

Achieving That “Just Right” Feeling...Watch Behavior Improve

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Objectives

- Quick overview of sensory processing disorder (SPD), and sub categories
- Understand behaviors related to SPD, and discuss interventions and strategies to address behaviors and self regulation



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Sensory Processing

- The ability to register, process, and use information taken in by the senses
- Allows us to make adaptive, appropriate, and functional responses
- Directly impacts development of functional skills



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Sensory Systems

- Visual
- Auditory
- Gustatory (taste)
- Olfactory (smell)
- Tactile
- Vestibular (movement)
- Proprioceptive (joint awareness)
- Introception

The vestibular, proprioceptive, and tactile systems are precursors to the development of the visual and auditory systems.



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Understanding our 8 Senses

The Near Senses:

- **Vestibular**- Processing information about movement, gravity, and balance, which is received through the inner ear.
- **Proprioceptive**- Processing information about body position and body parts, which is received through the muscles, ligaments, and joints.
- **Interception**- is contemporarily defined as the sense of the internal state of the body. This can be both conscious and non-conscious. Interception helps you understand and feel what's going on inside your body. You're able to tell if you need to use the bathroom. You know if you're hungry, full, hot, cold, thirsty, nauseated, itchy, or ticklish.
- They are called the "hidden" senses, because we are not aware of them, we cannot control them, and we cannot directly observe them.



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Sensory Stimulation

Input from any of the sensory systems to the body.

Examples:

- How clothing feels against one's skin (tactile)
- Active play (i.e. playground) (vestibular, proprioceptive)
- Music/Voice/Noise from the environment (auditory)
- Position changes (i.e. standing/sitting/laying) (proprioceptive)
- Types and temperature of foods (tactile, taste)
- Knowing when need to go to the bathroom (introception)



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Sensory Processing Disorder (SPD)

- Also known as Sensory Integration Dysfunction (SID) or Dysfunction in Sensory Integration (DSI), now the trend in the past 10 years has moved towards calling Sensory Processing Disorder (SPD).
- Occurs when there is a "glitch" in the system.
- The brain cannot register, interpret or integrate sensory information to produce an organized response...making learning and interacting difficult.
- A. Jean Ayres, PhD, compared SID to a neurological "traffic jam" that prevents certain parts of the brain from receiving the information needed to interpret sensory information correctly.



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About SPD

- the body-brain processing of registering, interpreting, and integrating sensation is regulated and goes entirely unnoticed.
- over-responsiveness to sensation that make it difficult to fit in an inflexible sensory world, which can be exhausting, troubling, and effortful for these individuals.
- so overwhelming and confusing at a brain and body level that they rarely feel safe.
- seek sensory input in inappropriate ways and have difficulty with interaction and engagement within the environment and the people around them.

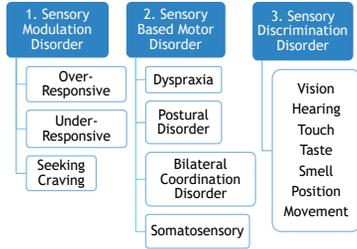
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Sensory Presentation



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Classic Symptoms and Classification of Sensory Processing Disorder



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Symptoms of Sensory Processing Disorder

3 classic symptom clusters:

1. Sensory Modulation Disorder (SMD)

- Over responsivity (avoider/sensitive), under responsivity (low registration/bystander), sensory seeking, regulation disorders

2. Sensory-Based Motor Disorder (SBMD)

- Dyspraxia, postural disorder, bilateral coordination, somatosensory

3. Sensory Discrimination Disorder (SDD)

- Vision, hearing, touch, taste/smell, position/movement

Can exhibit multiple symptoms of SPD and/or symptoms of SPD and another disorder



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Behavioral Responses Related to SPD

- Impulsive
- Under active
- Overactive
- Distractible
- Clumsy
- Avoidant
- Agitated
- Hitting
- Tantrums
- Poor frustration tolerance
- Poor peer interaction
- Emotional outbursts
- Emotional shut-down
- Decreased arousal
- Obsessive touching of others



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Understanding Sensory-Based Behavior

- Poorly adaptive or challenging behaviors seen in children may be the result of poor sensory processing.
- Observing the behavior and the cause of the behavior may tell how the child is interpreting or processing sensory information from the environment.
- Becoming the "Investigator" of the child's behavior. What is the antecedent(s) before observing the disruptive behavior?



