



Sensory Systems and Their Effects

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Introduction

- ▶ Our senses are the most important foundation for ALL daily activities.
- ▶ Each task requires us to manage data that is coming in through our eyes, ears, skin, nose, body movements, and body position.
- ▶ Functioning systems automatically filter, discriminate, organize, and respond to this data.
- ▶ Without automatic interpretation, we struggle in our ability to regulate and perform.
- ▶ Everyone has some sensory dysfunction, but when this negatively impacts us, it needs to be managed.



Chat Box Activity

What are some of your own sensory needs or preferences?

- For getting ready for bed?
- Food preferences?
- Clothing preferences?
- Lighting preferences?
- Sound/ volume preferences?

Senses are on a spectrum

Seeking

Avoiding



Our Sensory Life

- ▶ Auditory System
- ▶ Vestibular System
- ▶ Proprioceptive System
- ▶ Touch System
- ▶ Visual System
- ▶ Interoception



Auditory System

- ▶ Auditory Processing problems cause disruption in the way a child's brain understands what they are hearing. It is not related to hearing loss. It can be overwhelming and often creates anxiety.
- ▶ This can look like: trouble orienting to words (tuning out), difficulty recalling instructions, word retrieval challenges, mis-hearing or saying "what" a lot, too loud/soft speaking, reduced listening endurance, reactivity to sound, making noises to self, behavior challenges, anxiety, and confusion.



Vestibular System

- ❖ The vestibular system is our internal guide that tells our body where we are in relation to upright.
- ❖ It helps direct our bodies step-by-step through the process of responding to gravity. It relays messages to the brain that give a sense of competence in movement, sitting, and balance activities.
- ❖ This also provides us a sense of “center” in our bodies



Reduced Vestibular Integration Leads To:

Difficulty with attention, focus, regulation, and behavior. Energy can be easily depleted trying to pay attention and be still

Challenges putting on shoes (balance coordination) and sitting upright in chairs to easily focus in class

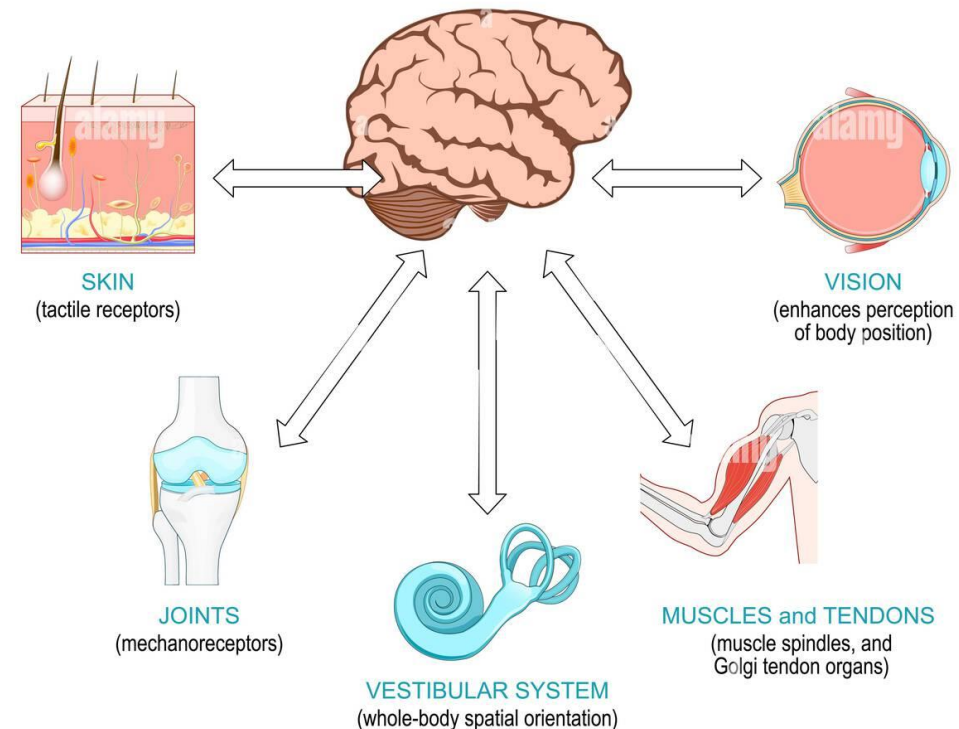
Constant fidgeting in chairs, slouching, not listening to the teacher, or difficulty balancing.

Can take great intention to not feel scared while going up stairs, being bumped, or even being pushed on a swing~ especially sideways or rotationally

Proprioceptive System

- ▶ Proprioception in our muscles and joints to tell us where we are moving in space without having to look at our bodies.
- ▶ This allows us to plan and react so that we move smoothly. We need proprioception to walk on the sand, wave to somebody, avoid bumping into other people, aim our reach, and manage grasp tension.

