



Making Sense of a Sensory-Intense World: Practical Coping and Opportunities for Connection

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Overview

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- What is sensory processing?
- Misperceptions about sensory processing
- Executive function, behavior, emotions, and sensory interface
- Approaches to understanding
- Approaches to support
- Becoming an ally

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What is not in this talk....

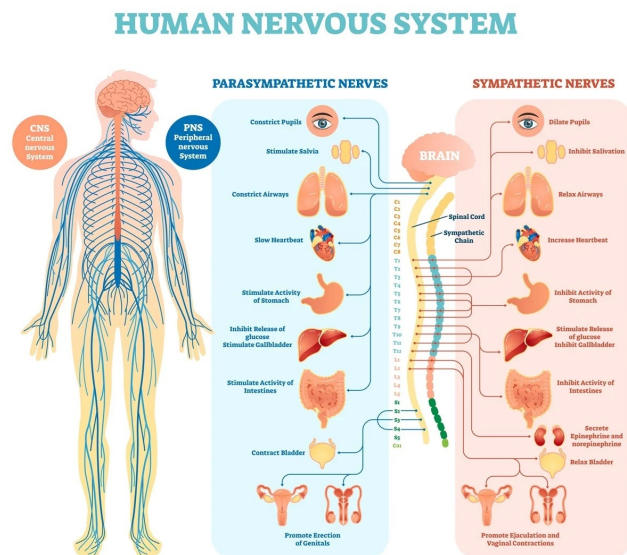


- Discussion of the relevance or accuracy of Sensory Processing Disorder as a separate clinical diagnosis
- Discussing the nuances of discrimination, modulation, and sensorimotor profiles of sensory dysregulation
- Sensory integration therapy as a treatment (evidence base for Ayres protocol and emergent support only)
- Occupational therapy clinical strategies

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Sensory Processing – The Reality of Being Human

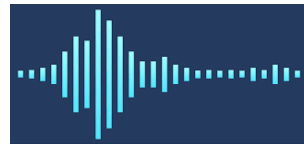
- All of us have a nervous system.
- We operate through electrical impulses – input and output.
- Even our most complex thoughts are a series of electrical signals interacting with learning history.



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Sensory Processing – Nuts and Bolts

- The purpose of the sensory system is to convert something we hear, see, etc. (a stimulus) into information we can use to determine a response that best fits our **individual** survival needs.
- Sensory receptors in our body are activated by a stimulus, convert this to an electrical signal, then transfer this signal across neurons in the nervous system to get a message to the brain.
- Humans are somewhat like advanced computers in this sense.

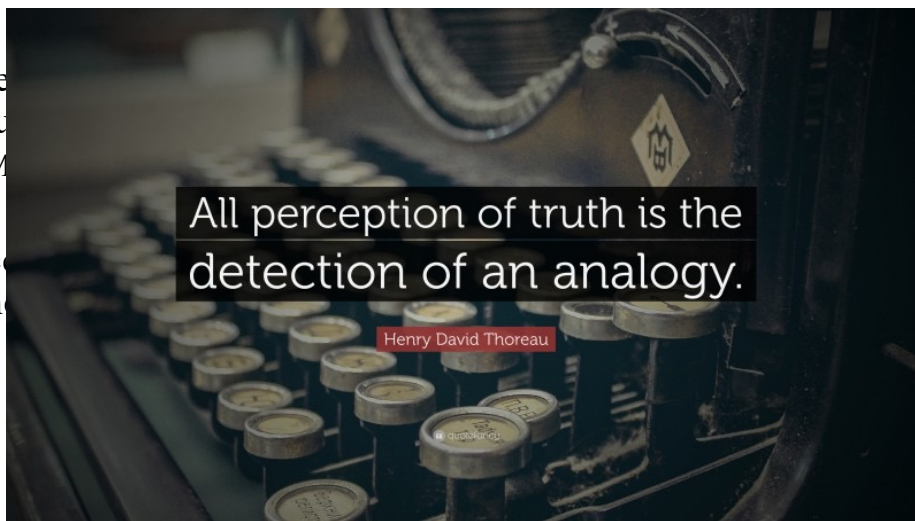


<https://opentextbc.ca/biology/chapter/17-1-sensory-processes/>

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Sensory Processing – Reception vs. Perception

- Reception is the process by which sensory receptors receive information from the environment.
 - Most sensory receptors are specialized to detect a specific type of stimulus.
- Perception is the process by which the brain interprets the information received from the sensory receptors.
 - Perception involves the brain's ability to organize and interpret sensory information.

