



University of  
New Haven



# Hacking your vagus nerve: Biobehavioral health strategies for counselors.

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# Your Presenter

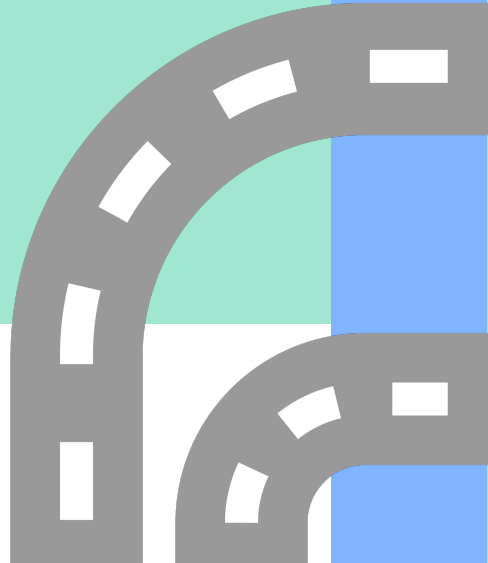
- Dr. Taylor Bigelow
- LPCA (Connecticut), NCC
  - Private practice
- Assistant Professor of Counseling
  - University of New Haven
- Ph.D. Counselor Education and Supervision
  - Foci in biobehavioral health
- Bi-directional mind-body relationship
  - Epigenetics
  - Heart Rate Variability
  - Lifestyle factors



# Roadmap

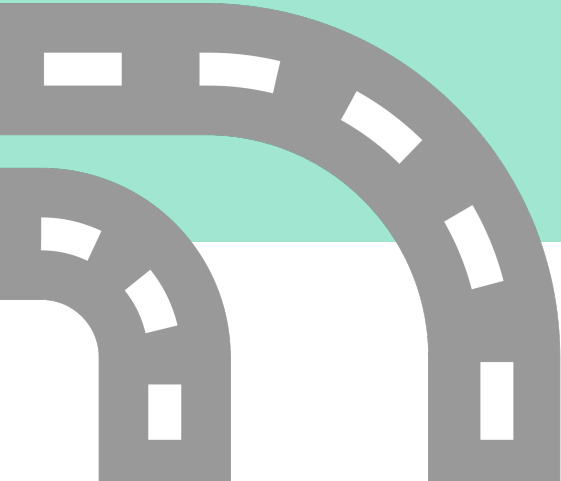
This presentation will provide

1. Overview of biobehavioral health mechanisms.
2. How said mechanisms can be incorporated into counseling teaching, research, practice, and supervision.



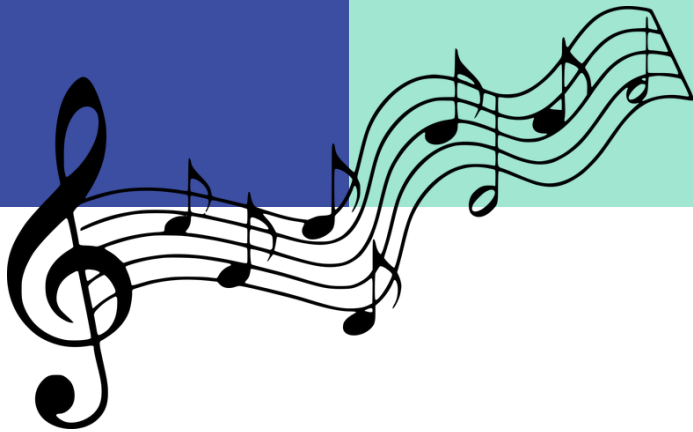
# Learning objectives

1. Understand the importance of biobehavioral health in counseling.
2. Explore how biobehavioral health applies across teaching, supervision, research, and practice.
3. Utilize and evaluate the utility of biobehavioral strategies in participants' personal and professional roles.





