

The Mind/Body Connection: Somatic Response and Emotional Well Being

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Disclosure

I am receiving reimbursement from Empower Idaho for this presentation.

There are no conflicts of interests related to this presentation.

Session Objectives

- Participants will learn basic physiological responses to internal/external stressors and recognize the correlation between physiological responses and emotional dysregulation.
- Participants will increase awareness of their own physiological responses to internal/external stressors
- Participants will learn specific techniques in managing physiological distress leading to emotional regulation

Biology and Psychology

“...the exploration of an unknown continent from opposite directions, where the explorers never meet because of impenetrable country that intervenes.”

- Karl Jaspers (German-Swiss Philosopher and Psychiatrist, 1883-1969)



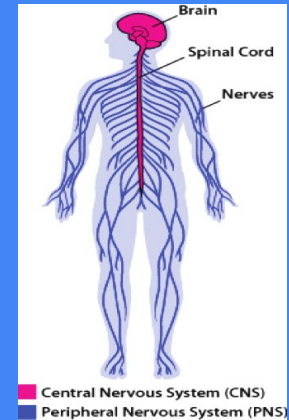
Neuroscience 101

Central Nervous System

Brain and Spinal Cord

The brain is an organ of nervous tissue responsible for responses, sensation, movement, emotions, communication, thought processing, and memory.

The spinal cord sends motor commands from the brain to the peripheral body and relays sensory information from the sensory organs to the brain.



Autonomic Nervous System

The autonomic nervous system is part of the peripheral nervous system

The ANS regulates involuntary physiologic processes: heart rate, blood pressure, respiration, digestion, and sexual arousal

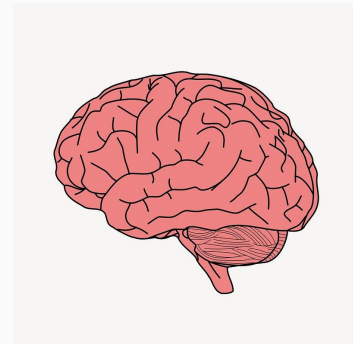
Two Divisions: **Sympathetic** (fight/flight) and **Parasympathetic** (rest/digest)



The Brain

1990's: Decade of the Brain (Gabbard, 2002)

- Emergence of advanced technology allowed for less invasive study of the brain
- Enhanced understanding of:
 - Affect and emotion
 - Encoding and retrieval of memory
 - Brain development and environment



Key Concepts in Neuroscience (Shapiro, 2018)

At birth, the brain is “incomplete” - organization and complexity is dependent on relational experience and environmental inputs

Healthy brain development is contingent upon healthy environmental influences (e.g. quality caregiving) in infancy and early childhood

Affective neuroscience hypothesizes that each person’s past experiences with relationships (particularly in early development) become “hard wired” in neural networks and influence the quality of future relationships

Past experiences - good and bad - become encoded and potentially “triggered” in present moments

Intense emotions activate the brain’s limbic system - in particular the amygdala

Responses such as fear increase stress hormones - increased heart rate, blood pressure, oxygen intake (increased arousal)

Chronic activation of stress responses can contribute to adverse physical health outcomes

Fight or Flight (or Freeze or Fawn)

Amygdala sends distress signal

Hypothalamus activates sympathetic nervous system by sending signals through the autonomic nerves to the adrenal glands

Adrenal glands respond by pumping adrenaline into bloodstream

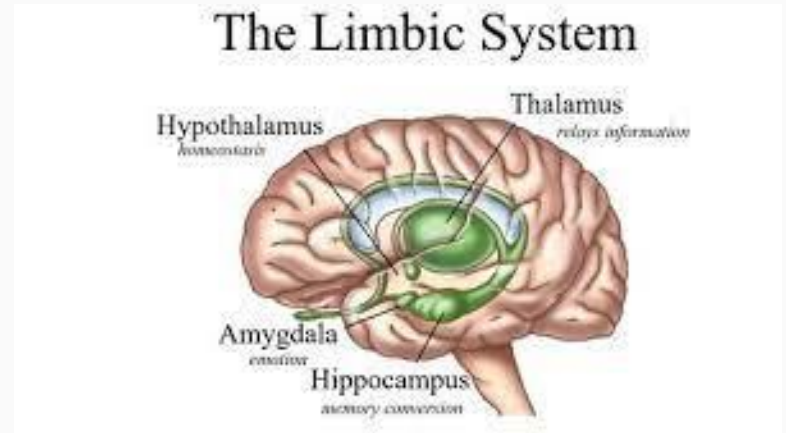
Heart beats faster than normal, pushing blood to the muscles, heart, and other vital organs

Pulse rate and blood pressure go up

Breathing intensifies

Extra oxygen is sent to brain, increasing alertness

Sight, hearing, and other senses become sharper



Biology and Psychology: Theoretical Underpinning

Early exposure to fractured caregiving/attachment and/or complex trauma resulting in impaired self regulation (Gabor Maté, MD; Bessel van der Kolk, MD)

