

SENSORY PROCESSING DISORDER



What is sensory processing?

We are always taking in information from our eyes, ears, body and skin. This is called sensory input. Nerves throughout our bodies take in the information, and our brains process it (tell us what it means).

As you are reading this, you are processing and making sense of sensory input:

- visual or vision input – the words you are reading on this page
- auditory or sound input – the background noises you’re trying to ignore while reading
- tactile or touch input – feeling the paper you’re holding, the seat you are on and the clothes you’re wearing
- olfactory (smell) input – the smell of dinner cooking or the perfume you’re wearing
- taste input – the mint gum you’re chewing
- movement input – this has two parts: the sense of our position in space (proprioception), and the feeling of gravity (vestibular input). As you’re reading, this input would be the feeling of leaning on your arms or tapping your foot.

Our senses all work together to allow us to carry on our daily activities. When we step into the bathtub, we use our movement, tactile, and visual senses. This becomes so automatic, that we don’t even think about it. When we are able to process sensory input well, our nerves and brain control this input without effort. We feel ‘just right’, and we are calm, alert, focused and ready to learn, work or play.

What are sensory processing issues?

What feels ‘just right’ is different for every person. Some of us like things quiet. Some of us prefer a little noise or activity so we don’t get bored. It often depends on what we’re doing. Children and youth with sensory processing issues have trouble interpreting information from their senses (their brains misread or distort the information). So their reactions to everyday sensations can be either too strong, or not strong enough. And they have trouble keeping the right level of alertness for the task at hand (self-regulation).

Sensitive Stan

Stan is a 9-year-old boy who seems to get upset by everything. Every day is a struggle for Stan and his parents. Mealtimes are a struggle because he is a picky eater. Getting dressed is frustrating and takes a long time because he can’t tolerate the seams on his clothes. So when his parents find clothes he does like, they buy several of the same item.



At school, he has trouble paying attention and sitting still in class. If other kids get into his personal space, or accidentally touch him, he gets either angry or tearful. At bedtime, his parents are exhausted from the nightly battle of getting him to brush his teeth and wash his face.

Stan has seen many health professionals already, but nothing has helped. So what’s really going on with Stan? Is he just trying to be difficult? Is it his parent’s fault? Or is it something else?

Sensory processing issues can happen on their own, or along with other conditions like:

- attention deficit hyperactivity disorder (ADHD)
- developmental disorders
- learning disabilities
- autism spectrum disorders (ASDs)

A few words about diagnosis

At the moment, not many doctors know about sensory processing problems. A number of mental health professionals are working to have these problems recognized as a condition called regulatory sensory processing disorder. But more research is needed before sensory processing issues can be considered an official diagnosis.

Common types of sensory processing issues

Sensory sensitivity (hyper-sensitivity = too sensitive)

Children with sensory hypersensitivity have nervous systems that feel things too easily or intensely. They become overwhelmed from too much sensory information. For these children, things feel too loud, too fast, or too bright.

When children are overwhelmed by sensory input, there are three main ways they may react:

- fight – get irritable, angry, or have tantrums or rages
- flight– get nervous, anxious, panicky or runaway and avoid the situation
- freeze– get so overwhelmed that they just shut down. When children or youth shut down' they may not be able to speak or move for a little while.

Problems processing sensory information can also cause problems with motor coordination (movement). For example, a child may have a weak grasp, because her tactile (touch) system is not sending the right information to her brain. She may not grasp hard enough or get her fingers in the right place.

For this reason, many children with sensory processing issues seem clumsy and awkward. They may also have trouble with stairs, skating or riding a bike.

Types of sensory sensitivity

Touch / tactile

These children are easily overwhelmed with touch input, like:

- tags on clothing
- food textures that are either too mushy or too crunchy (these children can

Hyper-sensitive (hyper-sensitivity): being more sensitive than most other people.

Motor coordination: many muscles working well together to carry out a task (like riding a bike).

Nervous system: includes the brain, spinal cord and nerves. It controls our senses, movement and thinking.

