

# SENSORY SYSTEMS

## ○ Tactile

- Cells in our skin send information to the brain regarding touch, pain, temperature, and pressure.
- Function:
  - Provides a defense mechanism by identifying hot and colds
  - Helps orient and discriminate things in the environment by whom and what are touching us and where we are being touched
- Activities:
  - Brushing
  - Massage/ back rubs
  - Tactile adventure bins
  - Play dough or therapeutic putty
  - Painting
  - Bath time – bubbles, crayon soap, back scrub brushes
  - Shaving cream
  - Pet grooming
  - Dress up
  - Make up

## ○ Vestibular

- Structures of the inner ear that detect movement and change
- Related to the Auditory System
- Function:
  - Allows us to know the speed at which we are moving, the direction in which we are going, and where our body is in space.
- Activities
  - Bouncing
  - Swinging
  - Spinning
  - Rocking
  - Climbing
  - Riding Toys
  - Walking, Running, Hiking, Swimming
  - Hanging Upside Down
  - Wrestling
  - Calming Vestibular: slow, rhythmic linear swinging or rocking, gentle slow spinning

## ○ **Proprioceptive**

- Muscles and joints which perceive contractions, stretching and compression in our body.
- Function:
  - Provides information about where parts of our body are and how they are moving.
- Activities:
  - Stair Climbing
  - Crawling
  - Playing Tug of War
  - Roughhousing
  - Pulling/Pushing (weighted wagon)
  - Catching/Throwing
  - Kicking
  - Carrying Heavy Items
  - Big Ball Activities
  - Scooter Board
  - Pulling Apart Resistant Toys such as Legos
  - Hitting/Punching
  - Squishing Between Pillows
  - Body Stretch
  - Joint Compression
  - Hanging
  - Stirring
  - Pushing
  - Vibration
  - Gross Motor Activities (Hiking with Backpack)
  - Massage
  - Biting, Chewing, Crunching
  - Using a Weighted Vest

## ○ **Auditory**

- In hearing, air-borne sound waves funnel down through the ear canal and strike the eardrum, causing it to vibrate.
- Function:
  - These structures work together to transmit sound from outside the ear to the auditory nerve, which send the information as an electrical impulse to the brain, where it can be processed and assigned meaning.

- Signs of Auditory Defensiveness:
  - Appears not to hear, even when his or her own name is called
  - Oversensitive to sounds
  - Constantly hums or sings to drown out environmental noises
  - Dislikes crowds and noisy places
  - Covers ears
    - Chewing gum or other strong Proprioceptive jaw input sometimes compete with external noises and makes them bearable

## ○ **Visual System**

- Receptors in the retina send information to the brain about our environment
- Function:
  - Acuity which is the focusing mechanism
  - Ocular motor which is the ability to track
  - Visual motor coordination which allow us to do skills such as handwriting or catching a ball
  - Visual perception which interprets visual information such as detecting changes in expression or ability to match colors.
- Signs of Visual Defensiveness:
  - Has difficulty reading facial expression and social cues
  - Is more comfortable in the dark
  - Looks intently at objects or people
  - Has difficulty scanning area to find something of someone
  - Poor eye contact
  - Stares off into space
  - Does not use eyes to guide movement
  - Squints
  - Has difficulty tolerating extreme intensity of color

## ○ **Taste and Olfactory Systems**

- 70 to 75% of what we perceive as taste actually comes from our sense of smell.
- Smell and taste are chemical senses detected by sensory cells called chemoreceptors. When an odorant stimulates the

chemoreceptors in the nose that detect smell, they pass on electrical impulses to the brain. The brain then interprets patterns in electrical activity as specific odors and olfactory sensation becomes perception -- something we can recognize as smell.

- The taste system, acting in concert with the olfactory system, indicates whether food should be ingested
- Signs of Defensiveness to Taste and Smells:
  - Over-reacts to new people, new scents
  - Uses a small personal space in an effort to smell other people
  - Licks others in order to interact
  - Does not seem to smell strong odors
  - Avoids certain tastes/smells that are typically part of children's diets