

Sensory Input and Sensory Processing Disorder

Overwhelmed by sensory experiences

Everyone has a sensory profile. Everyone has differing sensory needs. A sensory processing disorder is when a person's sensory needs cannot be met the way they normally live their life, and they need to do extra things and/or help from other people to meet their needs.

Our senses include the following 8, not 5 like we were originally taught.

Our senses include:

- (1) Sight and Vision / Visual Input.
- (2) Hearing / Noise / Auditory Input.
- (3) Touch / External Feeling.
- (4) Taste.
- (5) Smell.
- (6) Vestibular Input / Movement.
- (7) Proprioception / feelings, input and sensations from your joints, muscles and connective tissues.
- (8) Interoception / Inside Feelings and Emotions and Emotional Input.



Feeling Regulated and Safe

If our sensory needs are not met properly, we don't feel regulated (comfortable / normal) and safe. Feeling regulated is important as without regulation, the person could have a

variety of experiences and feelings which mean they can't function normally, may not be able to manage their actions, cannot concentrate and don't have control over their body. Regulation is about having control over your body and its actions, its movements, its responses, and the way it takes in input. An unregulated person may feel scared, feel starved, feel depressed and overwhelmingly sad or distressed, feel needy, feel fidgety and awkward, feel unsettled and constantly unhappy. With some sensory processing disorders, some people can experience psychotic type symptoms when they are not regulated. This can appear like hearing voices, feeling suicidal¹, feeling like you're trapped and cannot function or exist, feeling sick and unable to talk or move, or feeling totally helpless. Getting regulated is essential for



people as this enables them to feel like their body is happy and they can function. Being dysregulated is torture for some people and has been described as overwhelming physical and emotional pain, devastation, inability to go on and totally consuming of all other senses and focus.

With some sensory processing disorders, the person may not be able to talk or hear when they are dysregulated due to another sensory issue (e.g., if the person cannot manage the light, their headache and internal pain may

¹ <https://www.sciencedirect.com/science/article/pii/S0006899313012134?via%3Dihub>

become so severe that they cannot even talk or communicate while this overwhelming sensory experience is happening).

Many people don't understand vestibular, proprioceptive or interoceptive sensory input. To help with this understanding, some further information is provided below.

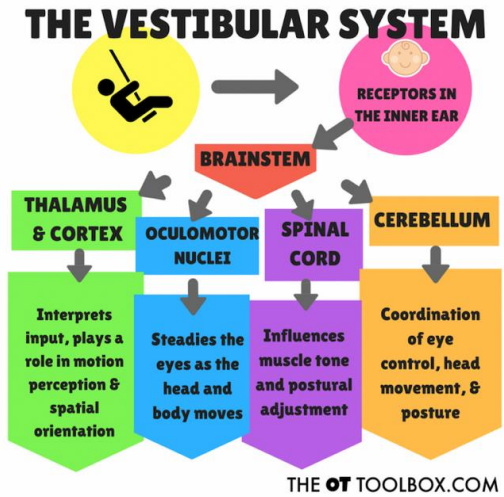
Vestibular Sensory Input and Avoidance

This type of sensory input is based on movement. *"The vestibular system is a sensory system that is responsible for providing our brain with information about motion, head position, and spatial orientation; it also is involved with motor functions that allow us to keep our balance, stabilize our head and body during movement, and maintain posture. Thus, the vestibular system is essential for normal movement and equilibrium."*² People who have a high sensory-seeking profile will be people who need high levels of vestibular movement to feel

regulated. These might be people who need to do a lot of exercise / sports to settle and who cannot sleep and feel 'twitchy' if they haven't moved around a lot. As children, people who need a lot of vestibular movement, are those who cannot sit in class without movement for lengthy periods of time and who struggle to listen to people if they have been still for too long.



