

# An Overview of Sensory Processing Disorder

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# Overview

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# Our Sensory System

- Visual (Sight)
- Auditory (Sound)
- Olfactory (Smell)
- Gustatory (Taste)
- Tactile (Touch)
- Vestibular
- Proprioceptive

# Not Just The 5 Senses

- Vestibular: information that we receive through our inner ear that tells us where our body is in relation to the ground
- Proprioceptive: information we receive from our muscles and joints that tells us how hard to contract our muscles or move our joints in relation to the Earth's gravity

# Definition & Diagnosis

# Definition of Sensory Processing Disorder

- A disorder that refers to the way the nervous system receives messages from the environment through the senses, and turns them into appropriate motor and behavioral responses.

# The Diagnosis

- Typically an Occupational Therapist will diagnosis a child with SPD by using:
  - Standardized tests
  - Observations of the child during play and other daily activities
  - Caregiver and teacher questionnaires and interviews

# Subtypes



# Subtypes

- Sensory Modulation Disorder (SMD)
- Sensory Over-Responsivity (SOR)
- Sensory Under-Responsivity (SUR)
- Sensory Seeking (SS)
- Sensory-Based Motor Disorder (SBMD)
- Sensory Discrimination Disorder (SDD)

# Sensory Modulation Disorder (SMD)

- A child experiencing SMD may:
  - Show difficulty turning sensory information into behaviors that accurately match the nature and intensity of the message they are receiving, (Miller, 2006, p. 21).

# Sensory Over-Responsivity (SOR)

- A child experiencing SOR may:
  - Avoid sensory input
  - Show negative responses to sensory input (covering ears, eyes)
  - Appear very cautious and unwilling to take risks or try new things that may pose a risk
  - Experience a melt down in loud or busy environments

# Sensory Under-Responsivity (SUR)

- A child experiencing SUR may:
  - Tend to be passive, have low arousal levels, and appear lethargic
  - Do not have much response to activity around them (loud noises)
  - May show need for more sensory input than their peers

# Sensory Seeking (SS)

- A child experiencing SS may:
  - Appear hyperactive, high arousal level
  - Unaware of touch or pain on themselves, or unaware they are touching others too often or too hard
  - Participate in unsafe activities (climbing too high and jumping off)
  - Enjoy loud playing music or a busy environment around them

# Sensory-Based Motor Disorder (SBMD)

- A child experiencing SBMD may:
  - Have difficulty with balance, imitating and/or sequencing movements
  - Show preference for familiar activity
  - Have trouble using both sides of the body or crossing over midline with hands
  - Show poor gross and fine motor skills (from kicking a ball to handwriting)

# Sensory Discrimination Disorder (SDD)

- A child experiencing SDD may:
  - show difficulty interpreting and organizing sensory input
  - Experience trouble telling sensory experiences apart
  - Have most difficulty with lots of different types of sensory input

# Comorbidity



# Co-Morbid Conditions

- Attention Deficit Hyperactivity Disorder (ADHD)
- Autism
- Fragile X
- Fetal Alcohol Syndrome (FAS)
- Obsessive Compulsive Disorder (OCD)
- Tourette's Syndrome

# Attention Deficit Hyperactivity Disorder (ADHD)

- Children with ADHD:
- Are constantly in motion.
- Have difficulty staying focused on a specific task.
- Have trouble staying organized.
- These relate to SPD because:
- Can closely relate to a Sensory Seeker (SS).

# Autism

- Generally show difficulty with social interaction, verbal and nonverbal communication and repetitive behaviors, (Autism Speaks, 2013).
- These children tend to be more withdrawn from their environment because they are unsure of how to respond.
- Symptoms of autism and SPD often overlap; children with autism who have low arousal shows similar symptoms to sensory under-responsivity. Children with autism who have high arousal show similar symptoms to sensory over-responsivity.

# Fragile X

- A genetic condition involving the X chromosome.
- It is an inherited intellectual disability.
- Most common autism and autism spectrum disorders.
- Relationship to SPD:
  - Most closely related to sensory over-responsivity.
  - Could be due to too much sympathetic activity (speeds up reaction).
  - Or too little parasympathetic activity (slows down reactions).