Self regulation: keeping the right level of alertness for the task at hand.

Sensory input or stimulation: information we take in through our senses.



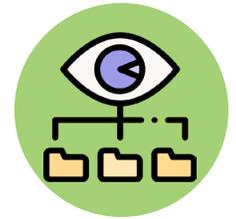
become picky eaters)

- being touched by others, especially if it is unexpected

Visual

Children with visual hypersensitivity are easily over-stimulated by:

- fluorescent or bright lights
- places with lots of visual stimulation, like busy classrooms, malls or fairs



Vestibular

Children with this kind of sensitivity feel movement too intensely, and feel things go 'too fast'. They may:

- get car sick easily
- be afraid of activities where their feet leave the ground (climbing ladders or amusement park rides)



Auditory

These children are easily upset by the noise from:

- home appliances (like vacuum cleaners or lawn mowers)
- riding on a busy school bus
- classrooms or school assemblies



Children may even create noise to drown out other distressing sounds

Sensory-seeking

Sensory seeking children crave more sensory input. They seem to have a never ending desire for sensory stimulation. For example, they may seek out:

- movement stimulation by rocking on their chairs
- oral (mouth) stimulation by chewing on their shirts

Those who can't meet their own sensory needs may complain of being bored.

Sensory under responsiveness

Children who are under responsive to sensory input look quiet and passive. They seem to have no energy or motivation during everyday activities. These children may need much more sensory input to feel 'just right' and be ready to work or learn. Children may find it easier to focus on school work if they:

- exercise a little before sitting down to desk work
- have lots of chances for active, 'hands-on' learning

Remember: Children can have a mix of sensory sensitivities and under responsiveness. For example, a child may be sensitive to touch, but seek out vestibular (movement) input.

Things might also change from day to day. A child might be very sensitive one day, and not bothered by the same things at all on the next day.



What should I do if I think my child has sensory processing issues?

Start by bringing your child to your family doctor (or pediatrician) to check for any medical issues. Remember that many doctors may not be aware of sensory processing issues. The next step would be an evaluation by an occupational therapist (OT). The OT will meet with you and your child, and will ask about:

- how sensory processing issues impact your child's everyday activities
- your child's development and sensory patterns
- current symptoms and function

The OT may also:

- observe how your child moves and reacts to sensory input
- give your child some tests

Finding an occupational therapist

- **Private practice**

Some OTs work in their own clinics or group practice. Contact the Ontario Society of Occupational Therapists (www.osot.on.ca) for listings of OTs who provide private services.

- **School boards**

It may be possible for your child to see an OT through the school (with services provided by a local Community Care Access Centre). Ask your child's school whether or not this is possible. Hospitals: It may be possible to see an OT through a hospital, like CHEO or the Ottawa Children's Treatment Centre (OCTC). Ask your child's doctor about this.

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For more information on up-to-date resources, including OTs in private practice, visit emotionalhealth.ca and enter a search for sensory processing disorder.

Helping children and youth with sensory processing issues

Children with sensory processing issues have trouble with 'self regulation', which means keeping the right level of alertness for the task at hand.

There are three main states of alertness described by Occupational Therapists Mary Sue Williams and Sherry Shellenberger, in their book, *How Does Your Engine Run® A Leader's Guide to the Alert Program® for Self Regulation* (1996).



Understimulated

Sleepy, lethargic, sluggish, and spacey. Has a hard time focusing.

A child who is under stimulated, will need more sensory input to feel “just right”.

For example, an under stimulated child may need:

- more movement to feel “just right.”
- more sound to feel “just right”
- more touch to feel “just right”

What to do

- increase sensory input
- use soothing strategies



Just right:

Calm, alert and focused. Ready to play and learn.

A child who is “just right” is getting just the right amount of sensory input.

What to do

- Keep doing the same thing



Over-stimulated

Hyper, over-excited, angry, worried, out of control. Has a hard time focusing.

A child who is over-stimulated is getting too much sensory input. They need less stimulation, or ‘soothing’ input.

