Pathways to Connection
A Polyvagal Approach

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The Autonomic Challenge

Besieged by signals of danger and disconnection

Searching for signs of safety and connection

Unfamiliar territory

Unpredictable events

No time to catch our breath

History of Adversity

Kolacz, J., Dale, L. P., Nix, E. J., Roath, O. K., Lewis, G. F., & Porges, S. W. (2020). Adversity History Predicts Self-Reported Autonomic Reactivity and Mental Health in US Residents During the COVID-19 Pandemic. *Frontiers in psychiatry*, *11*, 577728. https://doi.org/10.3389/fpsyt.2020.577728

The Autonomic Impact of Trauma

Trauma sidetracks the development of autonomic regulation.

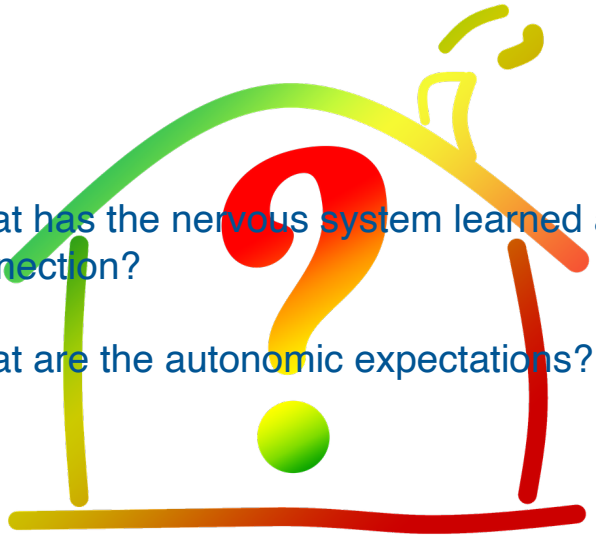
Traumatic experiences interrupt opportunities to exercise the neural circuitry of connection.

Trauma replaces patterns of connection with patterns of protection.

Adaptive survival responses replace social engagement.

Co-regulation is unavailable/dangerous.

Self-regulation is ineffective/inadequate.



What has the nervous system learned about connection?

What are the autonomic expectations?

Human Social Genomics and Neuroception

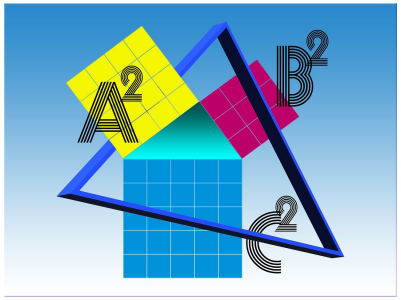
Neuroception of danger activates threat related gene expression

"…increasing evidence that changes in the expression of literally hundreds of genes can occur as a function of the physical and social environments we inhabit. Moreover, it appears as though these effects are often more strongly tied to peoples' subjective experience of their surrounding social environment than to objective features of those environments." (Cole)

Slavich, G. M., Mengelkoch, S., & Cole, S. W. (2023). Human social genomics: Concepts, mechanisms, and implications for health. Lifestyle medicine (Hoboken, N.J.), 4(2), e75. https://doi.org/10.1002/lim2.75

No matter how irrational the thought, feeling, or behavior, remember the nervous system does not make moral meaning or assign motivation - it simply enacts a response to ensure survival.

A Dynamic Equation



When cues of safety outweigh cues of danger, change is possible, options appear, and new stories emerge.

When cues of danger outweigh cues of safety, survival strategies activate and we get stuck in a survival story.

Find the pair of words that fits for your nervous system.

Cues of Safety

Cues of Danger

Follow the Pathways of Neuroception

inside/embodied outside/environmental between/relational

Regulation, dysregulation, and the return to regulation is the common human experience.

Adaptive survival responses are normal and needed.

Can we meet each moment with curiosity and without blame and shame?

Self Compassion

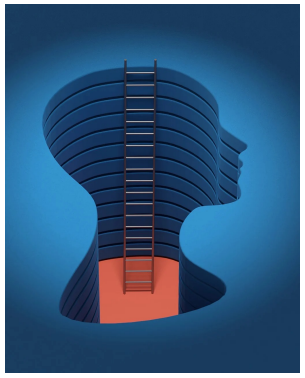
Self-Compassion: Kristin Neff and Chris Germer (https://self-compassion.org/wp-content/uploads/2017/09/Neff.Germer.2017.pdf)

1. This is a moment of suffering.
2. Suffering is a common human experience.
3. May I be kind to myself.

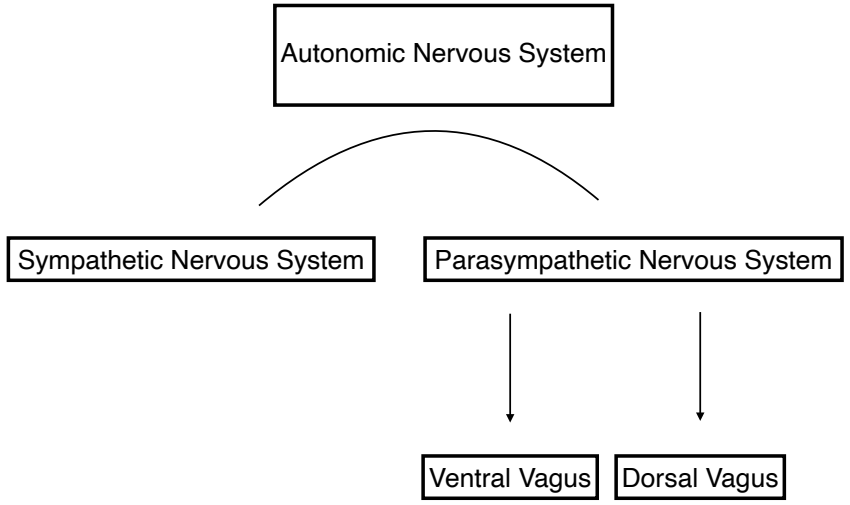
Through the Language of the Nervous System