**What's a song  
that brings  
you joy?**



# Check In

**What is  
biobehavioral  
health?**



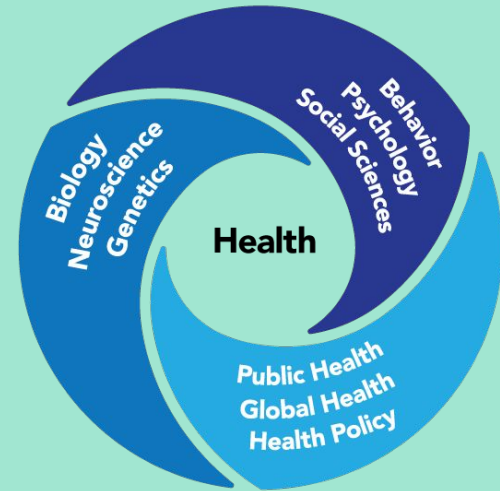
**Why does it  
matter in  
counseling?**



# **Biobehavioral Health Concept Overview**

# Introduction

- Biobehavioral health
  - The integrative scientific study of how biological, psychological, environmental, cultural, and global factors converge to affect health and wellness across the entire human lifespan.
- Learning more about how biobehavioral health mechanisms impact mental health can be key in promoting wellness across the lifespan.



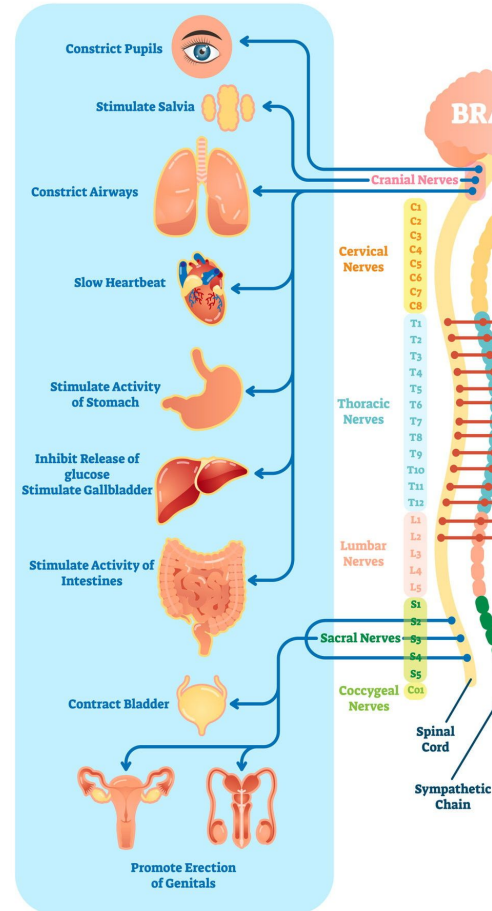


# Autonomic Nervous System

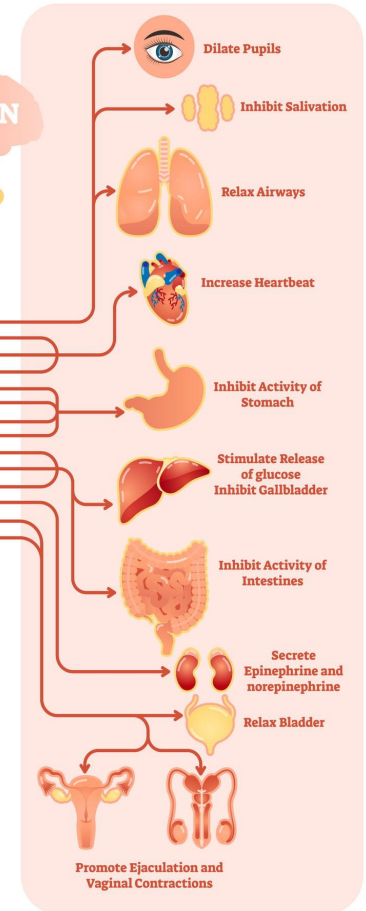
- The body's surveillance system.
- **Parasympathetic** (Rest & Digest)
  - Relaxes your body after periods of stress or danger.
- **Sympathetic** (Fight or Flight)
  - Responds to dangerous or stressful situations.

