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Making Sense of Meltdowns: How To Identify And Intervene For Children With Sensory Based Disruptive Behaviors

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Objectives

As a result of this course, participants will be able to:

1) Differentiate between behavior and sensory-based behaviors in relation to meltdowns in children.

2) Identify at least 2 ways to determine if a child is having a sensory-based meltdown.

3) Delineate at least four approaches to intervention for children with sensory-based meltdowns, including 1) reframe the behavior; 2) collaborate to prescribe sensory strategies to maintain arousal level for learning; 3) improve coping abilities with sensory strategies, and 4) environmental adaptation.

4) Identify at least two ways to utilize sensory modulation strategies to prevent or reduce episodes.

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Why do we need to address this as pediatric therapists?

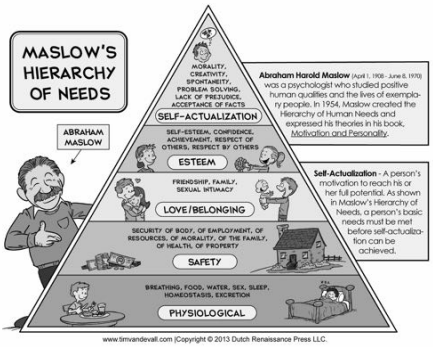
- Disrupts participation and/or performance in occupations (education, play, social participation, self care, sleep)
- Affects social interactions and communication abilities
- Creates social and emotional distress for child and family
- Development impacted
- Functional behavior plans to do not work for this situation…leading to conflict in the ESE process
- Children with SPD, ASD have disrupted white matter; tract associated with social emotional processing significantly affected for ASD (Chang et al., 2014)
- Addresses family-centered care (Cohn et al., 2014)
- Impedes transition processes (Demchick et al., 2014)
- We can affect life altering change!

Tool: Maslow's Hierarchy of Needs (1943)

- Self actualization (achievement)
- Self esteem
- Belonging, Connectedness

- Safety
- Physical needs

(Maslow, A.H., 1943)



Source: http://timvandevall.com/wp-content/uploads/2013/11/Maslows-Hierarchy-of-Needs.jpg

PURPOSES OF BEHAVIOR

- SEEK (attention, food, tangible)
- ESCAPE/AVOID (task, person, environment)
- COMMUNICATE WANT/NEED
- SENSORY

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Sensory, Behavior, or Both??

Sensory	Behavior
• Occurs regardless of circumstances • Happens for no reason-not predictable • Positive behavior program does not change response • *Function is escape or avoidance*	• Dependent on antecedents • Predictable • Responds to positive behavior program • Function is attention or communication, *or avoid*

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Sensory Processing Concepts

- **Sensory Processing:**
  - "…ability to register and modulate sensory information and to organize this sensory input to respond to situational demands"
  - **Modulation:** ability to notice and regulate stimuli and respond in appropriate manner
  - Neurophysiological processes related to modulation of input are ***habituation*** and ***sensitization***.

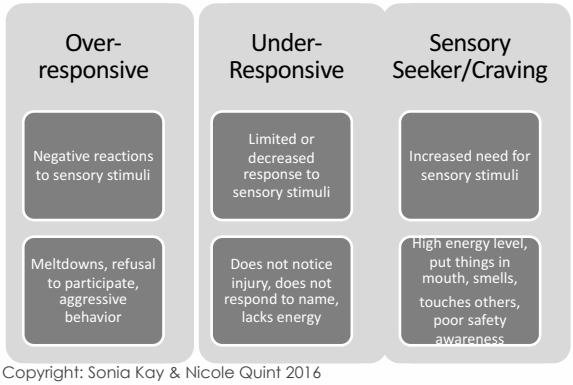
Sensory Processing: Sensory inputs

- Brain processes multiple sensory modality inputs
  - Proprioception
  - Vision
  - Auditory system
  - Tactile
  - Olfactory
  - Vestibular system
  - Interoception
  - Taste
  - *Activity level**

