Sensory Processing Difficulties

What is Sensory Processing?

Sensory processing is how we use the information provided by all of the sensations within our body and from our environments. All of the information is integrated to give us an understanding of who we are, where we are and what is happening around us. When our senses are integrated correctly we are able to respond appropriately to sensations, for example whether we are eating a sandwich, riding a bike, or reading a book, our successful completion of the activity requires adequate processing of sensation.

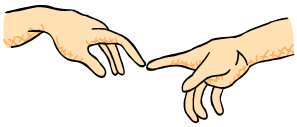
What can happen if something goes wrong?

People with possible sensory processing difficulties may have difficulty in figuring out what is happening inside and outside of their bodies and the sensory information their body is registering may not be accurate. Imagine how a classroom may feel; the pictures on the wall repeatedly grab their attention as their brain doesn't register that this has been seen before. The noise of the school bell is like someone screaming in their ear. When lining up to move classes they are on 'high alert' just in case someone brushes past them as this may feel painful to them. Their bodies aren't providing adequate information as to where their arms and legs are, so they need to move in their seats to get that extra feedback. There seems to be some faulty wiring somewhere. Most people get used to their own sensory preferences and make choices about their daily activities appropriate to them. However, children tend to go with their instincts and may struggle to communicate how they feel, they may be disorganised in a world they can't quite make sense of. These children need support from those around them, to learn strategies and consider their needs to make life just that little bit easier.

Humans have 7 senses, not just 5 and these are:

1. *Tactile/Touch*
2. *Taste*
3. *Smell*
4. *Vision*
5. *Auditory/Hearing*
6. *Proprioception/feedback from muscles/skin/joints etc. Involving body awareness*
7. *Vestibular/movement*

Tactile/Touch



Two functions, one for protection and one for discriminative touch

Protective

- Our skin has receptors within it that respond to pain, temperature and light touch. This alerts us to potential threats and allows us to react appropriately. The information is interpreted and our brain then decides as to how we should act e.g. to pull our hand away from heat source.

Discriminative

- Our skin is our largest sensory organ. It has different receptors that give more detail about what the skin is feeling. This also responds to pressure applied to the skin. Through touch we gain information about levels of the quality of touch e.g. soft, hard, etc, about objects and what/where is being touched, in order to develop refined fine motor skills.

With smoothly operating protective and discriminative touch, a child will be comfortable and willing to interact with objects and people and will be in an alert, calmer, engaged state to learn.

So what happens if something isn't quite right?

One of the most common sensory difficulties is being **overly sensitive to touch.** These children may show the following behaviours in school:

- Avoidance of messy play and touch, and may become distressed if required to do it.
- Gets upset when others brush past them.
- Gets upset when their hands or face are messy and avoids finger feeding.
- They sometimes look like they want to run away (flight) or go into fight mode as their protective mechanisms kick in.
- You may however see the child seek out touch in order to control their environment.

On the other hand a child may be more **under sensitive to touch** than usual. In the classroom you may see the following:

- Has messy face and hands and doesn't seem to notice.
- Doesn't know where they are being touched.
- Leaves clothing twisted on their bodies and doesn't seem to notice.
- Difficulties in managing grasps when using pencils, scissors, etc.

How to help

When overly sensitive

- For the student who experiences sensitivity to touch (tactile defensiveness), allow them to stand at the front or end of the line. Arrange the classroom seating to minimise the risk of being jostled and bumped by classmates and have the child's desk near the teacher.
- When planning an art activity, adapt the activity by using tools such as brushes and pots to reduce touching messy products.
- Be aware that materials such as glue, finger paints, clay, paper maché, etc. may cause the child to have an aversive response.
- Prior to activities which may lead to any anxiety for the child such as messy play, or assembly time, use some of the heavy work activities listed below. Any task that provides active pushing/pulling or deep touch/pressure is calming to the nervous system so they are less likely to react in an inappropriate way.
- Avoid light touch, use firm pressure when touching the child and always approach from the front to prepare the child.
- Allow them to use 'fidget' tools, permit them to use one object. Set boundaries for them using it and ensure that this is not negatively impacting on their attention to the task or others.

When under sensitive

Encourage the child to experience as many tactile experiences as possible. Try integrating the following types of activities into their classroom activities:

- **Messy Play** – Sand, water, finger paint, lentils, rice, shaving foam, play dough, powder, jelly, gloop. Try pouring warm water then dry products e.g. seeds or beans over hands.
- **Feely Box** – A box with a sleeve attached to one end over a hole (you can use a pillowcase). Child feels for objects inside the box without looking. Start with familiar hard objects with different shapes/textures, and grade up to a broader variety e.g. dry/scrunchy.