1. I've lost my anchor in ventral. (Notice and Name)
2. Moments of protection happen for everyone. (Normalize)
3. May I bring some ventral energy to this moment. (Invitation)

Navigating the Autonomic Hierarchy



The autonomic hierarchy outlines predictable pathways of disconnection, mobilization, and engagement.



Evolution

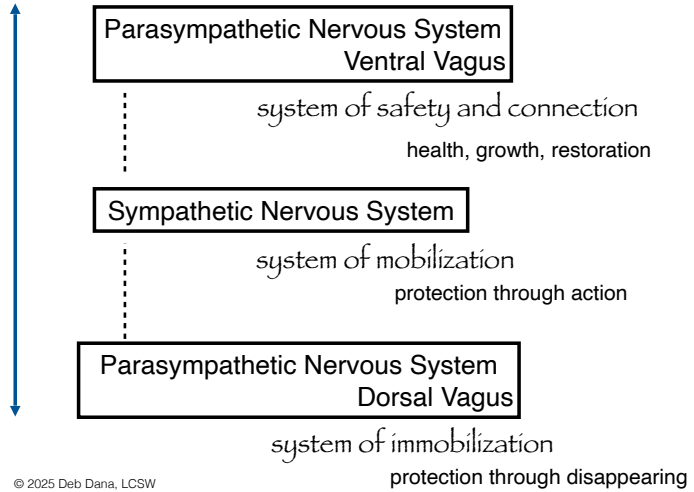
parasympathetic *dorsal vagal*	sympathetic	parasympathetic *ventral vagal*
500 million	400 million	200 million
immobilized	mobilized	social
collapse	fight and flight	connect

In Utero

parasympathetic *dorsal vagal*	sympathetic	parasympathetic *ventral vagal*
9-28 weeks	16-20 weeks (inferred)	23-40 weeks (myelination)
cardio-inhibitory	cardio-excitatory	suck, swallow breathe, vocalize

Cerritelli, F., Frasch, M. G., Antonelli, M. C., Viglione, C., Vecchi, S., Chiera, M., & Manzotti, A. (2021). A Review on the Vagus Nerve and Autonomic Nervous System During Fetal Development: Searching for Critical Windows. Frontiers in neuroscience, 15, 721605. https://doi.org/10.3389/fnins.2021.721605

Hierarchy of Response

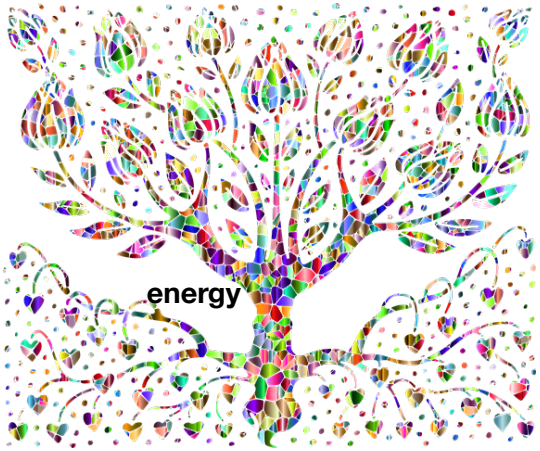


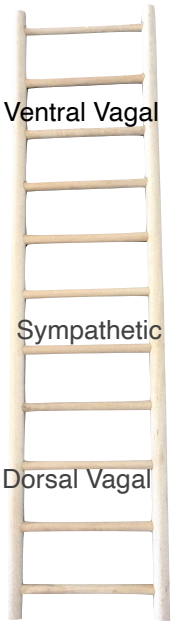
Emergent Properties

- Our biology supports or restricts access to body sensations, thoughts, feelings, behaviors, beliefs.
- The emergent properties of each state are only available when we are in that state.
- When we move from state to state, we gain and lose access.

It's not about being willing…
…it's what is biologically possible.

A Regulated System





Healthy Homeostasis
both/and "enough"

regulated and reaching out

alert, attentive, mindful, curious

I'm here, open to options, ready to connect, communicate, and collaborate.

---

energy to move through the day

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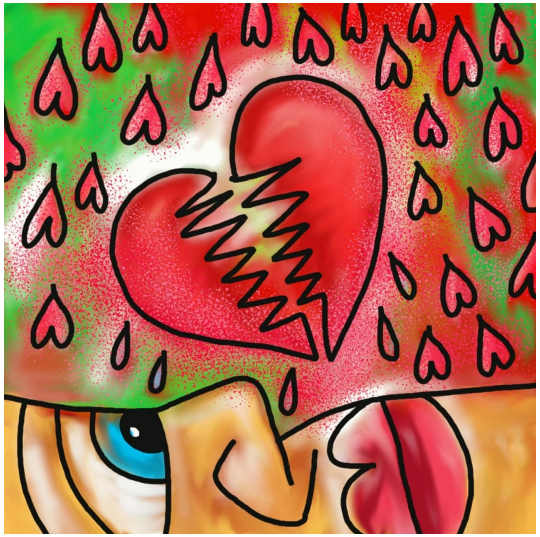
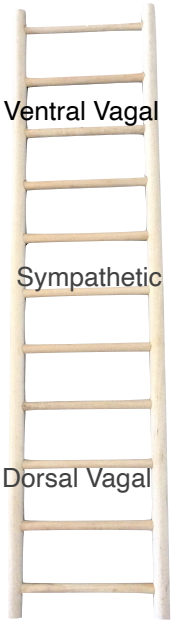
healthy digestion
nourishing nutrients

Missing the Regulation of Ventral





out of reach

Mobilized Survival Energy
a polarized world

Flight: alarmed, anxious, panicked
What's going to happen?