Mangeot et al., 2001

Sensory Dysregulation-

Difficulty grading response to stimuli



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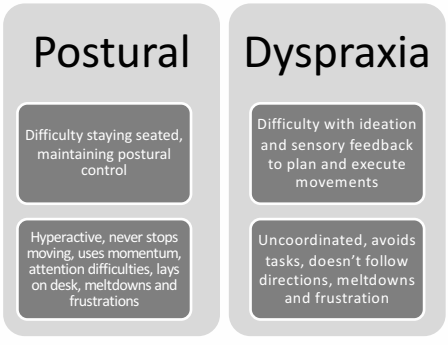
Motor Based Postural Disorders



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Sensory Processing Disorder

- High comorbidity with other disorders
- Owen et al. (2013) found abnormal white matter in children with SPD
  - primarily posterior cerebral tracts
  - Correlates strongly with atypical unimodal and multisensory integration behavior

- **Up to 47% of students with ADHD meet criteria for one type of Sensory Disorder (SPD); up to 80% comorbidity**
- **Students with ADHD and SPD have high risk for anxiety** (Reynolds & Lane, 2009)
- **Up to 35% of gifted students have SPD** (Cronin, 2003; Jarrard, 2008)
- **75% of individuals with ASD have SPD** (Cheng et al. 2005; Miller, 2014)
- **40-85% of children with DD have SPD** (Miller, 2014)

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Beyond the Numbers…

- **Visual sensory processing deficits exist in bipolar disorder** (Yeap et al., 2009)
- **Schizophrenia-less gray matter (parietal lobe) which is base for sensory function, correlation with sensory processing deficits** (Kreitschmann-Andermahr et al., 1999; Ahevinen et al., 2006)
- **Bipolar has extremely high co-morbidity with ADHD (62-98%)** (Youngstrom et al, 2010) **; inherent in bipolar to have sensory distortions and unstable sensory processing due to cortical thinning in parietal and occipital lobes** (Lyoo et al, 2006)
- **Both bipolar and schizophrenia have abnormal sensory gating, impaired sensory-motor systems** (Thaker, 2008; Davies et al, 2009)
- **Children with fetal alcohol spectrum disorders have problem behaviors related to sensory processing** (Franklin et al., 2008)**-important to note that schizophrenia has possible etiology related to alcohol intake during pregnancy**

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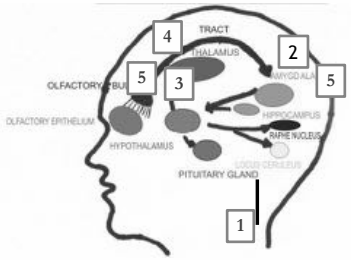
Sensory Input Received…

1. **Brainstem activated with norepinephrine (warning system for arousal)**
2. **Arousal increases once amygdala (limbic system) activated**
3. **Eventually, dopamine released**
4. **SENSORY INPUT goes to thalamus (1 of 2 places relayed)**
   - **1. Cortex: perceive sensation, initiate movement**
   - **2. Amygdala: for memory pertaining to arousal/ attaching emotional meaning to stimulus (can lead to fight or flight)**



http://dev.zinegraphics.com/scent-marketing-the-future-of-advertising/

Van Hulle et al., 2012

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Threat Analysis…

- **Amygdala to R hippocampus**
- **From hippocampus to R orbitofrontal cortex (OFC) for more information and memory activation**
  - ***Threat vs. excitement analyzed* and survival behavior either increased or decreased**
  - **Organizes motor defensive behavior and autonomic responses to "threat"**
  - **OFC activates hypothalamus, brain center for autonomic function**

(Miller et al., 2007; Van Hulle et al, 2012)

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https://eatingoffplastic.wordpress.com/2014/07/23/highly-sensitive-person-vs-sensory-processing-disorder/

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A problem for sensory over responsive children is an ABNORMAL threat analysis

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Video Example

- Prior to video, everything was fine…climbing on equipment and smiling
- And then…

What systems are affected- Autonomic?

