# Using a Multifaceted Approach for Self-Regulation Interventions:

# Neuro Development & Sensory-Based Intervention Best Practices





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#### Hello!





Session A, September 8, 2025



#### **MISSION**

Provide high quality, cost-effective programs & services.

Responsive to our members and the students they serve.





#### The Collaborative IEP Process

**January 21, 2026** 

Session B: Best Practices in School-Based Services

- Regulatory issues that impact school-based practice.
- The role of OT and PT in MTSS.
- Best practices for comprehensive, participation-based assessment and interventions that lead to improved student outcomes.



#### The Collaborative IEP Process Cont.

March 19, 2026

# Session C: Designing Supports for Student Access, Engagement, and Progress

- Collaborative process for IEP goal development shifting away from disciplined specific IEP goals.
- Integrated therapy services and embedded interventions to support student outcomes.
- Implementing a workload model.



# Learning Objectives



"If you change the way you look at things, the things you look at change."

- Wayne Dyer



### Learning Objectives Continued

- Describe neurodevelopment and the processing of sensory information.
- Explain research related to the effectiveness of many traditional "sensory integration" strategies as well as other cognitive-behavioral approaches to supporting selfregulation.
- Identify a variety of self-regulation assessment tools.
- Describe considerations for "Sensory Rooms."
- Identify strategies RSPs can use to support eMLSS and tiered interventions.

### **Expectations for Today**

- Ask questions write in chat.
- Listen fully with your ears, eyes and heart.
- Integrate new information For additional reading or opportunities for application in your practice.
- Notice moments of discomfort and stay curious.





### **Expectations for Today Continued**

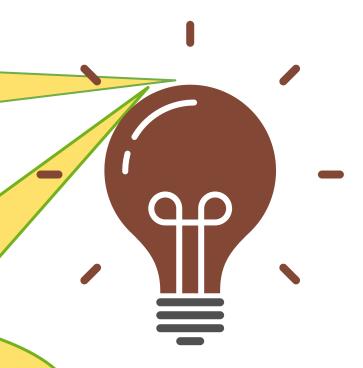
- Be open to the experience of others and accept non-closure.
- Speak your truth without blame or judgement.
- Stay muted if not talking.
- We invite you to keep your video on.





## The "Ahas" That Shaped My Career

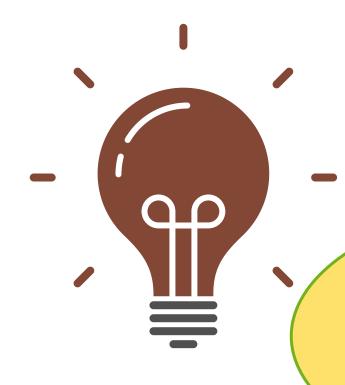
"Best practices" of the 1970s and '80s are not best practices in the 2000s.



Developing a student's skills in self-determination and self-assessment is a game changer!



# My "Aha's"



Building a relationship with the student, teachers, and family affected outcomes.

Student's skills do not generalize to improved functional task performance in a primarily pull-out model of service delivery.



#### IDEA From 1975 to 2025



Children's needs are different in 2025.

Best practice interventions have evolved.









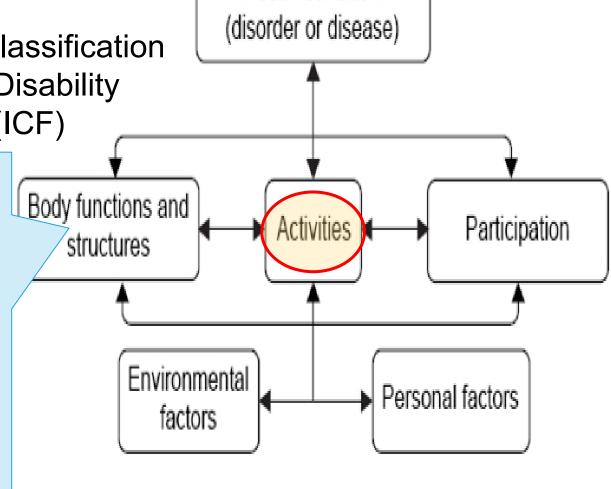


#### Social Model of Disability

The International Classification of Functioning, Disability and Health (ICF)

Research says: Targeted interventions at this level do not lead to functional outcomes.

Novak & Honan, 2019



Health condition

World Health Organization

# **Facilitating Change**

IDEA: Purpose of Related Services:



**PARTICIPATION** 

**ENGAGEMENT** 

**ACCESS** 





### **Essential Shift in Viewpoint**

- Impairment does not always result in the inability to perform a task.
- Likewise, limited function does not necessarily prevent performance of a specific role.
- Remediation of impairments is not the outcome or goal of school-based (OT, PT, SLP) intervention.

Wisconsin Department of Public Instruction OT and PT Resource Guide



### **Essential Shift in Viewpoint**

#### Impairments in themselves ...

- Sensory processing deficits
- Attention deficits
- Physical impairments

...are not reasons to provide school-based therapy services.





#### Shift in the Literature

There is a shift in the literature from a focus on sensory processing and integration to an emphasis on the functional performance challenges resulting from these problems.

