

Sensory Processing Disorder & Autism Spectrum Disorder



Where is the difference?

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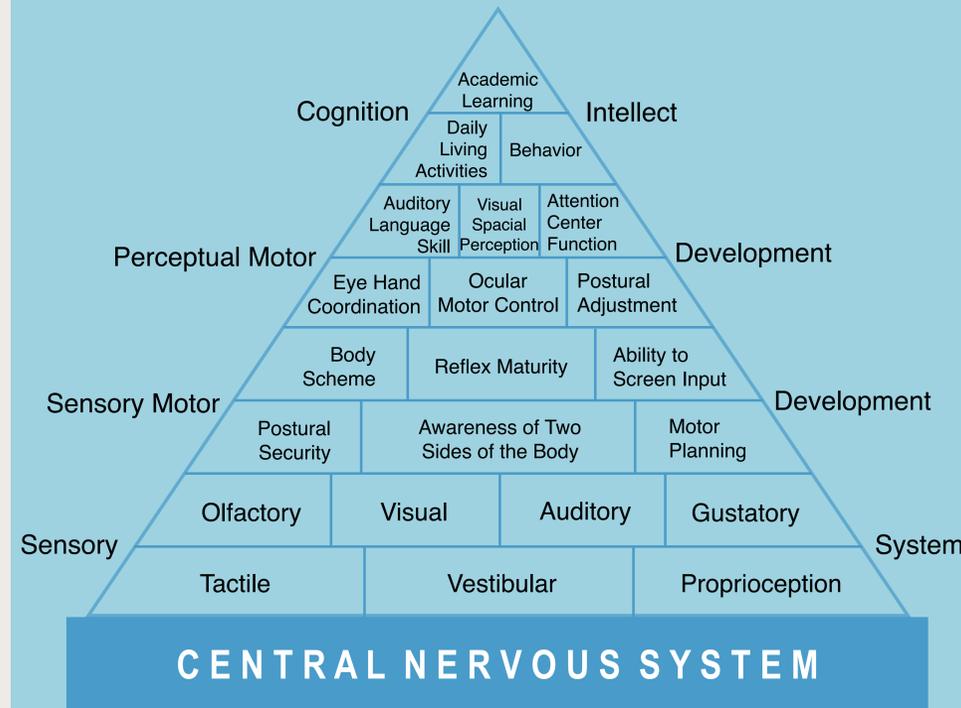
Introduction

- 1 in 68 children in the United States is diagnosed with autism spectrum disorder. Autism is a serious, lifelong, pervasive neurological developmental disorder causing deficits in social interaction and communication.
- It is said that more than 90% of people with autism have sensory integration difficulties that cause exaggerated reactions to everyday sensations.
- There is no standard diagnostic test for these various sensory processing dysfunctions. As a result, a diagnosis has not yet become accepted among therapists and professionals.
- Sensory processing disorder has not been provided a subset of treatment or services for those who do not have autism.
- Therapists and researchers petitioned the American Psychiatric Association in hopes that sensory processing disorder can be included in the Diagnostic and Statistical Manual.