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Reasons for Behaviors

- For attention
- For escape
- To communicate
- To seek or to avoid sensory input
- For self regulation
- To meet a specific need

A behavior is the nervous system's response to environmental stimuli.
 The neurological response can turn into a learned behavior.



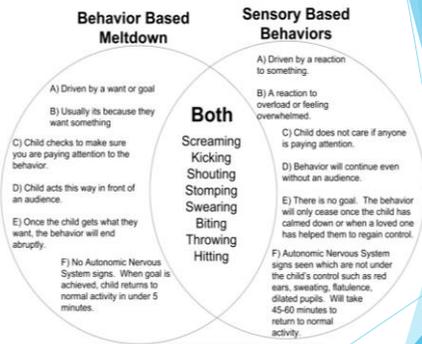
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Emotional Impacts of SPD

- Children with Sensory Processing Disorder often have problems with motor skills and other abilities needed for school success and childhood accomplishments. As a result, they can become socially isolated and suffer from low self-esteem and other social/emotional issues.
- These difficulties may put children with SPD at high risk for many emotional, social, and educational problems; including: inability to make friends or be a part of a group, poor self-concept, academic failure, and being labeled clumsy, uncooperative, disruptive, or "out of control."
- Anxiety, depression, aggression, or other behavior problems can follow.



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Sensory Processing Intervention

3 Complementary Strategies:

1. Helping parents/caregivers/teachers understand sensory difficulties that lead to the child's behaviors & foster successful relationships between the child and significant others.
2. Modifying the environment to fit the child's need.
3. Providing individualized direct intervention designed to meet the individual's needs.

Everyone deserves the best support we have to offer in order to flourish. By Lucy J. Miller



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Using Sensory Stimulation to Enrich Experiences

Common ways sensory stimulation is attained through play and activities of daily living:

- Exercise - proprioceptive, vestibular, tactile
- Swinging - vestibular
- Climbing (i.e. monkey bars) - proprioceptive, vestibular
- Messy play (i.e. finger painting, playing in dirt/sand, food play) - tactile, olfactory, gustatory
- Singing - auditory
- Jumping and running - proprioceptive, vestibular
- Weights vs. compression - tactile, proprioceptive



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Effects of Sensory Stimulation

- Increase/decrease arousal level
 - Shut down vs. hyperactivity
- Affects sleep/wake cycles
- Calming effect
- Improved organization
- Improves attention, skill development, and social interaction



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Sensory Regulation

- The ability to respond or adjust appropriately to sensory stimulation, its called an adaptive response.
- Regulation needs to occur in order to attain, maintain and change one's own arousal level to meet the demands of an activity or situation.

We all do things to self-regulate:

- | | |
|----------------------|------------------------|
| • Exercise | • Drink coffee or soda |
| • Listening to music | • Fidget |
| • Chewing gum | • Leg tapping |
| • Deep Breathing | • Etc. |



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Self-Regulation

- Sensory Regulation is an ultimate goal of SPD intervention and to have the child accountable and self-aware of sensory and environmental needs to achieve success within their everyday lives.
- The key is beginning able to identify your own emotional state.
- Self-awareness, and helping the child understand there emotional state.
- The caregiver must be aware of their own regulated state in order to help an out-of-control child. Meaning if the caregiver is being heightened with the child, this will not help set up the child to calm.



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The OT Toolbox Sensory Dysregulation

When your nervous system is out of balance due to too much or too little sensory input. Sensory dysregulation is an involuntary response and can look like any of the following



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Behavioral Strategies

- Create a positive environment
- Use selective praise/ignoring
- Establish simple routines (can use a schedule)
- Try to plan activities so that something enjoyable will follow a less enjoyable activity
- Establish and enforce simple rules
- Be consistent
- Use simple, specific language
- Give choices as much as possible
- Make it clear when and how tasks begin and end (can use a timer or picture schedule)
- Provide sensory motor support, especially great with individuals that do not do well with transitions.



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The Alert Program®

Although the Alert Program® initially was intended for children with attention and learning difficulties, ages 8-12, it has been adapted for preschool through adult and for a variety of disabilities.