Reynolds, 2017



### Limited Evidence for Many Strategies

#### The Assessment Question:

- How does it impact the child's participation/engagement in their day-to-day situations?
- Identify & connect "Educational Impact"

#### **Aligning Services:**

- Continuum of services and supports
  - Direct & on-behalf services
  - Supplementary aids and services
  - Program modifications and supports
- Evidence-based interventions
- Skills and expertise of IEP team members



# Intersection of Sensory Processing Trauma, and Mental Health

# JOURNAL SENTINEL

"Trauma early in childhood inflicts damage, study shows"

- July 19, 2018



### Genetics and Epigenetics

#### ep·i·ge·net·ics

The study of changes in organisms caused by modification of gene expression rather than alteration of the genetic code itself.

Epigenetics and Child Development: How Children's

Experiences Affect Their Genes, Center on the Developing Child Harvard University

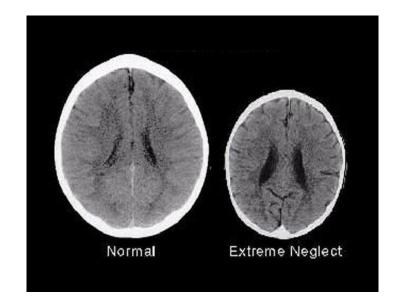
CESA 1

#### What We Know

Children who experience a high production of cortisol and epinephrine:

- Smaller hippocampus (memory and mood regulation)
- Larger amygdala (fight or flight)

Finegood et al., 2017



Left: Normal

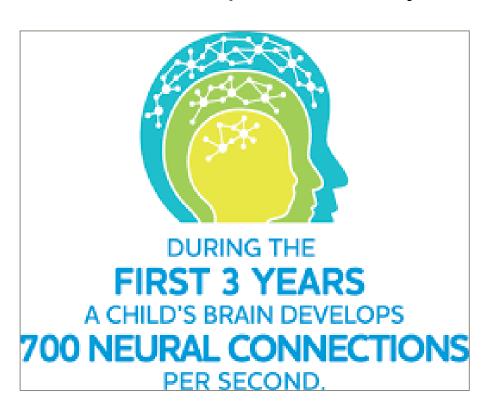
Right: Extreme Neglect



#### Development of the Brain & Behavior



#### Experience Plays a Critical Role



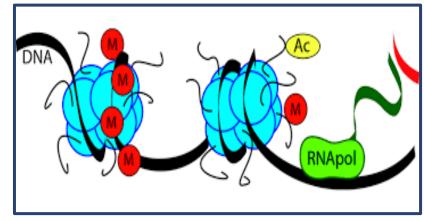
90% before age 5

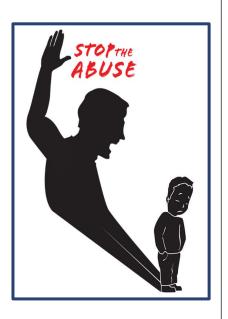
10% after age 5



# Early Experiences Shape Us, Our DNA









### Adverse Childhood Experiences

- ACEs can cause actual changes to the brain's structure that predispose children and youth to difficulties with:
  - Planning/organization
  - Self-regulation/emotional regulation
  - Adaptability/flexibility
- Impairments in these areas can then lead to:
  - Academic delays
  - Interpersonal and behavioral difficulties

Barth et al., 2018



## Behaviors as Coping Mechanisms

Understanding Children
Who Have Experienced
Early Adversity: Implications
for Practitioners Practicing
Sensory Integration

"Emotional dysregulation must be carefully investigated, to explore the relationship to a coping strategy as a function of the child's perception of safety."



Dysregulation is common in a number of neurodevelopme ntal, behavioral, and mental health disorders.

Lynch, et al, 2017

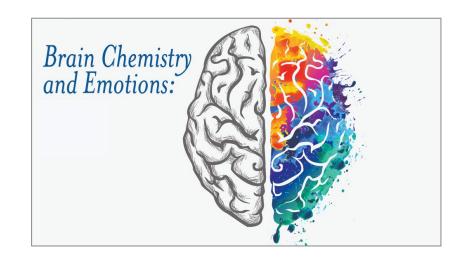
#### **Brain Facts That Will Blow Your Mind**



#### PTs - you may already know this!

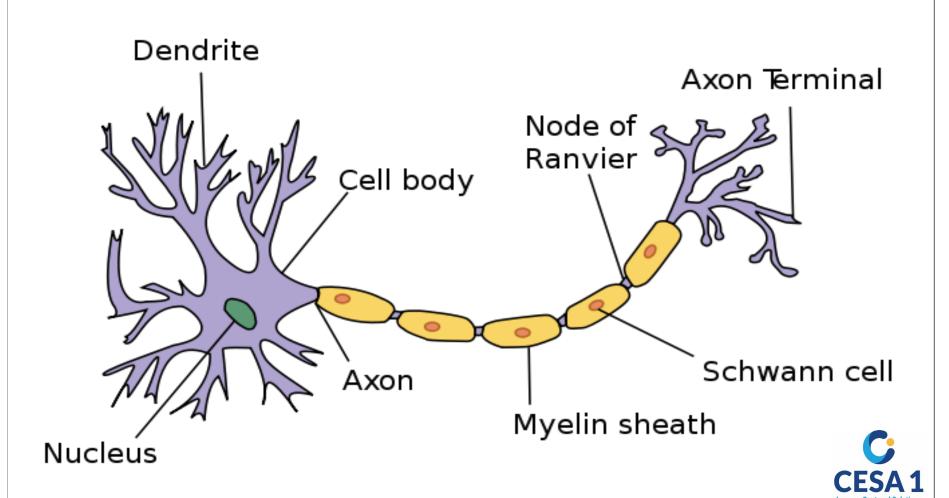
Exercise actually alters brain chemistry.





