



Sensory
Processing
Disorder:
Impact on a
Child's Behavior in
the Surgical
Setting

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**We are bombarded with
millions of sensory stimuli
every second!!!**

- ▣ We are aware of some stimuli
- ▣ We are not aware of some stimuli

Sensory Processing

Is the complicated work your brain performs to make sense of the gazillion bits of information that come flooding in every second from your environment

(<http://www.spdfoundation.net>)

Sensory Processing Disorder

Is a condition that exists when sensory signals *are not* organized into appropriate responses (<http://www.spdfoundation.net>)

When the body is **unable** to perceive or respond to stimuli appropriately

DSM5 criteria

- ▣ Diagnosis based on presence of difficulties in detecting, modulating, interpreting or organizing sensory stimuli to the extent that these deficits impair daily functioning and participation

Risk Factors

- ▣ Low birth weight/ prematurity
- ▣ Prenatal complications
- ▣ Maternal stress/illness
- ▣ Delivery complications
- ▣ Minority
- ▣ Lower socioeconomic status
- ▣ Single parents

To integrate stimuli we must:

- ▣ **Alert**- attend or orient to stimuli
- ▣ **Select**- filter out non-essential information
- ▣ **Protect**- defend ourselves if stimuli is overwhelming or dangerous.
- ▣ **Organize**- into meaningful information

Sensory Processing Disorder

- Identified by A. Jean Ayers, Occupational Therapist
- Influences behavior
- Impedes learning
- Impacts movement and coordination
- Interferes with relationships and social skills
- Affects children in the health care setting
- Approx. 1 in 20 people in general population
- Approx. 8 in 10 in the autistic population
- Considered for acceptance in DSM-5

Prevalence of SPD

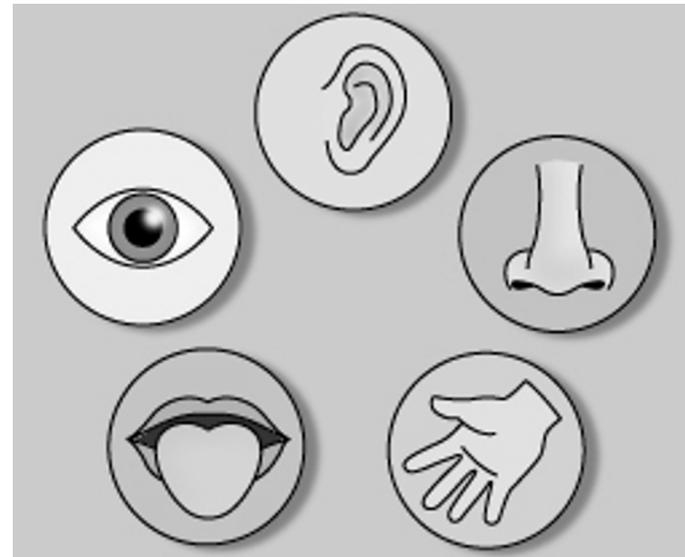
- * 1 in 20 people in general population
SPD-Sensory Over-Responsivity
- * 8 in 10 in the autistic population

Sensory Processing Disorder in the Healthcare Setting

- ▣ Unpredictable behaviors
- ▣ Safety challenges
- ▣ Anxiety
- ▣ Potential for PTSD from experience

Stimuli are interpreted by using different sensory systems:

- Tactile
- Auditory
- Visual
- Proprioception
- Vestibular
- Olfactory
- Gustatory
- Interoception



Tactile Processing is the ability to discriminate different types of touch



Tactile dysfunctions can cause:

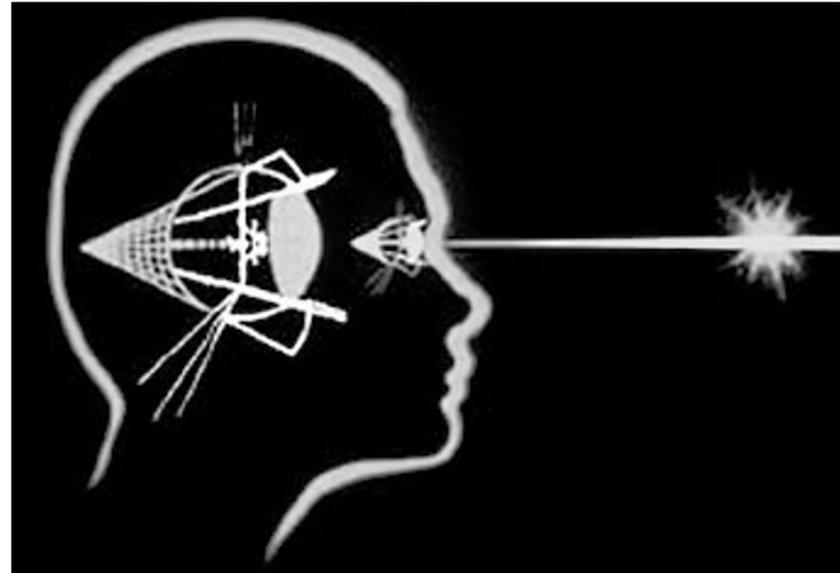
- ▣ Learning disabilities – touch is too distracting
- ▣ Impaired social skills
- ▣ Poor imagination- limited experiences
- ▣ Inflexible and rigid
- ▣ Eating challenges
- ▣ Clothing and grooming problems
- ▣ Tantrums, hitting, kicking, etc. –in response to **perceived** threat of touch from others