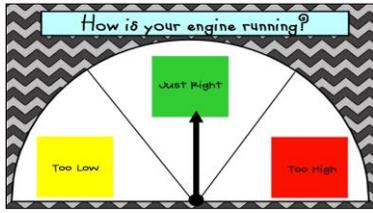
If children are intellectually challenged or developmentally younger than the age of eight, the program's concepts can be utilized by staff to develop sensory diets (Wilbarger & Wilbarger, 1991) to enhance learning.

- <https://www.alertprogram.com/>
- Created by Mary Sue Williams and Sherry Shellenberger, occupational therapists for over 35 years and founders of the Alert Program® in Albuquerque, NM.
- They have recently revised program.



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Example Barometer



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Strategies to Address Sensory Regulation

Zones of Regulation

- Red Zone** is used to describe extremely heightened states of alertness and intense emotions. A person may be elated or experiencing anger, rage, explosive behavior, devastation, or terror when in the Red Zone.
- Yellow Zone** is also used to describe a heightened state of alertness and elevated emotions; however, one has some control when they are in the Yellow Zone. A person may be experiencing stress, frustration, anxiety, excitement, silliness, the wiggles, or nervousness when in the Yellow Zone.
- Green Zone** is used to describe a calm state of alertness. A person may be described as happy, focused, content, or ready to learn when in the Green Zone. This is the zone where optimal learning occurs.
- Blue Zone** is used to describe low states of alertness and down feelings, such as when one feels sad, tired, sick, or bored.

(Kuypers, L., (2015). Zones of Regulation. <http://www.zonesofregulation.com/index.html>)



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Examples of Zones of Regulation

The image shows several cards with icons and text:

- Explosing**: I feel overwhelmed and I explode. My voice is loud. I yell or scream.
- Boiling**: I feel hot and my face is red. I feel like I can't breathe. I feel like I'm going to throw up.
- Upset**: I feel like I can't control my emotions. I feel like I'm going to cry.
- Frustrated**: I feel like I can't do anything right. I feel like I'm going to give up.
- Irritated**: I feel like I can't sit still. I feel like I'm going to run away.
- Nervous**: I feel like I can't focus. I feel like I'm going to mess up.
- COOL**: I know I am doing a good job. I feel calm and in control.
- CALM**: I feel like I can do anything. I feel like I'm in control.
- RELAXED**: I feel like I can do anything. I feel like I'm in control.
- Sleepy**: I feel like I can't stay awake. I feel like I'm going to fall asleep.
- Sluggish**: I feel like I can't move. I feel like I'm going to fall asleep.
- engine off**: I feel like I can't do anything. I feel like I'm going to fall asleep.

 There is also a diagram titled 'THE ZONES OF REGULATION' showing a spectrum from Blue to Red with corresponding strategies:

- Blue Zone**: Stretch, Drink water.
- Green Zone**: Deep breaths.
- Yellow Zone**: Take a break.
- Red Zone**: Take a break.



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Other Ideas for Self-Regulation

Body	Zone	Student Strategies	Teacher Strategies
fast energy	Red Anxious Frustrated Overwhelmed	<ul style="list-style-type: none"> 1. Use the self-talk strategies 2. "The Red Sign" 3. "When one minute is too long" 4. Use the self-talk cards 5. Use the self-talk cards 6. Use the self-talk cards 	<ul style="list-style-type: none"> • Take a break • Breathing techniques • Breathing together and counting out loud • Break time (10-15 min) • Use the self-talk cards
moving energy	Yellow Frustrated Silly/Wiggly Excited	<ul style="list-style-type: none"> 1. Use the self-talk strategies 2. "The Yellow Sign" 3. "When one minute is too long" 4. Use the self-talk cards 5. Use the self-talk cards 6. Use the self-talk cards 	<ul style="list-style-type: none"> • Use the self-talk cards • Use the self-talk cards • Use the self-talk cards
down energy	Green Calm Relaxed	<ul style="list-style-type: none"> 1. Use the self-talk strategies 2. "The Green Sign" 3. "When one minute is too long" 4. Use the self-talk cards 5. Use the self-talk cards 6. Use the self-talk cards 	<ul style="list-style-type: none"> • Use the self-talk cards • Use the self-talk cards • Use the self-talk cards
slow energy energy off	Blue Sleepy Sick Bored	<ul style="list-style-type: none"> 1. Use the self-talk strategies 2. "The Blue Sign" 3. "When one minute is too long" 4. Use the self-talk cards 5. Use the self-talk cards 6. Use the self-talk cards 	<ul style="list-style-type: none"> • Use the self-talk cards • Use the self-talk cards • Use the self-talk cards