PROPRIOCEPTION (sense of position, movement, and balance)



Imbalanced Proprioception

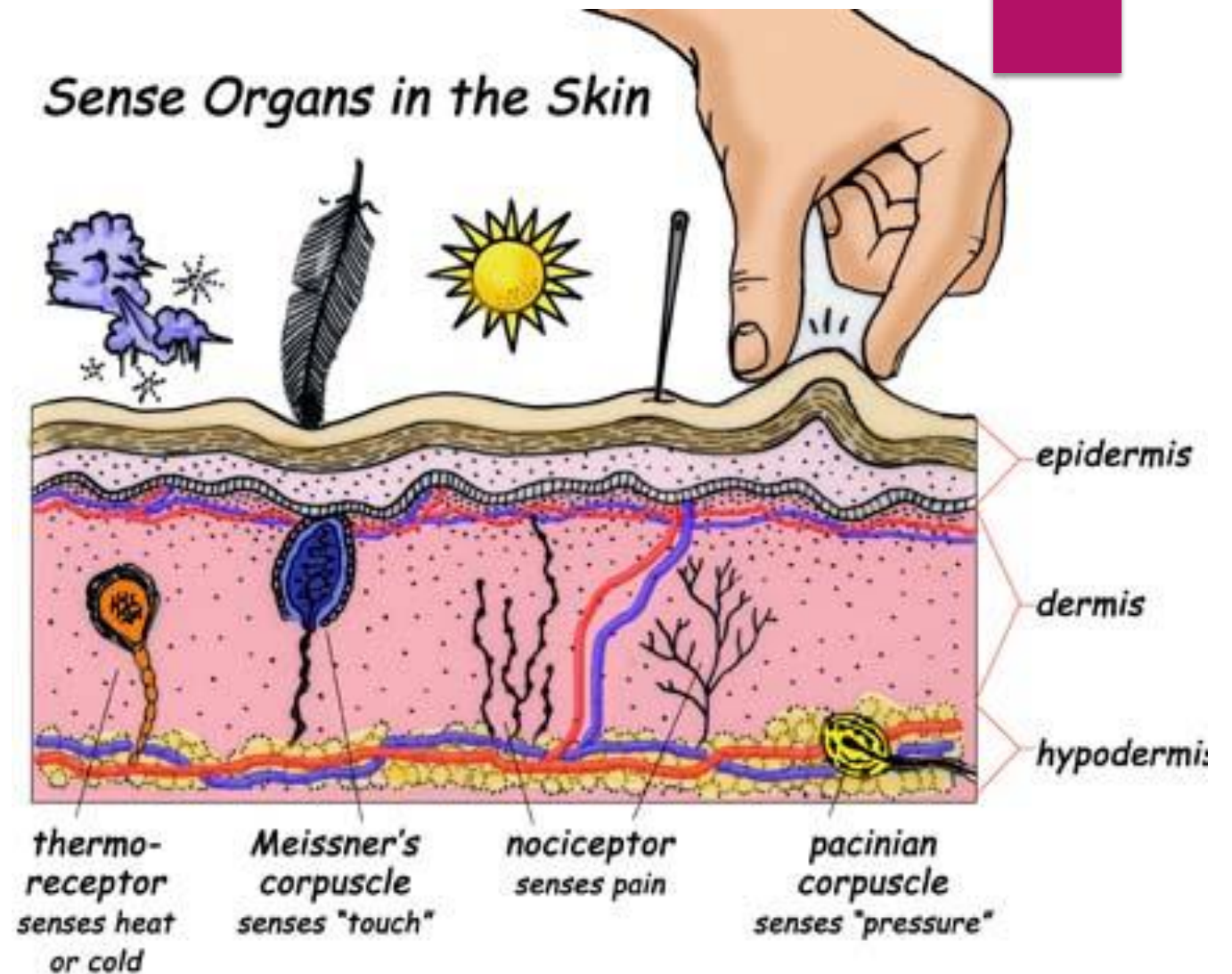
- ▶ Reduced proprioception can result in clumsiness, poor coordination, improper posture, using too much or too little force, decreased body awareness, motor planning deficits and more.
- ▶ Kids will seek more information through jumping, banging, crashing



Touch

**We continually take in information through touch; we feel the air, we bump into others, we notice if a bug lands or crawls on our arm, we manipulate things with our fingers, walk with bare feet, engage in hugs and high fives, etc.

**These require our bodies to process the input and either disregard it, filter it, or respond to it.



- ❖ There are many types of touch input: pressure (general touch), heat and cold, pain, interoception (identifying, understanding, and responding appropriately to internal signal patterns)
- ❖ When these are not working there can be sensitivity or defensiveness to many things (clothing, proximity, food texture, sticky hands, etc.).



