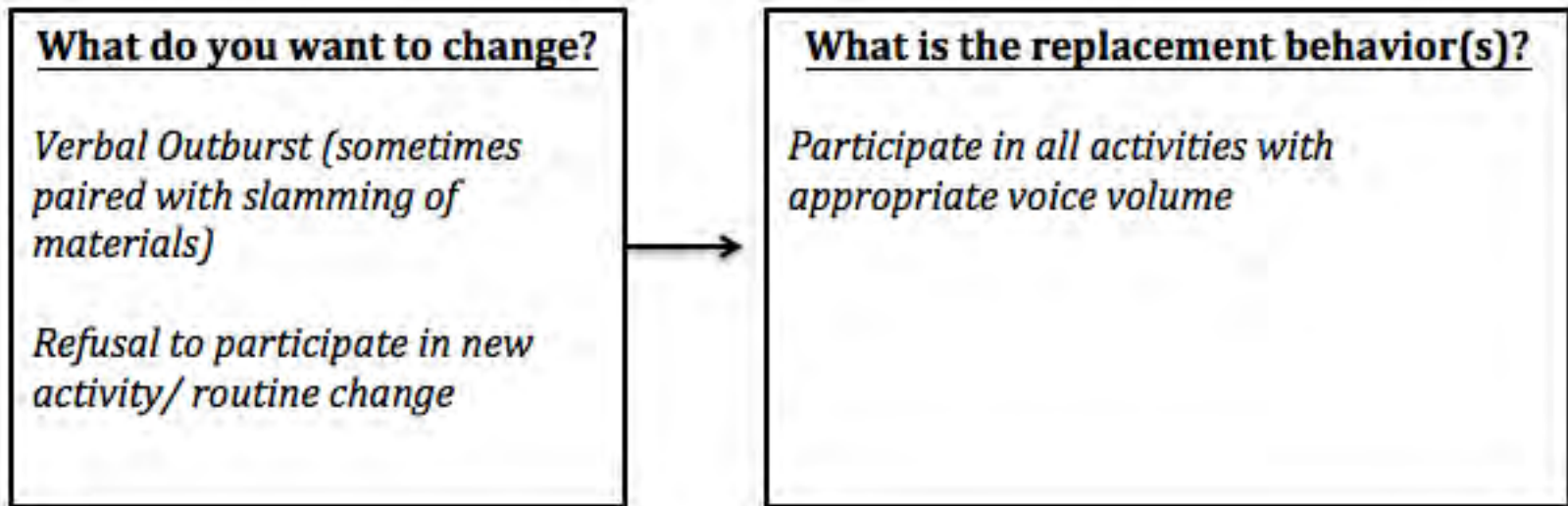
# Goal Writing

*Adaptive behavior, executive functioning,  
social-pragmatic, & challenging behavior  
goals can be  
difficult to write.*