Fight: angry, aggressive,
I have to act!

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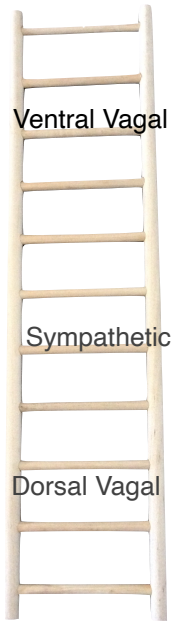
out of regulation



far away

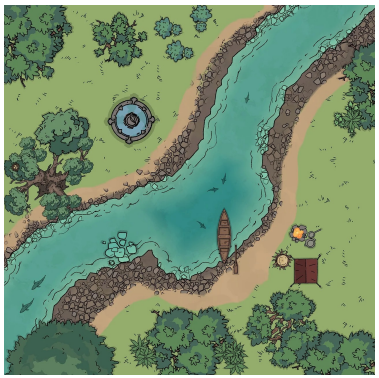
waiting to reactivate

Immobilized Survival Energy
disconnect and disappear

invisible, gone, “rescued” from sympathetic

I’ve left this time and place…
I’ve given up…

I wisely started with a map. J.R.R. Tolkein



Why Map?

Understanding the pathways and patterns of our autonomic responses reduces shame and self-criticism and makes room for curiosity and compassion/self-compassion.

Knowing where we are on a map brings a sense of organization and a guide to finding the way to regulation.

Maps create a shared language. They are a way to “be on the same page”.

Create Your Own Map First

- Get to know your nervous system.
- Quickly and accurately identify your state.
- Find the right resource and return to ventral.
- See yourself and others through an autonomic lens.

Mapping with Clients

- Mapping is an easy a way to introduce Polyvagal Theory.
- Clients “find themselves” on their maps and begin to see their experience through the lens of the autonomic nervous system (biology not motive).
- The Personal Profile Map begins the befriending process.

Learning to safely tune in and turn toward…

- Clients “find themselves” on their maps and begin to see their experience through the lens of the autonomic nervous system — biology not motive.
- When disconnected from autonomic awareness, a client’s state automatically becomes their story.
- Through their maps, clients can engage with their autonomic states not simply be engaged by them.
- They can begin to reshape their relationship with their autonomic nervous system.

The Personal Profile Map
Where Am I?

Identify → Interrupt

State → Regulating Resource

Shared Language → Shared Understanding

I am…
People are…
The world is…

I am…
People are…
The world is…

I am…
People are…
The world is…

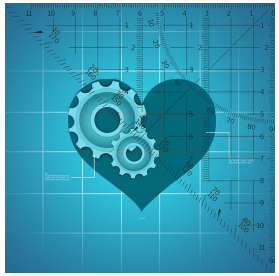
The Personal Profile Map
The Polyvagal Theory in Therapy: Engaging the Rhythm of Regulation (Norton, 2018)

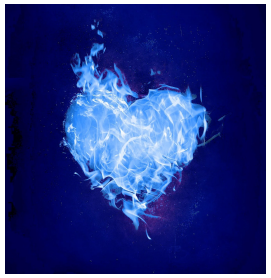
Notice and Name

1. Notice where you are on the autonomic map.
2. Name the state.
3. Turn toward your experience.
4. Bring curiosity/compassion to the experience.
5. Listen for a moment to the story of that state.

Autonomic Profiles

We all have a home in ventral…





…and a home away from home.

Where was the autonomic safe place in the past?

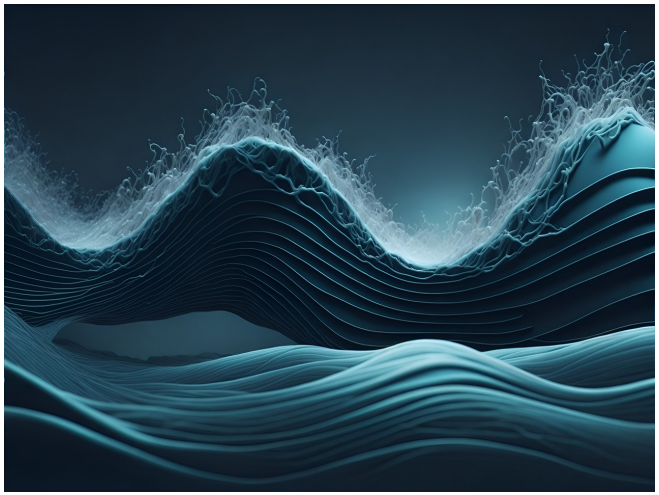
Does the system lean toward dorsal invisibility or sympathetic disruption?

