



Sensory Processing



Sensory processing, also referred to as **sensory integration**, is the perception and interpretation of sensory input in the environment. It is the way the brain receives, organizes and responds to sensory input. Our sensory systems do not function in isolation from each other. Our brains and nervous systems constantly integrate and act on information from multiple sensory systems at once.

While most people think in terms of five sensory systems (vision, hearing, touch, smell and taste), there are actually eight. In addition to the five more familiar sensory systems, there are three others:

Proprioception

Information about our body's posture, position in space, and movements, via sensations from our muscles, bones and joints

Vestibular system

Located in the inner ear, coordinating with vision and proprioception to provide information about the position of our head and neck, stabilizing our gaze, and helping us maintain head position and body posture

Interoception

Takes in information about body sensations, such as hunger, thirst, heartbeat, breathing and muscle tension, and helps us maintain homeostasis and identify emotions

Everyone, whether neurotypical or neurodivergent, can be viewed as having their own unique **sensory profile**. Each person's sensory profile fits better in some environments than others. When our sensory profile is not a good fit for an environment, we sense, perceive or respond more slowly and deliberately, which is exhausting, and less accurately and adaptively. Some people may withdraw, "melt down" or seek sensory soothing to cope.

Neurodivergence and sensory processing

Some neurodivergent people, especially those with autism, may experience sensory over-responsivity, under-responsivity, sensory seeking or sensory defensiveness. Social interactions may be avoided, or the person with sensory differences may be avoided by others. Sensory differences during social interactions can be distracting and cognitively depleting. Sensory issues contribute to some neurodivergent people's struggles with change and transitions, and with hyperfocus on narrow interests. Staying with what's predictable or familiar may be a way to cope with sensory issues.

Examples of behaviours that may indicate sensory issues are:

- Meltdowns
- Avoidance or withdrawal
- Cognitive depletion or exhaustion
- Overwhelm in crowds
- Aversion to specific sounds, lights, textures, touch or smells
- Limited food choice
- Apparent lack of awareness of hunger or thirst
- Fascination with visual repetitive movement (e.g., fans, doors)
- Strong attraction to a particular texture or other tactile input

Stimming

Stimming is short for **self-stimulating behaviours**. The term “stim” is used to describe one of these behaviours, which can include doing an action over and over or repeating the same sound several times. People may use stimming to help them cope with emotions or sensory issues. Stims are often a form of regulation and may help a person express emotions, increase focus, relieve stress or calm down.

Types of stimming

- **Auditory**—Involves hearing and sounds, such as snapping fingers, repeatedly touching ears, or listening to the same sound over and over. Listening to music is frequently used by neurodivergent students as a learning strategy to increase focus.
- **Vocal**—Sounds made with the voice or throat, such as coughing or clearing of the throat several times, repeating the same word, humming or singing.
- **Tactile**—Actions that involve touching or feeling, such as rubbing or scratching skin, opening and closing fists, tapping fingers on an object or surface, touching favourite comfort items, using fidget tools, or flapping hands or arms. It can sometimes look like chewing on objects or gum.
- **Visual**—Involves sight, such as looking at lights for a long time, viewing video clips repeatedly, or frequent blinking or rolling of the eyes.
- **Vestibular**—Involves movement or balance, such as pacing back and forth, hanging upside down, rocking in chairs or hammocks, or twirling around.
- **Olfactory**—Involves tasting or smelling, such as smelling or sniffing things or people, carrying a favourite scent or perfume, or chewing on or licking objects. It may also involve fixation on certain foods or drinks.
- **Full body**—Movement that involves the entire body, such as rocking back and forth or spinning around.

Reasons for stimming

- **Too much stimulation**—Stimming may help if a person is facing too many things that affect their senses, such as too many smells or sounds, all at once.
- **Too little stimulation**—A person's senses may need more action to keep them focused.
- **Wanting to stop or reduce pain**—Banging the head or another part of the body may help reduce pain experienced elsewhere in the body.
- **Managing emotions**—Stimming can be a way of coping with or responding to various emotions, including happiness, sadness or anger.

Benefits of stimming

- **Helps with self-regulation**—Stimming can be a vital tool for self-regulation. It can help people manage sensory input, process emotions and maintain focus by providing a way to soothe, calm and ground themselves in overwhelming situations.
- **Reduces anxiety**—Stimming can reduce overall anxiety levels, allowing people to feel more comfortable and secure in their environment.
- **Improves mood**—By managing sensory and emotional input, stimming can contribute to a more positive mood.
- **Increases self-awareness**—Understanding and accepting their own stimming behaviours, and having them accepted by those around them, can foster a person's self-awareness and self-acceptance.



Strategies to support students who have sensory sensitivities

Strategies to support students with sensory sensitivities are not a one size fits all and need collaboration with the student, parent or caregiver, and their circle of support care team. It is important to know that one tool, strategy or adaptation to the learning environment may be sensory overloading for one student and regulating to another.

- ⚙️ Check in with each student to find out what would be helpful to them and individualize strategies to meet their needs.

- ⚙️ Limit auditory, olfactory and visual stimuli:
 - Use natural lighting when possible.
 - Reduce clutter.
 - Reduce visual stimuli on walls.
 - Allow access to noise-cancelling headphones or earplugs.
 - Arrange for students to take tests in a quiet room, or place dividers between desks.
 - Do not use aromatherapy, air fresheners or other scents (natural or otherwise) in classroom environments.

⚙️ Since many neurodivergent students struggle to remain still and focused for long periods in conventional classroom setups, offer flexibility with seating and movement:

- Allow for preferential seating, flexibility with seating arrangements, and opportunities for movement.
- Provide alternative seating, like standing desks, exercise balls or beanbags, to enable gentle movement.
- Designate an area for pacing or movement breaks to build in opportunities to reset.

⚙️ Provide sensory toys and materials:

- Allow access to fidget toys, headphones, squishy balls, pieces of cloth with a preferred texture, a stuffed animal with a preferred feel or smell.
- Provide wiggle seats—nubbed cushions designed to help neurodivergent children who focus better when they can move around in their seats.

⚙️ Support students in learning when and how to take brain breaks, and make them easily accessible as needed.

⚙️ Provide alternative environments for students with sensory sensitivities to participate in events involving a large number of people (e.g., assemblies), such as streaming them and broadcasting to a quiet room.

⚙️ Support stimming as needed, and cultivate a classroom environment that normalizes and supports it:

- Educate the class—Teach students about stimming, explaining that it is a natural way for some people to self-regulate and focus, rather than something to be embarrassed about.
- Model positive attitudes—Show acceptance of students who stim and model positive interactions with them.
- Create a culture of acceptance—Foster an environment where students feel comfortable being themselves and expressing their needs, including stimming.