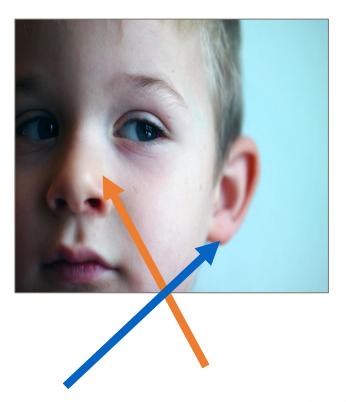


### Repetition in Context



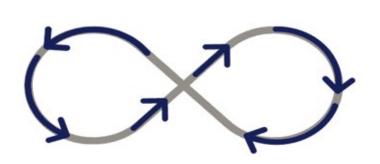
# Skill Development & Daily Routines







### Skill Development & Daily Routines





- 1. Start in the center.
- 2. Move up to the left.
- 3. Continue around smoothly several times.
- 4. (Stop at center).

**Develop Learn Grow** 



#### Resilience Research



#### re·sil·ience noun: resiliency

the capacity to recover quickly from difficulties

Research shows that resilience can be developed through:

- Supportive and responsive relationship with at least one stable, caring adult
- Providing the child with opportunities for meaningful and supportive interactions in safe environments



### Strategies for Increasing Resilience

- Emotional literacy
- Increase empathy
- Anger coping/management
- Interpersonal problem solving
- Develop skills for academic/job success





# Have You Considered



#### *Impulsive*

Can't plan ahead

**Anxious** 

Can't delay gratification

Labile mood / emotional instability

Emotional rigidity

Poor memory

#### Are these symptoms of

- ADHD? ... or
- Adversity/trauma?... or
- Mental health issue? ... or
- Sensory integration? ...or
- All the above?



### Sensory Integration®: The Debate





Whiting et al., 2025

Occupational therapy using Ayres Sensory Integration® in school-based practice: A call to action

Benfield et. al., 2025

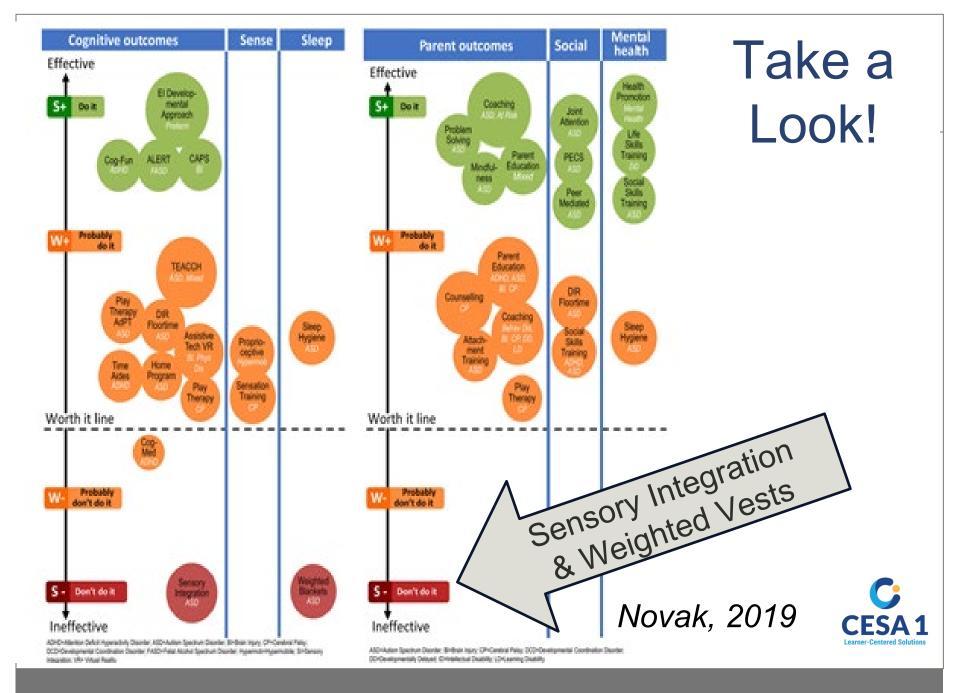
Response to Whiting et al., 2025, Occupational therapy using Ayres Sensory Integration® in school-based practice: A call to action

#### Let's Get Real

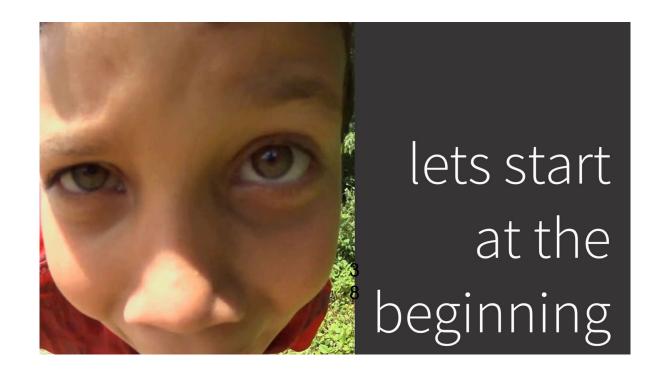
"... neuroscience did not stand still. We now have dynamic systems theory, heterarchical processing models, robotics, and Al-driven neural networks that give us far richer and more precise understandings of how brains actually develop and adapt. These frameworks have left Ayres' mid-20th century metaphors behind."