² <https://www.neuroscientificallychallenged.com/blog/know-your-brain-vestibular-system>



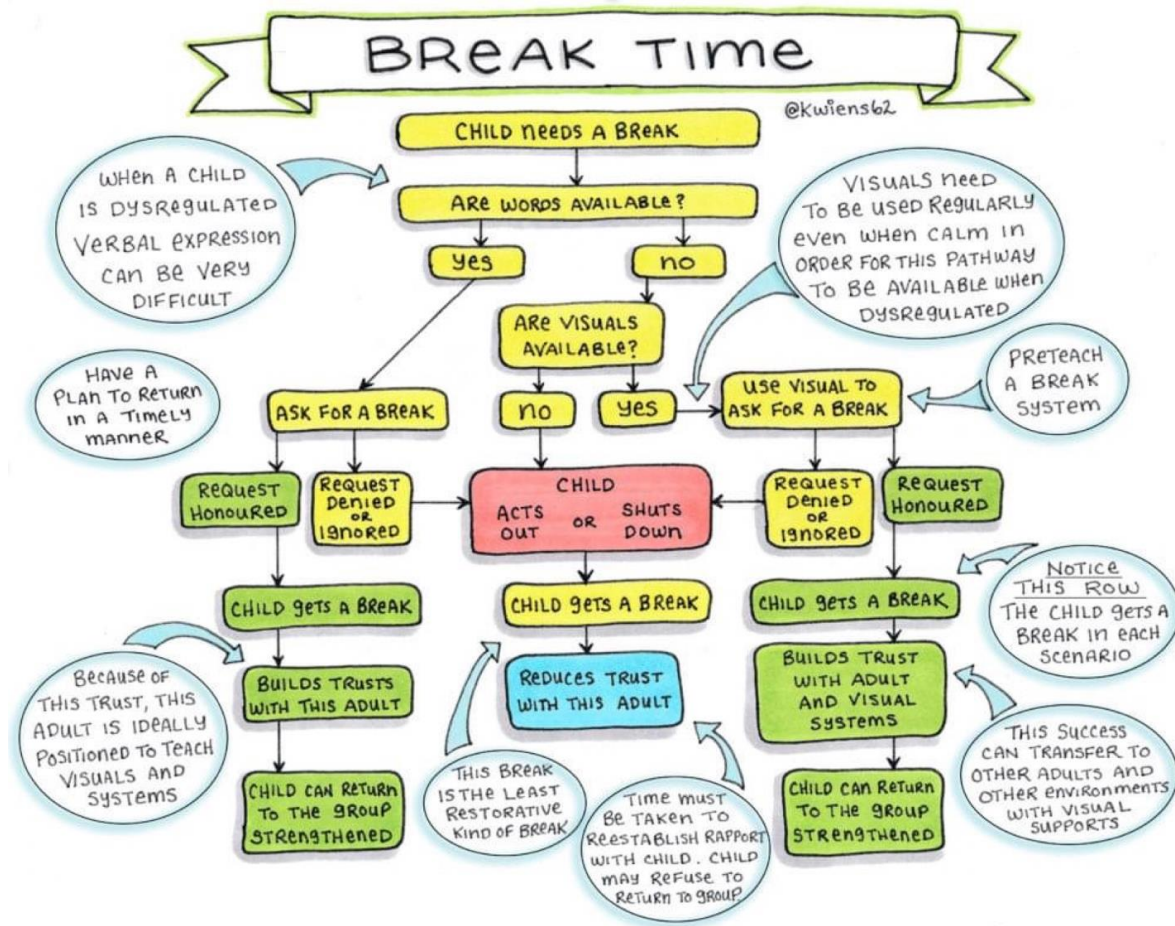
“The vestibular system is comprised of several structures and tracts, but the main components of the system are found in the inner ear in a system of interconnected compartments called the vestibular labyrinth. The vestibular labyrinth is made up of the semi-circular canals and the otolith organs (all discussed below), and contains receptors for vestibular sensations. These receptors send vestibular information via the vestibulocochlear nerve to the cerebellum and to nuclei in the brainstem called the vestibular nuclei. The vestibular nuclei then pass the information on to a variety of targets, ranging from the muscles of the eye to the cerebral cortex.”³

Reports indicate that children who need high levels of movement and **don't get it** can show signs of dysregulation which can appear like severe mental health distress. There have been reported incidents of children and adults in hospital, with symptoms of psychosis, hearing voices and experiencing trauma because of the effect on the brain from not gaining sufficient vestibular input.

Breaks, a necessary and natural human right.