- **Hide and Seek** – Find objects of different shapes and sizes hidden in bowls of;
    - Rice/lentils/dried beans, dried pasta shapes etc.
    - Sand or plant gravel.
- **Finger painting and water play**
- **Play dough** – incorporating small hidden objects to pull out.

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Taste and Smell

Smell travels directly to the centre of our brain which controls our emotions, memory and learning. Smell is closely linked to our sense of taste, think about how bland food tastes when we have a cold for example.

Our brains are wired so that we are able to respond appropriately to tastes and smells. A bad smell for example doesn't go away but our brain stops noticing it so that we are not totally distracted by it, however if we smell burning we know we have to act upon it.

So what happens if something isn't quite right?

Again there are two different kinds of difficulties that may occur, the first being an **over sensitivity** to smell and taste and the second an **under sensitivity** to smell and taste. The latter of the two is less common.

Overly sensitive, these children may show the following behaviours in school:

- Avoids food most children their age enjoy.
- Craves or gets upset by certain tastes and/or smells and doesn't appear to get used to the smell.
- Is distracted by a smell in the room and cannot refocus on the lesson.
- Feels nauseous or gags at smells others are only mildly affected by.

How to help

- Try redirecting the child to carry out some of the heavy work activities to distract them and also to calm their overly alert sensory systems.
- Allow them to have their favourite scent or an object that they like the smell of to block out the 'offensive' smell.

Vision

There are different aspects of our visual systems. The first is our **eye movements** and the second **visual processing**. The movements of our eyes are controlled by muscles, that allow us to follow a moving object with our eyes, fix on an object, scan a page of writing and focus our eyes on one object and then move to another and re-focus quickly. **Visual processing is the brain selecting and responding appropriately to visual input.**

So what happens if something isn't quite right?

If difficulties with **eye movements** exist you may see the following difficulties in the classroom:

- Eye contact is limited as the child struggles to maintain focus.
- They use their fingers when reading to keep their place even when not age appropriate.
- They repeatedly lose their place when copying from the board.
- They may struggle to judge distances so bump in to the furniture in the class room.

If difficulties exist with **visual processing** you may see the following difficulties in the classroom:

- Watches everyone when they move around the room.
- They struggle to cease noticing the pictures or the people in the room.
- Cover eyes or squints to protect eyes when the lights are switched on.
- Express discomfort with bright lights, e.g. rubs eyes, headache.

How to help

Eye movements

- Child sits at the front of the class.
- Provide a written sheet on the desk to copy from rather than copying from the board.
- Use large print books/work sheets.
- Use a finger or ruler to mark where reading.
- Use a typoscope or reading ruler when reading (cut out a window in a piece of card and show only what is needed to be read).
- Use an angled writing surface to reduce the distance the eyes have to travel from the board to the paper.

Visual processing

- Build up the sides of a desk with cardboard to block out distracting stimuli.
- Keep visual (i.e. art projects on the wall, bulletin boards, hanging projects) and auditory distractions to a minimum to help facilitate the child's attention to classroom instructions.
- Have the child sit near the classroom teacher to facilitate the child's ability to attend to directions and tasks.
- Use different colours for different lines on the whiteboard.

Auditory

Auditory processing refers to how the brain recognises and makes sense of sounds. Sounds consist of loudness, pitch, how long it lasts for and where it is coming from. We automatically put all of this information together and respond appropriately to it.

So what happens if something isn't quite right?

There are potentially two types of auditory processing difficulties. The first is an **over sensitivity** to sounds and the second is an **under responsiveness** to sounds.

If difficulties exist with **over sensitivities** you may see the following behaviours in the classroom:

- Puts hands over their ears when the noise levels rise in the class or the bell rings.
- Over reacts to sounds that others barely notice.
- Can't stop noticing the noise of the fan in the back of the classroom, so cannot attend to another task.

If difficulties exist with **under sensitivity** to sounds you may see the following behaviours:

- The child speaks in a loud voice.
- The child may hum to themselves.
- Seems to ignore you when you call their name even though you know they can hear you.

Please note that these behaviours may also be seen in children who are over sensitive to sounds as they are struggling to screen out surplus noise in order to attend to your voice or they may hum as a way to block out other unexpected sounds.

