

# UNDERSTANDING REGULATION AND SENSORY PROCESSING



Michelle Pettit, MA,OTR/L

Lizzy Duffy, MS,OTR/L

# Meet the Therapists:

## Michelle Pettit, MA, OTR/L

I am an occupational therapist and yoga teacher, who is passionate about connecting with people to facilitate their engagement in meaningful life activities that support their independence, confidence, and goals. I use various techniques tailored to meet your needs, including (but not limited to) sensory, motor, nature-based, and activity-based. I am consistently learning and self-reflecting to ensure quality and compassionate services. I look forward to a collaborative therapeutic experience, that is genuine to you or your child.

## Lizzi Duffy, MS-OTR/L

I'm an Autistic and otherwise Neurodivergent Occupational Therapist who parents a neurodivergent child. I've been a therapist for 15 years, working with people of all ages. I became involved in the disability community a few years ago and through listening to diverse voices, I've learned to more deeply appreciate the differences that naturally exist in humanity. As I listen and learn from you, we can create supports and services that promote your well-being, as you become more autonomous and authentic in yourself.



# OBJECTIVES

UNDERSTAND "KIDS DO WELL IF THEY CAN"

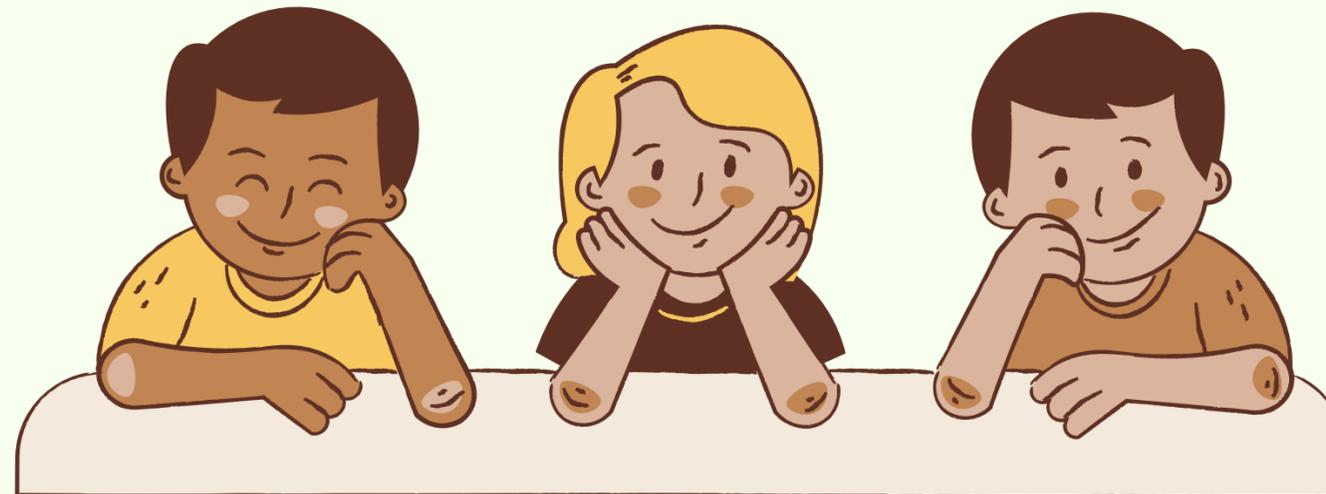
LEARN ABOUT PERSON FACTORS IN RELATION TO BEHAVIOR

UNDERSTAND ENVIRONMENTAL AND ACTIVITY FACTORS (INCLUDING EXPECTATIONS) AND HOW THEY IMPACT BEHAVIOR

EXAMINE THE BRAIN AND BODY CONNECTION AND IMPACT OF TRAUMA

SENSORY PROCESSING OVERVIEW

BRIEF SYNOPSIS OF HOW TO SUPPORT BEHAVIORS



# WHAT ARE BEHAVIORS?

BEHAVIORS ARE OBSERVATIONS OF  
WHAT WE DO AND HOW WE ACT

BEHAVIORS ARE NOT ROOTED IN  
BEING "BAD" OR WANTING ATTENTION

CONTRIBUTING FACTORS TO  
BEHAVIOR ARE A VARIETY OF  
FACTORS (SEEN & UNSEEN)