# “Soft Skills” Goal Writing

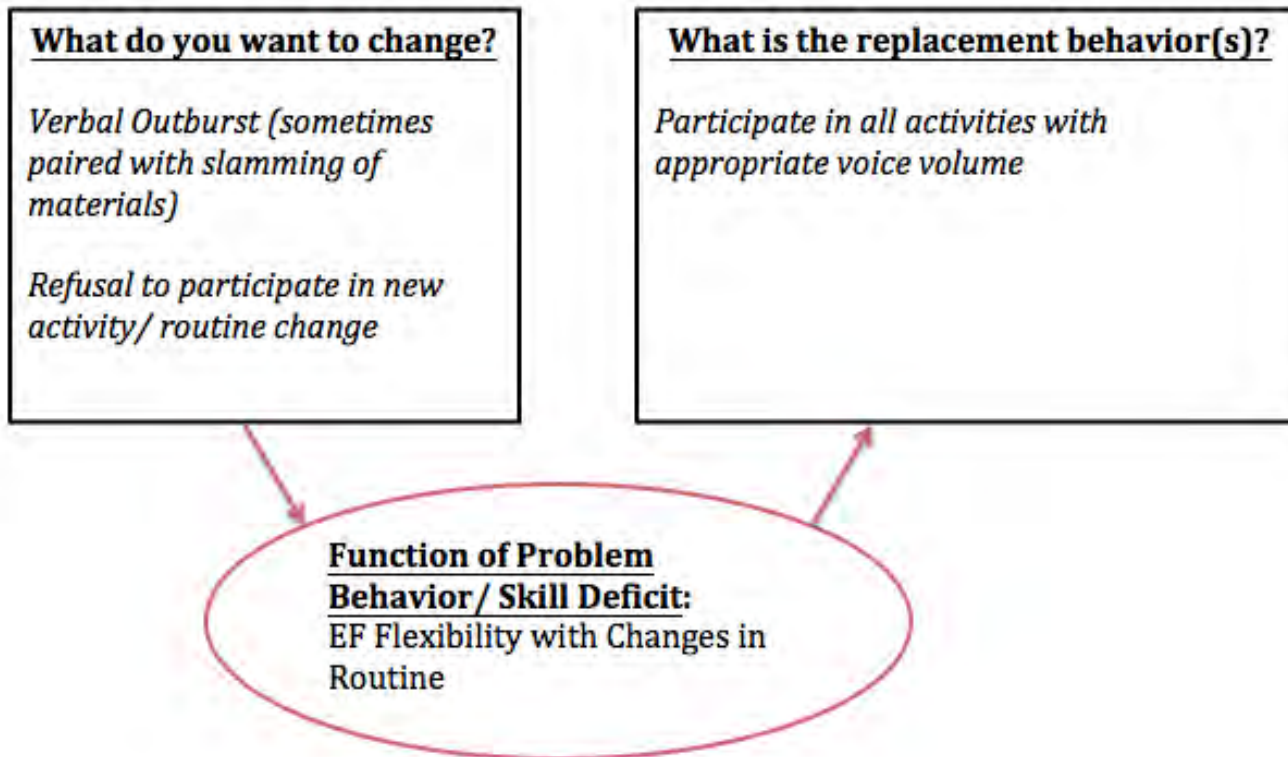
- There is often not a set curriculum for soft skills
- These skills are hard to teach, therefore it is important to break these skills down into manageable steps and scaffold instruction
- More detailed goals supports consistency. If the student transitions (buildings, teachers, settings), all instructors will be more equipped to target goals with more consistency
- Oftentimes broadly written goals are not actually taught and therefore the results are “hope and pray” or the teaching plan is focused on the consequence of the behavior