## AUTONOMIC NERVOUS SYSTEM

### PARASYMPATHETIC NERVES



### SYMPATHETIC NERVES



# Intro to Vagus Nerve

- A long nerve that spans from the brain to the colon!
- Serves many functions
  - Responsible for the regulation of internal organ functions
  - I.e., digestion, heart rate, and respiratory rate.
- Main **parasympathetic** nerve of the body
- Homeostasis

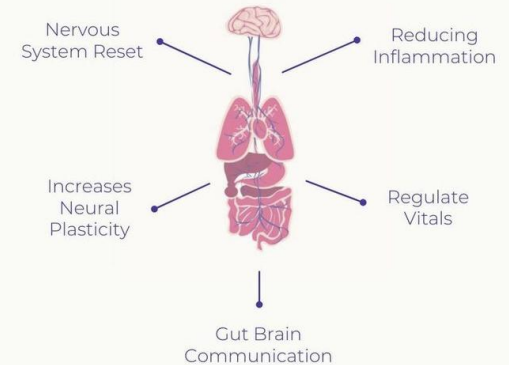


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Follow



## 5 ROLES of the Vagus Nerve



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# Polyvagal Theory

- Theorized by Dr. Stephen Porges
- Connected to the parasympathetic nervous system
  - “Rest & Digest”
- The autonomic nervous system produces three states:
  - Rest-and-digest (social and safe)
  - Fight-or-flight (mobilisation)
  - Shutdown (immobilisation)

## The Polyvagal Theory - Traffic Light Concept

**FEAR**  
“I can't”

### Shutdown and Dissociation

When we fear for our life we freeze in terror and everything shuts down; we become unable to move; we disconnect from ourselves and others in order not to feel what is happening. Animals play dead at this stage. We appear absentminded, avoiding eye contact. The voice is a bare whisper, our facial expressions are lifeless. Such shutdown masks unbearable activation levels of intense fear, which have been numbed by dissociating from them. Our body either becomes rigid and immobile, or collapses and slumps over at times to the extent that we cannot even walk upright anymore.

**DANGER**  
“I can”

### Sympathetic Arousal

When we perceive danger, we become tense, jumpy, alert, easily triggered. Every system in the body gets ready to fight or flee. The heart rate increases. Emotions can quickly escalate into rage. We are crying on the inhale.

**RELAXED**

### Parasympathetic Settling

Once we perceive the danger as over, we calm down, our peristalsis begins to move again. We exhale and cry on the exhale. Sometimes we shake, releasing the excess stress hormones and tension held in the body.

### Social Engagement System

We feel safe. A calm state describes the so-called Social Engagement System where we are able to connect with our surroundings. We feel a relaxed alertness, can be present in the here-and-now, make eye contact, have a clear voice, and our face is alive with expressions. All higher brain functions are online, we can relate and reason; we can interact with others and our environment; we are capable of reasoning, verbal communication, and learning new skills.

# Heart Rate Variability (HRV)

- Heart rate variability is where the amount of time between your heartbeats fluctuates slightly.
- Slower heart rates happen when you're resting or relaxed, and faster rates happen when you're active, stressed or when you're in danger
- **A biobehavioral measure of resilience.**
- Vagus nerve as a pathway (Lehrer & Gevirtz, 2014)

## Heart Rate Variability



### Low HRV

"Fight or Flight"

Easily exhausted

Low Adaptability

Decreased Cognition

### High HRV

"Rest & Digest"