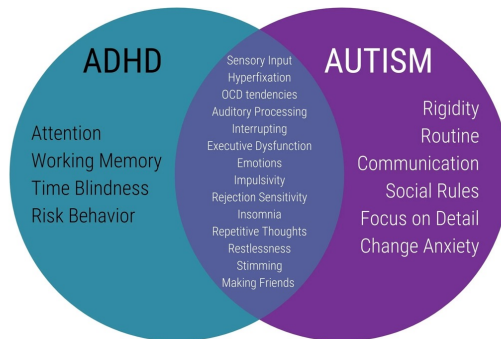
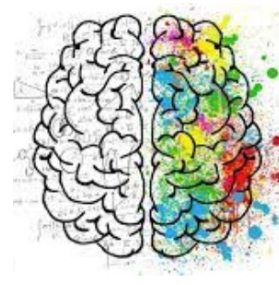


<https://opentextbc.ca/biology/chapter/17-1-sensory-processes/>

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Misperceptions

- Sensory differences are clearly diagnostic of ASD.
 - Inaccurate – ADHD, anxiety, autoimmune conditions, and many more diagnostic profiles have sensory overresponsivity and/or underresponsivity components .
 - i.e., photosensitivity in lupus/epilepsy, Kim & Chong, 2013; sensory modulation and daily life interference in ADHD, Adra et al., 2020; sensory modulation problems and DMDD, Benarous et al. 2020)



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Misperceptions

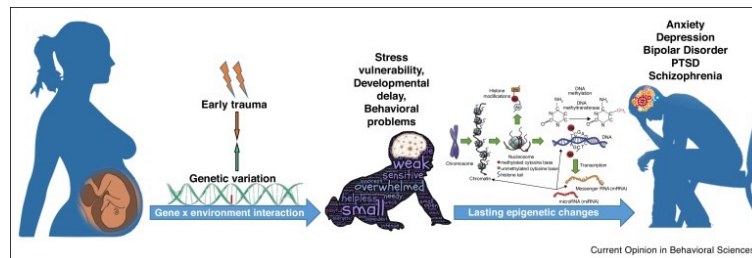
- Sensory processing differences are unique to a people with diagnosed disorders.
 - Inaccurate – Sensory processing sensitivity is a widely researched phenomenon that has been tied to personality traits (e.g., neuroticism and openness in adults – Lionetti et al., 2019), parenting styles and practices (Goldberg & Scharf, 2020), and stress (Greven et al., 2019).



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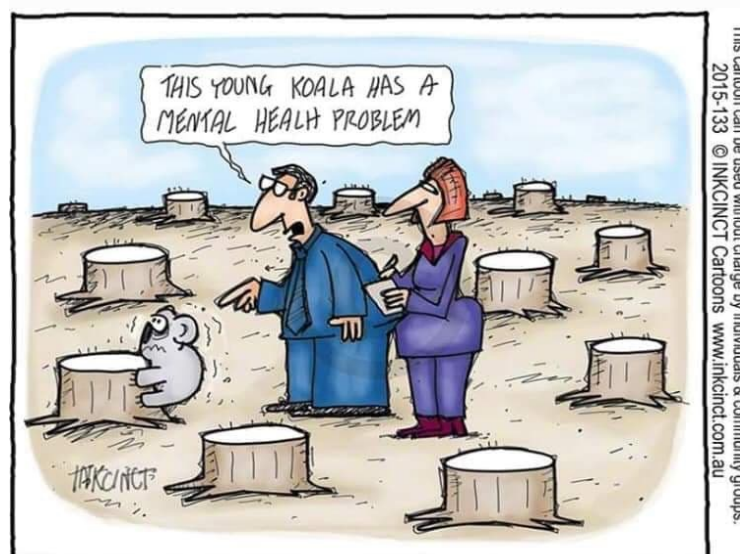
Misperceptions

- Sensory processing should function the same in all people.
 - Inaccurate – There is a growing body of literature on transgenerational epigenetic inheritance of stressors that alter offspring genetic expression *and* there will always be natural variability across a species.
 - Experiences can alter gene expression. This is typically a positive feature of survival passed down across generations. However, this can act in ways that increase risk of hormonal, cognitive, behavior, and emotional differences and interferences in future generations (Cruceanu et al, 2017; McKenna et al., 2022; Švorcová, 2023)



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What is the real issue?