Polyvagal response (vagal nerves of parasympathetic system): In addition to parasympathetic and sympathetic nervous systems there's a third system, a combination of activation and calming, enacted during social engagement (Stephen Porges, PhD)

Somatic marker hypothesis: Decision making is influenced by biasing signals (somatic markers) arising from changes in the body periphery (Antonio Damasio, MD, PhD)

Physiological Responses to Stress

Stress is an Aspect of Life

Positive Stress

Tolerable Stress

Toxic/Traumatic Stress

(National Scientific Council on the Developing Child)

Adverse Childhood Experiences

Adverse childhood experiences, or ACEs, are potentially traumatic events that occur in childhood (0-17 years). These include:

- experiencing violence, abuse, or neglect
- witnessing violence in the home or community
- family member being incarcerated

These experiences can increase the risks of chronic diseases and leading causes of death, such as cancer, diabetes, heart disease, and suicide (Centers for Disease Control, 2023).

Why All This Focus on Early Development?

Evidence-based research enhances our understanding of the importance of nurture - and the subsequent biological impact upon nature

(Is it nature or nurture? It's a *combination* of the two!)

- The past is important as it provides a framework - childhood is a template
- We can consider gaps *and* protective factors (strengths-based)
- We can begin to understand our reactions and ourselves

Increased Arousal: Transdiagnostic Feature

Trauma Disorders

Anxiety Disorders

Personality Disorders

Disruptive, Impulse-Control, and Conduct Disorders

Depressive/Bipolar Disorders

Attention Deficit Disorder

As An Aside...

Functional Neurological Disorder (Conversion Disorder)

Symptoms related to altered voluntary motor or sensory functioning **not** explained by a medical disorder. Risk factors include emotional instability, childhood abuse/neglect, and stressful life events (American Psychiatric Association, 2022).

- Weakness/Paralysis
- Tremors
- Seizures (commonly referred to as pseudoseizures)
- Sensory Symptom Disturbance (“hysterical blindness”)

Somatic Responses to Stress/Arousal

Headaches, Nausea, Shortness of Breath, Shakiness, Stomach Pain, Sweating,
Chest Pain, Dizziness, Muscle Tension, Increased Heart Rate

(These are also symptoms of panic...)

Several studies have documented that panic disorder is the most common reason for seeking emergency treatment for noncardiac chest pain (Dark, et al., 2016)



Internal Stressors/External Stressors

External Stressors originate beyond/outside one's self (e.g. death of loved one, job loss, deadline)

Internal Stressors originate from within (e.g. thought distortion/thinking error, resurfaced memory, beliefs)

Both types of stressors can create the same somatic response

Awareness of Body Response

Think of an occasion...



What Did You Notice?

Our Body Responds to Stimulus

In this day and age of Tik-Tok “self-diagnosing...”

Somatic responses are normal!

“You’re having a feeling...”

Be aware of pathologizing reactions/responses.

We live in a society where it’s easy to numb ourselves.

Emotional Dysregulation

Difficulty managing emotional responses; inability to maintain emotional control (in clinical terms: emotional lability)

High affective intensity, rapid emotional rise times, slow rates of return to emotional baseline, excessive reactivity to psychosocial cues, random chaotic or rapidly-cycling fluctuation in affect... (Koenigsberg, 2010)



Risk Factors

Children who do not have access to sensitive caregivers or who do not feel safe in their environment are less likely to receive opportunities to learn constructive strategies by which to regulate their emotional states (Calkins & Hill, 2007; Repetti et al., 2002).

Failure to develop secure attachments with caregivers during early childhood has been associated with managing and making sense of emotions (Sroufe, 2005).

Children who report ACEs tend to exhibit dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis following stressors (Gunnar & Adam, 2012) and these impairments have also been seen among adults with a history of child adversity (Tarullo & Gunnar, 2006). Dysregulation of the HPA axis is associated with high emotional reactivity (Repetti et al., 2002) and compromised abilities to effectively identify and regulate emotions (Gunnar & Quevedo, 2007).

Mind and Body Intertwined

Common Presentations: chronic depression/anxiety, irritability, overreactions, under-reactions (“shutting down”), and rumination

Feelings states are unable to be controlled

Is this just a problem in one’s head? Perhaps, literally, yes...

Research indicates orbitofrontal cortex (controls emotions, impulse control and social interactions), exhibited smaller grey matter volumes in physically healthy individuals that have problems regulating emotions (Petrovic et al., 2016)

Top Down

Cognitive reappraisal of emotion can occur through the top-down prefrontal regulation of limbic activity, using elaboration to recast initially negative appraisals as being less negative - allows for response to stimuli in a goal directed manner as opposed to reactivity (the heart of Cognitive Behavioral Therapy)

Stimulus



Think about the stimulus



We feel something based on our thoughts about stimuli

Bottom Up

Recognizes the lower parts of brain (brainstem and limbic system)

Stimulus occurs



Emotion is sparked

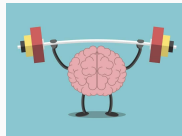
Body sensations or feelings are the first to occur. A threat is experienced. The sensory motor and survival functions of the brain (the lower part) may respond in flight/fight/freeze/fawn.