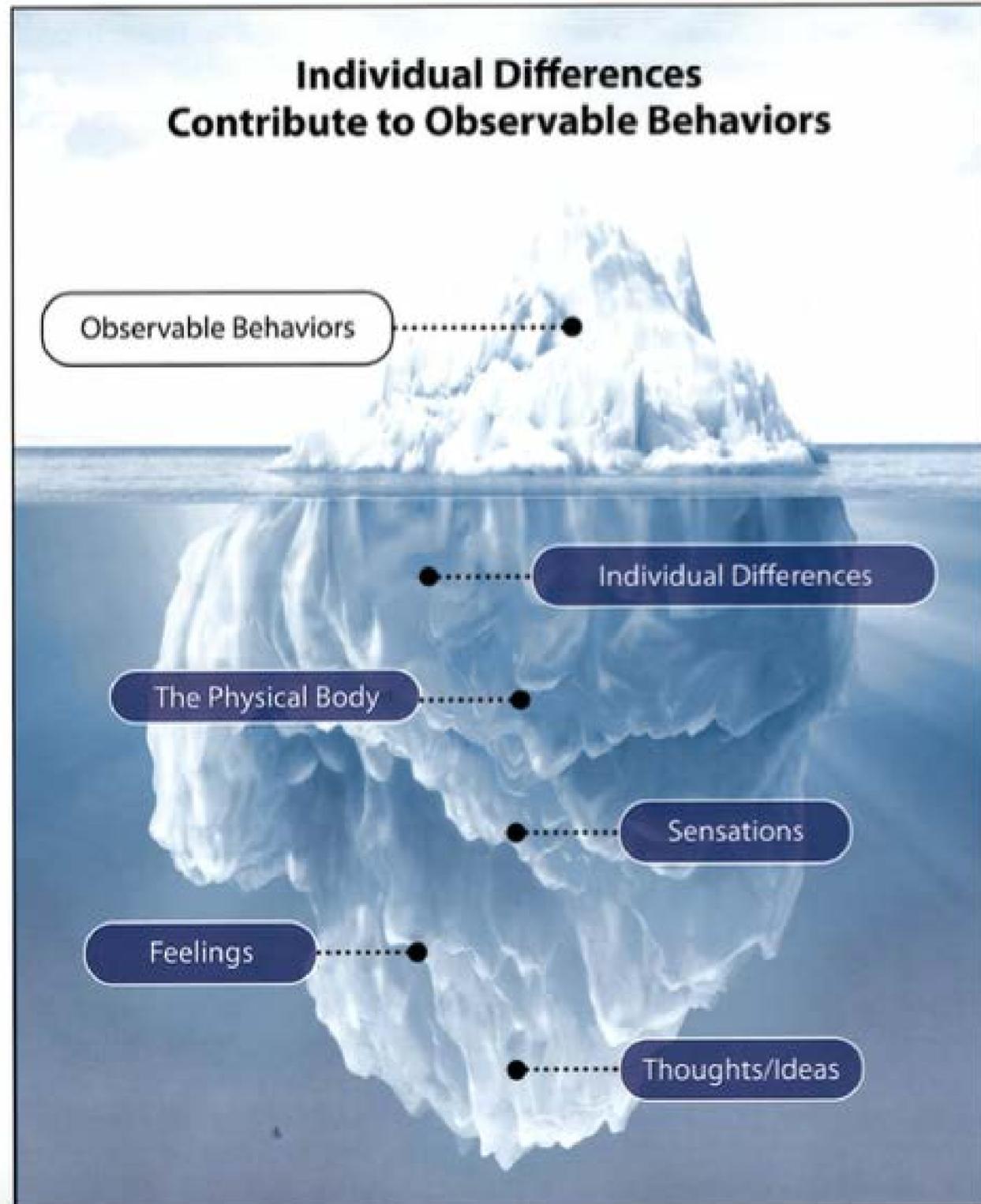
# UNDERSTANDING BEHAVIOR



## Factors to Consider

- Person Factors
- The Environment
- The Activity
- Expectations

We View Behaviors as  
the Tip of the Iceberg



# UNDERSTANDING BEHAVIOR

## Person Factors

**Mona Delhooke's