

What is sensory processing?

Sensory Processing is the way in which the brain receives, organises and responds to sensory input received through the senses. It helps us to know what is going on in our body, helps us understand our environment, keeps us safe and filters out information so that we can pay attention, engage and learn.

Everyone processes sensory information differently and has different sensory preferences. These impact what we notice, how we feel and how we respond in everyday activities. Responses to sensory input can be different from person to person. For example, you step on a piece of Lego and receive sensory input from receptors in your foot telling you it's sharp. This information is processed and related to previous experience and a response is generated (pulling foot away).

There are eight sensory systems which are defined below.



Visual

Our visual system provides information regarding where objects are in space and their characteristics.



Touch (Tactile)

Our tactile system is our sense of touch. This is received through our skin all over our body. This provides information on sensations including pain, pressure, texture and temperature.



Hearing (Auditory)

Our auditory system provides our body with information about sounds in our environment including how far away a sound is, and if it is familiar.



Oral (Gustatory)

Our gustatory system is our sense of taste and includes sensory receptors in our mouth. This provides information on temperature, texture and flavour.



Olfactory

Our olfactory system is our sense of smell.



Movement (Vestibular)

Our vestibular system provides information on the body's movement. This includes information on how fast we are moving, whether we are upright, or upside down. This system is also responsible for balance.



Body position (Proprioception)

Our proprioceptive system tells us where our body is and what it is doing. This information is provided by our joints, muscles and ligaments. This allows us to feel where our body parts are, even if we can't see them!



Interoception

This is the awareness of our body's internal state. This lets our body know when we need the toilet, if we're hungry, tired, hot/cold and what emotion we are feeling.



The cup theory

The cup theory proposes that we all have a metaphorical cup for holding sensory input. Some individuals have big cups and some have a small cup. The size of the cup represents how much sensory information we are comfortable with or need.

Individuals with a big cup need a lot of sensory input to fill their cup. Those with a small cup only need a little input to fill their cup and it can easily overflow.



We can have different sized cups for different senses, meaning we can be comfortable with more sensory information for some senses than others. Our cup size can change according to fatigue levels, sickness, stress and our motivation or interest levels. For example, someone's cup for tactile input can be small, making it fill quickly during messy play activities causing them to run away from the activity. Or, someone's cup may be big for vestibular input causing them to seek this by spinning around and going upside down in the classroom to fill their cup.



Sensory Profiles

Dunn's Model of Sensory Processing proposes there are four types of sensory profiles. These are determined by sensory thresholds (or cup sizes) and our response to the sensory input.

Over responsive reactions

Sensory Avoider

These are individuals with a low threshold and an active response by attempting to stop or reduce the sensory input. This may look like:

- Running and covering ears in the classroom.
- Not being able to wear certain clothes or eating certain foods.
- Avoiding grooming tasks such as brushing their hair or teeth.

Sensory Sensitive

These individuals have a low threshold and a passive response. This may look like:

- Finding it hard to concentrate if there is a noise during a test.
- Becoming upset by noises or smells.
- Dislike being upside down.

Under responsive reactions

Sensory Seeker

These individuals have a high threshold and an active response. This can look like:

- Rocking and leaning on their chair in classroom.
- Chewing on clothing or pencils.
- Loves to touch different textures.
- Looks closely at spinning or brightly coloured items

Registration (Bystander)

These individuals have a high threshold and a passive response. This may look like:

- Missing instructions given by the teacher.
- Showing minimal responses to pain or temperature changes.
- Often bumping into people or objects.
- Find it hard to copy actions with body.
- Doesn't notice when needing to use the toilet until too late.

Unhelpful sensory responses occur when there is a mismatch between the individual sensory preferences and the environment. This can impact an individuals' ability to engage in different tasks and occupations such as eating, brushing teeth, playing and school participation. Knowing our sensory preferences can help set us up for success so that we can implement strategies or set-up our environment to best support the individual's needs.