- **Parasympathetic Nervous System**
  - **Homeostasis**
- **Enteric Nervous System**
  - **Gastro system (not yet studied)**
- **Sympathetic Nervous System**
  - ***Fight or flight***

Van Hulle et al., 2012

What are the Signs?

1. Red Ears
2. Facial color change (pale, red)
3. Muscle tone changes: decrease (noodle kid), increase (fisting, rigid/tense)
4. Significant reduction in performance in short amount of time
5. Breathing changes (holding breath, heavy breathing, etc.)

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What are the Signs?

https://iveronicawalsh.files.wordpress.com/2010/07/fightorflight1.jpg

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How does this affect function?

- Acute arousal and defensive posture produce a consistent **FREEZE**
  - Helpless to solve problem → helplessness results
  - Repeated **FREEZING** → **passive immobility** despite given new possibilities for escape
  - Problem solving and learning potential becomes negatively influenced
  - FREEZING can then result from neutral stimuli
  - Environmental input (initially benign) can then become traumatic stimuli
  - Aka "deer in headlights" or shutting down

Miller et al., 2007; Van Hulle et al., 2012

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Meltdowns

Limbic Activation

- not a tantrum
- not behavioral communication
- often sensory-related
- fight or flight
- confidence killers (MHoN)
- NEED SUPPORT not PUNISHMENT

https://www.youtube.com/watch?v=alDaRq9o97U

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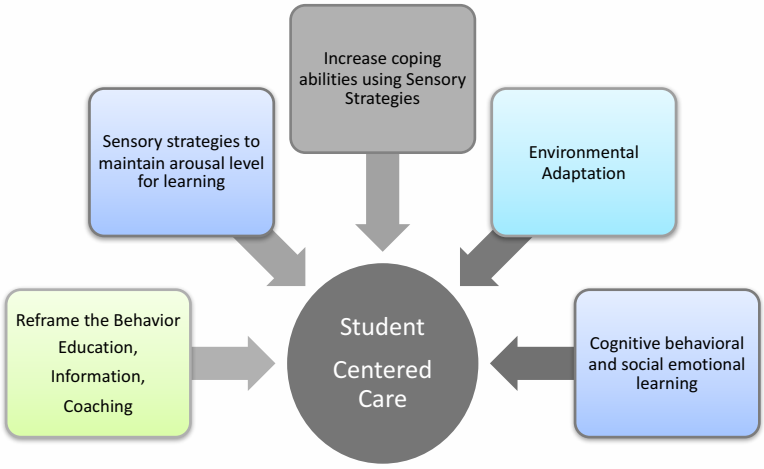
Meltdown Video Example

https://www.youtube.com/watch?v=azNUXDsq1nY

"Ethan"

Shannon Lee. (Feb. 24, 2014). Ethan's has a meltdown during reading homework ASD PDD-NOS. Retrieved from https://www.youtube.com/watch?v=azNUXDsq1nY

Approaches to Intervention



(Warner et al., 2013)

Goals for Sensory Processing Intervention

- Awareness of the role of sensory processing in student's behavioral responses
- Maintain calm, alert state in learning environment
- Increased active learning and task behavior
- Utilize sensory strategies to self regulate attentional and emotional responses
- Prevention of episodes of challenging behavior
- Decreased episodes of challenging behavior

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Intervention Process

- **Assessment-**
  - Use of observation, questionnaires, and assessments to determine the student's sensory preferences and needs.
- **Sensory Diet-**
  - Individualized specific daily plan of sensory stimuli that assists that individual in staying alert, calm, and regulated. Sensory stimuli are applied in a proactive method to satisfy/meet the student's sensory needs and support their function in the educational environment.
- **Sensory Strategies-**
  - Sensory tools that include input from most of the sensory systems that the student can access when needed to regulate their emotions and behavior.