Iceberg helps us to understand the various person factors that are at the root of behaviors.**

# UNDERSTANDING BEHAVIOR

## Person Factors

Trauma

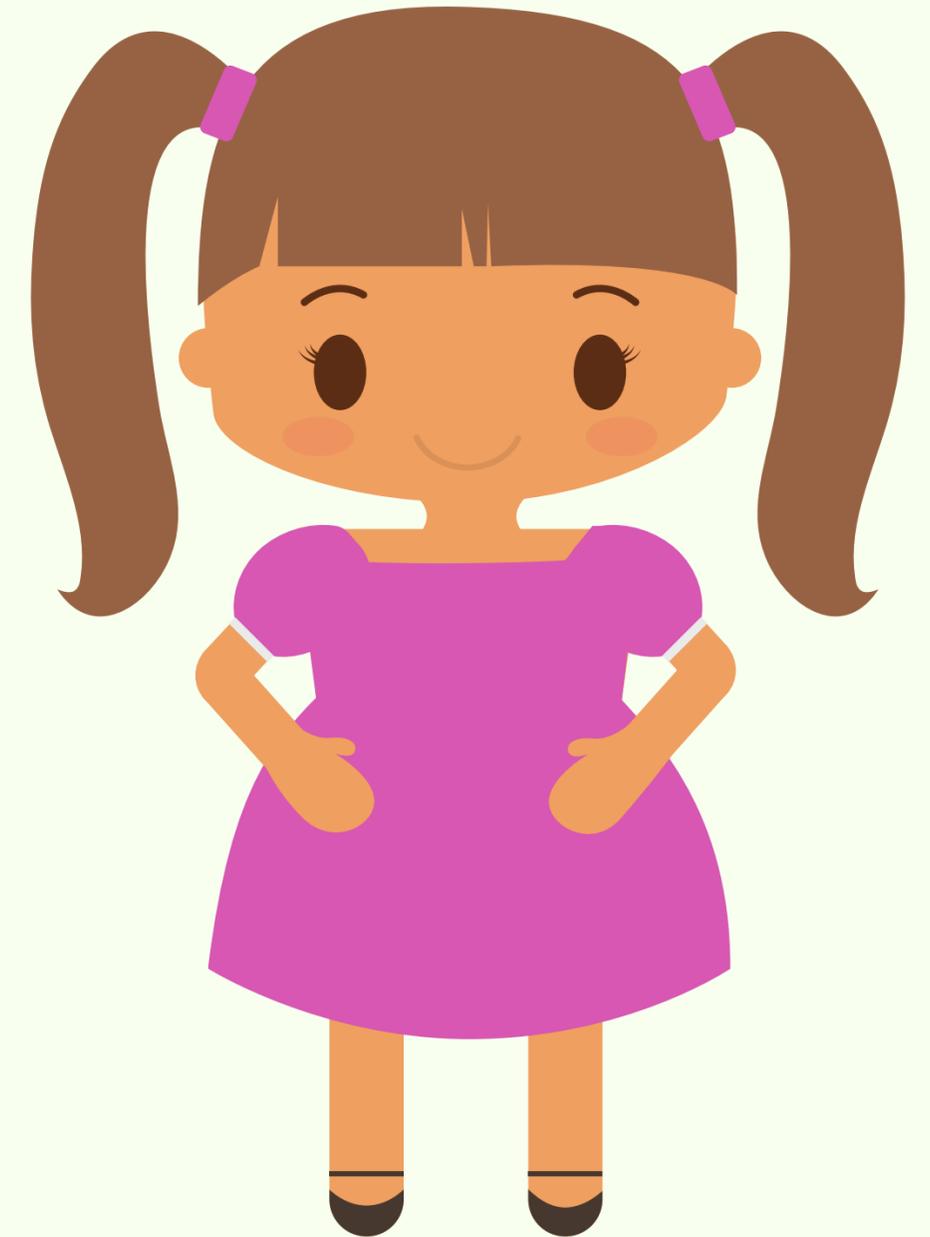
Sensory Processing

Medical and Health Conditions (known and unknown)