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Self-Regulation

To use any of the above programs, there are 3-4 levels of learning the system to have the children buy into the system:

1. Learn the vocabulary.
 2. Learn the feeling that coincides with the words (the student/child has to start to become self-aware or accept adult facilitation).
 3. Learn strategies to assist to change levels of regulation (i.e. what will rev up, slow down, increase attention).
- Sometimes children never make it independently to step 3, depending cognitive level. However, can still use system with external assistance for step 3.



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Activity Suggestions for Overresponsivity

Auditory

- Use soft voice & short sentences
- Listen to soft music with low frequencies
- Use soft music, white noise, or nature sounds
- Wear head phones to dampen loud sounds
- Play "I Spy" while waiting in lines

Visual

- Dim the lights
- Use natural light, when you can
- Wear baseball cap or sunglasses
- Visual schedules to organize the child
- Use visual countdown, like the time timer



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Activity Suggestions for Overresponsivity

Proprioceptive

- Use weighted objects- RULE: only use weight for 20-30mins, then off for 2-hrs!
- Engage isometrics (i.e. wall push ups, chair & push ups)
- Work out with weights
- Snack on chewy foods, allow for chewing gum, whistles
- Give firm hugs or have beans bag chairs in rooms for "mushing" kids between
- Wear pressure garments (i.e. bear hug vest), but this could also be under tactile

Tactile

- Roll and/or wrap child in blankets or "mush" between pillows
- Offer fidget toys
- Allow self-directed tactile as they can tolerate it

Vestibular

- Rocking in chair
- Exercise break and complete toe touches



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Activity Suggestions for Underresponsivity

Auditory

- Combine music and movement-fast and slow
- Use a fast paced metronome as background

Visual

- Brighten the lights
- Organize timed tasks
- Use a "time-timer" for work completion

Proprioceptive

- Apply deep pressure that is quick, fast strokes
- Use massager
- Use fabric/texture materials for light touch on skin
- Need things that are unexpected and frequently changing to increase there arousal levels



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Activity Suggestions for Underresponsivity

Vestibular

- Run for short distance (fast, can do in hallway)
- Use of Disc-o-Sit or wedges
- Jumping, high knees, stand-sit-stand
- Sit and bounce on therapy ball at desk
- Animal walks

Oral Motor

- Crunchy snacks
- Using sweet, hot, sour, or spicy snacks
- Chewing gum

Smell

- Aroma Bracelet (smells that elicit attention-strong smells, i.e. mint, citrus, etc.)



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Activity Suggestions for Sensory Cravers/Seekers

Vestibular

- Disc-o-Sit or wedge seats
- Yoga
- Stop-start activities prior to sitting tasks
- Sit on therapy ball

Smell

- Calming bracelets with scents such as lavender, vanilla, or coconut

Proprioceptive/Tactile

- Goal-directed heavy work activities prior to sitting tasks
- Fidgets
- Stress ball
- Weighted Items (within timing standards of no more than 30mins per wear with 2 hour break between wearing)
- Compression Garments
- Theraband or something stretchy around base of chair for child to bounce legs onto



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Activity Suggestions for Sensory Based Motor Disorder (SBMD-Postural Disorder and Dyspraxia)

- Build child's self-esteem
- Strengthen core muscles (i.e. abdominals)
- Work on antigravity positions (i.e. superman position)
- Weight-bearing and resistive activities
- For increased fine motor ability-work on stability of shoulders, forearm, and wrist
- Remember to work on motor challenges, not just sensory difficulties, "normal movement patterns"
- Activities that require body movements within space (i.e. Simon says)
- Activities with component of timing and sequencing



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Activity Suggestions for Sensory Discrimination Disorder (SDD)

- Helping children be aware of properties of people, objects, and other things
- Use rich descriptions of sensorimotor play into activities
- Communication, use of descriptors
- Work on visualization
- Have them measure and weigh things around them, literally to be able to compare and contrast to learn differences
- "same" and "different" games
- Activities that require sustained balance and positioning (i.e. yoga & twister)



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Key Things to Always Remember About Sensory Processing...