For example, an overstimulated child may need:

- less movement to feel “just right.”
- less sound to feel “just right”
- less touch (or soothing touch) to feel “just right”

What to do

- reduce sensory input
- use soothing strategies

An OT can help your child to learn ways to ‘self-regulate’. Children and youth can learn to recognize when they are under-stimulated, ‘just right’, or over-stimulated. And they can learn what to do in each situation. Programs for children and youth with sensory processing issues will often include ways to adapt the child's environment, suggestions for interaction, and calming or alerting activities.

Ways to adapt the child's environment

- finding a quieter place in the classroom for a child with sound sensitivity to sit
- cutting tags out of clothing for a touch sensitive child
- learning the signs that the child is getting over-stimulated, and giving the child a soothing space where she can calm down

Suggestions for interaction

For example, using multi-sensory approaches for a child who needs extra sensory input to focus:

- talking, singing, or playing music
- using pictures or allowing the child to draw
- giving ‘manipulatives’, like stress balls or play-doh

Regular calming or alerting activities

Regular calming or alerting activities can be added to a child’s daily routine to help a child feel ‘just right’.

This might include:

- jumping on a mini trampoline in the morning to help wake up
- doing some “heavy muscle work” to calm down before going to the dentist

Sensory sensitivities and strategies in detail

Children with sound (auditory) hyper-sensitivity:

- become easily distressed by loud noises
- may try to cope by making noise to mask out other sounds (i.e. humming while in a loud crowd)
- may cover her ears, or react with ‘fight’ (anger) or ‘flight’ (fear, withdrawal) to loud noises

You can help by:

- lowering the noise level—turn down the radio, TV, computer. Make changes so that your child’s room is quieter.
- doing noisy activities when your child isn’t around—try to plan your vacuuming or lawn mowing for when your child is out or let your child know that you need to do these things ahead of time
- letting your child use ear plugs or hearing protection when needed
- let your child listen to background music with an mp3 player (as long as your child can control the volume)
- Using ‘white noise’ (like from a fan) or background music if your child has trouble sleeping

At school, it can help to:

- seat the student away from sources of noise (like away from the classroom door)
- use ear plugs or headphones for music on noisy school buses. Some school boards may also have vans available for busing students
- give the child a ‘quiet’ or ‘chill out’ place (a ‘low sensory’ place to go when feeling overwhelmed)
- let the child know ahead of time if there will be fire alarm testing or drills

- offer a quiet place to go during school assemblies

Children with touch (tactile) hyper-sensitivity:

- are easily overwhelmed by unexpected, light touch (like someone brushing up against them)
- may not want to be touched
- will seek out more personal space, or a larger ‘personal bubble’ from others
- may have trouble at school with ‘circle time’, in line ups, or in crowded places like hallways and buses.
- may have troubles with clothing such as hats, gloves – parents may find that when they do find clothes their child likes, they buy extras to have on hand
- find hair care, face washing and tooth brushing difficult
- may be picky eaters because they don’t like some food textures

You can help by:

- using deep pressure touch – this can actually be soothing

At school, it can help if a child:

- wears a weighted vest
- wears a backpack (ideally with 10% of the student’s body weight) – have an adult remind the student to put on the backpack during stressful times (like transitions)
- has a chance to carry things, like books
- can exercise muscles by wiping down the blackboard, cleaning desks or playing on play structures
- has a plan developed with an OT to prevent accidental touch
- can avoid situations where he could be touched unexpectedly. Placing the student in the front or the back of a line up can reduce the chance of being touched
- is allowed a larger ‘personal bubble’
- knows ahead of time that she will be touched
- can chew gum. This gives calming, deep pressure, oral (mouth) stimulation. Studies have shown that chewing gum is helpful for learning. It would be helpful if schools allowed students to chew gum
- can have other sources of oral stimulation if gum is not possible. Students could chew on straws, plastic tubing, ice, liquorice, raisins, popcorn, or drink from a water bottle

Children with oral sensitivity:

- don’t like certain food textures
- avoid new foods with new colors, textures, or tastes
- avoid foods with mixed textures, for example, smooth foods with lumps, like spaghetti sauce with

meat, stews with meat and vegetable chunks

- can be picky eaters with a very limited diet
- may have strong preferences for just the right temperature for food or drinks
- prefer to eat different foods on the plate separately, (like eating all the meat first, then all the potatoes, then all the peas)

You can help by:

- talking with your doctor if you are worried about your child's diet
- consulting an Occupational Therapist trained to teach the 'Wilbarger oral de-sensitization program'
- respecting your child's food texture preferences
- introducing new foods gradually
- allowing children to chew gum at school. This gives calming stimulation to the mouth. Studies also show that chewing gum can also help learning
- giving other sources of oral stimulation if gum is not possible – children can chew on straws, plastic tubing, ice, raisins, popcorn or drink from a water bottle.

Children who seek movement to feel just right:

- are always 'on the go'
- tend to do better when they have chances to move or fidget
- may be fidgety or restless at school

At school, it can help if a child:

- can move as much as possible (washroom breaks, work from a standing position, running errands for the teacher or cleaning the blackboard)
- alternates "thinking activities" with movement activities:
 1. thinking activities for 10-20 minutes
 2. physical activity like a "Body Break" session of 2-5 minutes (jumping jacks, squeezing a stress ball, or push-ups against a wall)
- has the chance to link movement and thinking activities (like having to go through a tunnel to get the pieces of the puzzle needed to complete the task at the other end)
- has special seating that allows them to stand and move easily (like a ball chair or move n'sit cushion)
- can use 'fidgets' to play with in class (stress balls) – Fidgets' have to be used correctly, so rules are needed (no throwing or distracting other students).

Children who are too sensitive to movement:

- get distressed by, or avoid certain kinds of movement
- may be upset by one kind of movement (like going up or down), but be OK with back and forth movement
- may not like riding in cars, or get car sick easily
- may avoid rides or swings
- may get anxious when there is lots of movement or when their feet are off the ground
- may be afraid of elevators
- can seem uncoordinated
- may have trouble with skills that require timing and doing things in the right order
- may be afraid of heights

You can help by:

- limiting movement that causes distress
- slowly introducing different movements into the child's life in a safe way
- teaching self calming activities

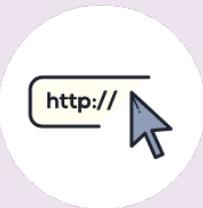
Children with visual hyper-sensitivity:

- may be easily distracted in places with a lot of visual stimulation (like artificial lighting, crowds of people)
- may be easily distracted or when doing visual tasks, like reading
- may be easily overwhelmed by colourful or complex images
- find messy desks, rooms etc. stressful (due to visual 'clutter')
- may find direct eye contact difficult
- prefer dim lighting
- tire easily or get irritable when working on visually complex tasks
- may squint, rub their eyes or get headaches while reading, but don't need glasses
- may have trouble with fluorescent lighting

At school, if can help to:

- cut down on visual stimulation (for example, don't place the student near windows, doorways or at the back of the class)
- have the student keep his desk clear, and only have needed items out

- use natural lighting whenever possible. Fluorescent lights are especially difficult – many also have a distracting hum
- place the student away from window as they may be sensitive to direct sunlight
- try to have a ‘chill out’ place with dim lighting
- offer a slanted writing or reading surface (like a lap desk propped up with books) – this allows the students to read things ‘head on’ instead of at an angle and promotes better posture
- give frequent breaks
- keep the blackboard free of visual clutter



Need more information?

[Cheo.on.ca](http://cheo.on.ca) is the best place to find information on CHEO's programs and services and learn about a variety of health topics for children and youth. Visit our online resource section to access CHEO-recommended websites, books, apps, videos and more!

Have you registered for MyChart?

MyChart is a **FREE** secure, online patient portal that connects patients to parts of their CHEO electronic health record, anywhere, at any time.

To apply for MyChart access, visit cheo.on.ca/mychart and fill out the MyChart access request form. Once your application has been approved, we'll send you an email with an activation code and instructions on how to