Sleep, Diet, and other physiological needs

Motor, Cognitive, Communication, and Social skills

Learning Profile



# ENVIRONMENTAL FACTORS

Physical

Cultural

Societal

Personal

Temporal

Activity

Other people involved



# UNDERSTANDING BEHAVIOR

## Activity Factors

Physical demands of the activity

Cognitive demands of the activity

Sensory demands of the activity

Other people or animals involved

Expectations



# WHAT IS SENSORY PROCESSING?

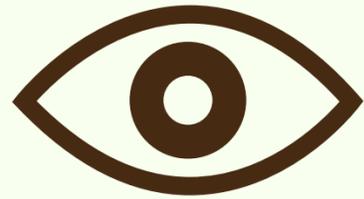
- Taking in information
- Interpreting information
- Responding to information



# Our Sensory Systems



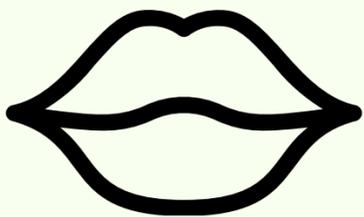
AUDITORY



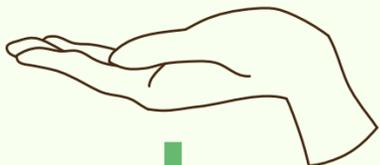
VISUAL



OLFACTORY



GUSTATORY



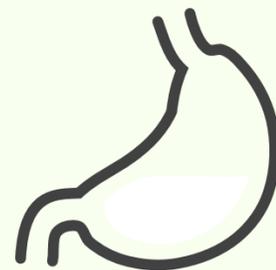
TACTILE



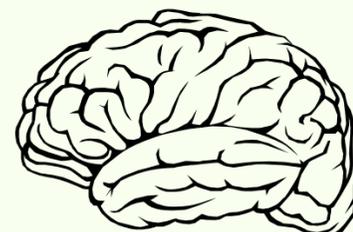
VESTIBULAR



PROPRIOCEPTION



INTEROCEPTION



NEUROCEPTION

# SENSORY SYSTEM THRESHOLDS

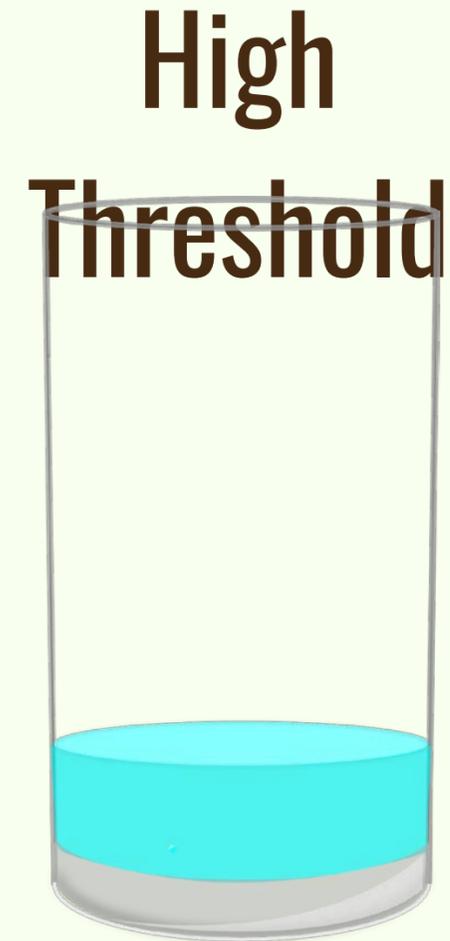
## HIGH VS LOW & EVERYTHING IN BETWEEN

Sensory processing varies

- Person-to-Person
- System-to-System
- Moment-to-Moment



**Low  
Threshold**



**High  
Threshold**

# SENSORY SYSTEM THRESHOLDS

CONTINUED

---



**Low  
Threshold  
Auditory  
Input**

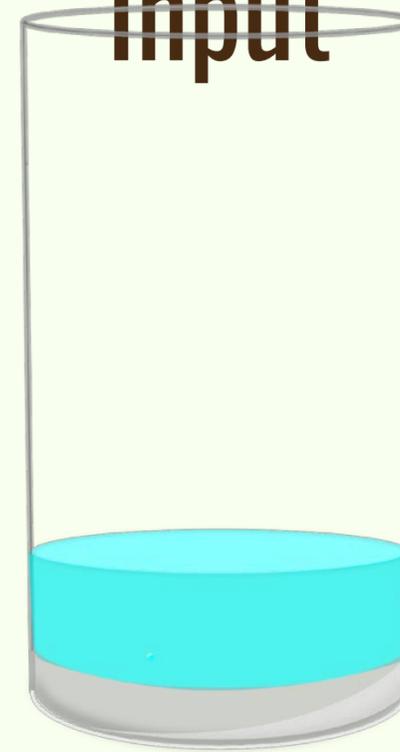
# SENSORY SYSTEM THRESHOLDS

CONTINUED

---



High Threshold  
Vestibular  
Input



