

UNDERSTANDING

SENSORY PROCESSING DISORDER

E-BOOK BY AVCTC



UNDERSTANDING SPD

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DOES MY CHILD HAVE SPD?

UNDERSTANDING SENSORY PROCESSING DISORDER

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Your child has big reactions to tags on their clothing. If you cannot find the exact brand of cereal your child will refuse to eat anything. Your child plays too aggressively with other children so they don't want to play with him. Your child's shirt collar is constantly wet because they are chewing on it all day long. Noises that you don't even notice seem to bother your child. Your child is afraid to swing or climb the ladder at the park.

**IF ANY OF THIS
SOUNDS FAMILIAR, I
THINK YOU ARE IN
THE RIGHT PLACE.**

It is all too often that the "behaviors" and challenges described above get chalked up to having a difficult or stubborn kid or even more often to bad parenting, but there is very likely more to the story. Children with Sensory Processing Disorder often have problems with skills and other abilities necessary for school and childhood demands. As a result, they frequently suffer from emotional, social, and educational challenges. This includes the inability to make friends or be a part of a group, have a poor concept of themselves, have academic failure, and



may be labeled clumsy, uncooperative, belligerent, disruptive, or "out of control." Unfortunately we see that anxiety, depression, aggression, or other behavior problems can follow. Because children with sensory processing challenges look "typically developing" parents are often blamed for their children's behavior by people who are unaware of the child's invisible disability

In the following pages, you will get a thorough explanation all about sensory processing. I hope this is a helpful tool for you in better understanding yourself or your child. First we will cover a



description of the eight senses followed by a description of what Sensory Processing is and how it should work. After that we will go into what it might look like for people who have sensory processing challenges including the various subtypes that exist within sensory processing disorder (SPD). At the end we will give you pointers on what to do if you suspect your child has sensory processing difficulties as well as a red flag worksheet that can aid in identifying if your child may be struggling with sensory processing difficulties.

SURPRISE! WE HAVE 8 SENSES.



I'm sure you remember learning about your senses growing up: sight (vision), sound (auditory), taste (gustatory), smell (olfactory) and touch (tactile). These senses are rather easy to understand and learn which is likely why they are the only sense we learned about in our early years. The three additional senses that we aren't taught about at an early age, while arguably more important to our development, are much more complicated to understand. The three additional

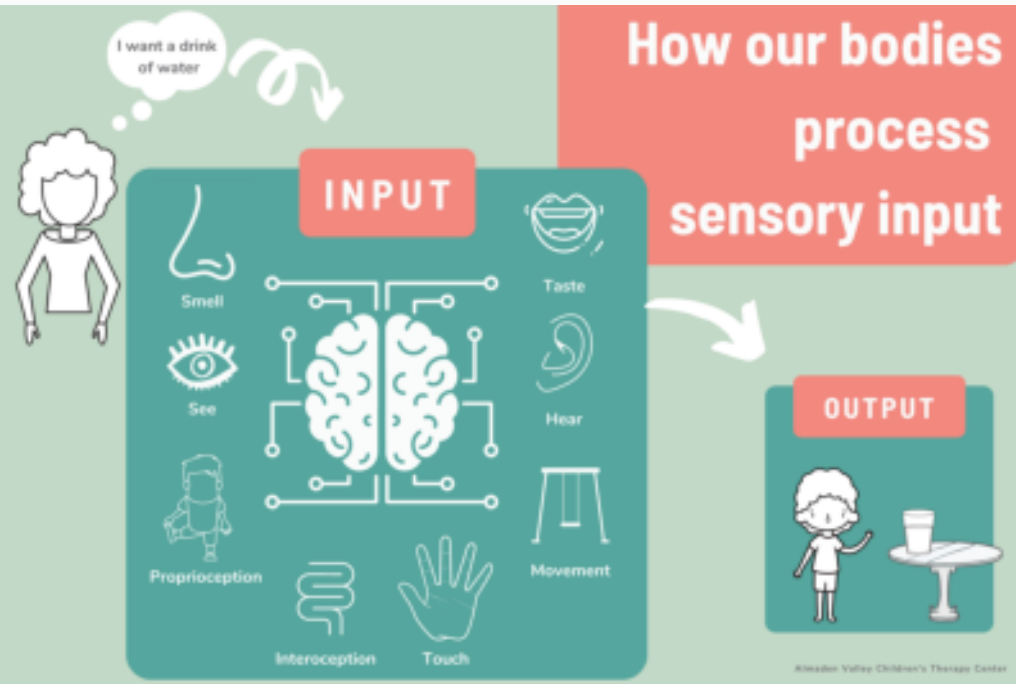
senses are: Vestibular (balance and movement), Proprioception (body awareness), and Interoception (awareness of the internal state of our body).