When exploring personal history, the question shifts from what happened to what was the autonomic response to what happened.

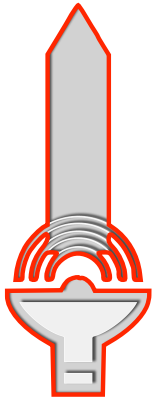
Energy and Actions

In general there must be a gentle return of energy when a dorsal immobilizing collapse is present, a way to safely organize energy when feeling the frenetic activity of the sympathetic state, and an action that deepens the feeling of regulation when anchored in the safety of ventral.

Organize the Energy…



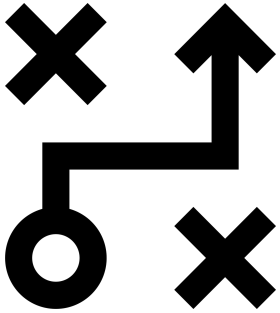
Too much…



Sympathetic tries to pull the system out of collapse.

The energy return is too big, feels overwhelming, and the system goes back into hiding.

Finding The Way Out…



A bit of energy returns as the system looks toward coming back to life.

Moments of subtle activation are followed by a pause and the system continues a gentle climb through sympathetic.

Listening to the Story of Three States

At any moment, we have three stories — one held in each state.

The story we hear and are held in, is from the state that is most active in our system.

Tuning in and hearing each of the three stories is a reminder that the state is where the story begins.

Listening to three stories uses the lens of the autonomic nervous system to expand perspective and enter into a moment of reflection.

Sharing your stories with someone else brings connection.

The Basic Listening Practice

- Take a small, everyday experience that doesn't affect your safety or have a big impact on your life
- Look through your two survival states
- End in ventral
- Reflect on what you learned

Expanded Practice

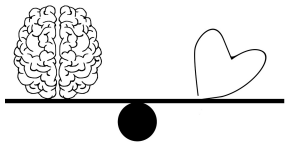
This practice is a good reflection practice. (end of the day, after a particular experience)

⟶ Look back on a moment that took you to dysregulation. Listen to that survival story first. Then listen to the other survival story and end by listening to the regulated story.

⟶ Look back on a moment of regulation. Listen to the ventral story and the two survival stories that were in the background.

⟶ Look back on a moment of regulation. Listen to the three regulated stories that were present.

Anchors and Touchstones

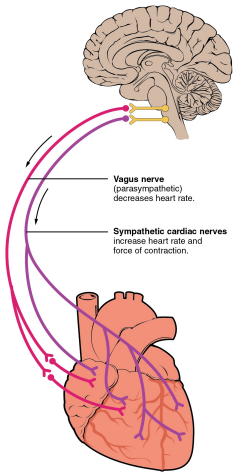


Find your anchors: who (people, pets, ancestors, guides), what (small actions), where (places of welcome), when

Find your touchstones: objects, scents, things you wear

The Vagal Brake

- is a ventral vagal circuit to the heart's pacemaker that speeds up and slows down the heart
- keeps the ventral vagal system online and in charge while allowing in more sympathetic energy without activation of the HPA axis
- creates the ability for flexibility of response — to respond and not automatically react
- supports smooth transitions



Forte, G., Morelli, M., & Casagrande, M. (2021). Heart Rate Variability and Decision-Making: Autonomic Responses in Making Decisions. *Brain sciences*, *11*(2), 243. https://doi.org/10.3390/brainsci11020243

Vagal Efficiency

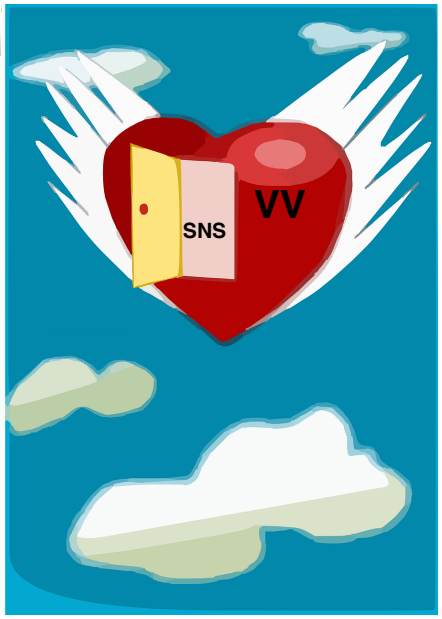
The vagal brake:

allows us to rapidly engage and disengage

to quickly energize and calm

brings a sense of ease to transitions

When the opportunity to exercise the vagal brake is a missing experience, the ability to move between states is impacted.



Step into the energy of your sympathetic system from an anchor in ventral.

Open and close
the doorway to activation.