# Goal Writing: Common Process

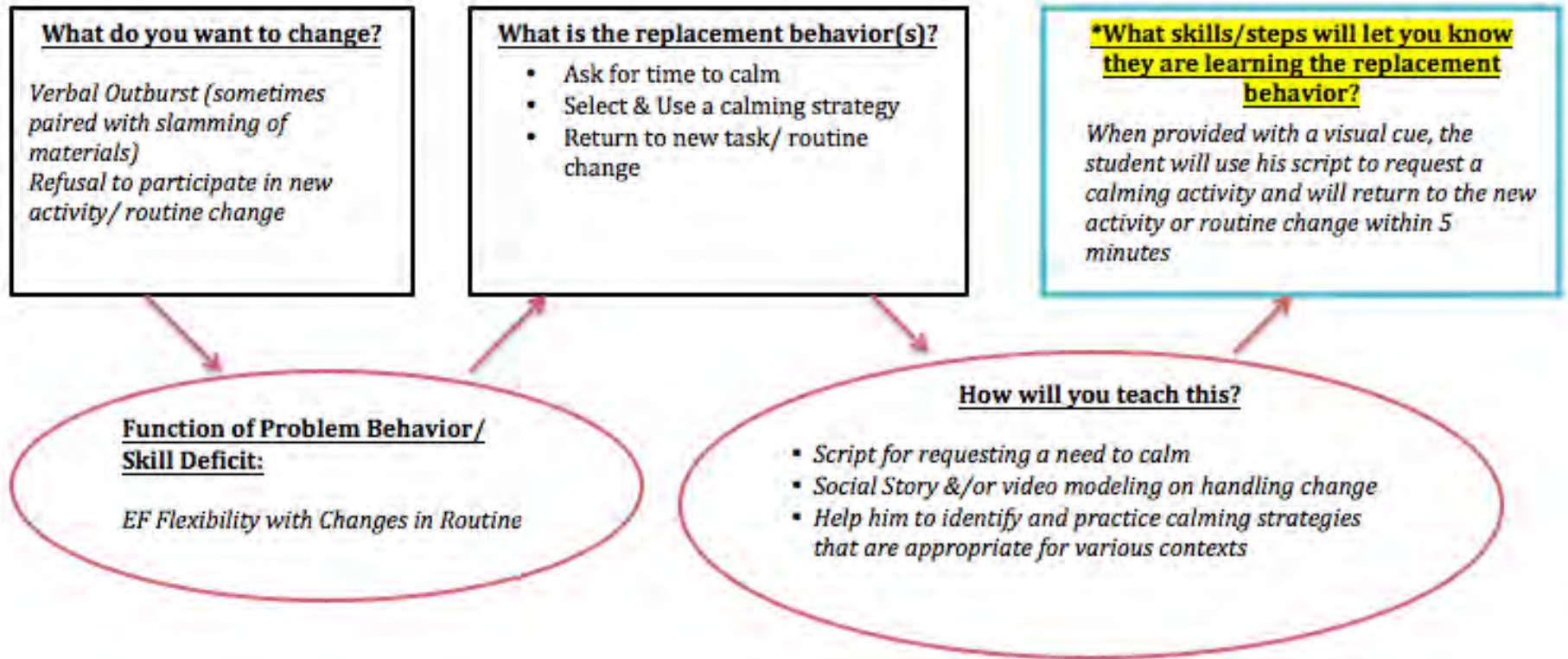


# Goal Writing: Better Process

(Considers the function of the behavior &/or Skill Deficit)



# Goal Writing: Expanded Process







# Strategies to Support Skill Development

# EF Skills

## The “Thinking” and “Doing” Skills

Response Inhibition

Working Memory

Quality  
(Goal Directed) Task  
Performance

Emotional Regulation

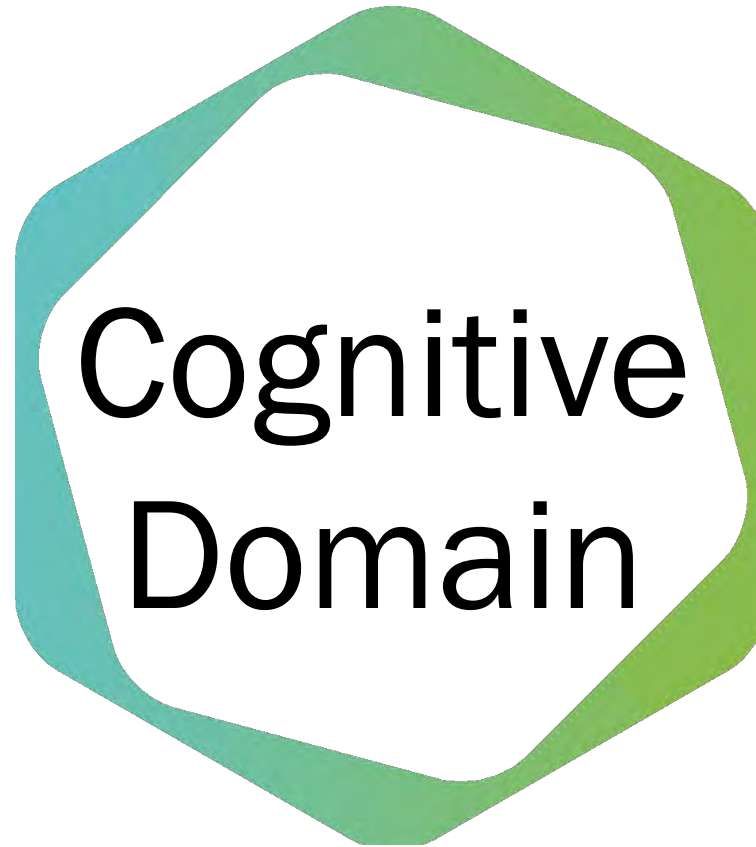
Organization,  
Planning, and  
Prioritizing

Time Management

Flexibility

Task Initiation

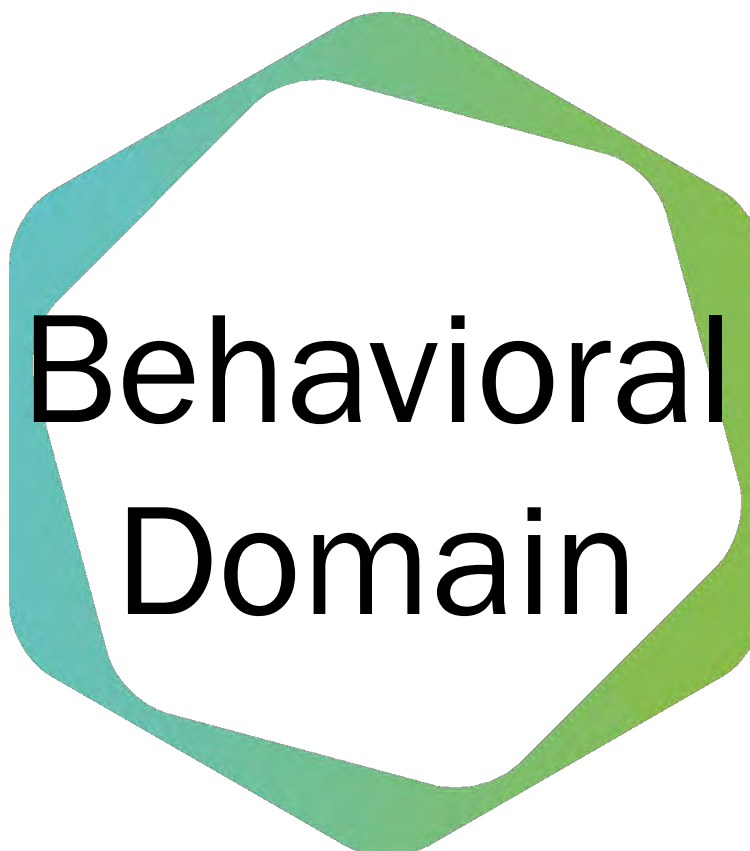
Independent  
Sustained Attention  
to Task