How to help

Over sensitivities

- Respect their sensitivities, it does really hurt!
- Try to prepare the child for any loud noises before they occur (i.e. bells/fire alarms).
- To minimise auditory distractions, a classroom with a rug or carpet would help decrease extraneous noises.
- Allow them to wear headphones or ear plugs when there is excess noise in the room.

Under sensitivities

- Only speak to the child when they are facing you and looking at you.
- Give simple instructions. Don't use too many words, be expressive.
- Speak loudly and clearly to these children at all times.
- Start with one instruction and increase as the child is able to retain more information.
- Ask the child to repeat the instruction to you.
- Wait for the child to process the information and respond, which may take them longer. Refrain from repeating the instruction too quickly as this may delay a response.
- Reduce extraneous noise OR wait until it has gone before giving instructions. (Do not expect a child with these difficulties to concentrate when there is a lot of noise going on in or outside the classroom).
- Give written instructions, visual prompt sheets, as well as verbal ones.
- Reduce background noise.

Proprioception

'How the body senses where it is placed', this is our subconscious sense that tells us where our arms and legs are in space without us having to look at them. This information is being passed on from our muscle, tendons and joints to our spinal cord and to our brains even when we are still. This ensures that we can be upright and not slipping off our chair, it also provides us with an internal map of our bodies. It is also the sense that helps us to grade the force we place through objects and impacts on the resting tone of our muscles.

So what happens if something isn't quite right?

The common difficulties with the processing of proprioceptive information appear to be a lack of sufficient information. If difficulties exist you may see the following behaviours in the classroom:

- Fidgeting in their seats in an attempt to gain more information from the muscles and joints as to the position of their body parts.
- Heavy handed, struggling to grade the force they place through a pencil, or when playing with toys.
- Struggles with PE and ball games.
- Having to look at their hands when writing or when using a computer mouse.
- Weak arms and legs to sustain position.
- Look at their feet when trying to ride a bike or climb.
- Chews hard on their pen or sleeve.
- Bumps into other children but not in an aggressive manner.

How to help

- Refer to the 'Heavy work' activities to be used during structured movement breaks at regular intervals throughout their day.
- Allow the child to wear a back pack with a few books in during times of transition or when sitting may help to keep them calm.
- Prior to handwriting have the child do some warm ups e.g. pressing palms together, press the palms on the desk, chair push ups with hands flat on the seat to push their body up.

Vestibular

How the body handles movement is down to our vestibular system, which is located in our inner ears. This sense helps to keep us upright against gravity and is stimulated when we move or change our head position and enables us to keep orientated when we bend over to pick up items, ride in the car, walk around the classroom and do PE. Other vestibular activities include maintaining an upright seated posture and paying attention to tasks. The vestibular sense is possibly the most fundamental of all our senses, as it gives us physical and emotional security when moving in space, as our bodies automatically adjust to stop us from falling. Our vestibular system reduces confusion about conflicting visual information, such as when a child hangs upside down. This sense also enables us to stabilise our visual filed when we run or track an item that moves. The information from the vestibular sense also passes through an area of the brain that impacts upon our attention and arousal levels (sleep/wake cycles). Consider how you handle a baby; to wake them up and get them excited you bounce them on your knee, to get them to sleep you rock them back and forth.

So what happens if something isn't quite right?

When vestibular information reaches the brain, the brain establishes if there is any threat or danger and will act accordingly. However a child with a poor functioning vestibular system will often not act spontaneously and will show no fear. A child may have an **overly sensitive** vestibular system which leads them to have an exaggerated emotional response to movements against gravity out of proportion to the actual potential threat. Some children may experience an **under responsiveness** to movement and constantly seek out as much movement as they can.

If difficulties exist with **over sensitivity** you may see the following behaviours in school:

- Avoids apparatus or fast moving playground equipment.
- Hesitates or avoids walking downstairs.
- Gets dizzy easily and may be car sick on trips.

If difficulties exist with **under sensitivities** you may see the following behaviours in school:

- Regularly move in their seats or get out of their seat but not necessarily in an organised manner.
- May have poor sitting posture so appear to slump over their desk.
- Some children may have low muscle tone so doing PE is challenging with poor balance skills.