Hierarchy in Action

Ventral Vagal

The vagal brake relaxes and re-engages to meet everyday challenges

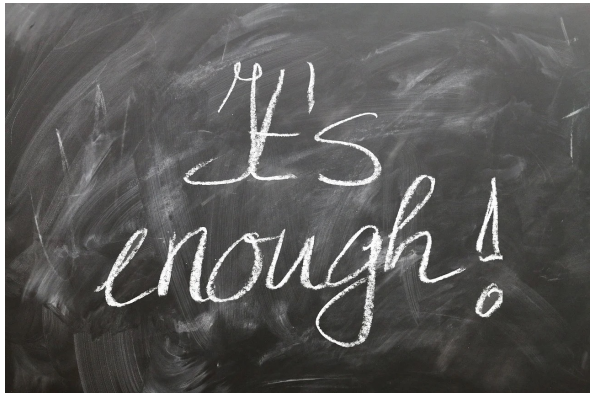
Sympathetic

With too great a challenge
the vagal brake releases
and the HPA axis is engaged

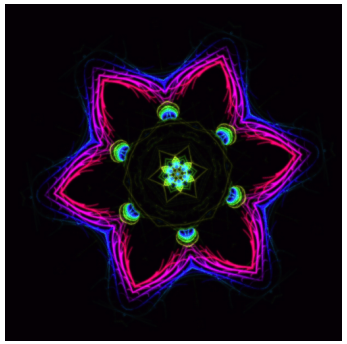
SNS can't meet the challenge and we fall into collapse

Dorsal Vagal

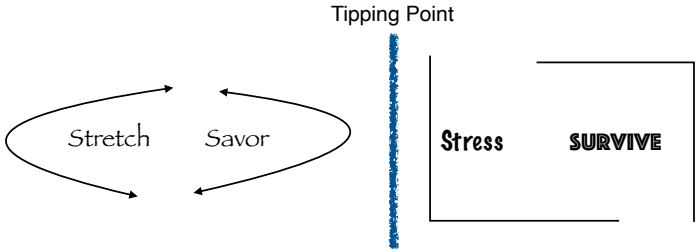
Stretch don't stress your system.

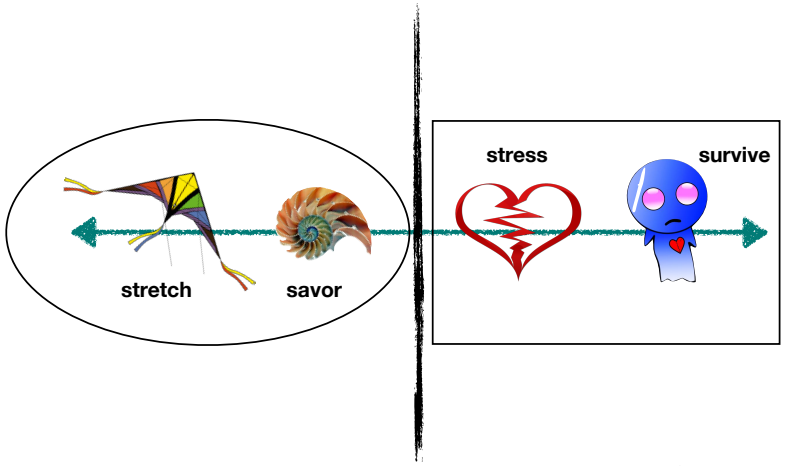


Patterns of connection and protection are being shaped and re-shaped in every moment. We are not stuck. With patience and persistence, when we stretch not stress our system, we find the way to a new rhythm.



The Right Degree of Challenge





Follow the Nervous System

When is the time to stretch?

When is the time to savor?

When is the time to stop?

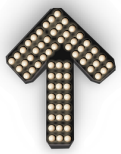
The Skill of Savoring

To savor is to be in a state of ventral vagal regulation feeling a sense of safety and telling a story of connection to self, to another, to Spirit, to nature.

Bryant F. B. (2021). Current Progress and Future Directions for Theory and Research on Savoring. *Frontiers in psychology*, *12*, 771698. https://doi.org/10.3389/fpsyg.2021.771698

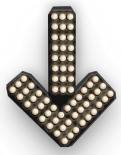
The Skill of Savoring

Amplifying



deepen the ventral experience

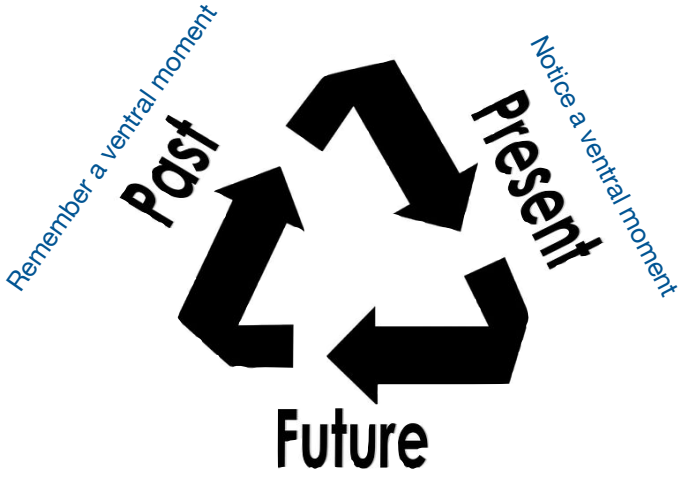
Dampening



I don't deserve to be happy

Something bad will happen

Three Kinds of Savoring



Anticipate a ventral moment

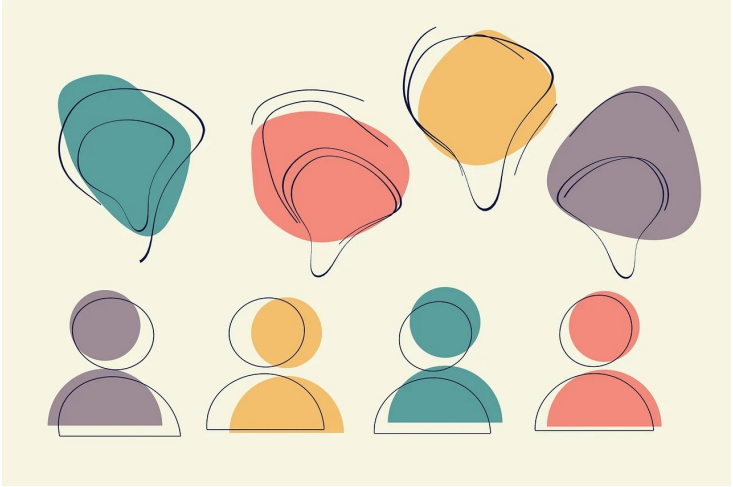
Three Step Savoring Practice

1. Attend - Bring a ventral vagal moment into awareness and stop to notice it.
2. Appreciate the moment. Stay with your awareness.
3. Amplify - Hold the moment in focused awareness for twenty to thirty seconds. Feel the fullness of the moment.