The following infogram shows the importance of having a break and debunks any ideology that this isn't a necessary right. Especially children who often require vestibular sensory input (movement) to help them be regulated require regular breaks, even more than what's been allocated.

³ <https://www.neuroscientificallychallenged.com/blog/know-your-brain-vestibular-system>



Proprioceptive Sensory Input and Avoidance

This type of sensory input is based on the relationship between your body and the world. This includes pressure and tightness of feelings on your body.

“The proprioceptive system is located in our muscles and joints. It provides us with a sense of body awareness and detects/controls force and pressure. The proprioceptive system also has an important regulatory role in sensory processing as proprioceptive input can assist in controlling responses to sensory stimuli.

Proprioceptive input can be very calming for those who are easily overwhelmed by sensory stimulation.

Proprioceptive input can be alerting for those who need increased sensory stimulation to facilitate attention and learning.”⁴

⁴ <https://sensory-processing.middletonautism.com/sensory-strategies/strategies-according-to-sense/proprioceptive/>

People who crave or sense the experience of proprioceptive sensory input are likely to be people who:

- Want to bite and chew things a lot (craving input).
- Chewing very slowly and drinking cautiously (sensing input).
- Love tight spaces, being squeezed, tight fitting clothes and heavy blankets (craving input).
- Walking on tiptoes (craving input) and/or focused and concentrated walking (sensing input).
- Throwing themselves heavily on the floor, or against the wall or other people (craving input).
- Loves to sit with legs or arms all tucked up and looped over, might prefer to sit on the ground (craving input).
- Holds things (such as pencils) with excessive grip and pressure. Might write heavily on paper (craving input).
- Hits head or body (craving input).
- Swallow things, or insert things into places, they shouldn't (craving input).

People who don't like (avoid), or have little awareness (bystander) of proprioceptive sensory input are likely to be people who:

- Struggle going up and down stairs (due to spatial awareness).
- Don't like people touching them or sitting too close to them.
- Are not very physically capable, have joint mobility issues, struggle with things like Ehlers Danlos Syndrome (EDS), have reduced or poor joint flexibility.
- Get dizzy easily and not cope with changes in light when connected to movement.

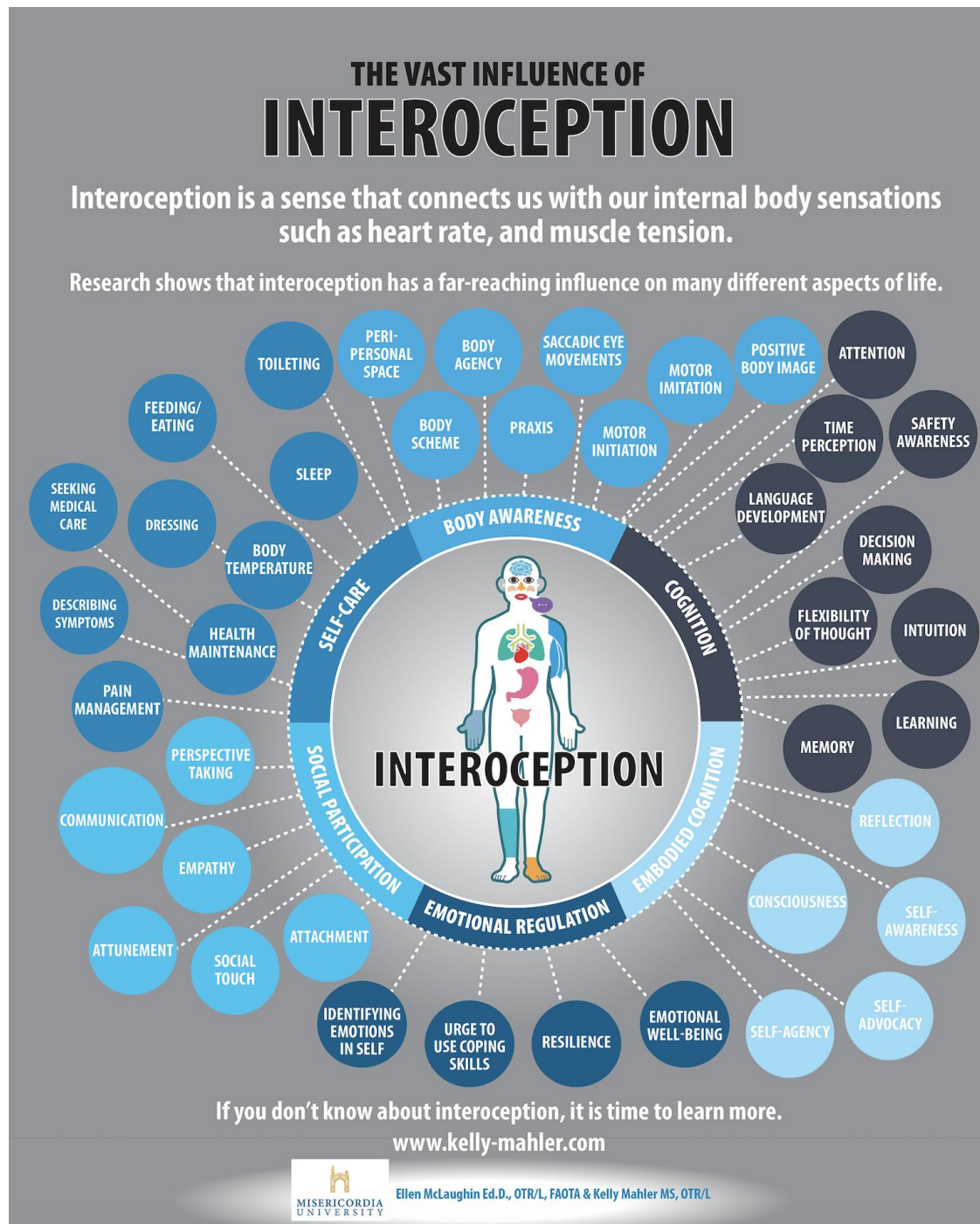
Exercises to help people struggling with proprioceptive sensory input include:

- Chewelry (chewy necklaces etc).
- Pushing and pulling on hands and clapping.
- Chair push ups, squeezing rubber bands around legs of chair.
- Bouncing with balls, including seated balls and exercise ball.
- Tug of war.
- Gymnastics style activities such as handstands, cartwheels, star jumps, gym equipment.
- Space hoppers, lying on stomach and weight-bearing using arms.

There are lots of equipment to help people who need proprioceptive sensory input. This can include balance beams, tight bands for around their legs, space hopper and exercise balls, therapy pods, tight sheets for around their bed, body socks and other compression-based items.

Interoceptive Sensory Input and Avoidance

This type of sensory input is based on feelings inside your body. Have a look at the image below, by Kelly Mahler. This shows the range of matters that Interoceptive input includes.



Interoceptive sensory input is one of the hardest to assess and explain as it's all about things happening inside the body. Interoception relates to **feelings of**⁵:

Hunger	Fullness	Thirst	Pain	Illness
Body Temperature	Sleepiness	Need to use the toilet	Anger	Distraction
Focus	Calmness	Boredom	Relaxation	Sadness

Just like any other sensory modality, we can experience interoceptive input in a variety of diverse ways. Some of us may not be able to feel things happening in our body and might struggle to know when we are about to urinate, or not feel pain in our body. Some of us are not able to say when we are thirsty or hungry as we don't feel those feelings, or if we do, we don't know we are feeling them.

Examples of people with **amplified interoceptive sensory input** (e.g., People who experience this input at a much greater extent than others). These people may or may not also be cravers and sensors of this input.

- People who get very upset by feelings of hurt or sadness, much more than others would in their situation.
- People who can control their bladder or bowels to heightened extents.
- People who feel their bowel or bladder to a much greater extent. For avoiders (who don't like the input) it's possible that a person may experience the input they hate in a heightened manner.
- People who experience pain to a much greater level than their peers.
- People who cannot manage changes in temperature and may hate having showers or get irritated in changing weather.

Examples of people with **bystander interoceptive sensory input** (e.g., People who experience this input at a much lesser extent than others).

- People who don't learn when they are needing the toilet and might need to wear incontinence aides for a long time.