Auditory Processing is the ability to receive, discriminate, and filter sound in order to understand it

Auditory Processing difficulties can cause:

- ▣ Poor memory and sequencing skills
- ▣ Trouble following directions
- ▣ Trouble paying attention
- ▣ Speech and language disorders
- ▣ Anxiety in loud environments
- ▣ Difficulty with “Wh” questions
- ▣ Poor social skills and interpersonal relationships



**Visual Processing is the ability
to identify and interpret visual
stimuli**

Visual processing difficulties can cause:

- ▣ Trouble with visual tracking
- ▣ Sensitivity to bright colors and lights, especially flashing lights
- ▣ Difficulty discriminating foreground and background
- ▣ Dyslexia and other learning disabilities
- ▣ Difficulty reading non-verbal cues

Proprioception has to do with the joints and how they work



Proprioception:

- ▣ Defines the body's position in space
- ▣ Determines how we interact with the environment.
- ▣ Determines how much force we use when performing activities.

Proprioception processing difficulties can cause:

- ▣ A love to crash into others and things
- ▣ Risk taking behaviors
- ▣ Chewing on inappropriate objects
- ▣ Seeking deep pressure input (to give them boundaries)
- ▣ “Bull in china shop”
- ▣ Motor planning problems
- ▣ Poor Self esteem
- ▣ Over or under responsive to pain

Vestibular stimuli impact our reaction to gravity, movement and balance



Vestibular Processing difficulties can cause

- ▣ Excessive movement
- ▣ Restlessness and distractibility
- ▣ Risk taking activities
- ▣ Speech/ language problems
- ▣ Poor posture or muscle tone
- ▣ On the move any way they can!!!!
- ▣ Excessive swinging and jumping

Other Processing Difficulties

- ▣ **Olfactory**- involving sensitivity to smells or sensory seeking certain aromas.
- ▣ **Gustatory** – involving taste and oral input related to food
- ▣ **Interoception** - Sensations from inside the body and that are perceived through internal organs

I have Autism and Sensory Processing Disorder

I have trouble focusing/concentrating---

---I DON'T like crowds

I DON'T like my hair washed,
cut or combed-----

---Bright lights hurt my eyes

I DON'T like LOUD noises---

--I have "selective hearing"
and difficulty listening
if there are other
noises around me

I chew on EVERYTHING---

I DON'T like my teeth brushed---
I am a VERY PICKY eater.

---Strong smells make me sick

Certain smells and textures
make me gag---

I am unaware of normal
touch and pain. I am often
rough and I DON'T know it.---

---My motor skills are off,
so I am a bit clumsy

I DON'T like my finger
and toe nails cut---

I AM just a boy,
and I just want to
be LOVED!

A Legion For Liam

* With
permission

Points to remember

- ▣ Will not exhibit every characteristic
- ▣ May demonstrate dysfunction one day, but not the next
- ▣ Can demonstrate characteristics of dysfunction, yet not have the dysfunction
- ▣ May be over or under aroused
- ▣ Everyone has some sensory integration problems, no one is regulated **all the time.**

(Kranowitz, Carol, 1998).

Peri-Anesthesia Staff should be aware:

- ▣ Pre op sets the stage for entire experience
- ▣ Goal is to decrease stress
- ▣ Safety is priority
- ▣ Post traumatic stress possible
- ▣ Rigidity is often anxiety driven
- ▣ Transitions are difficult
- ▣ Covid-19 adds to stress

Parents are Stressed!!!

- ▣ Feeling as though they are being judged
- ▣ Unable to control child
- ▣ Afraid of how child will react and act
- ▣ Worried about medical prognosis
- ▣ Concurrent medical conditions- cancer, epilepsy
- ▣ Children react to other's stress

Nursing's Role....