Start slowly. Build toward 30 seconds. Stop when the experiences moves from amplifying to dampening.

Be gentle, patient, and persistent…

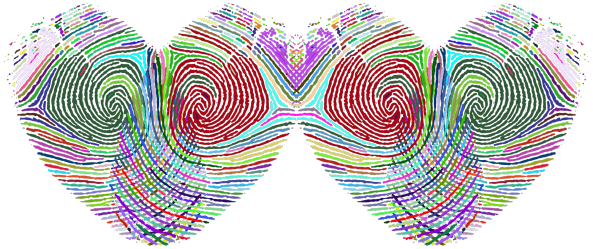
Co-Regulation



We are inextricably linked…

…one nervous system to another

Autonomic Intimacy

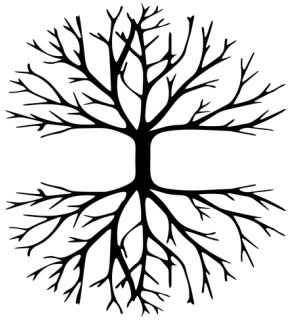


Is it safe to connect?

The drive to survive

The longing to connect

The Nervous System of the Forest



Like us, trees thrive with community. A single tree is connected beneath the ground to the trees around it, two trees intertwine their roots and grow together, and groves of trees join and reach toward the sky.

https://sitn.hms.harvard.edu/flash/2019/exploring-the-underground-network-of-trees-the-nervous-system-of-the-forest/

An Ongoing Autonomic Conversation

The autonomic nervous system both sends and searches for cues of safety or danger.

We are continuously broadcasting and receiving.

Our work is to stay tuned in to the autonomic conversation.

When we send signals of safety, we extend an invitation to connect.

When we receive signals of safety we feel an autonomic welcome and feel safe to move into connection and co-regulation.

When we send signals of danger or receive an autonomic warning from another system, reactivity increases and adaptive survival responses are reinforced.

The autonomic nervous system is shaped and regulated through interactions with others.

- The Social Engagement System broadcasts and receives signs of welcome or warning.
- Through information sent from someone's eyes, voice, face, and gestures, we know if they are safe to approach and can intentionally use these pathways to send an invitation for connection.

The Social Engagement System

Formed through the evolutionary integration of Cranial Nerves V (trigeminal),VII (facial), IX (glossopharyngeal), X (vagus), XI (spinal accessory)

Controls:

Facial expression (emotional expression)

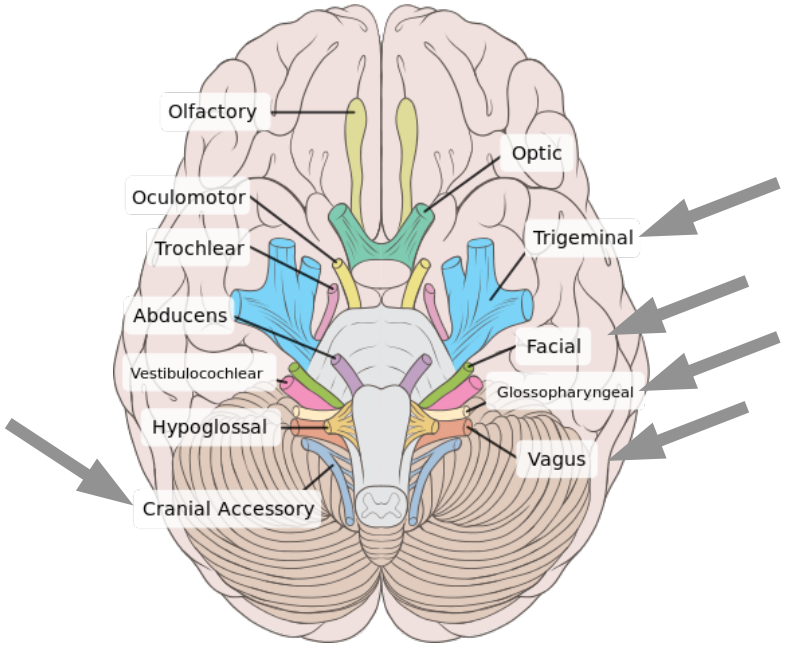
Eyelids (social gaze)

Middle ear (hear human voice)

Mastication (ingestion, sucking)

Larynx, pharynx (vocalizing, swallowing, breathing)

Head turn and tilt (social gesture, orienting)