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Intervention Process

Self Regulation

- CBT
  - Calming strategies
- Social & Emotional Learning
  - Zones of Regulation
  - Alert Program
  - POWER! Batteries

Sensory

- Environmental supports
- Preparatory input/Sensory diet (buffet)
  - Sports
  - Physical activity
- Access to quiet area
  - Mindfulness
  - Visualization
  - Yoga

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Emotional Self-Regulation

- Emotional regulation
  - Year 1: infants try to reduce negative arousal by physical strategies
  - Year 2: Capable of actively utilizing emotional regulation strategies
  - Preschool age: Able to calm self and start to learn basic feelings, emotions, and management
  - Ages 6-10: Understand and apply social rules re: emotions
  - Adolescence: Able to employ more complication emotional regulation strategies to promote socialization

(Olson, 2010)

Coping Model

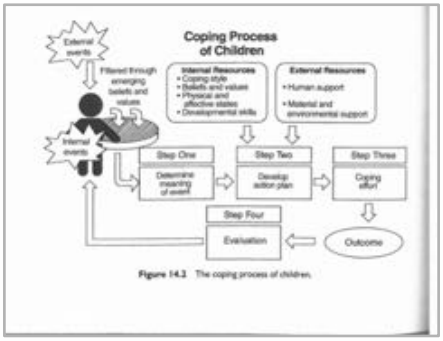


Figure 14.2 The coping process of children.

Williamson, G.G., & Szczepanski, M. (1999). Coping model (pp. 431-467). In P. Kramer, & J. Hinojosa (Eds.) *Frames of reference in pediatric occupational therapy*. (2nd ed.) Baltimore, MD: Williams & Wilkins.

Coping is process of making adaptations to meet personal needs and respond to demands of environment

- transactional
- coping strategies are LEARNED
- coping process generated by stress
- KEY: developmentally appropriate level of stress, different for each child, facilitates
  - **motivation**
  - **learning**
  - **mastery**

PAL Strategy (Quint, 2014)

P: Plan

-Assess, observe behavioral STORY and SEL competence

A: Access

-Opportunities for safe (no judgment) embedded social & emotional skills, CBT, sensory processing (exploration)

-Use of preffered, play-based embedding

L: Learning

-Practice and refine (generailize) abilities through preferred play, then less-preferred play, then non-preferred, non-play activities

Emotional Intelligence

–Knowing one's emotions

–Managing emotions

–Motivating oneself

–Recognizing emotions in others

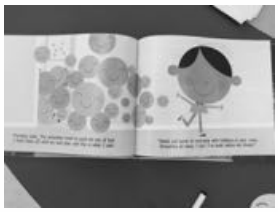
–Handling relationships

Goleman, D. (2006). *Emotional intelligence*. New York: Bantam.

Quint, N. (2013)

Intervention: Activities created around story about "Grouchies"

- http://grouchies.com/
- Available as app for iPad
  - musical "Grouchies"
  - who has the "Grouchies"?
  - "go away Grouchies"



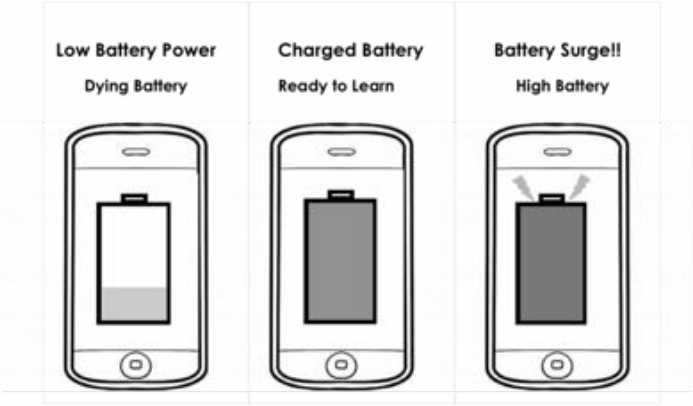
Wagenbach, D & Mack, S. (2009). The grouchies. Washington DC:Magination Press.