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But what does this all mean?!

- Sensory processing is complex for all of us. It cannot be assumed that one person's experience can be generalized to another person, nor that sensory differences are unique to one group of people.
- Sensory challenges can be multi-layered:
 - Underreactive receptors to detect an experience.
 - Overreactive receptors that enhance/intensify an experience.
 - Underreactive perception in the brain results in less of a reaction.
 - Overreactive perception in the brain results in an intense reaction.
- Critical Conclusion – **All experiences are valid and accurate for each individual person given how they are perceiving their experience. No one is wrong about how they are processing, just different than one another.**

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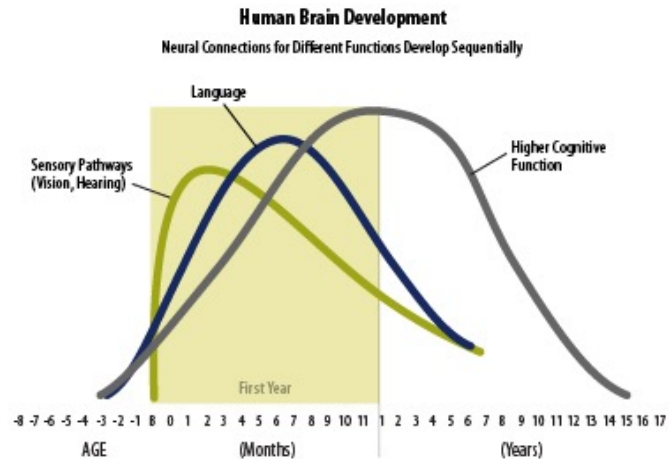
Executive Function, Behavior, Emotion, Sensory – Interface

- Most of the evidence for sensory differences is based on behavioral observations. For example, someone might spin, refuse to touch something, restrict food intake, seek out water, etc. Each of these examples is something other people observe.
 - We may view these behaviors as atypical because *most* people don't engage in the behavior in the situation or stimulus conditions in which they occur.
- There are two features to be considered for all behaviors:
 - Topography – what a behavior looks like
 - Function – what the behavior is trying to accomplish (the hidden need)
 - *Behaviors can look the same but have a different function! Beware the error of assuming a behavior meant to escape a situation in one setting means the same thing if it occurs for a sensory-driven reason in another – environment/setting is a key component to understanding someone's needs.*

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Executive Function, Behavior, Emotion, Sensory – Interface

- What we see behaviorally is only one piece of the puzzle.
- Executive Functions (EF) also play a role.
 - Working memory – holding things in mind for multi-step tasks; allows complex thought
 - Inhibitory control – manage distractions, frustration, and matching behavior to situation
 - Mental flexibility – adjust to changing circumstances and contingencies



<https://harvardcenter.wpenginpowered.com/wp-content/uploads/2011/05/How-Early-Experiences-Shape-the-Development-of-Executive-Function.pdf>

<https://blog.nebraskachildren.org/2014/01/06/meet-the-executive-functions-the-key-to-brains-that-work-like-they-should/>

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Executive Function, Behavior, Emotion, Sensory – Interface

- Sensory dysregulation goes hand-in-hand with executive function deficits.
- Those of us outside the person observe the behavioral and emotional reactions of the person to those deficits.

