

Adrenal Glands - glands that sit on top of the kidney organs, that provide an autonomic release of stress hormones and chemicals (adrenaline, cortisol, etc.) to prepare us for action when a large enough threat or stressor (real or perceived) enters our present moment. Also, in a regulated system the adrenal glands gently release cortisol in the morning to help wake us up.

Lab 2 – Biology of Stress 2: Africa Safari Time

Allostatic Load - refers to the wear and tear on the body from stress related to early trauma, daily life (chronic stress), our environment, etc. It creates inefficiency in the system, and our body begins to use more energy to do the same baseline tasks.

Autonomic Nervous System (ANS) - is part of our peripheral nervous system. It's broken down into the sympathetic and parasympathetic branches, both of which are equally important to us for optimal health. The ANS is the portion of our nervous system that is responsible for many automatic responses like heart rate, digestion, hormones, breathing, pupil dilation, etc. It's also responsible for the automatic stress responses of fight, flight and freeze/shutdown. The ANS also helps us engage and connect with ourselves, others, and the environment around us.

Lab 1 – Biology of Stress 1: Autonomic Nervous System 101

Attunement - tuning into and accurately sensing what is occurring within ourselves and with others, and responding to what is needed accordingly. When attending to these needs with care and attentiveness, we are noticing: tone of voice, mood, emotional states, body gestures, facial expressions, movements, breath, choice of words, tension/ease in the body, habits, patterns, ticks, eye contact or not. It's all information that provides somatic cues. Given that, true attunement tends to function as a sixth sense - an intuitive, accurate radar of knowing.

Awareness - is paying attention to yourself, and your surroundings, being present, and orienting to that which is around you.

Lab 1 – Basic Orienting

Biological Embodiment - is an essential part of interoception in which we notice and feel our internal sensations, listen and interpret our bodily cues, and then act from these cues accurately.

Biological embodiment allows us to perceive our physiological states. It requires us to tune into our:

- Need to urinate or release bowels or gas
- Hunger signs
- Fullness
- Thirst
- Breath rate and nature (shallow, deep, in the chest, belly)
- Heart rate
- Tiredness
- Pain signals
- Hot/Cold temperature
- All forms of sensation (tingling, tightness, flow, shaky, relaxed, tense, pulsing, vibrating, etc.)
- Emotions
- Boundaries

Body Scanning - the practice of tracking your body with awareness to explore what sensations and feelings are present.

Bracing (Bracing Pattern) - holding, tightening, and tension to protect or guard an area of our body - bracing is often in either the musculature, fascia, or both. These are usually chronic, unconscious patterns of tension. Bracing patterns can also be things we repetitively do in specific situations, like holding our breath when under work stress, for example.

Capacity - in the case of nervous system health, it's our ability to notice and be with what we are sensing and feeling. It is the ability to be present and stay with uncomfortable or foreign sensations while genuinely staying within our real window of tolerance. We can also look at capacity as the amount of energy we have available, in order for us to move through our day in a healthy way. Our capacity decreases with nervous system dysregulation and when we are tired.

Coherence - having good flow and connection between the systems and parts of our body. This includes the heart rate, breath, nervous system, organs, tissues, emotions, sensations,

thinking, etc. It even includes our connection to the environment as well. They all have flow and connection with one another, everything is working together in harmony. This is coherence.

Training Call #1

Containment - being contained is a term we use to describe being present to one's experience while feeling safe, like we have a somatic container that is able to genuinely hold our experience. More importantly, it's the capacity to be present to our more difficult and uncomfortable sensations and emotions while staying embodied, grounded, and aware. It can be a way of self-soothing and deactivating stress as needed, or as a way of staying present and feeling safe while we experience the often uncomfortable sensations and emotions of old survival stress ramping up to its peak in order to be truly released.

It is an internal resource as opposed to resourcing ourselves via the external world.

The ways in which we practice containment may change as we do. For example, we may eventually move from practicing containment with something like a self-hold, and eventually be able to contain solely with our attention to our body and connection to the present moment.

Training Call #1

Lab 6

Co-Regulation - when mammals socially engage, this will, ideally, spark up the ventral vagal nerve. This brings more regulation to the nervous system through connection with others. However, this does not always happen when we are living with unresolved survival stress.

The Ventral Vagal Nerve is minimally functional when we are babies. Babies essentially "borrow" their caregivers' ventral vagal nerve (whether healthy or not) in order to learn how to engage with themselves and others.

