

2. Our Senses: Video Script

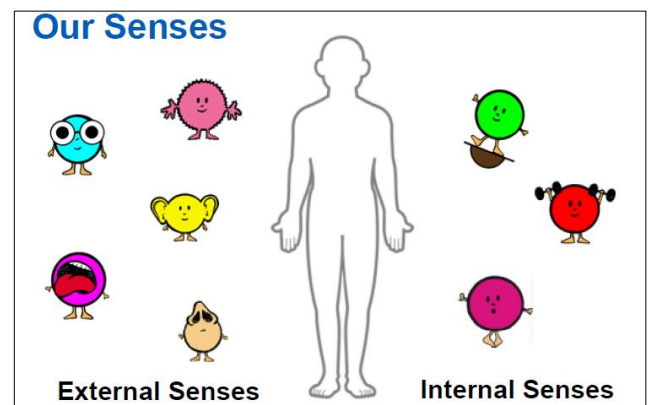
Welcome to the Warrington Occupational Therapy service training on sensory processing. In this second video you will learn about the 8 sensory systems and talk about what it might look like if we process sensory information differently.

Watch our other videos to learn about sensory processing and different sensory strategies. We recommend that you watch the videos in the order that they are numbered to help with your understanding.

We learn from a young age in school that we have 5 senses: seeing, hearing, touch, smell and taste. These 5 senses are external senses. They give us information about the outside world and what's happening in our environment.

But we also have 3 hidden senses, which give us information about what's happening inside our bodies. These senses are:

- The vestibular sense: this is our sense of balance and movement. This sense is located in our inner ear.
- The proprioceptive sense: this is our sense of where we are in space and how much force we are using with our body. This sense comes from inside our muscles and joints.
- And the interoceptive sense: this is our sense of changes inside the body and how we are feeling, for example feeling hungry, needing the toilet, or feeling cold.



In the previous training, we spoke about how different people may process sensory information differently.

Some people may have a low threshold for sensory input. This means that they only need a small amount of stimulation before they may feel overwhelmed. Their brain is receiving the messages from the senses too strongly.

Some people, however, have high thresholds for sensory input. This means that their brain receives the messages from the senses too weakly. Therefore, they may seek extra sensory stimulation in order to register and feel the sensation.

It is possible to have a low threshold in one sensory system and a high threshold in another sensory system (for example, a low threshold to noise, so the child may be

upset by sounds and cover their ears. But the same child may have a high threshold for movement and so seeks movement all the time to be able to feel this sensation in his body).

Each child experiences sensory stimulation differently and has a different threshold for sensory input. To help make sense of this, we can use a simple metaphor - the sensory "cup."

Imagine your child has an internal sensory cup that is the right-size for them. With each sensory experience they have, the cup starts to fill up.

We all need a full cup (or enough sensory input in our day) for us to be able to do our daily activities such as paying attention, sitting and playing with our friends, or getting dressed in the morning.

If your child's cup is small, even a small amount of sensory input can overflow the cup and lead to an overwhelming experience (this is what we call having a low threshold)

If your child's cup is large, it takes a lot of sensory stimulation to fill the cup (this is what we call having a high threshold).

First, lets talk about our visual sensory system.



This sensory system helps us to process visual information such as the colour, shape and size of objects. It also tells us about motion and distance.

If we have a low threshold to visual information, we might become overwhelmed by visual stimuli, such as the lights being too bright or being easily distracted by movement in a room. We might have to close or cover our eyes.

If we have a high threshold to visual information we might not notice visual things in the environment. We might seek out visual things like shiny, spinning toys or stare at things intensely. This will help to fill our visual cup and allow us to notice the sensation.

The auditory system or hearing system helps us to process auditory information such as the tone, pitch, frequency, and volume of sounds.

If we have a low threshold to auditory information, we might cover our ears or become upset by lots of noise. We might hear sounds other people do not hear like the ticking of a clock or people talking over the other side of the room.



If we need lots of sound input and have a high threshold, we might seek noise. We might make noise ourselves by humming or singing or banging the table. If our threshold is high, we may also not respond to our name being called or fail to notice sounds in the room.

The tactile sense comes from our skin. The skin is the largest and most sensitive organ in the body.

The touch system helps us to process light tickly touch, deep pressure touch, pain and temperature. The skin helps us to stay safe; for example, if we touch something hot, our brain will send us a message to quickly take our hand away to protect us. The touch sense helps us to feel textures (if something is rough or smooth), it helps us to know where our body is in space (can you feel the chair under your bottom right now? That's your tactile sense helping you!) and it is also important to help us develop our fine motor skills.