More Than Half a Century Later and Still Waiting for Sensory Integration Evidence, Christopher Alterio





# What Is Sensory Integration®?





# Ayres Sensory Integration ®

- Jean Ayres began exploration and the development of her theory in the mid 1950s, with development of the first assessment tool in the late 1969-1971.
- Ayres' sensory integration is a theory that describes how the neurological process of processing and integrating sensory information from the body and the environment contribute to emotional regulation, learning, behavior, and participation in daily life.

A Specific Trademarked Assessment Tool is Used – requires extensive, post graduate training



### SIT vs. SBI

#### **Ayres SIT®**

Clinic-based, child-centered intervention originally developed by Jean Ayres, which provides play-based activities and enhanced sensations to elicit and reinforce the child's adaptive responses.

#### SBI

Adult directed sensory modalities that are applied to the child to improve behaviors with associated modulation disorders.



# Integrating SBIs

Integrating SBIs with behavioral intervention appears most effective for helping clients with Autism Spectrum Disorders.



FAB Strategies: Sensory – Based Interventions Improve Behavior



## Sensory-Based Interventions (SBI)

- Clinicians and others (directed by therapist) provide sensory based intervention strategies.
- Follow protocols for the particular intervention (prescriptive).
- Strategies are generally chosen based on the clinician's own experience and knowledge of sensory integration theory, but do not follow the therapeutic principles or fidelity of the Ayres protocols for assessment, diagnosis, and treatment.



# Sensory Processing: Alternate Models

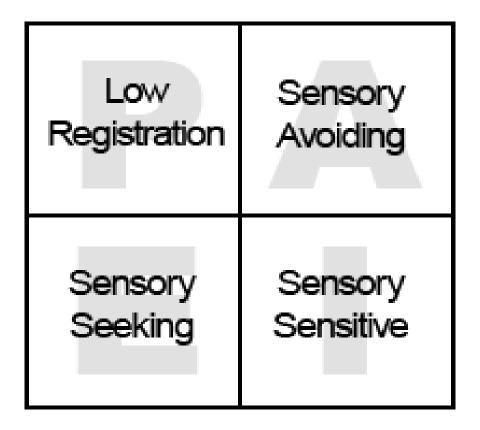
- · Lucy Miller, PhD, OTR
  - Sensory Processing Disorder
- Winnie Dunn, PhD, OTR, FAOTA
  - Everyone has neurological "thresholds" and subsequent behavioral responses that interact on a continuum

Children with sensory processing and integration difficulties may be characterized as falling into subgroups:

- Dyspraxia
- Modulation difficulties involving under or overreactivity



## Sensory Processing: Alternate Models



Neurological Threshold, W. Dunn



# Sensory Processing Disorder (SPD)



- It doesn't appear in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5), the guide used by doctors and therapists to diagnose learning, behavior and attention disorders.
- There's growing awareness of sensory processing issues, but it's still controversial in medical circles.



# Applying Our Knowledge

Sensory processing can interfere with a child's ability to perform school tasks, develop social relationships, and participate in age-appropriate activities.

- Ensure that learning environments and routines are universally designed with attention to varying sensory news of students.
  - Not a bombardment of sensory input
- Needs assessment
  - Teachers' knowledge
  - Consideration of person and environment assessment resources to look at barriers

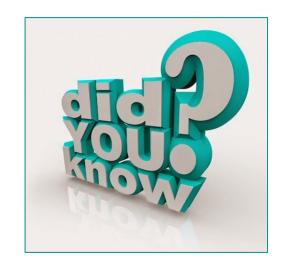


#### You Should Know ...

# Children who have difficulty with processing and interpreting sensations

 Research suggests that 10-55% of children with no diagnosed disabilities have difficulty with processing and interpreting sensations.

American Board of Internal Medicine – Choosing Wisely initiative



Five Things Patients and Providers Should Question, AOTA



# Delay or Disorder?



- Delay in acquisition of language (motor, learning readiness, mobility, etc.) skills compared to one's chronological and cognitive/intellectual age-peers
- Delay may exhibit a
  - Slower onset of a skill
  - Slower rate of progression through the acquisition process
  - Varied sequence in which the skills are learned, or all the above

How Do You Know When it's a Language Delay Versus Disorder?, ASHA Wire



# **Interesting Data**

"A variety of scientific evidence has also found that the pandemic seems to have affected some young children's early development."

New data [July 2024] points to the pandemic's profound and enduring effects on the nation's youngest public school children, many of whom were not yet in a formal school setting when COVID hit.

Belsha, 2024 Deoni, 2022 Kuehn et al., 2023

The Youngest Pandemic Children Are Now in School, and Struggling, New York Times



## More Interesting Data

"We find younger students and students who were already needing academic support are the furthest away from reaching pre-pandemic growth trends."