All eight sensory systems convey information to us about the outside world. Vestibular information is detected from organs within the inner ear and it tells us how our body is moving relative to gravity – are we moving, what direction, what speed. Proprioception is detected from

sensations received in the muscles and joints and it tells us the position, location, orientation, and movement of the body muscles and joints. In simpler terms, vestibular input tells us how the body is moving and proprioceptive input is where the body is at. The final sense is called Interoception. Interoception allows us to be aware of our internal bodily states: do I need to go to the bathroom, am I cold, am I hungry, am I full? The perceived sensation of temperature, pain, nausea, hunger, thirst, physical anxiety or frustration is the result of interoception.

WHAT IS SENSORY PROCESSING?

Sensory processing refers to the way our nervous system (brain, spinal cord and peripheral nerves) receives messages from our 8 sensory receptors, integrates/process that information, and then turns them into an appropriate response/output (see image below). Sensory processing occurs at all times for all people. We are constantly receiving sensory information, our brain is integrating all the information and then we are using that information to inform how to engage with the world.



Consider a child drinking from a cup. The child's body is receiving sensory input from all of their senses. Here are just a few of the sensations they are receiving from their environment as they get ready to drink:

- smell: sweet smell from beverage, florally smell from candle, smell of dinner being cooked
- sight: cup is small, cup is half full,

cup appears to be plastic, other objects on counter within child's visual field, art on the wall, dad is moving around the kitchen

- sounds: hears noise from the lawn mower outside, hears the food sizzling on the stove
- touch: clothes feel soft and comfortable, sitting on a hard surface, residual liquid on face from last sip



In order for a child to successfully take a sip, their nervous system must make sense of all of the sensory information they are receiving by integrating and processing it. Their brain must use all of that information in order to decide just how to complete the task: how fast should I lift the cup, how much force should I exert onto the cup, how much should I tip the cup, etc. The child is then able to use all of the information gathered from its senses to perform the task (output): take one sip.

This process occurs for every single action we take. Fortunately for most, it is an automatic process that occurs so fast we do not think twice. For individuals with sensory processing disorder there is difficulty with some aspect of this process. Sensory Processing Disorder (SPD) exists when sensory signals are either not detected correctly or they don't get organized into appropriate responses.

In addition to being able to help us to interact with our environment through motor actions, we require sensory input in order to stay alert/regulated. Each person has unique sensory needs/preferences based on how their body receives and processes sensory information. Consider for a moment what types of things you do if you have to listen and pay attention for a long period of time. Do you fill up your cup with your favorite drink? Do you stand up every so often to walk around? Do you chew gum? Have sour candies? Shake your leg? These are all sensory strategies you are using to help your body to stay alert. For me, I often benefit from having a cold drink (usually an iced coffee with a straw) and I sometimes find myself resting my face on my hands (deep pressure input) in order to stay focused.