The tactile sense is closely linked to our fight or flight stress response. If our brains are processing this information differently, we usually show a big response. This is common when it comes to light tickly touch on the skin. Our clothes, touch from others, getting our hair brushed and our nails cut, all involve light tickly touch on the skin. For some people who have a low threshold, this touch may feel uncomfortable and almost painful. Those with a low threshold may become distressed by the feeling of new clothing or labels in their clothes, may hate brushing their teeth, or getting their hair cut, and avoid hugs and kisses.

Those with a high threshold may love to do messy play activities, they may be unaware of the temperature outside, and may not notice food on their hands or face.

The olfactory or smell sense and gustatory or taste senses:

At first, children explore their world through their mouths.

They mouth objects to learn textures, tastes, and shapes. As their motor skills develop, these oral seeking behaviours decrease.

The oral motor system has an important role in self-regulation. It can help to calm or alert our system. A good example of this is giving a crying baby a dummy. The baby sucks on the dummy and it helps calm the baby down. As adults we often do the same without even knowing – think about people who bite their nails when they are anxious, or eat crunchy popcorn during a scary movie! Using our mouth to chew, suck or bite on objects can often help us feel calm.

If we have a low threshold to taste and smell, we might become upset by odours that no one else can smell.

Processing smell differently can make us refuse to eat different foods. Our mouths give us important information about whether food is crunchy, smooth or chewy or whether it is hot or cold. We all have definite sensory preferences about tastes and textures we like or dislike. If we have a low threshold, we might only eat bland food or food with one texture.

If we have a high threshold, we might seek out smells and tastes. We might choose to eat intense flavours like spicy or sour foods. We might also lick or chew on objects which are not food or put them in our mouths. This will help us feel where our mouth is in space and may help us feel calm.

Proprioception is one of our hidden senses. It is located in our muscles and our joints and it tells us 2 things: where our body is in space, and how much force we are using with our muscles.

If we are processing proprioceptive information differently, we may not know where our body is in space and bump or crash into things.

To feel where our body is in space, we may seek this sensory input through jumping, crawling, pulling or pushing items, or chewing on objects like clothing or pencils. If we are processing this sense differently, we might also not know how much force we're using and do things like hold our pencil too tightly or not lean hard enough on the pencil, or we may be too rough when playing with friends.

This sense is also very important because it helps us change how alert we feel. This sense is closely linked to our emotions, and helps us to remain calm and manage our emotions. For this reason, children and adults usually seek this type of sensory stimulation because it feels good for our bodies and mind.

The more we use our muscles and joints, the more proprioceptive input our body receives. These muscle-use activities often make us feel calm and focussed.

The vestibular system gives us information about balance and movement. When your head and body move, fluid in your inner ear moves too. This gives your brain information about how you are moving. It tells us how fast we are moving, and in which direction.

When you are processing vestibular information differently and you have a low threshold, a small bit of movement may feel like a lot. You might avoid movement and not like it when your feet leave the ground. You may feel car sick, or feel sick if you spin too much.

If you have a high threshold, you might need lots of vestibular information to help your body feel just right. You might spin or move your body and head more than other people.

Interoception: The interoceptive receptors are all around our body in organs like the heart, lungs, stomach, bladder and skin. They help us feel what is going on inside our bodies.

Awareness of our body sensations helps us to experience essential feelings such as hunger, fullness, thirst, pain, the need for the bathroom, anxiety, sadness, and frustration.

Children who struggle with the interoceptive sense may have trouble knowing when they feel hungry, full, hot, cold, or thirsty. Having trouble with this sense can also make self-regulation a challenge. When you're able to tell that you're thirsty, you know to take a drink. When you can feel that your bladder is full, you know to use the bathroom. For some children, this system doesn't work as well as others. Some children may experience difficulties with toileting, or they may not know when they are full and will want to eat all the time.

Your interoceptive system also gives you clues about your emotions. If your heart is racing, you have butterflies in your tummy or have shaky hands, this might mean you are feeling anxious. If we are processing this information differently, we might not be able to read the clues our body is giving us and may not know how to respond appropriately.

We talk about the sensory systems separately to help us understand them, but in day-to-day life they all work together.

Look at this child picking a flower – how many senses does he need to do this task?



He will need his vision, his touch, and possibly his smell. He will need his balance or vestibular sense to be able to reach down and pick the flower without falling over.

He will need to know where his hand is in space (or his proprioceptive sense) in order to reach out and pick a flower and to use the correct force and not crush the flower. He will need his auditory sense to make sure there is no danger around him while he focusses on the activity.

If some of this child's sensory systems are not working well, he may not be able to complete this task independently or successfully.

We hope this video was helpful. Please take a look at our other short videos to learn more about sensory processing and sensory strategies.