Improved Performance

High Adaptability

Improved Cognition

# Strategies



**So what does  
this look like?**



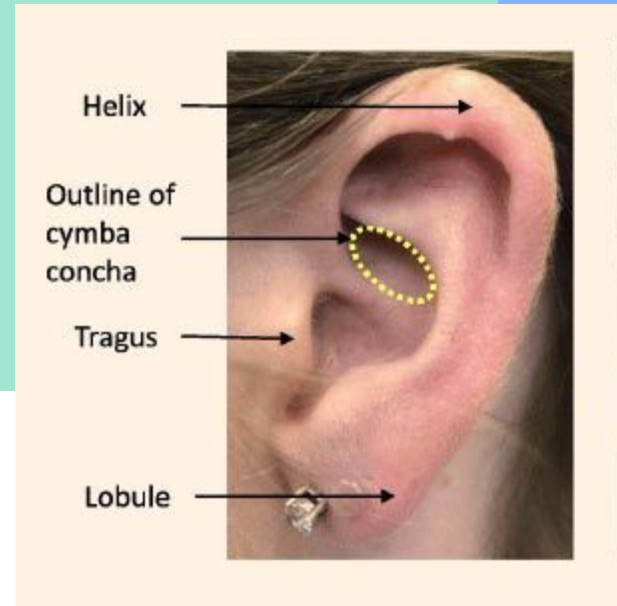
# Strategies List

- Diaphragmatic breathing (Wang, et al., 2010)
  - Activates parasympathetic nervous system
- Singing, Humming, Chanting
  - Vagus nerve passes by vocal chords and inner ear
- Meditation (Creswell, et al., 2016)
  - Spending time in nature
  - Prayer
- Counseling
  - Co-regulating
  - Normalizing client experiences (Ryland, et al., 2022)



# Strategies List

- Massage (Meier, et al., 2020)
  - More studies needed, but the ones we do have show that a massage of the base of the head, neck, and shoulders can improve HRV.
- Cold Exposure
  - Triggers vasoconstriction
  - Activates baroreflex
- Yoga and Exercise
  - Increased heart rate
  - Yoga as Tx for PTSD
- Positive Social Interactions
  - Helping others

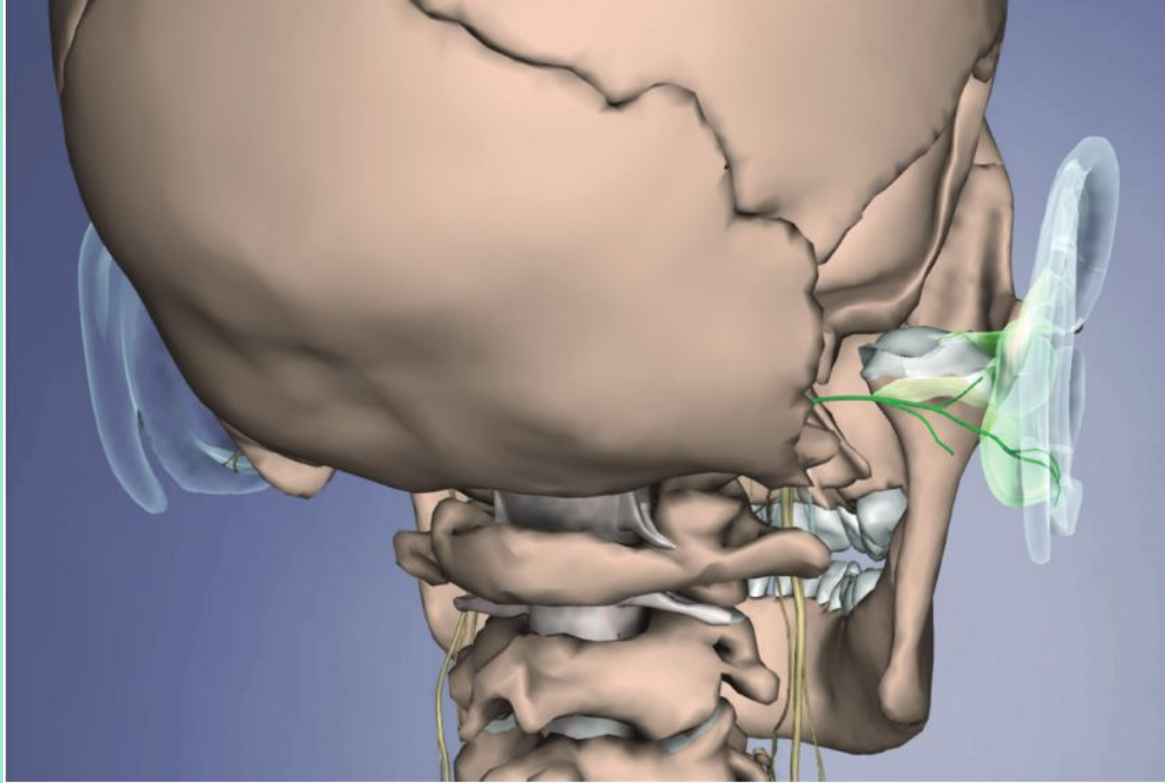






# Let's practice!

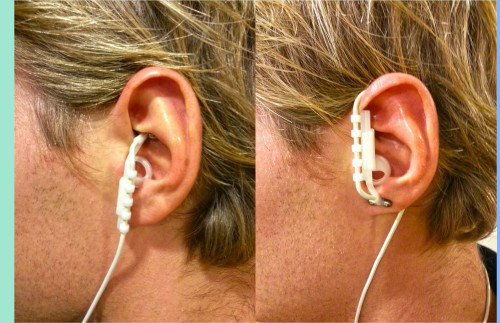
Image Sourced from  
(Luchau, 2017)