WHEN SENSORY PROCESSING CAUSES DIFFICULTIES

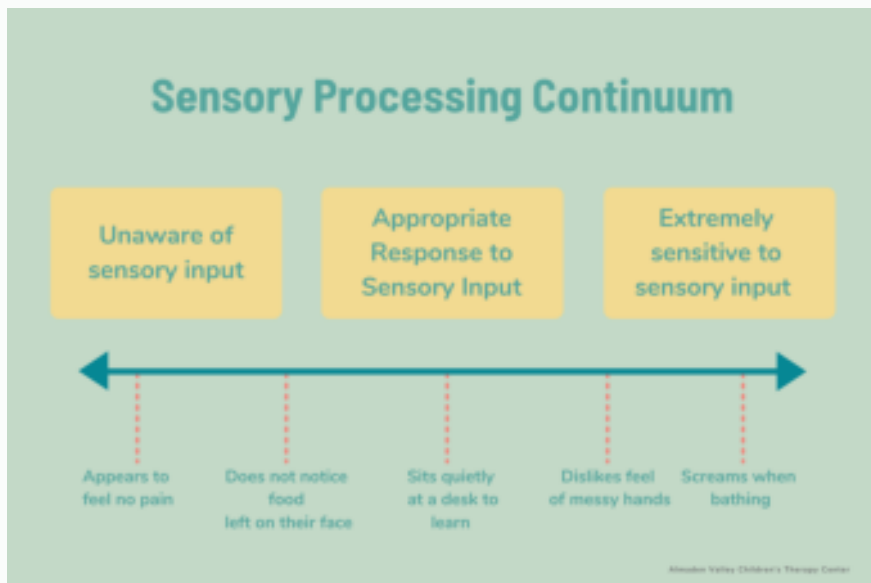


Sensory processing is only considered 'disordered' if it impacts a person's daily lives. I like to think of sensory processing as a continuum. We are all somewhere on the continuum since we all must take in sensory information in order to interact with our environment and remain alert and attentive.

SENSORY PROCESSING IS ONLY CONSIDERED DISORDERED IF IT IMPACTS A PERSON'S DAILY LIFE

Despite each of us having sensory preferences/needs (like me benefiting from drinking an iced beverage from a straw to help me pay attention at a day long learning event), most of us do not have sensory processing disorder. We would likely fall in the middle of the continuum. We are able to receive sensory input, process/integrate the information in our nervous system and then use it to successfully interact with our environment and maintain an appropriate state of arousal.

However, many individuals are more sensitive or less sensitive to sensory information and would fall to the right or left ends of the continuum respectively. Sensory Processing Disorder is likely present when the effects of a child's sensory processing challenges are chronic are impacting their daily lives.



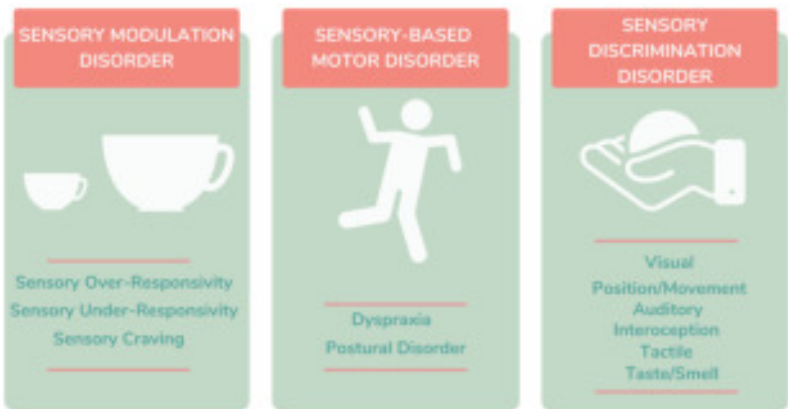
Going back to my example earlier of how I incorporate sensory strategies to stay alert during a meeting, if I could not remain in my meeting, became combative or was unable to listen or participate appropriately because I was having a difficult time organizing the various sensory aspects occurring, it is possible I am experiencing Sensory Processing Disorder. SPD can affect a child's behavior, influencing how they learn, move through their environment, relate to others, and how they feel about themselves (Kranowitz, 2005). A study done by Alice Carter and colleagues in 2009 suggests that 1 in every 6 children experiences sensory symptoms that may be significant enough to affect aspects of everyday life functions. Many individuals with SPD may have co-occurring diagnoses including autism or ADHD however it is also

possible to have SPD alone. A groundbreaking study completed by Dr. Marco and colleagues concluded that "although sensory processing differences are well known to occur in association with other clinical conditions such as autism, there are individuals with sensory processing differences who do not meet the criteria for other known disorders. This study is the first to show that children affected with isolated sensory processing disorders have quantifiable differences in their brain structure." Unfortunately it is not uncommon for a child with SPD to be misdiagnosed or not identified until late since many healthcare professionals are not appropriately trained to understand and recognize sensory challenges.

