

Understanding Development in Children

Sensory Integrative Processing



Children's brains develop through movement, sensation and social interaction, supporting learning and everyday functioning. Sensory integrative processing helps the brain organise sensory information, supporting regulation, connection and skill development.

OVERVIEW

Brain Connections in Early Childhood

Babies are born ready to learn. Early brain connections exist but are not fully organised. Through children engaging in experiences that are rich in social interactions, sensation and movement, their brain strengthens these connections forming sophisticated networks. This process allows us to adapt and function in the world. This information sheet will focus on understanding the organisation of sensation and impact on our learning and development.

Processing sensation

Sensory Integrative Processing describes the brain detecting, analysing organising and responding sensory information.

Most of the time it occurs automatically and subconsciously.

Dr Jean Ayre's described how the brain develops from the bottom up, with the sensory systems as the foundational and vital to integration, learning, development and wellbeing, impacting regulation, social connection, behaviour, and all skilful activities.



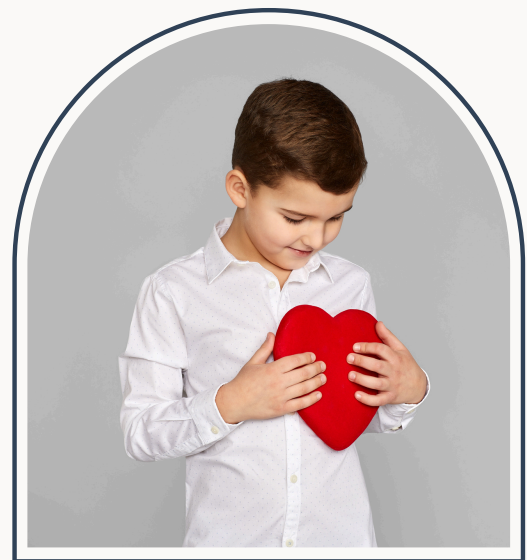
SENSORY PROCESSING

Eight Sensory Systems

Detect information from inside and outside our body

- Sensory systems that detect information from outside our body include: sight, sound, smell, flavour, gravity, and touch.
- Sensory systems that detect information from inside our body include: position and movement (proprioception), head position and movement (vestibular) and interoception (including hunger, thirst bladder and bowel, temperature, heart rate)

If the brain can make sense of and respond to all of these sensations in an effective, efficient and integrated way, we can perform higher level capacities with more ease and precision (get dressed, know when to use the toilet, hold a knife and fork, kick a ball, read and respond to social cues etc).



SENSORY PROCESSING PATHWAYS

Two Sensory Integrative Processes

Sensory information is processed in two different pathways: Sensory Modulation and Sensory Discrimination.

Sensory Modulation

Sensory Modulation is considered the evaluative process. It influences what we pay attention to and how strongly we respond to sensory input. It answers the questions:

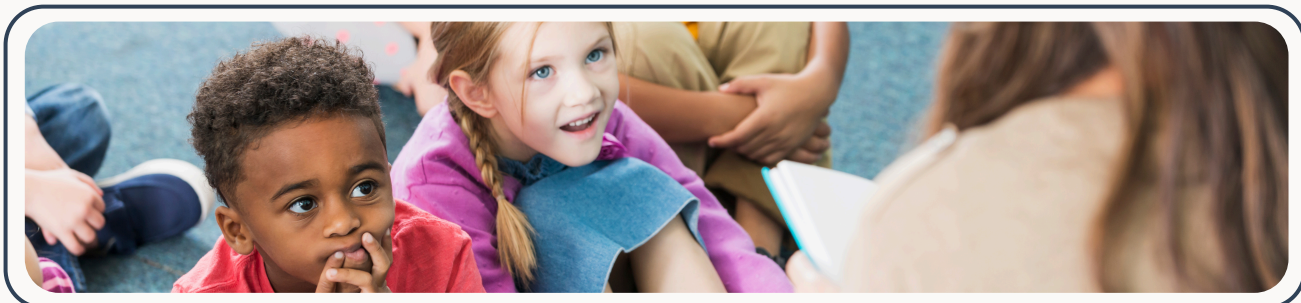
- Is this sensory information safe or poses a risk to me?
- Is the sensory information important or not?

Sensory Discrimination

Sensory Discrimination processing enables the brain to interpret the specific qualities of sensory input. It answers the questions:

- What is that?
- What is the intensity, location, duration and quality of this sensation?
- What precise action do I need to take?

When discrimination is working well, we act with precision and confidence. When it is less efficient, everyday tasks take more effort and concentration.



THE BRAIN AT WORK

Common Ways to Support Sensory Integrative Processing

You could think of your brain as a 'headquarters' that receives hundreds of signals every second. It sorts the sensory signals, decides what needs attention and what can be ignored, and what action needs to be taken. This is sensory integrative processing at work.

If you think your child may have individual differences in sensory integrative processing you could contact your local Occupational Therapist to discuss the process of assessment and intervention.



RESOURCES

Further Information

Websites

- Pathways.org: Resources on development milestones up to age 6
- Zero to Three: Resources on early development, useful for educators
- Understood: Support for children with learning and attention issues

Books

- The Whole-Brain Child, Daniel J. Siegel and Tina Payne Bryson: Strategies for healthy brain development.
- How Emotions Are Made, Lisa Feldman Barrett: New science of emotions.
- Sensory Integration and the Child, A. Jean Ayres: Sensory integration issues and solutions.
- Raising a Sensory Smart Child: The Definitive Handbook for Helping Your Child with Sensory Processing Issues, Lindsey Biel and Nancy Peske
- Understanding Your Child's Sensory Signals: A Practical Daily Use Handbook for Parents and Teachers, Angie Voss