Great Practice Suggestions for EF skills across age bands (infancy-adolescence):
<https://developingchild.harvard.edu/resources/activities-guide-enhancing-and-practicing-executive-function-skills-with-children-from-infancy-to-adolescence/>

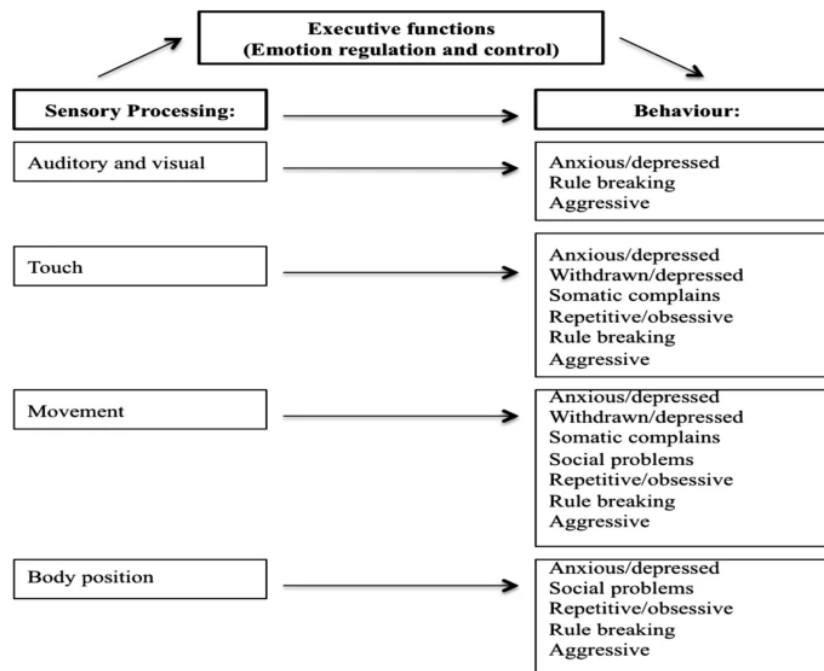
<https://harvardcenter.wpenginpowered.com/wp-content/uploads/2011/05/How-Early-Experiences-Shape-the-Development-of-Executive-Function.pdf>

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Executive Function, Behavior, Emotion, Sensory – ASD

- Executive functioning deficits vary in research thus far for autistic individuals, suggesting there are subtypes of ASD as well as variability inherent to individuals and their specific profiles (Demetriou et al., 2019)
 - Proposed to be related to various findings of overconnectivity and underconnectivity of areas of the brain.
- Suggestion has been made that planning, organizing, and matching behaviors to goals requires more effort for autistic individuals relative to non-autistic controls (Dias et al., 2023)
- Weaknesses in EF can actually mediate the relationship between sensory processing challenges and behavioral/emotional dysregulation behaviors – weaker EF means more difficulty managing sensory challenges which leads to more behavior/emotion regulation (Fernandez-Prieto et al., 2020)

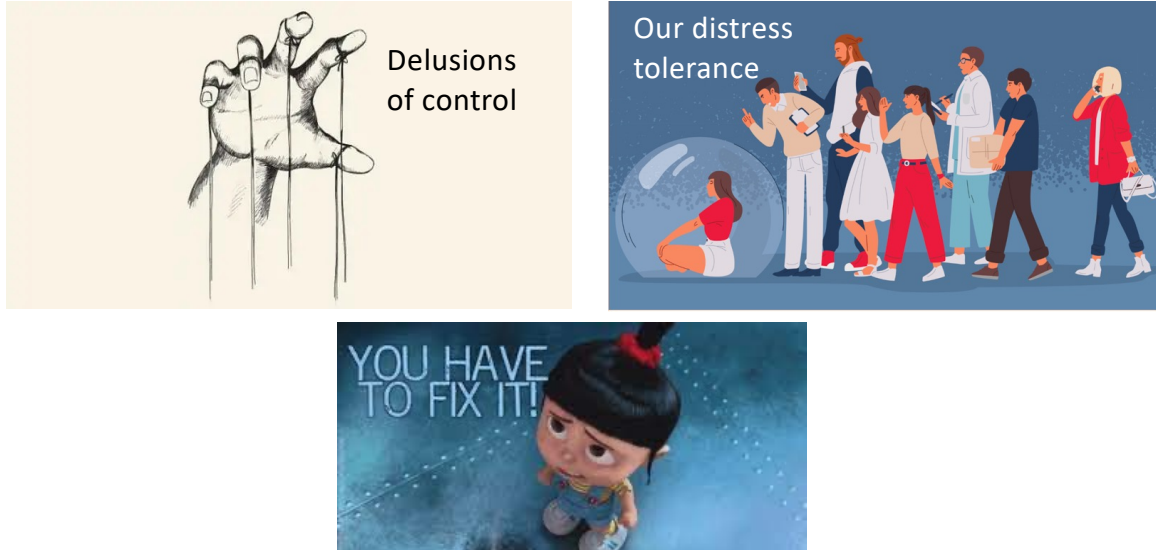
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Fernandez-Prieto et al., 2020 – Fig. 2