Regulation requires sense awareness and psychophysiological modulation, lowering arousal, and muscle contraction. One must feel safe first!

Neuroplasticity

The ability of the nervous system to change its activity in response to intrinsic or extrinsic stimuli by reorganizing its structure, functions, or connections
(Mateos-Aparicio et al., 2019)

Longitudinal studies promote the theory that behavioral intervention (specifically Mindfulness Based Stress Reduction) can increase grey matter concentration in hippocampus resulting in increased ability to regulate emotions



Techniques

Regulation: Sloooooow Down



Stop: Discontinue Engagement from Stimulus/Trigger

Retreat: Remove/Distance Self from Stimulus/Trigger

Scan: Evaluate Somatic Responses

Focus on Breath

Deep, Regular, Even Breaths

4-7-8 Breathing (Inhale, Hold, Exhale)

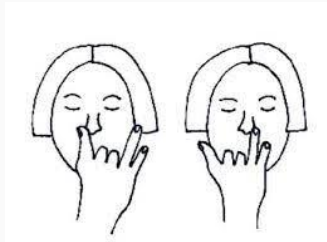
Diaphragmatic Breathing (Inhale through nose for 4 seconds, exhale through mouth for 6 seconds) - activates parasympathetic nervous system



Alternate Nostril Breathing

Pranayama (practice of breath regulation) - Alternate Nostril Breathing (ANB) activates both cerebral hemispheres

Research indicates ANB allows for a decrease in sympathetic activity and an increase in the parasympathetic activity (decreased blood pressure)



Use of Senses to Soothe

Olfactory, auditory, and visual stimulation is associated with dopaminergic brain areas (Sorokowska et al., 2017; Kawahata, 2020)

- Positive memories/nostalgia increase dopamine and serotonin (Yang et al., 2022)
- Pleasant scents induce a perceived state of relaxation (Pizzoli et al., 2021)
- A close relationship between music consumption and the reward system... subtle interplay between arousal and valence as the major dimensions of core affect (Reybrouck et al., 2022)

5-4-3-2-1 Grounding

5 things you can **see**

4 things you can **touch**

3 things you can **hear**

2 things you can **smell**

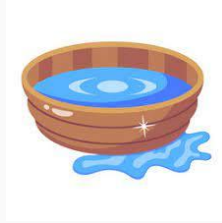
1 thing you can **taste**

Tip the Temperature

Hold breath and put face in a bowl of cold water (or hold a cold pack on eyes and cheeks for at least 30 seconds)

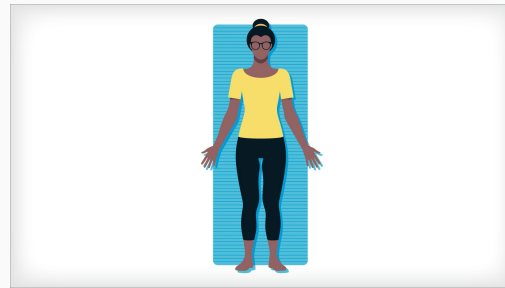
Mammalian diving reflex activated

The reflex causes our body chemistry to change—heart rate drops down immediately - parasympathetic nervous system is activated to prompt a relaxation response (allows for the conservation of energy)



Muscle Relaxation

Add muscle relaxation to paced breathing. While inhaling and exhaling, tense body muscles one by one. Notice the tension. Breathe out and let go of the tension by completely relaxing your muscles.



Visualize a Calm Place

A favorite vacation destination

A comfortable room in your home

A pleasant memory

(A photograph/picture might help)



Acute Aerobic Exercise

Acute moderate aerobic exercise facilitates the down-regulation of negative emotions and appears to help individuals more vulnerable to problematic affective dysregulation to be less susceptible to the impact or lingering effects of a stressor (Bernstein et al., 2017)



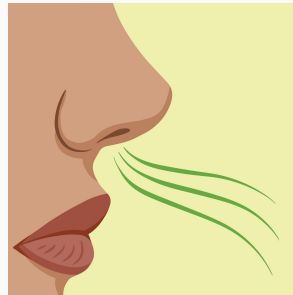
The Nose Knows

Essential oils

Perfume

Dried spice/flowers

Sprig of herbs



Certain “autobiographical” smells can have a calming effect (Pizzoli et al., 2021)

It's got a good beat and I can dance to it...

Classical music

Favorite music (try regulating breath to beats)

Sounds of nature (forest, ocean)

White noise



Tactile Grounding

Hold an object and play a game of twenty questions

Hold an ice cube until it melts



Homework (yes, homework)

Increase awareness of your body. In the next 24 hours, monitor your physical reaction. Try a brief body scan:

- Waiting at a stoplight
- While in a work meeting
- When watching the news
- When lying in bed before you fall asleep

Is there a correlation between your physical state and current stressors?

Reflect on moments of high stress within the past month. How did you react? Were there occasions in which you would have preferred to react differently?

In the next week, try at least two sensory regulation techniques (you don't need to wait until you feel overwhelmed/stressed).

It is the mind that makes the
body. — Sojourner Truth

Questions? Thoughts?

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