Feelings Board/Activities

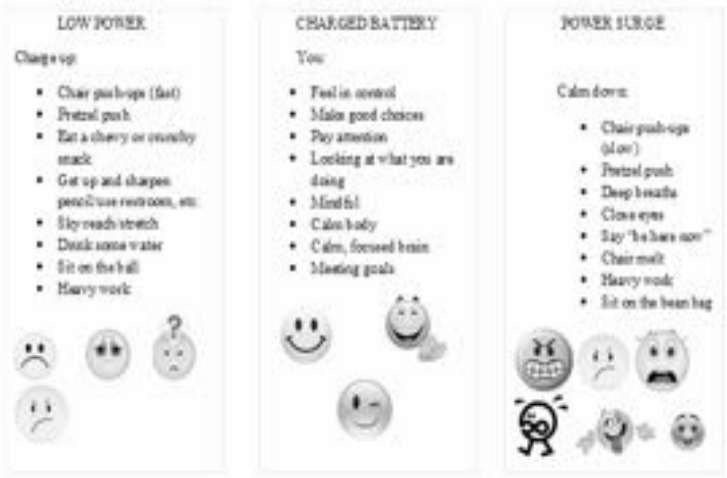
http://havingfunatchelleshouse.blogspot.com/2013/04/discussing-emotions-with-pasta-faces.html?showComment=1365207052244#c8114664732873045393

http://www.ebay.com/itm/Felt-Board-Flannel-Story-Feeling-Faces-educational-circle-lime-emotions-/290729990954?pt=Educational_Materials&hash=item43b0db9b2a&nma=true&si=BCUSGvA5SyNFygNT4pXowY2jdH4%253D&orig_cvip=true&rt=nc&_trksid=p2047675.l2557

POWER! Battery System (Quint, 2010)



POWER! Batteries (Quint, 2013)



Calming Strategies

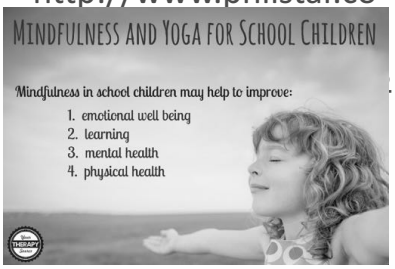
1. **Identify/Name "behavior"**
2. **Learn strategies**
3. **Choose strategy(s)**
4. **Practice**
   a. **calm**
   b. **dysregulated**
   c. **when limbic/autonomic**
5. **Decide on effectiveness/reassess**

Social Story Strategies

Mindfulness

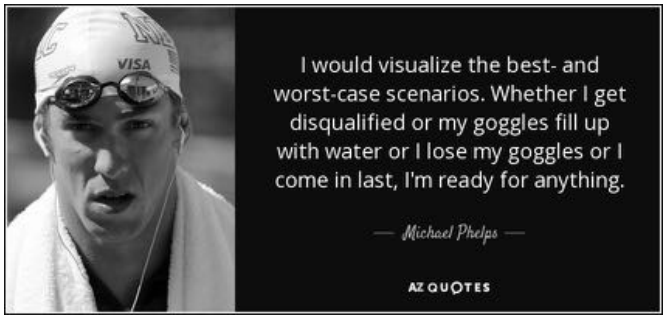
- Association between stressors and anxiety stronger for children than adolescents therefore, coping tools important
- MF form of attention using meditation techniques
- Learn to pay attention in a specific way
  - On purpose
  - In present moment
  - And non-judgmentally

- http://www.philstar.co



- (van de Weijer-Bergsma et al., 2012;

Visualization



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Sensory Regulation Techniques

- **Sensation from all systems can be modified to increase or decrease orientation**
- In general to **alert** a system:
  - Input is unpredictable
  - Input is unfamiliar
  - Input will be varied and change
- In general to **calm** a system:
  - The input is predictable
  - Input is familiar and expected
  - Input will be sustained