- Current research shows...neuroplasticity is ever changing throughout the life span.
- Only way to change or enhance the neuroplasticity, in our case for today's discussion is the sensory system, is through completing activities with frequency, duration, intensity, and variability.
- The NEED to become an investigator...start to plot out the behaviors and try to figure out what the antecedent is or the trigger that causes the behavior. Could be another child, environment, task, and/or time of day.
- Once that is figured out, now we can implement strategies to pair with the behaviors seen.
- REMEMBER it will not be a cookie cutter fix, each child is different and has different needs!



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QUESTIONS?



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References / Resources

- Bialer, D.S. & Miller, L.J. (2011). No Longer A Secret: Unique Common Sense Strategies for Children with Sensory or Motor Challenges. Arlington, TX: Sensory World.
- Kranowitz, Carol Stock. (1998). The Out-of-Sync Child. New York, New York: The Berkley Publishing Group.
- Kranowitz, Carol Stock. (2003). The Out-of-Sync Child Has Fun. New York, New York: The Berkley Publishing Group.
- Trott, Maryann Colby. (2002). Oh Behave: Sensory Processing and Behavioral Strategies: Therapy Skill Builders.
- Ahn RR, Miller LJ, Milberger S, McIntosh DN (2004). Prevalence of parents' perceptions of sensory processing disorders among kindergarten children. Am J Occup Ther. 2004 May-Jun;58(3):287-93. doi: 10.5014/ajot.58.3.287.
- Miller, Lucy Jane, Ph.D., OTR. (2006). Sensational Kids. New York, New York: G.P. Putnam's Sons.



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References / Resources

- STAR Institute-<https://sensoryhealth.org/>
- Yack, E., Aquilla, P., & Sutton, S. (2002). Building Bridges Through Sensory Integration. Las Vegas, Nevada: Sensory Resources.
- Ben-Sasson, Carter, Briggs-Gowen (2009). Sensory over-responsivity in elementary school: prevalence and social-emotional correlates. *J Abnorm Child Psychol.* 2009 Jul;37(5):705-16. doi: 10.1007/s10802-008-9295-8.
- Williams & Shellenberger (1996). "How Does Your Engine Run?" A Leader's Guide to Alert Program® for Self-Regulation. TherapyWorks, Inc.
- Kuypers (2011). The Zones of Regulation® Book: A curriculum designed to foster self-regulation and emotional control. Social Thinking Publishing.
- S'Cool Moves for Learning <https://www.schoolmoves.com>
- Zone of Regulation <http://www.zonesofregulation.com/>
- The Incredible 5-Point Scale <http://www.5pointscale.com/>
- The Alert Program <http://www.alertprogram.com/>



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References / Resources

- Sensory Smarts www.sensorysmarts.com
- Child Mind Institute <http://www.childmind.org/en/posts/articles/2014-4-28-how-sensory-processing-issues-affect-kids-school>
- Teachers Pay Teachers <https://www.teacherspayteachers.com/Product/Behavior-Unit-1241115>
- Pinterest www.pinterest.com/joallisonlone/sensory-integration-for-the-classroom
- Sensory Processing Disorder <http://www.sensory-processing-disorder.com/problem-behavior-in-the-classroom.html>
- OT Advance <http://occupational-therapy.advanceweb.com/Web-Extras/Online-Extras/Sensory-Strategies-for-the-Classroom.aspx>
- Therapy Street for Kids http://therapystreetforkids.com/files/School_sensory_handout.pdf

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 Phone #: 301-652-2682
 TDD: 1-800-377-8555
 Fax: 301-652-7711
www.aota.org



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References / Resources

Weisman Children's Outpatient Center Locations

- | | |
|--|---|
| 94 Brick Road
Marlton, NJ 08053
(856) 489-4520 | 450 Tilton Road
Suite 105
Northfield, NJ 08225
(609) 344-8400 |
| 2475 McClellan Ave.
Pennsauken, NJ 08109
(856) 675-1450 | 1206 W. Sherman Ave.
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Vineland, NJ 08360
(609) 896-6740 |
| 405 Hurffville-Cross Keys Rd.
Washington Twp., NJ 08080
(856) 218-3280 | |



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