# PERSON FACTORS

## The Brain

### THE EMOTIONAL BRAIN

- THE BRAINSTEM
  - CONTROLS HEART, LUNGS, ENDOCRINE, AND IMMUNE SYSTEMS
  - IMPACTS SLEEP, APPETITE, TOUCH, DIGESTION AND AROUSAL
- THE LIMBIC SYSTEM
  - CONTROLS FIGHT, FLIGHT, OR FREEZE RESPONSES
  - ACTIVATED BY INTENSE EMOTIONS
  - RELEASES STRESS HORMONES

### THE RATIONAL BRAIN

- NEOCORTEX
  - HIGHER FUNCTIONS
  - INCLUDES FRONTAL LOBE
    - USE OF LANGUAGE
    - ABSTRACT THOUGHT
    - ABSORB AND INTEGRATE INFORMATION
    - PLAN
    - MAKE CHOICES
    - EMPATHY





# PERSON FACTORS

## The Autonomic Nervous System

### VENTRAL VAGAL COMPLEX

- SOCIAL ENGAGEMENT, SAFETY, LEARNING, THINKING
- 1ST RESPONDER FOR PERCEIVED THREAT
- SIGNALS HEART AND LUNG TO SLOW (RELAX/CENTERED)
- ORIGINATES IN THE BRAINSTEM

### SYMPATHETIC NERVOUS SYSTEM

- FIGHT OR FLIGHT
- BACKUP MODE FOR PERCEIVED THREAT
- LIMBIC BRAIN
- PREPARES MUSCLES, HEART, AND LUNGS

### DORSAL VAGAL COMPLEX

- SHUTDOWN, DISENGAGE, FREEZE
- BACKUP BACKUP MODE FOR PERCEIVED THREAT
- SIGNALS STOMACH, KIDNEYS, AN INTESTINES (DRASTIC REDUCTION IN METABALISM AND HEART RATE, DIFFICULTY BREATHING, STOMACH STOPS WORKING OR EMPTIES
- REPTILIAN BRAIN

# PERSON FACTORS

## Neuroception



THE ABILITY TO ASSESS  
DANGER AND SAFETY  
AROUND US

# PERSON FACTORS

## The Impact of Trauma on the Brain & ANS

Faulty neuroception

"Neurons that fire together, wire together"