How to help

Over sensitive

When working with a child with gravitational insecurity, it is essential that they are in control of the amount of challenging movement experiences they will engage in. The child should never be pushed past his or her limit. Finally, be aware of sensory strategies you can use to make the child feel calm, safe and secure (Heavy work). These are useful to prepare the child for challenging work and to comfort and calm them if they feel unsure or unhappy with certain movement activities.

Classroom Strategies:

- Use a firm, supportive seat that will not tip, to help the child feel stable and secure whilst at their desk. Make sure their feet can be flat on the floor to ground them.
- Use your hands to help the child develop their awareness of their body position. Always use firm 'grounding' touch, such as two hands firmly placed on their shoulders, and concentrate on the joints of the body being stable. This will also help to focus the child's attention on an activity.
- The child may become distressed or anxious with anticipating movement and changing positions in the classroom e.g. sitting down on the floor etc. Use visual markers so the child has a clear aim of where to go e.g. put their carpet square or favourite cushion on the floor so they can aim to be sitting on it.

- Break down activities into simple stages. For example it might be more successful to reduce the distance to floor sitting position at first. Show them what to do.
- Think about what position the child likes to be in during different activities in the classroom. Let the child maintain the position they are happy and secure in and as their confidence develops, support the child in different, more challenging positions (e.g. flat on their tummy, on a therapy ball) and work towards them maintaining these positions independently.
- Use every opportunity to reinforce the child's proprioception/body awareness. This doesn't always have to be done by another person but trial using a backpack weighted with books or simple pushing/pulling games, which facilitate force/compression for increased sensory feedback.

PE Strategies:

- Limit the number of children and space to increase sense of security. Allow the child to increase their ability to work on moveable or suspended equipment at their own pace by focusing on lease challenging and fewer pieces used. The idea is to grade your approach very gently and allow the child to lead exploration of the activities.
- Consider starting off by using mats, soft play wedges and textured materials (bubble wrap, fur, foam stepping stones) to create uneven surfaces for the child to negotiate around.
- When the child is ready, move onto equipment such as therapy balls, rolls, large wedges etc.
- Eventually the child may be able to access more challenging equipment such as climbing frames, swings, benches etc.

Under sensitive

- Using a 'defined' spot for them e.g. carpet square, sequencing spot during carpet time or assembly.
- A regular change of position can help them to maintain their attention e.g. Lying on tummy, sitting on the floor, sitting on a chair during circle time, kneeling.
- Work with success; if they can stay in a circle for 20 seconds, use this as your baseline and increase your time from this measure.

- Try a short walk around the circle and then sitting again.
- Have a box of fine motor activities that they are allowed to go to during transitions between lessons or classroom activities. E.g. puzzles, threading, peg boards, pencil tasks.

- Taking regular short breaks to walk around classroom, to carry out a chore.
- Provide as many opportunities as possible for active work during the day e.g. instead of sitting to do maths have them do the problem on the board.
- Provide a solid seat with armrests of the correct height.
- Provide a tilted desk top (angled board) to help them to maintain an upright posture with increased visual feedback.
- Provide 'heavy work' activities during the day especially prior to handwriting tasks or those which require long periods of sitting. E.g. cleaning the board, handing out books, pushing tasks, moving furniture, etc.
- Providing a fidget toy to keep their hands busy. To use at their desk so as not to distract other children.

Movement breaks:

Have these scheduled into their timetable at times when they usually need to be on the move rather than waiting for them to begin moving. You are trying to pre-empt it so that their body is getting the movement it needs in a more functional and structured way. They will hopefully not need to fidget as much if these activities are done regularly during the day. Try a combination of these for 5 – 10 minutes directly before you want them to focus their attention well. E.g. assign active tasks to the child who seeks movements such as handing out books, moving chairs, giving out art supplies.

- Activities that require movements of forward and backwards are calming, rather than those that are in circles. If there are swings that may help to calm. Space hoppers and bikes are useful as well.
- Doing some of the following activities in PE or during movement breaks to give them movement and also improve their ability to be upright against gravity.
    - Animal walks on hands and feet/knees.
    - Dog walk: begin with the child on all fours. Get them to wave each 'paw'. Two 'paws' if they can manage it. Using arm and leg on one side, then the opposite arm and leg.

    - Bottom walk: 'walk' along the floor on your bottom – tell the child they are a train – can they go slow or fast.
    - Half knee push: kneeling up, the child has to walk on his knees pushing a ball (against resistance).
    - Half knee duel: pushing palms trying to upset the other's balance. Switch knees.