Dunn, 2007, 2008; Miller 2014

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Types of Input

SYSTEM	CALM	AROUSE
VESTIBULAR (Movement)	Slow, Rhythmical Continuous	Fast, Irregular Multidirectional
PROPRIOCEPTIVE (Muscle)	Heavy weight (Weight bearing, Squeeze)	Push/Pull
TACTILE (Touch)	Deep Pressure (Massage)	Light Touch (Feather, tickle)
VISION (Eye)	Incandescent, Dim, Soft Visual Anchors	Bright Lights Color
AUDITORY (Ear)	Slow,Quiet, Classical, Drums	Fast, Loud, Violins Jazzy

Miller, 2014

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Environment

Classroom

- Physical and temporal important for preschool children (Piller & Pfeiffer, 2016)
  - **Avoidance/perseveration**
  - Routines
  - Modifications and sensory support
- Structure: effect on SP
- Sensory characteristics: effect on arousal

Sensory strategies

- Promote self-regulation
- Fidgets
- Alternative seating
- Sensory bins and kits
- Heavy vests, items

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Physical Activity/Sports

- PA benefits: embed sensory; release of beta-endorphin/serotonin (theories); weight control
- FUN MAPS framework (Fun Integration Theory (FIT)(Visek et al., 2015)
  - Large exodus out of organized sports
  - Fun determinants, conceptualizing fun, and quantifying fun
  - Emphasize Fun to increase participation
- Vitamin N: (Louv, 2016)
  - Green schoolyards as havens from stress/resources for resilience in childhood/adolescence (Chawla, 2014)
  - Restorative environments require children's inclusion in research and design in environments (Bagot, 2014)

Sensory and Sports

http://www.ohanaot.com/top-8-sports-kids-spd/

Embedding SEL/Coping into PA

Resources

- Fun and Function website has "build your own sensory break" form
  - https://funandfunction.com/blog/wp-content/uploads/2015/03/standard-classroom-breakbox-with-self-reg-tracking.pdf
- POWER! Batteries and POWER! Battery Chart for monitoring
  - Provided within additional resources for this course or the POW! Course
- Sensory stories
  - https://www.mencap.org.uk/blog/create-your-own-sensory-story-7-steps
- Social stories
  - https://www.youtube.com/watch?v=R8c_Br8I_Tc

In Conclusion

- All children have sensory needs and challenges, but children with emotional challenges often have more intense underlying sensory needs, difficulties
- The sensory environment has positive calming effects when it is structured, predictable
- The sensory environment can be alerting when it is unpredictable
- This can increase arousal; in some children (those with sensitive limbic systems) therefore at increased risk for abnormal threat analysis
- Having sensory options in both a separate calming area and sensory strategies in the classroom promote consistent, optimal sensory environment to promote learning and DECREASE chance of behaviors, including sensory-based
- Therefore, having sensory options in form of sensory room, sensory diet, and sensory strategies PROMOTES LEARNING

Thank you!

Email: quint@nova.edu

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http://healthsciences.nova.edu/ot/

Dr. Sonia Kay, Who generously allowed me to use portions of our presentations from our program,

It Just Makes Sense

Evidence

- Mullen et. al, (2008) found that 63% of participants reported use of weighted blanket decreased anxiety.
- Champagne & Sayer (2003). 98% of participants reported positive change related to use of sensory room and sensory strategies. 40% reduction in facility use of restraint.
- Voytecki (2005) Hand fidgets increased on-task behavior in disabled students.
- Support sensory stimulation and relaxation with multisensory rooms (Stephenson, 2002)
- Strong, meaningful sensory input for underresponders in classroom; calming input for overresponders (Murray et al., 2009)
- Adapted seating supports academic performance behaviors in classroom (Schilling, 2006; Schilling & Schwartz, 2004)
- Dunn (2008) recommends using evidence-based sensory strategies (weighted vests, adapted seating, etc.) within a routine to promote inner drive, which is also evidence-based (Baranek, 2002; Hanft & Pinklington Ovland, 2000; Schneck, 2001, as cited in Dunn, 2008)

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