



Sensory Integration & Sensory Processing

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Therapy in Praxis is a specialist assessment and therapy service for children and adolescents with developmental and neurological conditions, using sensory integration and other therapeutic approaches.

Working on a national basis we offer consultancy and training for individuals working with a diverse range of neuro-developmental and atypical developmental difficulties.

THE SENSORY SYSTEMS

Sensory-integrative techniques take into account all the senses, with techniques aimed at optimising a child's ability to make use of sensory information. The sensory systems – and some issues that they can present for children – are as follows:

- Visual System
- Vestibular System
- Auditory System
- Proprioceptive System
- Tactile System
- Oral System
- Olfactory System

Visual System

The visual system is closely related to the development of normal movement patterns, and therefore, children need to perceive their environment visually in order to accurately orient themselves to their surroundings. Children who are sensitive to various visual stimuli may not explore or learn about their surroundings. As a result, they may have difficulty carrying out activities of daily living and attending to classroom tasks.

Related to the visual system are ocular motor skills - the smooth and coordinated movement of the eyes to attend to and follow objects and people in the environment. Controlled eye movements are needed to find and track a moving object, scan the environment, sustain eye



contact on a fixed object or person, shift gaze from one thing to another (e.g., the blackboard to paper) and for eye/hand or eye/foot coordination skills.

Some children without any vision or ocular motor limitations get visually over-stimulated by their everyday environment. These children can be easily distracted by bright lights or a busy decor - (e.g., wall decorations) and be unable to make eye contact or visually attend to activities.

Vestibular System - Perception of Body Movement Against Gravity

This 'hidden sense,' located in the inner ear, takes in information from the environment and sends it to the brain. The vestibular system registers the position of one's body in relation to gravity and lets you know if it's moving or still, or speeding up or slowing down. The vestibular system has a strong influence on the muscles that control posture, including the muscle tone and strength needed to sit in a chair, hold one's head up or play a sport.



Auditory System



The auditory system is positioned together with the vestibular system inside the ear. This system enables a person to identify where a sound is coming from and to differentiate among various sounds. When sound enters the ear, both high and low frequencies are perceived. Higher-toned sounds, such as a person's voice, carry a lot of information. A lower-toned sound, such as thunder, tends to be deeper and not carry as much information.

The auditory system also helps to tune out extraneous auditory information in order to focus on pertinent sounds. When this processing does not occur, a child might appear inattentive or unable to 'listen.' There is a difference between hearing and listening.

- Hearing is the passive reception of sound.
- Listening is active and requires effort and intention: You must want to do it.

Proprioceptive System - Perception of Body Position in Space

This is another 'hidden sense' that takes in information from the environment and sends it to the brain. It is registered by receptors located in muscles, tendons, ligaments and surrounding joints. The proprioceptive system tells the brain where body parts are and what they are doing in relation to each other and objects – in particular, at times when vision is occluded.



For example, this system helps children to subconsciously know the exact amount of force needed to throw or kick a ball, to reach for a toy/pencil, to write/draw, or to just sit in a chair.

The proprioceptive system is closely linked to the vestibular system. Both work together to help the individual know exactly what is happening within the body and to the body as we move through space and interact with our environment.

Proprioceptive input, a name for therapeutic heavy work or deep pressure to the muscles and joints, can be both calming and alerting to the nervous system. Unlike other sensory input, it is rarely overloading. It can improve a child's body image, muscle tone and physical strength.

Touch / Tactile System

The tactile system functions as both a protective sense and a discriminatory sense.

The protective sense alerts a child to danger (e.g., hot/cold). The discriminatory sense provides information to the child about the quality of objects in the environment (e.g., soft/hard, rough/scratchy/smooth).

Children can be over-responsive, under-responsive or combine a little bit of both. Difficulty in this system can also affect feeding skills.



Oral System

This system pertains to textures, tastes and temperatures that enter the mouth. When referring to the oral sense in relation to the therapy we offer children, we are usually discussing oral defensiveness or hypersensitivity to oral sensations (picky eaters).



Oral defensiveness is usually seen in conjunction with tactile defensiveness. However, some children seek out strong oral input or display excessive drooling, indicating hypo-sensitivity to oral sensations (messy eaters).

Smell / Olfactory System

This system pertains to the ability to detect and differentiate odours. Smell is the only system that has a direct route through the limbic system to the brain. Smell has a powerful influence on our behavior and often is a link to powerful emotions and memories. Many times we are unaware of the overwhelming influence smell holds.



WHY SENSORY INTEGRATIVE TECHNIQUES?

Sensory integration is the ability to take in information from our senses, organise it and make an appropriate response. A child who experiences a disruption of this pathway or process (e.g., sensory-integrative dysfunction, ADHD/ADD, learning disabilities, autistic spectrum) has trouble adapting to environmental demands and maintaining an efficient level of arousal or attention.

The brain is surprisingly 'plastic' – meaning it can respond to stimuli and create new neuronal pathways. In other words, a child who experiences sensory disruption can, through carefully designed activities that may look like simple play, retrain his or her brain to process sensory information more effectively.

This neurological theory serves as the foundation for all treatment strategies in our practice. At Therapy in Praxis we have therapeutic techniques covering all the sensory systems, so we can address not only individual sensory challenges a child faces, but also multiple sensory challenges and the integration of all sensory information – to optimise a child's ability to function in his or her world.

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