SPD SUBTYPES

Sensory Processing Disorder can be hard to understand because no two people with SPD present the same. Additionally, an individual can have difficulties in processing just one sense or many. According to Dr. Lucy Jane Miller, "children do not fall neatly into only one of the subtypes of Sensory Processing Disorder; most of the time children have multiple symptoms and fit into more than one subtype of SPD." According to the STAR Institute, there are over 260,000 different patterns of expression of SPD which is why it is so important that each individual undergo an evaluation to understand their unique needs which evolve and change over time. At AVCTC we strongly believe that there is not a one size fits all approach to supporting children with SPD. A skilled Occupational Therapist will observe and evaluate how your child engages with their environment and how they perform on a variety of measures to better understand their unique sensory profile.

Subtypes of Sensory Processing Disorder



<https://www.spdian.org/learn/subtypes-of-spd>

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Individuals with sensory processing challenges fall into one of the following categories: 1) Sensory Modulation Disorder, 2) Sensory-Based Motor Disorder or 3) Sensory Discrimination Disorder. A brief summary of each is described here with a more thorough description below. Sensory modulation disorder refers to individuals who have difficulty appropriately controlling/regulating their responses to sensory stimuli (such as kids who become upset by clothing tags or

kids who are constantly crashing into others to obtain deep input). Sensory Based Motor Disorder refers to people who have difficulties with balance, motor coordination, or the performance of skilled motor tasks as a result of poor tactile, proprioceptive, and/or vestibular processing. Finally Sensory Discrimination Disorder means that you have difficulty interpreting sensory information from any of the 8 sensory domain (e.g. you are unable to accurately identify where you are

touched). Now we will go into more detail including descriptions of the subtypes of each category.

Sensory Modulation Disorder (SMD) refers to a child who has difficulty managing their responses to sensory stimuli. There are 3 subtypes of sensory modulation disorder which are over-responsive, under-responsive, and seeking. An analogy that is helpful when trying to understand sensory modulation disorder is thinking about filling up a coffee cup: Imagine our bodies are like a coffee cup and the liquid that we pour into it (iced coffee for me) is the sensory input we receive from the environment. A child who is over responsive (or sensitive) to sensory information has a really small cup. When you pour sensory input into the cup it is quick to fill up and overflow overwhelming the child. On the other hand a child who is under responsive (less aware of sensory input) has a really big cup. If we pour the same amount of sensory input

into their larger cup it will barely fill up. To be at a just right state of regulation, we need our cup to be full (but not too full!). For a child who is sensory craving, if we go back to the cup analogy, imagine the child's cup has a hole in it. No amount of sensory input will ever be able to adequately fill it up.

Sensory Based Motor Disorder (SBMD) refers to a child who has difficulty with balance, motor coordination, and the performance of skilled motor tasks due to not having accurate sensory information. There are two subtypes for SBMD and they include postural disorder and dyspraxia which both manifest because a child has deficits in either tactile, proprioceptive, and/or vestibular processing. Individuals with postural disorders have difficulty stabilizing their body during movement or at rest in order to meet the demands of the environment. For example, a child with postural disorder may have difficulty sitting

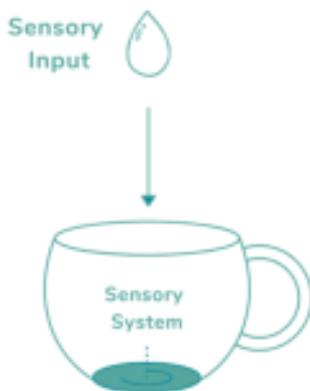
OVER-RESPONSIVE

Only need a little input before your cup is filled or overflowing



UNDER-RESPONSIVE

Need a lot of input before your cup is filled



SENSORY CRAVING

Never completely fill up the cup due to having a hole in the bottom



upright in their chair for the same length of time as their peers or they may frequently fall over when navigating uneven surfaces that requires them to balance. Individuals with dyspraxia have trouble processing sensory information properly, resulting in problems planning and carrying out new motor actions. You might notice they have trouble forming an idea, planning a sequence of actions or performing new motor tasks. Often a child with dyspraxia may appear clumsy, awkward, and accident-prone. For example, an individual with dyspraxia may frequently break toys, have poor ball skills, or have trouble with fine motor activities.