Green: vagus nerve (X)—auricular branch. Violet: mandibular nerve (V3)—auriculotemporal branch. Orange: lesser occipital nerve (C2) and greater auricular nerve (C2, C3). *Courtesy Primal Pictures, used by permission.*

# Strategies

- Lifestyle changes (Dedoncker, et al., 2021)
  - Nutrition, sleep, physical activity
- tVNS (Dedoncker, et al., 2021)
  - Noninvasive transcutaneous vagal nerve stimulation (tVNS)
  - Delivers electrical impulses to the vagus nerve.
  - It is used as an add-on treatment for certain types of intractable epilepsy and treatment-resistant depression
- Other Biofeedback
  - Smartwatches
  - Wearable tech



# **Integrating Biobehavioral Health in Counseling and Counselor Education**



**So why is this important  
for counselors and  
counselor educators?**



# Teaching

- Curriculum
  - Lifespan, diagnosis, fieldwork
- Foundations
  - Case conceptualization, theories of development
- Client contextual dimensions
  - Regardless of emphasis area
  - Impact of biological and neurological mechanisms on mental health
  - Impact of crisis and trauma on individuals with mental health diagnoses
  - Characteristics, risk factors, and warning signs of students at risk for mental health and behavioral disorders



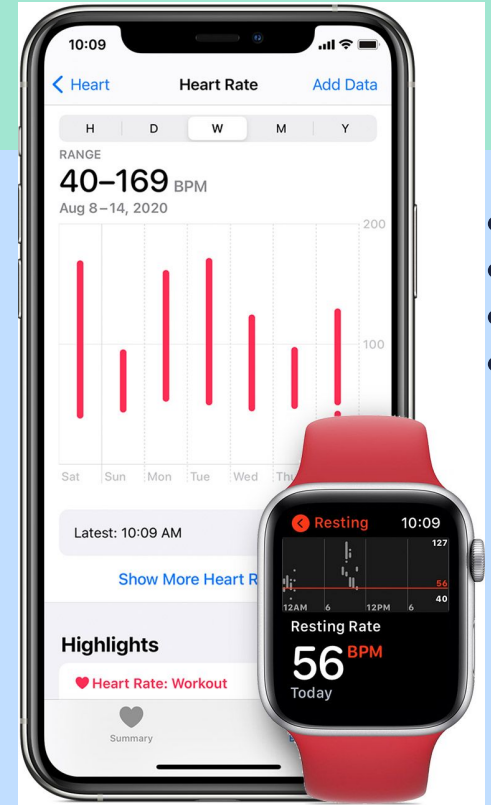
# Practice

- Diagnosis
  - Trauma work
    - Moving beyond the fight flight dichotomy
  - Depression (Moretta & Messerotti Benvenuti, 2022)
    - People with depression may have less control over their vagus nerve
- CACREP
  - Techniques and interventions for prevention and treatment of a broad range of mental health issues.
  - Strategies for interfacing with integrated behavioral health care professionals
    - Provides a common language and literacy
- The School Counselor
  - Core curriculum design, lesson plan development, classroom management strategies, and differentiated instructional strategies