"For districts, this means taking an equally nuanced approach to their data to evaluate if intervention efforts have made an impact."



# Modulation vs. Discrimination









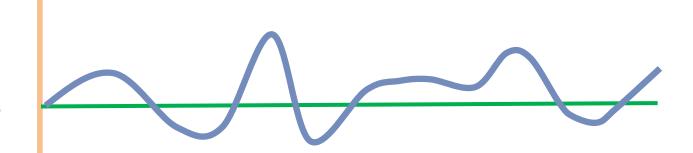


# Modulation in "Typical" Individuals

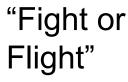
"Fight or Flight"

"Normal" Baseline

Lethargic "Asleep"

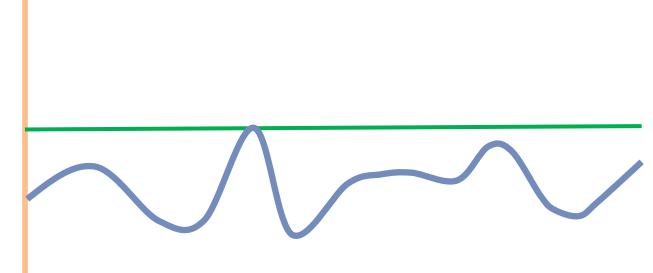


# **Atypical Sensory Modulation**



"Normal" Baseline

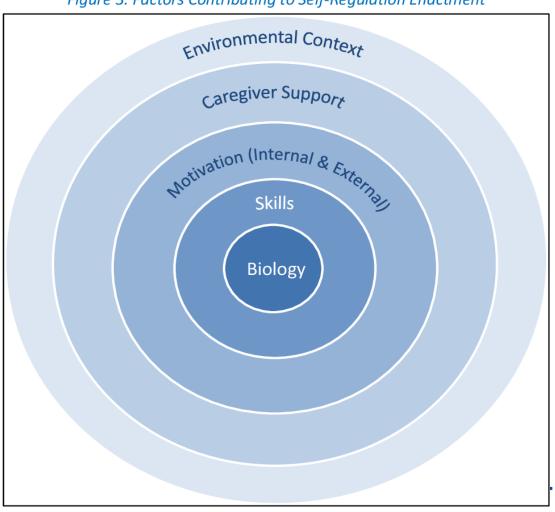
Lethargic "Asleep"



# Big Takeaway from Today

Figure 3. Factors Contributing to Self-Regulation Enactment

Self-Regulation and
Toxic Stress Series
The Administration for
Children and Families



# Big Takeaway from Today Cont.

Sensory integration is not synonymous with self-regulation.

Self-regulation is the act of managing one's thoughts and feelings to engage in goal-directed actions such as organizing behavior, controlling impulses, and solving problems constructively.



# Our Challenge: Shifting the Narrative

Sensory integration
Sensory concerns
Sensory activities

#### Instead, say:

- Self-regulation
- Behavior regulation
- Emotional regulation
- Planning/organization
- Adaptability/flexibility



# Fidgets - Yes or No?





### Levels of Evidence of Effectiveness

**Strong Evidence**: Consistent results from well conducted studies; at least 2 randomized controlled studies (RCTs)

**Moderate Evidence:** 1 RCT or 2 or more studies with lower levels of evidence

Limited Evidence: Indicates few studies, flaws in the available studies, inconsistency in findings across studies

Mixed Evidence: Inconsistent findings across studies

**Insufficient Evidence:** The number and quality of studies are too limited to make any clear statement of evidence

### **Autism Evidence and Practice**

# The practices, which do not meet the criteria for evidence-based interventions include:

- Use of specific equipment for passive stimulation like brushing protocols, swings, weighted vests, squeeze machines, and weighted blankets
- Sensory diets
- Use of a sensory gym

The National Clearing House on Autism Evidence and Practice



## Autism Evidence and Practice Cont.

The practices, which do not meet the criteria for evidence-based interventions include:

- Touch therapy
- Sensory-motor intervention
- Auditory Integration Therapy

The National Clearing House on Autism Evidence and Practice



# Need to Consider "Prescriptive" Sensory Breaks - Diets

Do they have the skills to calm?

Unintended consequences?

System in distress?

What input is truly removed?

Do they know how to advocate?

Can they discover and find what works?

What assumptions did we make?

<u>Understanding "Sensory",</u> Supporting Neurodiverse Students Statewide Coordinator, Katie Berg MA Ed.





# Interventions Lacking Evidence

# INSUFFICIENT EVIDENCE: Sensory Diet – Sensory Integration & FM Interventions

- Handwriting without tears
- Use of weighted vests for children with ADHD or ASD

Wong et. al.,2015, Bodison & Parham AJOT 2018

#### VERY POOR EFFICACY: Single System Sensory-Based Interventions

- Therapeutic listening
- Wilbarger brushing
- Astronaut program

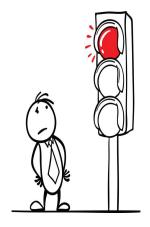
Bodison & Parham 2014



# Intervention Lacking Evidence

"Sufficient evidence against the use of weighted vests/weighted items and stability/ therapy balls."