Sensory Discrimination Disorder (SDD) can occur in any combination of sensory domains: visual, auditory, proprioceptive, vestibular, tactile, olfactory, gustatory, and/or interoceptive. The dictionary defines discrimination as the "Recognition and understanding of the difference between one thing and another." Therefore sensory discrimination allows us to recognize and interpret subtle differences between sensory stimuli. One example you might see is tactile discrimination disorder. An individual who has difficulty discriminating tactile input would not be able to easily recognize the different qualities of an item they are touching by feel alone. They may not be able to interpret what they are touching as hard or soft, wet or dry, etc. This individual would likely struggle to grab something out of their pocket without pulling everything out or button their pants without looking at the button.



**OFTEN A CHILD
WITH DYSPRAXIA
MAY APPEAR
CLUMSY,
AWKWARD, AND
ACCIDENT-PRONE.**

DOES MY CHILD HAVE SPD?



After reading this, you may be wondering if your own child may have Sensory Processing challenges. On the next page you can complete our free Red Flags checklist which includes some of the most common red flags by age group. This checklist will help you determine if your child may benefit from an Occupational Therapy evaluation to help get to the bottom of their challenges. If you determine that your child would benefit from OT, I suggest having an evaluation completed by a skilled licensed occupational therapist who has advanced training in Sensory Processing Disorder. An evaluation of a child's sensory processing will likely include a combination of standardized and non-standardized assessment tools in a safe and fun environment.

Of course, if you are in San Jose and you need help determining if your child's sensory processing is impacting their ability to succeed, our office offers free phone screenings and we would love to support your family. You can sign up for a free screening on our website.

SPD RED FLAGS

INFANTS & TODDLERS

- PROBLEMS SLEEPING
- REFUSES TO GO TO ANYONE BUT THEIR MOM FOR COMFORT
- IRRITABLE WHEN BEING DRESSED; DOESN'T LIKE CLOTHES
- RARELY PLAYS WITH TOYS
- RESISTS CUDDLING
- CANNOT CALM SELF

PRESCHOOLERS

- OVER-SENSITIVE TO TOUCH, NOISES, SMELLS, OTHER PEOPLE
- DIFFICULTY MAKING FRIENDS
- DIFFICULTY DRESSING, EATING, SLEEPING, TOILET TRAINING
- CLUMSY; POOR MOTOR SKILLS; WEAK
- IN CONSTANT MOTION; IN EVERYONE ELSE'S "FACE AND SPACE"
- FREQUENT OR LONG TEMPER TANTRUMS

GRADE-SCHOOLERS

- OVER-SENSITIVE TO TOUCH, NOISE, SMELLS, OTHER PEOPLE
- EASILY DISTRACTED, FIDGETY, CRAVES MOVEMENT, AGGRESSIVE
- EASILY OVERWHELMED
- DIFFICULTY WITH HANDWRITING OR MOTOR ACTIVITIES
- DIFFICULTY MAKING FRIENDS
- UNAWARE OF PAIN AND/OR OTHER PEOPLE

GRADE-SCHOOLERS

- OVER-SENSITIVE TO TOUCH, NOISE, SMELLS, AND OTHER PEOPLE
- POOR SELF-ESTEEM; AFRAID OF FAILING AT NEW TASKS
- LETHARGIC AND SLOW
- ALWAYS ON THE GO; IMPULSIVE; DISTRACTIBLE
- LEAVES TASKS UNCOMPLETED
- CLUMSY, SLOW, POOR MOTOR SKILLS OR HANDWRITING

Recreated from SPD Foundation