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Approaches to Understanding - Caregiver



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Approaches to Understanding – Personal Strategic Plan

- Conduct a “sensitivity and low responsiveness” self-assessment.
 - Identify what is easier for you to pick up on in the environment. Don’t assign value to these as helpful or unhelpful, just assess your profile.
 - Can you hear sounds much further away than other people? Do you see light beams?
 - Identify what is harder for you to pick up on in the environment. Again, do not assign value labels, just focus on what you don’t perceive easily.
 - Do you sometimes not hear people speaking depending on their tone? Do you tend to overheat and only realize you are too hot when you are covered in sweat? Stub your toe and not notice you are hurt until you see a mark/blood?
 - For each of the items you identify, write down what you typically do when you encounter that experience.
 - Write down your goals and aims.
 - Now evaluate how well your behaviors match your goals and aims. Are there places where maybe you could use help choosing different options?
 - Generate alternative response ideas and what it would take to try them out – physical, emotional, behavioral, social resources

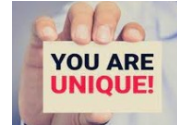


Remember
this might
vary by
day or
situation

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<https://www.nichd.nih.gov/health/topics/autism/conditioninfo/treatments/cognitive-behavior>
https://www.kennedykrieger.org/stories/interactive-autism-network-ian/cognitive_behavioral_therapy

Approaches to Understanding – Create a Common Language & Interdependence



- No one other than you understands how you truly feel or see the world – your view is entirely unique.
- Define your support team – who will help you set up a self-regulation plan and who can you turn to when you hit an obstacle
- Try to use analogies to help other people understand your experience.
 - Some of my favorite client quotes:
 - On focus - “My brain is full of bouncy balls. I don’t know what you said.”
 - On discomfort from tactile experiences - “Touching lettuce makes my teeth itch.”
 - On clothing preferences covering all skin– “The air hurts. It feels like sandpapers.”
 - On organizing emotions and working memory - “My brain is black...my heart is yellow. I am happy and love, but I can’t find it all same place.”
 - On needing more time to process - “Does not compute. My pinwheel is spinning.”

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Approaches to Support

- Build advocacy skills – when to voice a need to adjust the situation or leave it and helping others honor that request; also when to determine you don’t need to cope with something unnecessary.
- Adaptive equipment – if the situation is not deemed unnecessary and you cannot leave or change the situation, are there physical/mechanical methods you can adopt (i.e., brimmed hat, ear plugs, and so on) to decrease aversiveness.
- Coping skills– The first two are the most important since part of being able to cope is to know what options you already have and decrease difficulty.
 - Waking up the body – sometimes you are not energized/aware enough and need music, movement, or other strategies to increase arousal levels
 - Calming down the body – this could include deep breathing, calming self-talk, certain sounds, etc.
 - Perspective-taking and managing distress – Cognitive-Behavioral Therapy (Wang et al., 2021; Scarpa & Reyes, 2011)
- Strengthen EF – Helping to build weaknesses in areas of problem-solving, organizing, and inhibition can help. More and more options are becoming available for this, including game-based programs that help to build EF! (Pasqualotto et al., 2021).
 - Mightier™ and similar programs are available
 - AANE and similar organizations might have coaches who can work with you (i.e., LifeMap)

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Becoming an ally

- Your aim is not to change how someone feels but to support them in meeting their needs in a way that suits their outcomes.
- Continuing to put forth a “disorder” view of sensory processing is harmful and can sometimes emphasize the wrong approaches (i.e., “normalizing” rather than embracing that the differences can be helpful in better understanding each other and our world).
- Be a coping partner rather than a challenger of change. Provide the “out” when that is the best choice.
- Listen more than you talk when your autistic colleague is sharing– be a carrier of neurodivergent messages to others and normalize individualism.

ALLY:

/ə-ˈlī/
NOUN OR VERB

(n): a person who associates or cooperates with another; supporter.

(v): to associate or connect by some mutual relationship, as resemblance or friendship.

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