⁵ Kelly Mahler, Interoception Daily Activity List

- People who cannot tell when they are in pain and show they don't experience (feel) it much at all.
- People who wear jumpers in summer and/or can sleep outside in the cold without feeling the low temperatures.
- People who eat endless amounts and don't feel full, and/or those who don't eat for ages as they don't feel hungry.

Sensory Sensors and Avoiders – What It Can Look Like

*Sensors and Avoiders are people who need to manage and limit the sensory input they receive due to small amounts being overwhelming to them. These people sense (feel / experience) certain things **more** than others would. Examples of such people include:*

- Someone who hates noise and must wear noise cancelling headphones (avoider of noise input).
- Someone who hates too much movement and becomes easily overwhelmed with physical activity (avoider of vestibular input).

- Someone who cannot cope with the feelings in their joints, muscles, and connective tissues and/or experience pain with movement and struggles (avoider of proprioceptive input).



Illustration by James Yang

- Someone who cannot stand lots of light and gets headaches easily in well-lit environments (avoider of visual input).
- Someone who cannot manage strong emotions and feelings and can become very overwhelmed, distressed, possibly depressed easily, and feel disturbed from feelings (avoider of interoceptive input).
- Someone who cannot manage feelings like being sick, having a headache, having period pain, having neurological processing issues subsequent to epilepsy, feelings of

moving their bowels to defecate, feelings of food being swallowed and processed by the body (avoider of proprioceptive / interoceptive sensory input).

- Someone who cannot cope with feelings of anxiety or if their tummy feels tight when they are sick or worried (avoider of interoceptive sensory input).
- Someone who cannot stand certain fabrics on their body and cannot touch certain textures (avoider of certain touch).
- Someone who struggles with visual changes, such as movement and gets very dizzy in situations where there is lots of movement (avoider of visual input and possible avoider of vestibular input).
- ⁶Someone who can't stand the taste of certain foods. In some situations, this can be very serious and very specific. In extreme situations, this may be diagnosed as Avoidant Restrictive Food Intake Disorder (ARFID) which now has its own DSM V diagnosis due it's severity and increasing commonality (avoider of certain tastes).



Avoidant Restrictive Food Intake Disorder (ARFID) is a new diagnosis in the DSM-5, and was previously referred to as "Selective Eating Disorder." ARFID is similar to anorexia in that both disorders involve limitations in the amount and/or types of food consumed, but unlike anorexia, ARFID does not involve any distress about body shape or size, or fears of fatness.

Although many children go through phases of picky or selective eating, a person with ARFID does not consume enough calories to grow and develop properly and, in adults, to maintain basic body function. In children, this results in stalled weight gain and vertical growth; in

adults, this results in weight loss. ARFID can also result in problems at school or work, due to difficulties eating with others and extended times needed to eat.

Sensory Sensors and Avoiders – What It Can Look Like When They Need Help

Sensory sensors and Avoiders need to avoid the sensory input that they don't like. If they can't avoid this input, it can be very distressing and sometimes excruciating and painful for them.

- Someone screaming, having a meltdown or self-harming because the sensory input they are receiving is so overwhelming that it's painful for them.

⁶ <https://www.nationaleatingdisorders.org/learn/by-eating-disorder/arfid>

- Someone vomiting, dry heaving, gagging, and spitting out food from their mouth.
- Someone holding their ears, covering their eyes, covering their mouth or any other part of their face or body to stop the sensory input, or at least reduce it.
- Someone constantly taking off their clothes or shoes, refusing to wear certain clothing, shoes, or socks, or refusing to touch or feel certain surfaces.
- Someone tripping or falling over.
- Someone unable to talk to you, or situational mutism in situations when they feel overloaded from sensory input.
- Someone who talks extremely fast, or must jump and move as they talk, because they can't stand the way their body feels at certain times or in certain temperatures.
- Someone who cannot go swimming in certain temperature water or who screams in the shower if the water is too cold, or just due to the water touching their body.
- Someone who becomes extremely distressed at emotional situations (including friendships and relationships) and may want to hurt themselves or self-harm when things become overwhelming, and they don't have the interoceptive skills to manage the feelings safely.
- Someone screaming so loud and hitting themselves to create their own sensory experience (that they can manage, and which helps them regulate) to avoid sensory input they can't manage (such as internal feelings).
- Someone hiding from people and crying when they are in social environments because the noise is so overwhelming that it becomes painful. This can also present as a heightened focus on just the noise of a fan, or an air conditioning unit working in the background that most others don't even hear.
- Someone who gets extremely distressed around the time of, or during going to the toilet as they cannot stand the feeling of the bowel movement through their body.
- Someone who will not spit something out of their mouth, nor swallow it as it doesn't feel right in their mouth.