Reduced Integration



Poor touch response can create defensiveness, fear, reactivity, escalated mood, poor eating, resistance to items of clothing, challenges standing in line with other students, difficulty in messy play, and even lashing out physically



SENSITIVITY TO TOUCHING



Without adequate touch processing a child may react with fight/flight/freeze unexpectedly. Stress may be significantly increased for them.



This can look like aggressiveness, annoyance, or reactivity... Kids may avoid crowds and lines or push people away. They may not have a good sense of personal space, be jumpy, or scream at things randomly.

Visual System

- ❑ Visual perception refers to the brain's ability to make sense of what the eyes see. It's not the same as visual acuity which is how clearly a person sees.
- ❑ Receptors are stimulated by light, color, and movement. Vision locates, tracks, and determines things around us. Eight muscles work together to guide the eyes.

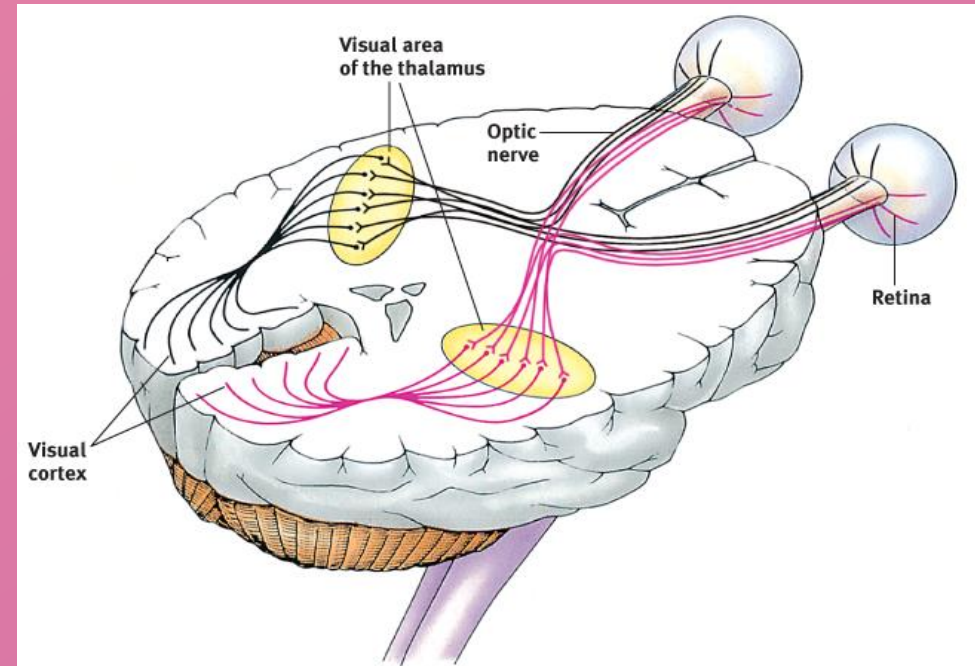


Figure 18.7
Myers/DeWall, *Myers' Psychology for the AP® Course*, 3e, © 2018 Worth Publishers

More Detail about Vision Sense:

Automatic visual perception is important for skills such as completing puzzles, cutting, coloring, drawing, dressing...

...finding things on floor, keeping eyes on targets, tolerating sunlight...

Without automatic visual accommodation for these everyday tasks, a child's self-esteem can suffer.

Without eyes working well together, even play can require significant amounts of extra energy.

Children can be both under- and over-responsive to visual input. Some become overstimulated easily in busy rooms

Visual Disturbance is so common:

Kids with visual processing challenges often are overwhelmed in busy environments. They can become agitated, look down or away, or hide behind things to tune out. They may react if seeing movement out of the corner of their eyes and feel a need to “protect” themselves from the unexpected. Visual system challenges are almost always involved in kids who are behavior challenged.

Kids with eye muscle disorders may struggle to stay focused on objects or people.. They may have one eye stronger and the weak one “shut down” or struggle to work together. This can cause dizziness, blurred vision, confusion, and frustration.

Other Info:

Visual Avoiders don't like bright lights/sunlight/direct eye contact. They miss objects in their path, can't tell distance, can be scared with objects moving toward them...