Batten, 2020



- Sensory approach and sensory integration
- Weighted blankets
- Handwriting: sensory approach

Novak, 2019



# **Green Light Interventions**

Behavioral interventions

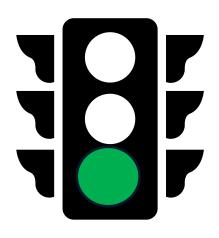


- ABA
- Token economy
- Coaching
- Cognitive & context focused
- Family-centered care





## More Green Light Interventions



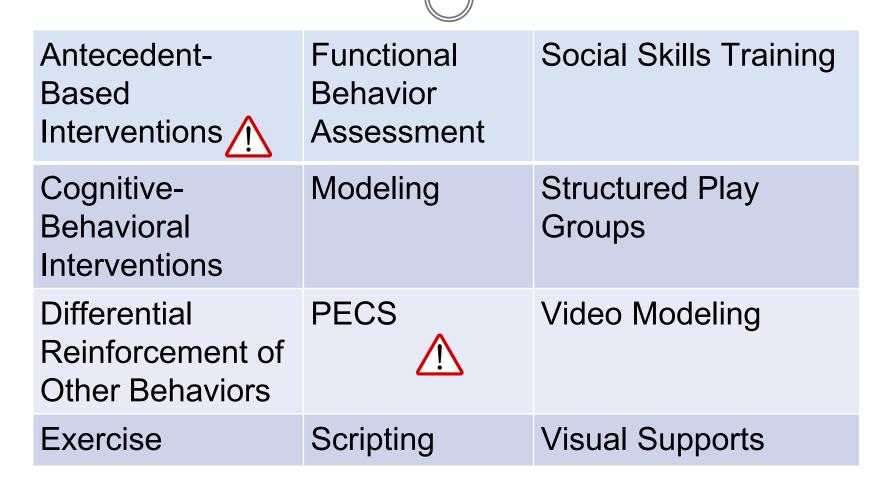
- Goal-directed training
- Task specific practice
- Home programs



- PECS (caution new information)
- Social skills training

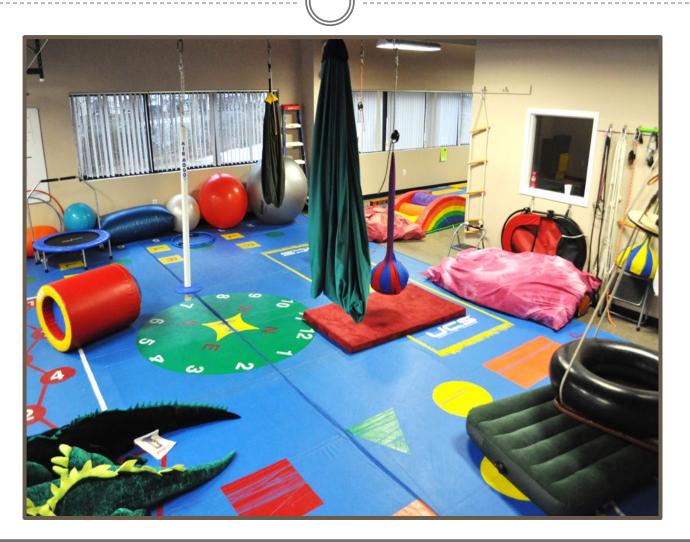


# Science-backed Autism Therapies



Wong et al., 2014

# Sensory Rooms





# Sensory Rooms - No Magic Here

Purpose: Considerations related to the IDEA and Least Restrictive Environment: best practices for integrated interventions into student's daily routines.



4 Tips
When Considering Interventions with Insufficient Evidence CESA 1

# Sensory Rooms Things to Think About

Fidelity of use for functional outcome: We want students to be able to \_\_\_\_\_ because they engage in the space by doing \_\_\_\_\_.

- Include data gathering for efficacy
- Create plan to fade seclusion and develop strategies for contextual/environmental interventions

Consider Capacity: Staff training and staff turn-over



# "Truths" About Sensory Interventions

- Interventions (array of direct and indirect) based on the student's unique needs as identified through assessment
- Emphasis on "just right" challenges to create opportunities for the child to develop increased tolerance and/or discrimination in order to improve functional performance
- Promote adaptations and modifications to activities and environments, often "in the moment"
- The best interventions tap into multiple neurological/motor systems - not "single system" interventions



# You May Turn Your Camera Off

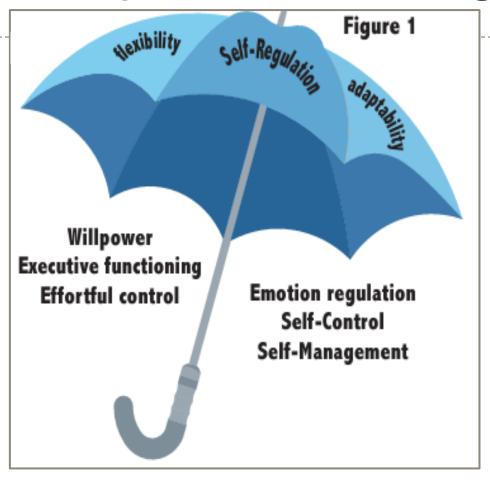


# Assessment of Self-Regulation

Regulation Will power/motivation **Emotional awareness Executive functioning Self-management Self control Effortful control Flexibility** Sensory processing