Sensory Seekers

Seekers are people who crave and need more sensory input than others. This need can be desperate and urgent, and many people don't even realise they have these needs. These are

people who feel / experience sensory input **less** than other people would and need help topping up their sensory bank to feel regulated and safe. Examples of such people include:

- Someone who likes extra chilli and spice in their food (seeker of taste).
- Someone who loves lights and the sun and loves to stare at lights or colours (seeker of visual sensory input).
- Someone who constantly plays on their iPad, computer, device and can spend hours just receiving the same sensory input (seeker of visual sensory input).
- Someone who loves movement and needs additional movement and activity (seeker of vestibular sensory input).
- Someone who chews everything, or walks around, licking surfaces of things (seeker of taste sensory input).
- Someone who wants to touch everything all the time (proprioceptive or tactile sensory seeker).
- Someone who loves feelings and emotions and craves emotional situations (seeker of interoceptive sensory input).
- Someone who loves making noise and loves noisy environments and makes lots of noises themselves, this could be by vocal scripting (which can also serve other purposes for the person) and by other verbalisations or movements with their body which create noise (seeker of auditory input).
- Someone who puts lots of salt or lots of flavouring on their food to make it stronger in taste and/or might like strong lollies like Warheads (seeker of taste sensory input).
- Someone who enjoys the feelings their joints, muscles and connective tissues make, and likes to move in different ways and feel additional input (seeker of proprioceptive sensory input).

Sensory Seekers – What It Can Look Like When They Need Help

Sensory seekers need to consistently receive the sensory input that they need and crave. If they can't receive this input, they often feel awful and can experience sickness, pain and feelings of total hopelessness and loss from not having their needs met. Examples can include the following:

- Someone who goes up to people they don't know and smells their clothes or hair.

- Someone who puts lots of things in their mouth, even those that aren't meant to be tasted or eaten. Sometimes the person might spit them out again, sometimes they might be swallowed.
- Someone whose joints and bones feel sore and achy when they don't use and move them and move around a lot.
- Someone who needs the constant visual sensory input they get from their iPad, computer games, devices, television and then becomes depressed, self-harming and unmanageable when they are asked to reduce the time, they spend on the devices that provide them this sensory input.
- Someone who becomes depressed, shows signs of psychosis, or hear voices⁷, who is not receiving sufficient vestibular sensory input. Vestibular input is directly linked to neurological feelings of safety and wellness and has a strong link with mental health.
- Someone who is morbidly depressed, feeling unloved by everyone and thinks no-one wants to be around them.
- Someone who takes things off people, tips out drinks, throws items around erratically.
- Someone who appears as if they have poor impulse control, e.g., who might run off suddenly to touch something, or who might quickly shove something on their face or in their eye, without thinking about danger or exercising any caution.
- Erratic, sudden and unpredictable movements are very likely for a sensory seeker to demonstrate if their needs are not being met. This can look like they are demonstrating unpredictable and irrational behaviour, when really, they are craving a certain type of sensory input and don't know how to regulate themselves.
- Rubbing genitals in public, or pushing genitals against tables, chairs or into other people. This is particularly common in adolescent boys with a heightened sensory profile. This behaviour can be very controversial because many believe any behaviour related to genitals is sexually driven. In many situations, those who seek sensory input may just be trying to regulate themselves by acquiring specific sensory input and/or needing touch or movement in a certain way.

Help us move the change to non-ABA strategies by adopting brain-based and sensory based integration interventions.
Join FB group "The OTHER Way" to find the community pushing this movement.

[The OTHER way \(public group\) | Facebook](#) *There are no copyright restrictions on this work and you're welcome to share it.

⁷ <https://www.sciencedirect.com/science/article/pii/S0006899313012134>