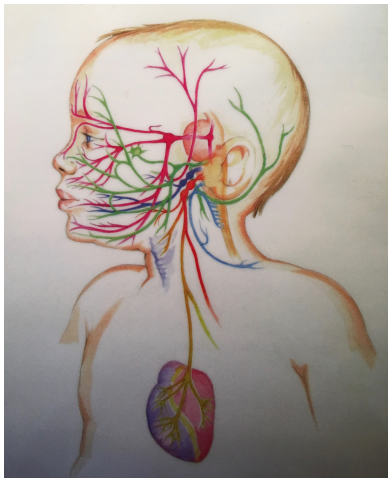
Five cranial nerves joined in the search for connection through our…

eyes

ears

voice

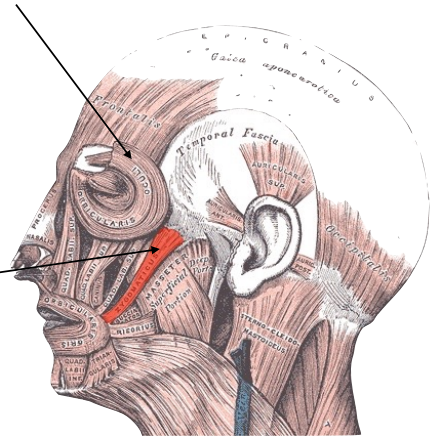
face and head movements



Used with permission: copyright Kate White ppncenter.com

Moving in and out of eye contact is a regulating action.

We use the eyes (orbicularis oculi) to sense safety and signal safety.



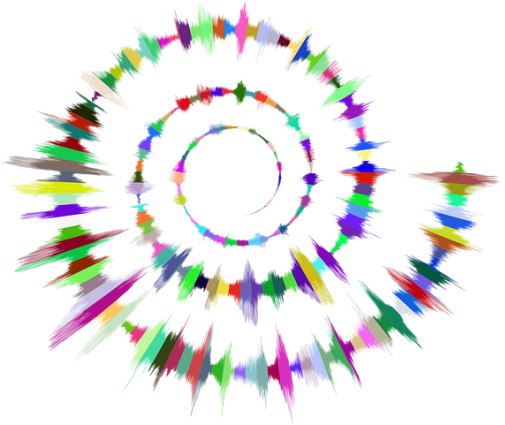
"…the zygomatic major can be willed into action, but only the sweet emotions of the soul force the orbicularis oculi to contract." Duchenne

Gray's Anatomy of the Human Body 1918

Sending messages with our eyes…

Lapolla, N. J., Bishop, B. H., & Gahtan, E. (2023). Social context modulates autonomic responses to direct eye contact. *Physiology & behavior*, *263*, 114119. https://doi.org/10.1016/j.physbeh.2023.114119

The ear collects the spiraling energy from the cosmos…
Anonymous Tibetan Medical Doctor



Tune in to your soundscape. As you listen, let your awareness move beneath the first layer of sound and notice the variety of subtler sounds that make up your soundscape.

Practice this as you move through your day, noticing the ways your nervous system responds to different soundscapes. Pay special attention to the soundmarks in your soundscapes. Some may help you anchor in regulation while others may prompt a move into mobilization or shutdown.

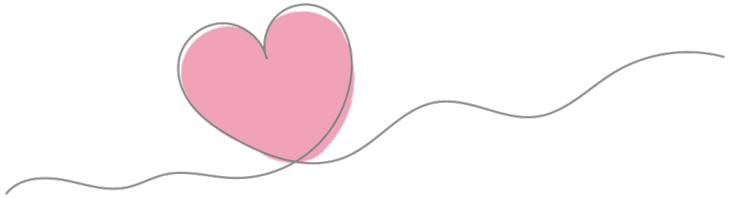
Notice which soundmarks feel welcoming and which ones send a warning. Imagine a soundscape that helps you anchor in ventral and notice the soundmarks that are important to you.

When you identify the soundscapes and soundmarks that help you anchor in ventral, you can begin to shape your sound environments to be autonomically nourishing.

SSP & RRP — Auditory Interventions

Kawai, H., Kishimoto, M., Okahisa, Y., Sakamoto, S., Terada, S., & Takaki, M. (2023). Initial Outcomes of the Safe and Sound Protocol on patients with adult autism Spectrum Disorder: Exploratory Pilot Study. International Journal of Environmental Research and Public Health, 20(6), 4862. https://doi.org/10.3390/ijerph20064862

Rajabalee, N., Kozlowska, K., Lee, S. Y., Savage, B., Hawkes, C., Siciliano, D., Porges, S. W., Pick, S., & Torbey, S. (2022). Neuromodulation using computer-altered music to treat a ten-year-old child unresponsive to standard interventions for functional neurological disorder. Harvard Review of Psychiatry, 30(5), 303–316. https://doi.org/10.1097/HRP.0000000000000341

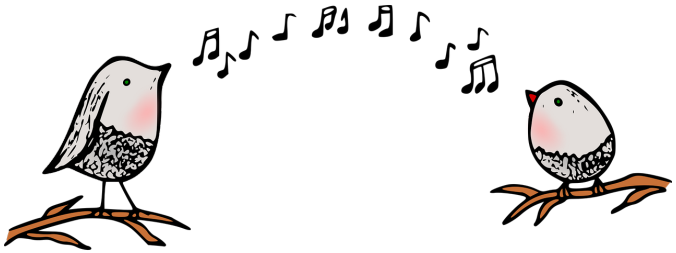


Kim, D., Kim, N., Lee, Y., Kim, S., & Kwon, J. (2023). Sound stimulation using the individual's heart rate to improve the stability and homeostasis of the autonomic nervous system. Physiological reports, 11(18), e15816. https://doi.org/10.14814/phy2.15816

The Power of Prosody

- The music of the voice
- Patterns of rhythm and sound
- Frequency
- Duration
- Intensity
- Reveals the underlying intent

Intonation before Information



Filippa, M., Nardelli, M., Sansavini, A., Meloni, S., Picciolini, O., Lunardi, C., Cecchi, A., Corvaglia, L., Grandjean, D., Scilingo, E. P., Della Casa, E., Berardi, A., EVC Group, & Ferrari, F. (2024). Maternal singing sustains preterm hospitalized newborns' autonomic nervous system maturation: an RCT. *Pediatric research*, *95*(4), 1110–1116. https://doi.org/10.1038/s41390-023-02932-4

Connection through Vocal Bursts

When you don't know what to say…use a vocal burst.

