Sensory Processing Disorder: Education and Intervention

Sensory Processing Disorder (SPD) is a complicated diagnosis and requires more education than therapists receive in their formal training in order to treat effectively.

In this article, we provide a brief overview of the disorder, its subtypes, and a general approach to intervention.

We conclude with continuing education recommendations and information on using BrainWorks to create effective sensory diets.

What Is Sensory Processing?

Sensory processing is the brain's ability to receive sensory information from the environment or the body and respond appropriately.

A simple example of sensory processing would be a person removing her hand from a hot stove. The sensory input would be a hot burning sensation while the response would be removing her hand.

But many instances of sensory processing are far more subtle and involve complex neurological processes. For example, while writing this article, my brain is inhibiting sensory input competing for my attention.

Examples might include the sound of my dog in the other room, and the feel of my clothing on my skin. Also consider the response to input from my muscles allowing me to remain upright in my chair and position my fingers to type accurately.

The Eight Sensory Systems

Humans have eight sensory systems but many of us are only aware of the first five:

1. Visual (sight)
2. Auditory (sound)
3. Olfactory (smell)
4. Gustatory (taste)
5. Tactile (touch)

The remaining three are often called hidden senses because they play a vital role in how we respond to our environment:

1. Proprioception: This is our sense of muscle and joint movements and gives us information about where our body parts are in relation to each other. A common test of sobriety involves touching your nose with closed eyes. This test relies heavily on a fully-functional proprioceptive system.
2. Vestibular: This is our sense of where our bodies (especially our heads) are in relationship to gravity. It tells me if I'm moving and in which direction. It also contributes to eye movements and the ability to stay upright even when our eyes are closed.
3. Interoception: This sensory system provides vital information about physiological variables. Examples include indicators of hunger, thirst, illness, heart rate, and the need to go to the bathroom. Interoceptive awareness plays a vital role in identifying emotions as well.

Sensory Processing Disorder

SPD occurs in two ways. First, there may be an issue with detection of sensory input. Second, input may not be integrated in a way that results in an appropriate response. This can impact everything from motor coordination to emotional regulation. There are three subtypes of SPD:

1. **Sensory Modulation Disorder:** People with this subtype have difficulty regulating responses to sensory input. They may struggle to determine which forms of sensory input are most important at the moment. Because of this, they struggle with attention to task or become overstimulated easily. There are also three subtypes of Sensory Modulation Disorder, which are described later. This article titled What Is Sensory Modulation Disorder provides more information.
2. **Sensory-Based Motor Disorder:** This subtype primarily impacts motor planning and postural control. Our webinars on primitive reflexes by Kim Wiggins and dyspraxia by Lori Benson Adams address interventions applicable to children with sensory-based motor disorder.
3. **Sensory Discrimination Disorder:** With this subtype, people have difficulty differentiating subtle differences in sensory stimuli.

One study indicates that as many as 1 in 6 children experience sensory symptoms significant enough to impact their daily lives (Ben-Sasson, Carter, Briggs-Gowen, 2009). In general, research shows 1 in 20 children are affected by SPD (Ahn, Miller, Milberger, McIntosh, 2004).

SENSATIONAL BRAIN

Common Signs and Symptoms of SPD

Symptoms will vary from one child to the next depending on the subtype of SPD as well as which sensory systems are involved:

- Becomes agitated in busy environments
- Resists activities of daily living such as tooth brushing, nail trimming, hair washing
- Frequent meltdowns
- Often described as picky or finicky
- Either high energy (hyper, constant movement) or low energy (sedentary, lethargic)
- Difficulty concentrating
- Delayed motor skills
- Delayed speech and language

SPD Intervention

Treatment for SPD typically involves occupational therapy and frequently necessitates physical and speech therapy as well. Outpatient therapy often uses specialized equipment to provide the just-right challenge. This allows sensory systems to interpret and respond to sensory input in a more adaptive manner.

Occupational therapy frequently uses an approach known as Ayres Sensory Integration (ASI). This form of intervention is based on the work of Dr. Jean Ayres. She utilizes the principles of neuroplasticity as well as a developmental frame of reference to facilitate neurological change related to sensory processing. In addition to clinic-based intervention, most therapists recommend a sensory diet for use in the home and school.

School-based OT often focuses on creating sensory diets to help students manage their sensory needs effectively, so they can benefit from their education. The goal of sensory diets is to help children stay at the just-right level of arousal allowing them to focus and perform their best academically, behaviorally, and socially.

SENSATIONAL BRAIN

What Is a Sensory Diet?

Sensory diet is a term used to refer to the sensory input received by your nervous system each day. All of us use sensory strategies continually to keep our brains at that just-right level of arousal for the situation (alert and focused, relaxed and ready to sleep, etc.). But most of us do this without putting any conscious effort into the process. Here are just a few activities adults might use to meet the needs of our nervous systems:

- drinking coffee to help you wake up,
- twirling your hair while you listen,
- going on a walk to de-stress, or
- taking a hot shower to settle down before bed.

However, for some children, this process of staying at that just-right level of arousal doesn't happen naturally. For various reasons, they need assistance to learn to identify the needs of their nervous systems and to select sensory activities to meet those needs effectively. This is where a good sensory diet with a teaching component comes in. Most children who benefit from the use of a sensory diet have one of the three subtypes of Sensory Modulation Disorder.