Seven Key Principles of Self-Regulation and Self-Regulation in Context

# 7 Key Principles to Self-Regulation



Seven Key Principles of Self-Regulation and Self-Regulation in Context



# 7 Key Principles

- Self-regulation serves as the foundation for lifelong functioning
- 2. Self-regulation is defined from an applied perspective as the act of managing cognition and emotion
- 3. Self-regulation enactment is influenced by a combination of individual and external factors
- 4. Self-regulation can be strengthened and taught like literacy

<u>Seven Key Principles of Self-Regulation and Self-Regulation in Context</u>



### 7 Key Principles Continued

Co-Regulation From
Birth Through Young
Adulthood: A Practice
Brief

WI DPI Social and Emotional Learning Competencies





### Participation-Based Assessment

#### Identified area of concern:

Student does not engage with peers or play equipment at recess.

#### Assessment question:

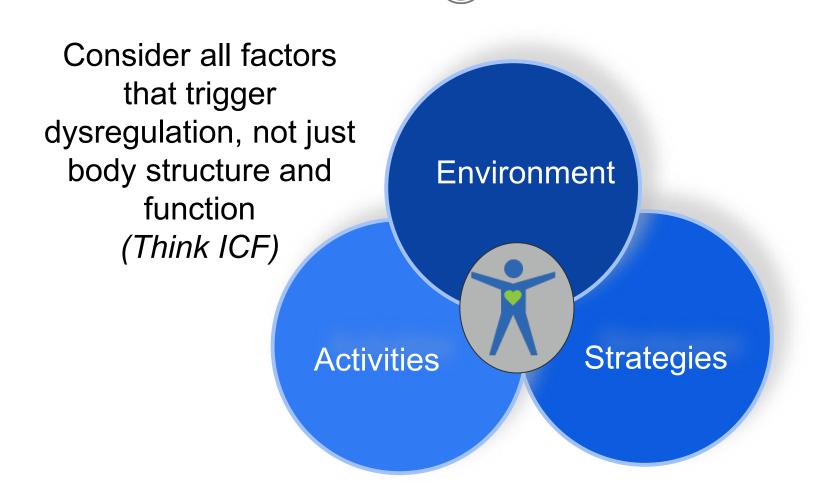
To what extent is the child able to select and carry out valued play and peer group activities during his or her free time on the playground?

#### Assessment task:

Identify the critical tasks that compose the client's key roles and on assess whether performance difficulties with any of those tasks are impeding student role or occupational performance.

Coster, 1998

# **Ecological Assessment**





### Participation Outcomes



- Behavioral outcomes
- Functional outcomes
- Amount of time and frequency of communication
- Family outcomes

Sensory AND Behavior: A Comprehensive Approach to Addressing Challenging Behaviors - SensationalBrain



### Assessments to Consider



- Scale for the Assessment of Teachers' Impressions of Routines and Engagement (SATIRE)
- Self-Regulation Assessment Rubric

 Your Therapy Source <u>STUDENT</u> SELF-REGULATION RUBRICS



### Additional Assessments to Consider

- Consider borrowing language from Indicator 7 to add to "Self-regulation" section of the OT Checklist and to connect "educational impact" in evaluation reports
- Young Children's Participation and Environment Measure
- WI DPI Social and Emotional Learning Competencies



### Play as Assessment & Intervention

#### Play as Assessment

<u>Child-Initiated Pretend Play Assessment</u> (ChIPPA) is a norm referenced standardized assessment of the quality of a child's ability to self-initiate pretend play.

Stagnitti, 2007



### Play as Assessment and as Therapy

### Research About the Importance of Play

Association of Early-Life Social and Digital Media

Experiences With Development of Autism Spectrum

Disorder—Like Symptoms. "... greater screen exposure and less caregiver-child play early in life to be associated with later ASD-like symptoms."

Relationship Between Sensory Processing and Pretend Play in Typically Developing Children This study found a statistically significant relationships between quality of play and sensory processing skill development.

Heffler, et. al., 2020 Roberts et.al. 2018

### High Leverage Practices

Begin with the child's goal to optimize motivation and saliency of practice

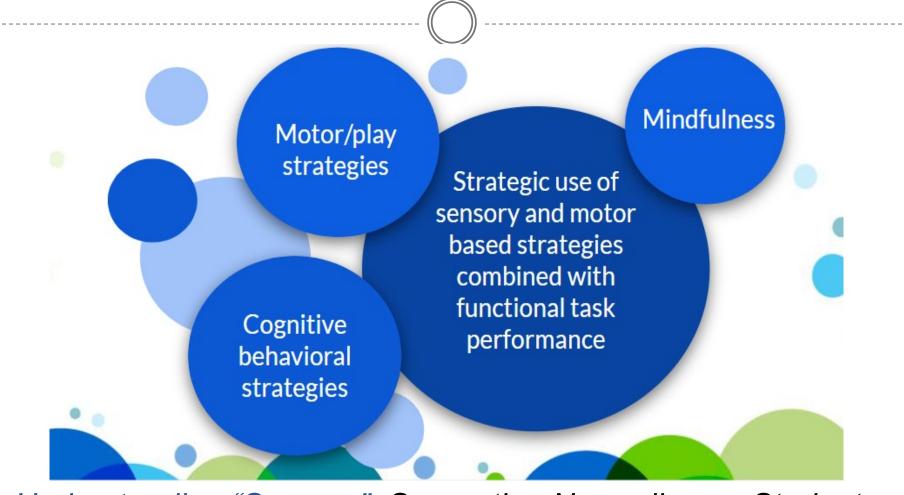
Practice of real-life activities in natural environments to optimize the child's learning and the variability of practice