Stress Hormones

Fight, Flight, or Freeze

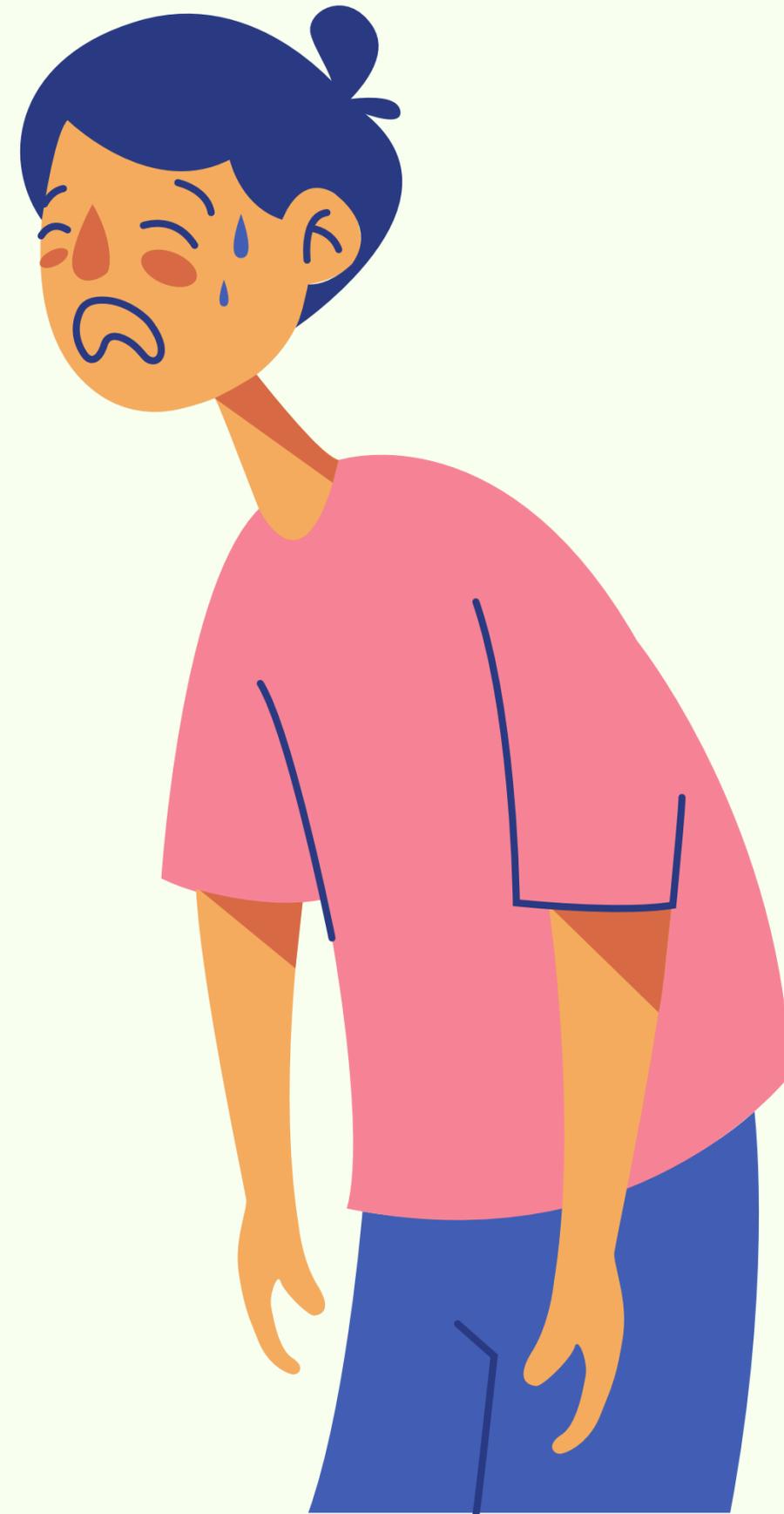
Hypervigilance and/or numbness



# PERSON FACTORS

## Health & Well-Being

Pain  
Hunger or Thirst  
Constipation  
Diarrhea  
Nutrition  
Gut Health  
Illness  
Sleep



# PERSON FACTORS

## Learning Profile

- Social Communication
- Interests
- Generalization
- Attention
- Routines
- Sensory
- Receptive Language and Auditory Processing
- Visual Learner
- Executive Functioning
- Development



# Actions!

- ARE NEEDS MET?

2. SUPPORT PERSON FACTORS

3. MODIFY ENVIRONMENTAL  
FACTORS/EXPECTATIONS

4. ADAPT THE ACTIVITY

# HELPFUL RESOURCES

## DR. MONA DELAHOKE

[Mona Delahooke, PhD - Pediatric Psychologist - California](#)

## LEARN PLAY THRIVE

[Learn Play Thrive – Become more confident and effective in your autism interventions.](#)