Characteristics of Sensory Processing Disorders

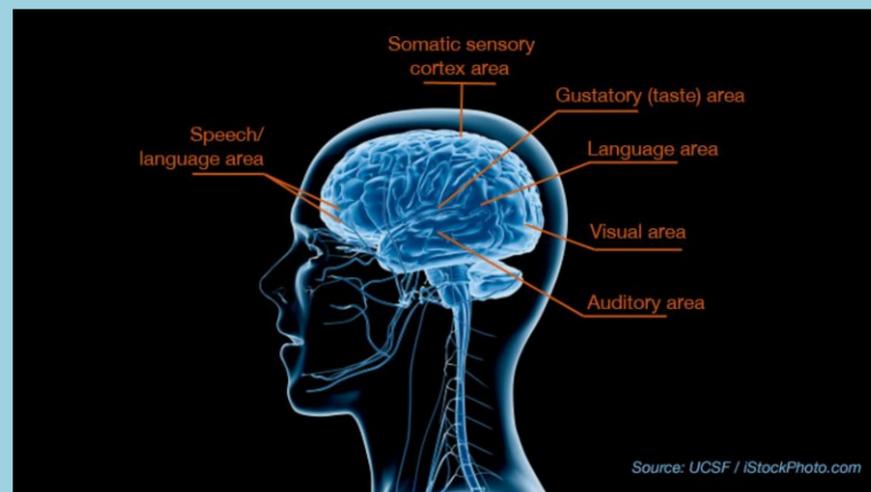
Over-Responsive	Under-Responsive	Sensory-Seeking
Hates getting dirty. Very sensitive to the texture of clothing and food.	Often does not notice if they sat in something wet, if someone touched them or their face is dirty. May drop things because they're unable to hold onto them properly.	Chews things like shirt cuffs, rubs against furniture and loves rolling around on the grass or mud.
Insecure about falling or losing their balance and may be prone to car sickness.	Prone to falling and getting hurt. Can swing or spin for a long time without getting dizzy.	Constantly on the move, fidgety, loves being upside down and is a real daredevil.
Battles with coordination and avoids too much playing with others.	Only responds to active play if it involves pulling, lifting or pushing.	Enjoys vigorous play and loves being squeezed or hugged tightly.
Easily overstimulated; covers eyes, cannot handle bright lights or loud noises.	Doesn't seem to notice obstacles in their path, responds slowly to moving objects.	Loves shiny, spinning, bright objects. Enjoys the TV really loud and likes being in a noisy crowd.
May moan about textures, temperature and taste of food; often gags in disgust.	Often eats very spicy or hot food without noticing any difference.	Are often seen licking inedible objects like toys.

Why Sensory Processing Disorder?



Pyramid of Learning. (Williams & Shellenbeger, 1-4)

- The sensory system is the building block of the central nervous system. Lack of proper function can directly affect other systems and impede learning potential.
- Understanding the relationship with autism spectrum disorder may support the hypothesis that sensory dysfunction is found among children who do not exhibit autism symptoms.
- Treatment may encourage sensory integration which can allow those with the disorder to live more fulfilling lives.



Methods of Research

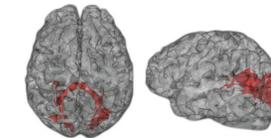
Mapping Sensory Processing Disorders in the Brain

Children with sensory processing disorders have decreased structural brain connectivity in specific sensory regions different than those in autism. Here's a closer look at the areas affected.

Sensory Processing Disorder only

Area Affected:

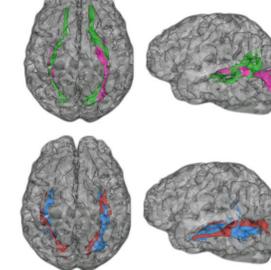
- Splenium of the corpus callosum between left and right lateral occipital cortices



Autism Spectrum Disorder only

Areas Affected:

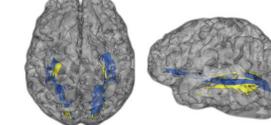
- Inferior fronto-occipital fasciculus (IFOF)
- Fusiform-amygdala
- Inferior longitudinal fasciculus (ILF)
- Fusiform-hippocampus



Autism Spectrum and Sensory Processing disorders

Areas Affected:

- Posterior corona radiata (PCR)
- Dorsal visual stream



Source: Mukherjee lab/UCSF



- Compare and contrast current research regarding sensory dysfunction in the field of Neuroscience and Neurodevelopmental disorders.
- Interview leading researchers studying sensory processing disorder.
- Interview local Regional Center service coordinators.
- Review Regional Center publicized information regarding sensory processing disorders.
- Attend lectures at local research institutes that focus on developmental disorders of the brain.

Future Direction & Goal

- I expect to find that there is biologically significant evidence supporting sensory processing disorder being a separate neurological disorder.
- As current research may not allow for diagnostic criteria and/or therapy, research and literature review can aid in understanding how to develop therapy for sensory processing disorders.
- Creating awareness can provide local school districts' special education team with the signs and symptoms of sensory processing disorders when a student lacks a formal diagnosis, hopefully creating a more enriching academic environment.