- ▣ Be a “*Sensory Detective*”
- ▣ Anticipate possible stressors/triggers
- ▣ Establish a plan (music, fidget toy)
- ▣ Include patient and family in developing plan
- ▣ Social story for new situations
- ▣ Practice new skills in less threatening environments
- ▣ Provide opportunities for sensory input (heavy lifting, deep pressure)

Scenario #1 Johnny's Pre-op

You are the pre-op nurse ready to bring Johnny back to the pre-op area. You notice the following behaviors as you call him back:

Johnny

- ▣ Accompanied by 2 family members.
- ▣ Wearing a Monkey harness
- ▣ Spinning
- ▣ Flapping
- ▣ Climbing and jumping from chair to chair
- ▣ Hanging on his father's arm
- ▣ Running back and forth between chairs

Johnny is exhibiting signs of
Proprioceptive and Vestibular
Seeking

Interventions for Johnny:

- ▣ Provide Heavy Work for him (carry heavy item, pull wagon, etc.)
- ▣ Jump to pre-op room
- ▣ Weighted blanket or lead vest
- ▣ Allow to move around
- ▣ Provide access to riding toys
- ▣ Provide vibrating toys/ balls
- ▣ Blanket Burrito on stretcher
- ▣ Frame area to give boundaries
- ▣ Give a ride in a wagon or wheelchair
- ▣ Deep pressure massage

Scenario #2 Ryan's resistance

You are the OR nurse meeting Ryan for the first time before you take him back for his scheduled dental rehab. When you enter the room, you see Ryan:

Ryan

- ▣ Refusing vital sign assessment
- ▣ Walking on toes- pacing around room
- ▣ Wearing crocs
- ▣ Long sleeve shirt in summer
- ▣ Stretch pants
- ▣ Refuse to change into pajamas
- ▣ Has pulled off his armband
- ▣ Not wanting to wash hands
- ▣ Disheveled hair

Ryan is exhibiting
tactile defensive behaviors

Interventions for Ryan

- ▣ Make allowances for tactile defensiveness
 - IE: arm bands, gown , socks , etc. may need to be changed after sedation
- ▣ Vitals- give time to transition
 - (allow to play with cuff, stethoscope, etc.)
- ▣ Give him a job (look for red sign, etc.)
- ▣ Include family to develop plan
- ▣ Use visuals / social stories to help child know what is next
- ▣ Discuss pre-med with anesthesia
- ▣ Allow comfort item
- ▣ Parental presence for induction if possible

Scenario #3 Susie

You are the PACU nurse who has just received report on a sleeping 3 year old Susie post MRI. Other than a febrile seizure 2 weeks ago, there was no significant history or concerns given in report. As Susie wakes up, you become suspicious of her behavior:

Susie

- ▣ Jumps/ startled with sound of alarms
- ▣ Places hands over her ears
- ▣ Becomes increasingly more agitated as PACU sounds continue.
- ▣ Begins repetitive vocalizations and starts to cry.
- ▣ When mom arrives she places headphones in ear
- ▣ Mom comments that she will only listen to “Frozen” songs
- ▣ Susie is whining and using hand gestures to ask for a drink.

Susie exhibits auditory defensive behaviors

Interventions for Susie

- ▣ Limit sounds
- ▣ Modify environment (away from loud noises)
- ▣ Head phones/Play musical preference
- ▣ Lower alarm volumes if possible
- ▣ Limit number of staff interactions at given time
- ▣ Use slow, clam voice
- ▣ Give time to process
- ▣ Avoid talking while others are talking
- ▣ Minimize visitors
- ▣ Turn TV off or lower volume

Take aways

- ▣ Better understanding of SPD
- ▣ Awareness of ABC's of behavior
- ▣ Better understanding of why behavior is occurring (parent, child and staff)
- ▣ Basic sensory assessment skill
- ▣ Tool bag of interventions
- ▣ Strategies to support parents, child and staff
- ▣ Where to find help

Where to find help:

- ▣ **Occupational Therapist with Sensory Integration Framework (OT/SI)**
- ▣ Consult a physician
- ▣ Role models: Temple Grandin- movie, books and speeches
- ▣ Other Parents
- ▣ Online resources
<http://www.spdfoundation.net>
- ▣ Online support groups: Autism Discussion Page
- ▣ Auditory Integration Therapies (AIT)
- ▣ ABA therapy



References

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- ▣ Ayres, A. Jean. (2005). ***Sensory Integration and the Child: 25th Anniversary Edition***. Los Angeles, Ca. Western Psychological Services.
- ▣ Greenspan, Stanley. (1995). ***The Challenging Child: Understanding, Raising, and Enjoying the Five "Difficult" Types of Children***. New York, N.Y. Perseus Books
- ▣ Kranowitz, Carol (1998). ***The Out-of-Sync Child: Recognizing and Coping with Sensory Processing Disorder, Revised Edition***. New York, NY. Starlight Press Books
- ▣ <http://www.spdfoundation.net>
- ▣ www.SPDDSTAR.org

<http://www.facebook.com/autismdiscussionpage>

Bill Nason, MS, LLP discusses tools that help children on the spectrum feel safe, accepted and competent