Cognitive  
Domain



**Emotional  
Domain**



**Behavioral  
Domain**

# Strategies

Next we will discuss some ways to teach each of these executive functioning skills

Response  
Inhibition

Working Memory

Quality  
(Goal Directed)  
Task Performance

Emotional  
Regulation

Organization,  
Planning, and  
Prioritizing

Time  
Management

Flexibility

Task Initiation

Independent  
Sustained  
Attention/  
Engagement

# Building Response Inhibition

- Identify times when confusion or stress could be heightened
  - Increase supervision (i.e., when student is over-tired or over-stimulated)
  - Provide pre-corrects for desired behavior
  - Rehearse new/replacement skills just before the stressful or difficult situation
- Directly teach to self-monitor by removing themselves of the stimulation that is temptation.

# Building Response Inhibition

## continued

- Help student learn to delay gratification
  - If/then statements for preferred items
  - Timers
  - Increase time delay (gradually)
- Practice by role-playing to:
  - Consider the context of the situation
  - Think of possible consequences of their actions
  - Recall previous experiences and the outcomes
- Reinforce IMMEDIATELY for exhibiting response inhibition



# Enhancing Working Memory

(Hold information in mind while completing complex tasks; tend to forget quickly)

- Gain attention (eye contact) before providing information to be remembered
- Keep external stimuli at a minimum
- Task analysis and chaining to teaching complex tasks
  - “Dora the Explorer” language
- Use visual supports (checklist, schedule)
- Work with student to come up with strategies to retain important information
- Practice new strategies prior to the situation
- Reinforce!!!!

# Increasing Sustained Attention/Engagement

*We ALL put off tasks we do not like to do – as adults we have more control to be able to put off what we don't like to do...*

If appropriate, modify tasks to match your student's capacity to exert effort

Tasks that take effort are either:

- 1) tasks that you are not very good at
- 2) tasks that you are fully capable of doing, but don't like to do

# Increasing Sustained Attention/Engagement continued

- Provide more frequent “check-ins” during non-preferred tasks
- Increase active engagement v. passive listening
  - Choral responding, cue card responding, individual answers
  - Guided notes
  - Visual manipulatives
  - Checklist of steps
- Reduce external stimuli
  - Seat towards front of class
  - Seat close to board/speaker
  - Do not seat by talkers/fidgety students

# Increasing Sustained Attention/Engagement continued

- Partner with a task-oriented peer & divide responsibilities so that natural structures help sustain attention
- Model and practice self-monitoring attention:
  - Timed “check points”
  - Rating scale
  - Have student track and compare to teacher tracking
- Increase interest in the task (provide choices when possible)
- Reinforce use of strategies and attention during long tasks
  - Tie reinforcement to task completion instead of time limits


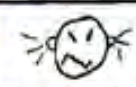


# Emotional Regulation

# Emotional Range

1. Identify the levels of the emotions
2. Identify how your body looks/feels at each level
3. Identify common situations that evoke the emotion at each level
4. Identify strategies that can be used

Name: David My Scared/Afraid/Trembling Scale

Rating	Looks/Sounds like	Feels like	Safe people can help/ I can try to
5	 Wide-eyed, maybe screaming, and running, hitting.	I am going to explode if I don't do something.	I will need an adult to help me leave. Help!
4	 Threaten others or bump them.	People are talking about me. I feel irritated, mad.	Close my mouth and hum. Squeeze my hands. Leave the room for a walk.
3	You can't tell I'm scared, jaw clenched.	I shiver inside.	Write or draw about it. Close my eyes.
2	I still look normal.	My stomach gets a little queasy.	slow my breathing. Tell somebody safe how I feel.
1	Normal - you can't tell by looking at me.	I don't know, really.	Enjoy it!