## THE STAR INSTITUTE

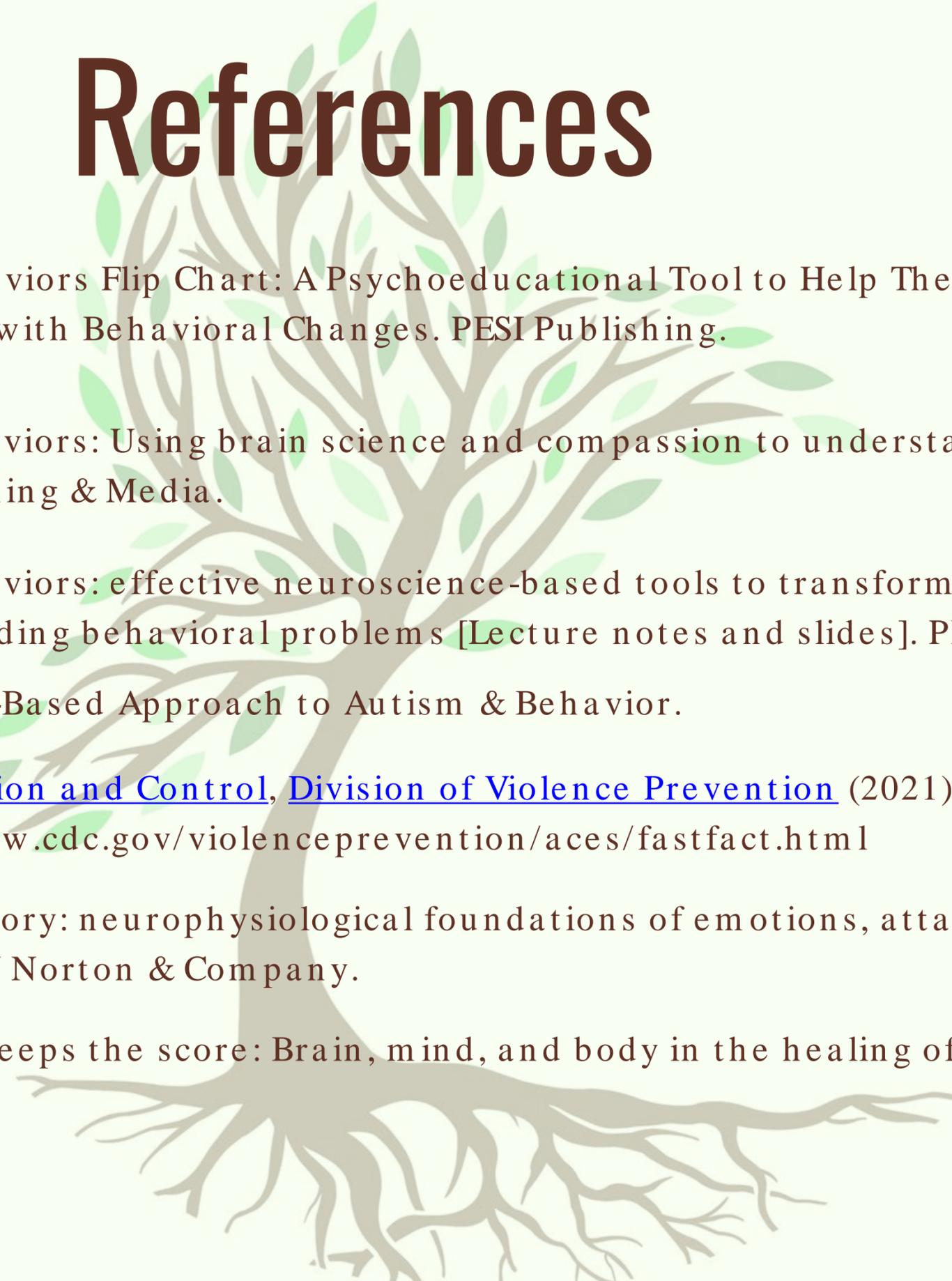
[Sensory Processing - STAR Institute \(sensoryhealth.org\)](#)





# Questions and Insights

# References



Delahooke, M. (2021). *Beyond Behaviors Flip Chart: A Psychoeducational Tool to Help Therapists & Teachers Understand and Support Children with Behavioral Changes*. PESI Publishing.

Delahooke, M. (2019). *Beyond behaviors: Using brain science and compassion to understand and solve children's behavioral challenges*. PESI Publishing & Media.

Delahooke, M. (2021). *Beyond behaviors: effective neuroscience-based tools to transform childhood behaviors, module 2: a new way of understanding behavioral problems [Lecture notes and slides]*. PESI Publishing

Learn Play Thrive LLC. *A Strengths-Based Approach to Autism & Behavior*.  
[Workbook].

[National Center for Injury Prevention and Control, Division of Violence Prevention](https://www.cdc.gov/violenceprevention/aces/fastfact.html) (2021). Preventing Adverse Childhood Experiences. <https://www.cdc.gov/violenceprevention/aces/fastfact.html>

Porges, S. (2011). *The polyvagal theory: neurophysiological foundations of emotions, attachment, communication, and self-regulation*. New York: WW Norton & Company.

van der Kolk, B. (2015). *The body keeps the score: Brain, mind, and body in the healing of trauma*. Penguin Books.