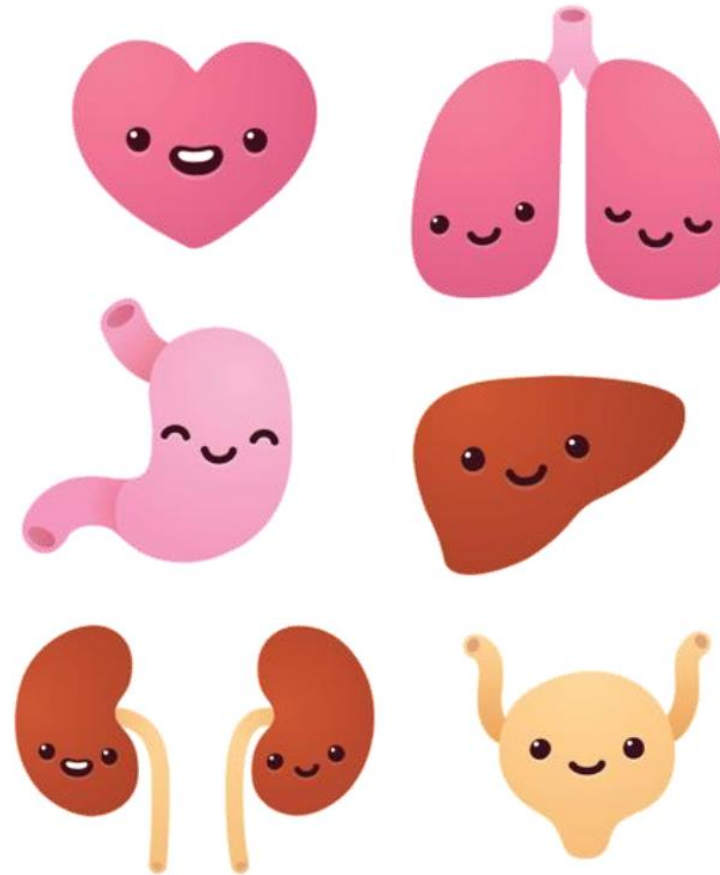
Visual Seekers stare at brightly colored or moving objects, enjoy flickering lights, stare at direct sunlight... These kids have trouble focusing on stationary objects and often hold items too close to their faces

No, wait - there's Eight!

Introducing Interoception!

Feeling our own body and organs:

- Heart beat
- Muscle tightness
- Sweaty skin
- Bladder fullness



How do these physical sensations relate to emotional development?

Knowing Our Body



If we aren't good at knowing our body, many accidents can happen. This brings shame, confusion, and acting out behaviors



We can not know we are hungry and suddenly be “starving” and then begin to eat and feel a bit of fullness and not need more food. We can forget to drink water, or we can be bolting for the bathroom because we discover our need to go “too late.”

SENSORY SEEKING VS. SENSORY SENSITIVE

I could bounce on a trampoline & spin in circles on the tire swing all day long

I like to smell things

I love having my hair brushed or played with

I love to play with the lights and turn them on and off

I enjoy making lots of noise – the louder the better

I don't notice if my clothing is disheveled or not on right

Tackle me, roll on the floor with me, give me bear hugs



I chew on everything in sight. I love crunchy foods

I love being tickled and massaged

I hate wearing shoes

I am scared of trampolines, monkey bars or to swing high

I dislike having my hair brushed

I hate certain food textures so I'm a picky eater

I close my eyes in bright lights

I cover my ears to loud noise



I'm very sensitive to smells

I don't like being tickled

I take out the tags in my clothes and there's some fabrics I won't wear

Don't touch me

THE SENSES

END PRODUCTS

Auditory hearing

Vestibular (gravity and movement)

Proprioceptive (muscles & joints)

Tactile (touch)

Visual (seeing)

eye movements
posture
balance
muscle tone

sucking

Eating
mother-infant bond
tactile comfort

body percept
Coordination of two sides of the body
motor planning

activity level

attention span

emotional stability

Speech
Language

eye-hand coordination

visual perception

purposeful activity

ability to concentrate
ability to organize
self-esteem
self-control

self-confidence

academic learning ability

capacity for abstract thought and reasoning

specialization of each side of the body and brain



There are many complex factors in each child we work with. Many times, sensory challenges are behind behavior problems or mood issues.

The child may not even know this as they have always “been that way” and think everyone perceives the world as they do.

Unlocking the right support is crucial for self-confidence and success.

Auditory Support:

▶ Piano music, *Forest Piano* by Dan Gibson, telling what noises are, providing quiet space to escape to, speaking face to face for attention or directions

Vestibular Support

- ▶ Spin child on chair, swinging, hanging upside
- ▶ down and swinging, swinging in crib sheet, use gentle pressure toward center at shoulders

Proprioceptive Support

▶ Carrying heavy backpack, carrying objects around room, heavy shoes, pushing furniture, compression clothes, weighted lap blanket, holding snuggle things for support



Tactile Support

▶ Seat away from rambunctious kids, last or first in line, ask before touching, use downward pressure strokes after reactive

Visual Support:

▶ Allowing eyes down, providing clear visual clues, showing things that are visually confusing, watching for eye rubbing/watering/strain and supporting.





Questions?

Thank you



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