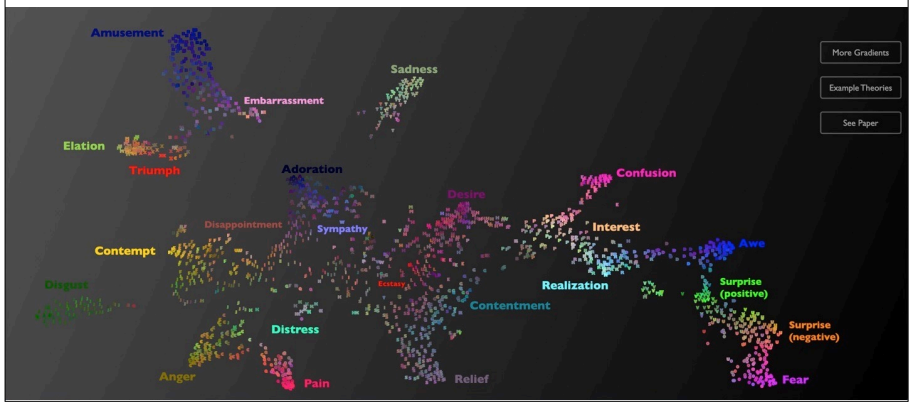
"non-language sounds" we use to communicate
ahhh, mmmm, ohhhh, humph
understood across cultures
understood across species
understood with a high degree of accuracy

Cowen, A. S., Elfenbein, H. A., Laukka, P., & Keltner, D. (2019). Mapping 24 emotions conveyed by brief human vocalization. *The American psychologist*, *74*(6), 698–712. https://doi.org/10.1037/amp0000399

The Sounds of Vocal Bursts

Interactive Vocal Burst Worldwide Map

- https://s3-us-west-1.amazonaws.com/vocs/map.html#



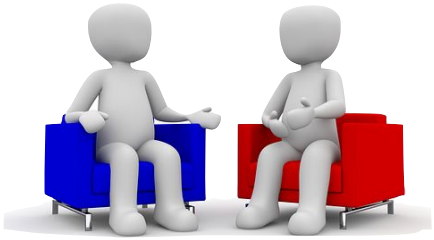
Head Movement

A straight, unmoving head is an autonomic cue of danger.

A slight tilt to the head broadcasts a cue of safety and an autonomic welcome.

Head nods send a message of connection.

Sommese, A., Miklósi, Á., Pogány, Á., Temesi, A., Dror, S., & Fugazza, C. (2022). An exploratory analysis of head-tilting in dogs. *Animal cognition*, *25*(3), 701–705. https://doi.org/10.1007/s10071-021-01571-8



Together, in this moment, in this place, doing this work, where do our nervous systems want us to be?

Danyluck, C., Page-Gould, E. Social and Physiological Context can Affect the Meaning of Physiological Synchrony. *Sci Rep* 9, 8222 (2019). https://doi.org/10.1038/s41598-019-44667-5

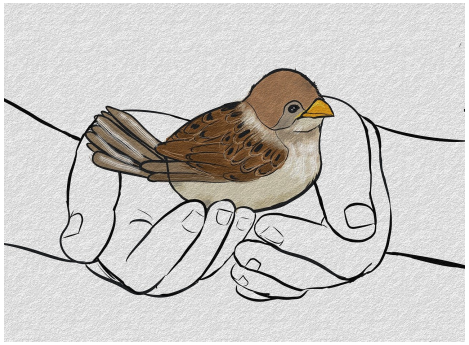
Conditions for Connection

Remember a moment when you longed for connection and your nervous system supported you in reaching out.

Remember a moment when you longed for connection and your sympathetic survival system activated and your bid for connection was received as overwhelming.

Remember a moment when you longed for connection and your dorsal survival system activated and prevented you from taking any action.

Finding the Way To Connection



What does your nervous system need to make it safe enough to come into connection?

Discover: What patterns are in place? How does the system move between states?

Disrupt: Offer a new autonomic experience. Bring ventral to the dysregulated places. Create the right degree of autonomic challenge.

and ***Strengthen:*** Recognize the place of ventral regulation.

Develop: Remind your client their system knows how to navigate the hierarchy. Travel the pathways between states to create flexibility. Anchor in ventral to bring safety to the process.

Deepen: Use the emerging patterns of regulation. Expand ventral vagal capacities. Stretch and savor.

The Responsibility of Being Polyvagal Informed

Honor the role of the autonomic nervous system in shaping our experiences and our stories.

Remember the nervous system has an inherent longing to be in regulation and an inherent knowing about how to get there.

Uncover the pathways that take you home to ventral.

Write an Autonomic Intention