# Fetal Alcohol Syndrome (FAS)

- FAS is a permanent birth defect syndrome caused by maternal consumption of alcohol during pregnancy.
- A study done in 2008 reports that children with FAS show similar symptoms as a child diagnosed with SPD.
- However, this conclusion is considered preliminary because of limitations such as size of group studied, instruments used, and the severity of their sensory issues.

# Obsessive Compulsive Disorder (OCD)

- OCD is diagnosed when obsessions or intrusive thoughts or images impact a person's ability to function on a daily basis, (NIMH, 2013).
- This relates to SPD because if a child is hypersensitive to receive information, such as feeling threatened by a touch or sight, they may form compulsions to make themselves feel safe from it.

# Tourette's Syndrome

- Tourette's Syndrome is characterized by multiple motor and vocal tics that a child displays, (Jewers, 2009).
- Many times, the motor or vocal tics occur when they experience some type of sensory stimulation.
- Not many studies have been done, however, researchers are interested in the connection between SPD and Tourette's Syndrome.

# Causes



# Causes

- Three possible causes of SPD that are being considered are:
  - Heredity
  - Prenatal Conditions and Birth Trauma
  - Environmental Factors

# Heredity

- Parents begin to notice similarities between their child's behavior and their own at a young age.
- Many studies have been done to prove this; one in particular found that 92% of children had at least one parent with symptoms of SPD (Miller, 2006, p. 285).
- However, study was not large or complete enough to establish a definitive link between the two, but researchers are still trying.

# Prenatal Conditions and Birth Trauma

- Prenatal conditions and birth trauma include: prolonged labor, breech birth, premature birth, or fetal distress.
- A study found that children who had sensory symptoms, had has some complication during birth, (Miller, 2006, p. 287).
- Although there is no definitive evidence of the connection to SPD, it is believed that prenatal and birth risk factors occur in children with SPD far more than typical developing children.

# Environmental Factors

- Studies have shown that children who were in orphanages for longer periods of time, showed symptoms of sensory over-responsivity.
- Children who experienced physical or sexual trauma in the home, also showed symptoms of sensory over-responsivity.
- Other possible factors are: poverty-related risks, lead poisoning, and newborn hospitalization.

# Treatment

# Sensory Integration (SI) Theory

- This theory is used by Occupational Therapists to treat those individual who have difficulty with sensory processing.
- It was developed by Jeans Ayres in 1950s and 60s and continues to evolve today.
- It's focus is to use purposeful activity and promoting an adaptive response to a sensory experience.
- Occurs in a sensory rich environment and much of the treatment comes in the context of play.

# Conflict with SI

- Lack of definitive research to support occupational therapists practice of SI.
- No funding for families who request SI.
- Little evidence of the effectiveness of the intervention.
- Fidelity.

# Fidelity

- Fidelity is the loyalty to the intended underlying theoretical and clinical guidelines that it hopes to prove in intervention.
- To establish fidelity, researchers should: thoroughly describe the intervention, identify specific features that make it different from other interventions, and create a procedure that can be evaluated for effectiveness.



# Goals of Treatment

# Goals

- Occupational therapist sets goals for child to work on that are unique to that them specifically.
- Make the goals a just right challenge for the child.
- Be defined by the priorities of the family.

# Goals Cont.

- Occupational performance: activities of daily living
- Self-regulation: ability to adapt to changes in environment; ability to focus and complete tasks
- Social participation: appropriate interaction with others; making and keeping friends
- Self-esteem: positive self-talk and perception of ones self

# Conclusion

# Conclusion

- Accurate diagnosis
- Individual needs
- Fidelity
- Treatment plan



**I HAVE ROUGH MORNINGS, I AM A PICKY EATER, I DON'T LIKE TO SHOWER, NOISE HURTS MY EARS, CLOTHES HURT MY SKIN, I DON'T LIKE TO BRUSH MY TEETH OR CUT MY NAILS, I HAVE MELTDOWNS, I GET SO ITCHY, I GET AGGRESSIVE AND FRUSTRATED, SOMETIMES I CAN BE VERY ACTIVE, OTHER TIMES, I DON'T MOVE AT ALL, I AM WITHDRAWN, I CRY, IT HURTS, I HAVE SENSORY PROCESSING DISORDER**

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