# Research

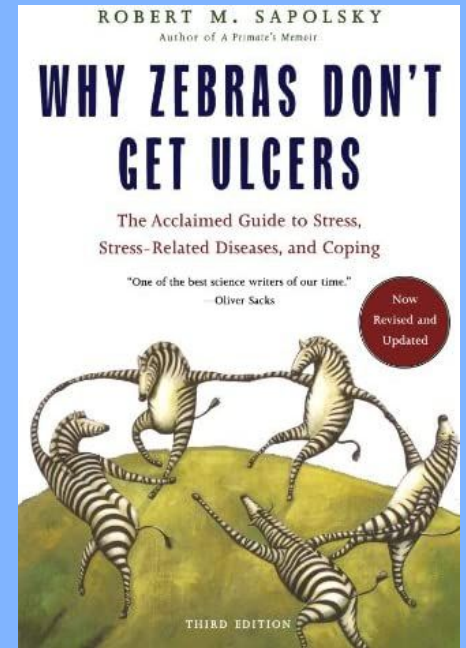
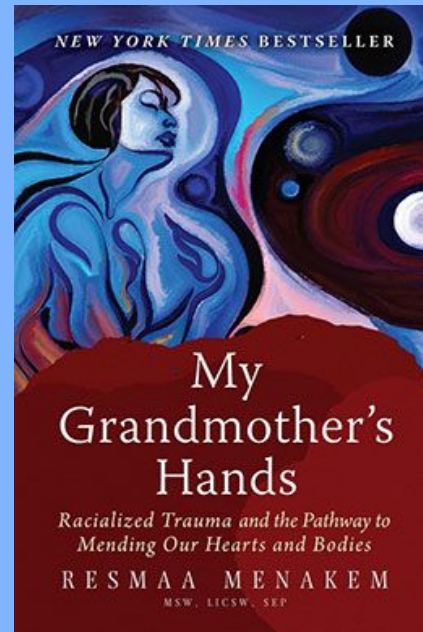
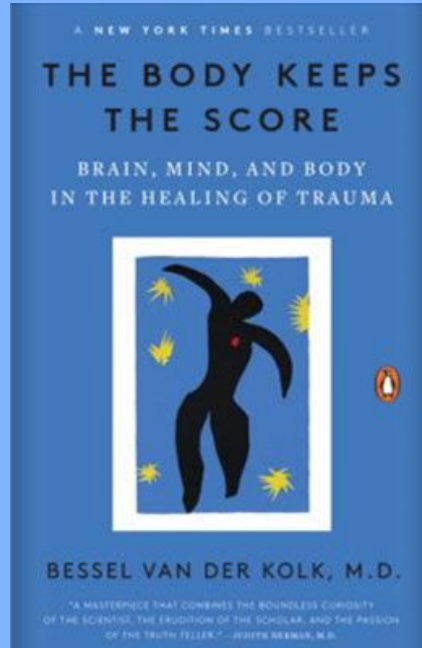
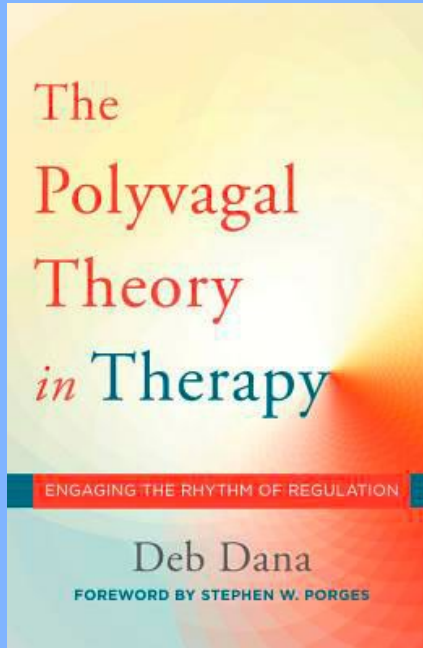
- Biobehavioral health measures relationship to diagnosis
- Integration of technology
- Need for case study and experimental designs
- Mindfulness
- Trauma informed care



# **Resources & References**



# Books



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# Video Resources

- Diaphragmatic breathing video
  - <https://www.youtube.com/watch?v=g2wo2Impnfg>
- Vagus Nerve Explained in 2 minutes
  - <https://www.youtube.com/watch?v=a-NCs1IOU5w>
- Trauma and the Nervous System: Polyvagal approach
  - <https://www.youtube.com/watch?v=ZdlQRxwT1I0>

# Check Out

**What is  
biobehavioral  
health?**



**Why does it  
matter in  
counseling?**



# Questions?

Thank you for your time and interest!

Want to keep the conversation going?

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