Sensory Processing

Amy Lerner, MS, OTR/L

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Sensory integration is the process of taking in information about our environment through our senses in order to interact socially, learn and develop motor skills. We typically think of our senses as including:

touch

vision

hearing

smell

taste

There are two other senses that are critical to the development of sensory integration.

proprioception – this is a sense that arises from receptors in muscles and joints that basically means a sense of one's own. This is the sense that tells us where our body ends and the rest of the world begins.

vestibular- this helps us with our sense of balance and tells us where our body is moving in space.

Children with sensory processing disorders generally have difficulties with touch, proprioception and vestibular.

Many children with Sensory Processing Disorder have difficulty processing everyday sensory information (e.g., sounds, sights, smells). This is called “sensory sensitivity,” and it can have a profound effect on a child’s life.

Children can be over-sensitive (i.e., hypersensitive) or under-sensitive (i.e., hyposensitive) in any of the following seven areas:

Type of input	Overresponsive	Underresponsive	Seeker	Behaviors you may see
TACTILE	-avoids touching messy textures such as shaving cream -difficulty with types of clothing especially labels	-does not notice when hands or face is messing -does not notice when clothes are not on correctly	-seeks out experiences to touch things -constantly fidgets with objects	-constantly runs hands through a certain texture -puts non-food objects in mouth
VISUAL	-avoids being in a room with bright lights -difficulty focusing on a busy disordered picture such as “I spy”	-complains eyes are tired when looking at a book -difficulty focusing on a still image	-stands in front of a mirror for a long time -spins objects and stares at them	-confuses b and d -difficulty finding an object in a picture or draw
AUDITORY	-covers ears in a noisy environment -makes noises to drown out noises	-does not respond to name being called -- Often speaks very loudly -has difficulty paying attention	-likes music that is fast and/or loud -makes noises in quiet environments	-can have a hard time discriminating between similar words
PROPRIO-CEPTIVE	-unable to sit for long periods of time -avoids jumping or bouncing activities	-slouches when sitting in a chair or on floor -sits for a long time	-seems to always be jumping or bouncing. -crashes into couches or bedding at home	-falls or bumps into objects -has difficulty grading movement when grabbing, pulling, or pushing
VESTI-BULAR	-refuses the swing, slide, and spinning -anxious when feet leave the ground	-does not get dizzy when spinning -seems to “wake up” when receiving intense input	-enjoys jumping from heights -constantly climbing, spinning Running	-safety issues -doesn’t adjust posture to avoid getting hurt on swings, stairs etc.
TASTE/ SMELL	-limited food repertoire -avoids spicy foods	-prefers spicy foods -not aware of foul odors	-overstuffs mouth -aware of perfumes on others	-overstuffs mouth -prefers consistent textures and will not mix

1. Sight—

Situated in the retina of the eye and activated by light, our sight helps us to define objects, people, colors, contrast and spatial boundaries. Children with sensory problems may experience the following differences:

Hyposensitive:

- A central object is magnified, but things on the periphery are blurred.
- Central vision is blurred, but peripheral vision quite sharp.
- Objects appear quite dark or lose some of their features.
- Poor depth perception – problems with throwing and catching; clumsiness.

Hypersensitive:

- Distorted vision: objects and bright lights can appear to jump around.
- Easier and more pleasurable to focus on a detail rather than the whole object.
- Images may fragment.

2. Sound—

This is the most commonly recognized form of sensory impairment. Hearing impairments can affect a person's ability to communicate as well as his balance. Children may experience the following differences:

Hyposensitive:

- May not acknowledge particular sounds.
- May only hear sounds in one ear, the other ear having only partial hearing or none at all.
- Might enjoy crowded, noisy places or bang doors and objects.

Hypersensitive:

- Inability to cut out sounds – notably background noise, which often leads to difficulties concentrating.
- Noise can be magnified and sounds become distorted and muddled.
- Particularly sensitive to sound and can, for example, hear conversations in the distance

3. Touch—

Touch is important for social development. It helps us to assess the environment we are in and react accordingly. It also allows us to feel pain. Children may experience the following differences:

Hyposensitive:

- Enjoys heavy objects (e.g., weighted blankets) on top of them.
- Has a high pain threshold.
- Holds others tightly - needs to do so before there is a sensation of having applied any pressure.
- May self-harm.

Hypersensitive:

- Difficulties brushing and washing hair because head is sensitive.
- Dislikes having anything on hands or feet.
- Only likes certain types of clothing or textures.
- Touch can be painful and uncomfortable; child may not like to be touched, and this can affect his relationships with others.

4. Taste—

Chemical receptors in the tongue tell us about different tastes (e.g., sweet, sour, spicy, etc.). Children may experience the following differences:

Hyposensitive:

- Eats everything (e.g., soil, grass, Play-dough, etc.). This is called “pica.”
- Likes very spicy foods.

Hypersensitive:

- Certain textures cause discomfort; some children will only eat smooth foods (e.g., mashed potatoes, ice-cream).
- Finds some flavors and foods too strong and overpowering because of very sensitive taste buds; has a restricted diet.