Intense repetition to activate plasticity, including homebased practice

Scaffolded practice to the "just right" challenge

Novak, 2014; <u>High-Leverage Practices</u>

# Building Self-Regulation Skills



<u>Understanding "Sensory",</u> Supporting Neurodiverse Students Statewide Coordinator, Katie Berg MA Ed.

## Intervention Approaches

# Providers apply a clinical reasoning skills when considering:

#### Intervention approaches:

- Create/promote (e.g., health promotion)
- Establish/restore (e.g., skill acquisition or remediation)
- Modify/adapt (e.g., environmental modification)
- Prevent (e.g., early intervening support; avoid secondary complications)

Occupational Therapy and Physical Therapy: A Resource and Planning Guide

## More Intervention Approaches

#### Intervention will address:

- Client factors
- Activity demands
- Context and environments
- Performance skills
- Performance patterns



Occupational Therapy and Physical Therapy: A Resource and Planning Guide

### Skilled Intervention: Models

# Providers apply a clinical reasoning skills when considering:

#### Intervention models:

- One-on-one interaction
- Group
- Whole class
- Consultation with team members (e.g., problem solving)



### Additional Skilled Intervention: Models

# Providers apply a clinical reasoning skills when considering:

#### Intervention models:

- Education of team members (e.g., training)
- Environmental adaptation (e.g., assistive technology)
- Program/routine development



### Self-Regulation & Co-Regulation



Self-regulation occurs through dynamic interactions between an individual and the environment.



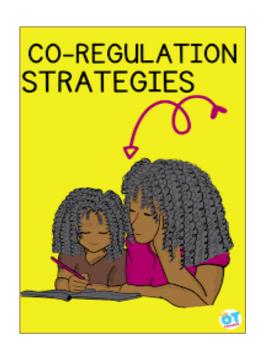
... and for children, the most critical component of the environment is relationships with caregivers.



**Co-Regulation From Birth Through Young Adulthood: A Practice Brief** 



## **Providing Co-Regulation**



- Model, prompt, and reinforce (or "coach") self-calming strategies when child is upset
- Instruct and coach use of words to express emotion and identify solutions to simple problems
- Coach rule-following and task completion
- Provide external consequences to support emerging selfregulation skill

The OT Toolbox

# Intervention Strategies

Simple Mindfulness Practices for Young Learners Across All Aspects of Diversity

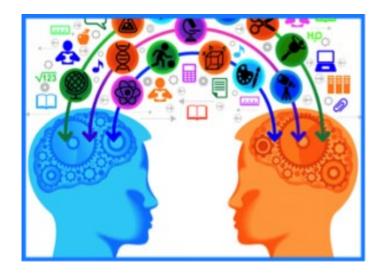
### The 5 R's in Self Regulation (Jill Frank's Podcast)

- 1. Reframe the behavior
- 2. Recognizing the stressors
- 3. Reduce the stress
- 4. Reflecting
- 5. Respond and support ResiAlience



# Self Determination & Self-Regulation







### Sample PLAAFP Data: Part 1 A

#### **Body**

Xxx shows impulsive behaviors and body movements that impact his safety when climbing furniture, disregarding commands for his safety: "come here" and "stop!" He is in constant movement and does not sustain attention for extended periods of time even with self-selected activities.



### Sample PLAAFP Data: Part 1 B

#### **Emotions**

Xxx demonstrates high levels of emotional reactivity, particularly when routines change or he is redirected from preferred activities. His parents are learning some co-regulation strategies through B-3 OT; however, he can get so upset that it is difficult for his parents to offer soothing.



### Sample PLAAFP Data: Part 2 A

**Behavior** (RRB's Restrictive Repetitive Behaviors)

Xxx demonstrates a few repetitive behaviors. His parents report repetitive behaviors do interfere with Xxx 's ability to engage in activities with others.



### Sample PLAAFP Data: Part 2 B

#### **Attention**

Significantly limited for adult-directed activities. He requires significant activity modification, verbal cues, and first/then language to maintain attention for more than 3 minutes on an adult-directed, non-preferred activity.



### Self-Regulation Goal Stem Ideas #1



- Will choose movement calming activity to improve their ability to transition between tasks, (with understanding the effects of different behaviors, or selfmanagement skills)
  - This may include emotional and selfregulation skills when transitioning anywhere in the school



### Self-Regulation Goal Stem Ideas #2

- Self-monitoring is another important skill that many students with disabilities need help with.
  - Checklists and self-assessment tools for taking turns during a conversation, understanding body language, learning appropriate coping strategies, and identifying social cues.



### Final Check-In

Whoa! This is new information!













This information is not consistent with what I was taught.

I need to reflect and get more information about...

This makes

sense!