# Emotional Regulation

Level	What you said	How other person may feel	What this may mean
5	I could kill you	Afraid, threatened	May call police, may think you are serious
4	Swearing about homework	Nervous, possibly threatened	Others may not want to be around you. You may get in trouble
3	Telling someone he is stupid	Offended, sad	May think you are unkind and not want to be around you
2	Talking while the teacher is talking	Confused, uncomfortable	Teacher may think it's not polite.
1	Smiling at someone in the hall. Using kind words.	Comfortable, relaxed	You may keep more friends.


# Visuals for Emotional Regulation


- Behavior Level Scales
- Video Modeling
- Frequency, Duration, Intensity Chart

	What does it feel like	What does it look like
 <b>5</b>	<b>Out of Control</b> Feels like you're a creeper and you're going to explode	Screaming Yelling Crying Throwing Things Kicking Things Breaking Things Hitting Things
 <b>4</b>	<b>Starting to Lose It</b> Getting angry like a zombie	Head feels like it's overflowing Start to say mean or hurtful things Call people names Take things away from people Kicking Furniture Tattle. Kid threat tells you to do things that will get you in trouble
 <b>3</b>	<b>Anxious/Worried/Excited</b> Feels like an Enderman and you want to get away or jump right out of your skin	Shouting/Yelling Don't want to talk about it A tear spilled Turning starts to hurt Repeat about something Repeating Words Quit Excited Jumping up and Down Flapping hands Punching on Things or People Repeating Words Can't stay in seat
 <b>2</b>	<b>I Think I Can Handle It</b> Feels like Steve when he has to work hard to survive	Must be hard for me but I will try to do it I will cooperate I will listen When that done it will make me feel good about myself for working so hard
 <b>1</b>	<b>Just Right</b> Like Steve!	Happy Calm Peaceful Nothing bothers you Interested in something


**Break Please**

**I am feeling..**







really angry



really frustrated



really worried




really disappointed

- Michael's Great Ideas  
for handling Anger
1. Hugging my dog
  2. Punching pillow + bed instead of myself
  3. Take deep breaths
  4. Playing with cars or with my sister
  5. Outside play - biking or baseball

## Power Cards

**Spiderman Needs Help**

Even a superhero like Spiderman needs help sometimes. Not even a superhero can do everything alone. At first, Spiderman was scared to ask for help. He didn't want people to think he was weak. He also didn't want people interrupting him when he didn't need help. Then Spiderman had a great idea. He could raise his hand to let people know when he needed help. This would keep them from interrupting, but also get him help when he needed it. When we need help, we can raise our hand just like Spiderman.





# Resources

## OCALI Autism Internet Modules

<http://www.autisminternetmodules.org/>

## National Professional Development Center on ASD- Evidence Based Briefs

<http://autismpdc.fpg.unc.edu/content/briefs>

## Missouri Autism Guidelines Initiative (MAGI)

<http://autismguidelines.dmh.mo.gov/>

# Master's Program

## Autism Education (M Ed)

### Master of education in special education with an emphasis in learning and instruction and a focus in autism

This 33-hour online graduate degree program will prepare you to excel in your work with children and youth with autism and related characteristics and their families. The program is designed for educators, as well as those in other related professions such as therapy, social work, health care, mental health and rehabilitation.

Course work covers the understanding of autism, methods of teaching individuals with autism, high-functioning autism and Asperger syndrome, social competency and applied behavior analysis, plus learning theory, instructional leadership, instructional technology and research. It is based on sound education theory, evidence-based practice, current legislation and relevant professional practice and experience.

The methods you learn will broaden your instructional repertoire and will even apply to individuals outside the varying points on the autism spectrum.

Just as autism appears in many forms and degrees that vary by individual, a widening range of jobs is available to professionals who are trained in the different aspects of coping with the disorder. Become a part of this developing field and enhance your career path—all from your home or office—with online courses from the University of Missouri.

### Prerequisite course (3 hours)

- introduction to special education

### Autism Focus Courses (21 hours)

- introduction to autism
- advanced behavior management
- methods of instruction for students with autism
- social competency interventions
- high functioning students with autism
- assessment to guide instruction
- young children with autism

### Master's Core Courses (9 hours)

- developmental aspects of human learning
- research with exceptional children
- technology to enhance learning

Courses may be taken individually as a post-baccalaureate (formerly nondegree) student or as part of a master's degree. Students who are applying course credit toward a degree must be accepted into the degree program before they finish nine hours of course work (three classes). Degree-seeking students enrolled in this program are eligible for federal financial aid.

### Application Deadlines

- July 1 for fall admission (classes begin in August)
- Nov. 1 for spring admission (classes begin in January)
- April 1 for summer admission (classes begin in June)

# Contact Information

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Thank You!  
Questions?