5. Smell—

Chemical receptors in the nose tell us about smells in our immediate environment. Smell is the first sense we rely upon. Children may experience the following differences:

Hyposensitive:

- Some kids may lick things to get a better sense of what they are.
- Some kids have no sense of smell and fail to notice extreme odors (can include their own body odor).

Hypersensitive:

- Dislikes people with distinctive perfumes, shampoos, etc.
- Smells can be intense and overpowering. This can cause toileting problems.

6. Balance (vestibular)—

Situated in the inner ear, our vestibular system helps us maintain our balance and posture, and understand where and how fast our bodies are moving. Children may experience the following differences:

Hyposensitive:

- A need to rock, swing or spin to get some sensory input.

Hypersensitive:

- Car sickness.
- Difficulties stopping quickly or during an activity.
- Difficulties with activities like sport, where the child needs to control his movements.
- Difficulties with activities where the head is not upright or feet

7. Body awareness (proprioception)—

Situated in the muscles and joints, our body awareness system tells us where our bodies are in space, and how different body parts are moving. Children may experience the following differences:

Hyposensitive:

- Hard to navigate rooms and avoid obstructions.
- May bump into people.
- Stands too close to others, because they cannot measure their proximity to other people and judge personal space.

Hypersensitive:

- Moves whole body to look at something.
- Difficulties with fine motor skills: manipulating small objects (e.g., buttons, shoe laces).

Newest Sensory Area - Interoception

- Interoception helps you understand and feel what's going on inside your body. For instance, you know if your heart is beating fast or if you need to breathe more deeply. 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.

- For kids with sensory processing issues, the brain may have trouble making sense of that information. They may not be able to tell when they're feeling pain or when their bladder is full. An itch may feel like pain or pain may feel ticklish.

- Kids who struggle with the interoceptive sense can also have trouble "feeling" their emotions. They may not be as tuned in to the body cues that help interpret emotion. Without being able to feel and interpret those body sensations, it's harder to clearly identify the emotion.

- For instance, a child may not "feel" fear because he doesn't recognize that his muscles are tense, his breathing is shallow and his heart is racing.

Heavy Work Activities for Kids

http://www.andnextcomesL.com

AT HOME

- Carry groceries into house
- Carry a laundry basket full of clothes
- Build a fort
- Move garbage or recycling bins to the curb
- Make the bed
- Do outdoor chores
- Do indoor chores
- Load/unload dishwasher
- Push or move furniture
- Sort recycling
- Water plants with a watering can
- Stack chairs
- Wash the car
- Remove couch cushions and put them back
- Fill a pillowcase or bag with stuffed animals
- Move or build with real tools
- Give the dog a bath
- Carry a small pet
- Drink thick liquids through a straw
- Clean windows
- Have a pillow fight
- Push chairs in at the table
- Push or pull boxes filled with toys or books
- Stuff pillowcases
- Stuff duvet into a duvet cover
- Empty garbage can
- Pull laundry out of washer or dryer
- Climb a chair or couch
- Make an obstacle course
- Stack and unstack cans or boxes of food

Primitive reflexes

When a baby is born there are reflexes that come from the brain to guide their growth. Most people only know about reflexes in that many are checked with a hammer when we go in for a check-up. However, when children have a neurological disorder many can be delayed, absent, or stay too long.
It is felt that these reflexes work from birth to help the child develop physically to gain both mobility and stability. The list of primitive reflexes is long and complex so I am not going to go into detail and most reflexes get integrated as the child matures. I will give you an example of how this impacted Carrie.

All children develop a reflex called the ATNR which is called the asymmetric tonic neck reflex. This starts in utero and should be integrated by 6 months. This serves the purpose of helping the child grab toys. The way it works is that when a child looks to the left or right the same arm extends and the other arm flexes. It resembles a fencing pose. Therefore, when the child is looking at a toy her arm is in the right place to touch it. With Carrie this lasted too long and she maintained the stance when sitting and standing and stopped her from using voluntary arm movements. The purpose of the ATNR is to provide stimulation for developing muscle tone and the vestibular system whilst in the womb before birth. It also assists with the birthing process by inhibiting limb movement and slowing it down so that the baby uses a "corkscrew" movement through the birth passage. ATNR helps with eye-hand co-ordination and serves as a precursor to this skill. A retained ATNR can have a significant impact on a child's development and it is often thought to have a major effect on the child's physical, cognitive, social and emotional progress, thus affecting their ability to function well in school. The retained reflex will continue to influence limb movement every time the head is turned and will have physical influences that impact on all other areas.

The ATNR will interfere with a baby's ability to reach things within the midline position of their body. Once this reflex is integrated (around 6 months) the baby begins to reach and have functional ability with the midline of their body. A strongly retained ATNR will affect this ability so that the baby finds it difficult for hands, feet and eyes to cross the midline. Visual tracking and eye pursuit of an object becomes difficult and this later results in difficulty with reading as the child can't easily make the rapid forwards and backwards eye movements that are essential for reading. Writing will also be difficult due to this as well due to the reflex causing the hand to involuntarily extend as the head is turned toward the hand. The child will find it difficult to maintain a pen grip and may compensate with a lot of pressure in a tight grip causing cramps and making their writing messy and illegible. The child may also find it difficult to copy written work as their eyes will follow their hand and not the text.