As babies, we are reliant on our caregivers to help prime and model healthy functioning through things like eye contact, facial expressions, tone of voice, regulated heartbeat, quality of touch, skin-on-skin contact, etc. Through this exchange, babies build the capacity to calm,

relate, trust and love as they co-regulate with their caregivers. Their own ventral vagal nerve becomes more myelinated as a result of these interactions. Myelin is a protective, fatty covering that allows the nerve to function more smoothly and accurately.

So, it is through CO-REGULATION that we eventually learn how to SELF-REGULATE. The opposite is also true; if our caregivers were insecure, anxious, angry, abusive, checked-out, highly stressed, or simply unable to attune accurately, then our capacity to calm, relate and love can really be thrown off.

This can result in social interactions sparking up the Sympathetic nervous system (fight/flight), which is the cause of social anxiety. Instead of social interactions downregulating us, they instead feel scary and threatening. When we don't have good co-regulation early on, the system will learn to adapt one survival strategy or another in order to navigate social interactions, which may result in the kind of social anxiety described above, or, more commonly, can result in the person numbing out via the freeze response, resulting in functional freeze, or in extreme cases, depression and isolation.

These kinds of survival adaptations can also potentially happen for someone with a well-developed ventral vagal system who had good co-regulation in early life, if they experience significant trauma later in life.

Lab 3 - Biology of Stress 4: Toxic And Accumulated Stress

Diaphragms - a term from the Osteopathic school and tradition. Containers and spaces located in the head, shoulders, breathing diaphragm, pelvis and feet. In many cases, they hold our organs, which also hold sensation, and they also often hold old, unresolved or unexpressed emotions. They need to be open, resilient and in flow for good coherence.

Training Call #1

Dissociation - a survival response brought on by high-tone dorsal vagal response (freeze/shutdown). It can appear as cognitive dissociation, where we can't remember something we were just told, or bodily dissociation, where we are cut off from our body and are numb because something feels too overwhelming. We can feel spacey or live on auto-pilot, or be disconnected from what we are doing. It is a protective response that originally evolved

to protect an organism from the pain of being eaten, only meant to come on at the extreme end of the fight/flight/freeze survival pathway when death is inevitable, so it is not a sustainable adaptation in the long term.

Dorsal Vagal (Dorsal Vagus Nerve) (Immobility branch of the ANS) - this is the most primitive portion of our ANS and is part of the parasympathetic branch of our nervous system. Its unmyelinated nerves come out of the brain stem, down the back of our body, and plug into all the organs below the diaphragm. It provides a rapid, unrefined slowing down response when activated.

The dorsal vagus nerve decreases our heart and breath rate and can move us into conservation mode under intense perceived/actual stress or shock.

Our dorsal system has a low-tone and high-tone function (tone refers to the amount of energy flowing into that system). Low-tone supports true rest / digest / repair, good immune function, and immobility without fear, which is useful for pro-social behaviors like sitting and conversing or having a meal with friends.

The high-tone response brings about a quick and sloppy freeze, or shutdown response, as a last resort to extreme threat (either real or perceived).

The dorsal portion is the only part of the vagus nerve fully available to a baby when born.

Lab 1 – Biology of Stress 1: Autonomic Nervous System 101

Lab 2 - Biology of Stress 3: Vagus Nerve 101

Embodiment - the felt-sense experience of being present, connected and grounded in our whole body.

Emotions - clusters of physical sensations felt in the body that we have given meaning to, often accompanied by specific facial expressions. Classic mammalian, universal core emotions are fear, disgust, anger, sadness, joy, and surprise. Peter Levine has proposed that we should also include in this group curiosity, excitement, gladness, and triumph. These emotions can help us know what to do in situational and relational contexts.

Much more common than these primal, core emotions are more subtle emotional states that may not have clear definition. Peter Levine coined the term ‘contours of feeling’ to describe these more common, nuanced experiences which also can give us very helpful information about our environment and our internal response to it, and how to respond.

Emotions can become stunted or stopped when stored survival stress builds and emotions are not expressed completely.

Lab 4 - Biology of Stress 5: Healing our Human Predicament

Explicit Memories (Declarative) - our ability to consciously recall facts and events. They can be textured and nuanced experiences of what happened. We can use declarative memory to get into implicit memory.

Lab 4 - Biology of Stress 5: Healing our Human Predicament

Episodic Memory - unique to each person, it’s our memory of a time or experience that includes an intense recall of sense and/or sensation and emotion along with where, when, and how something happened. These types of memories are often triggered by scents, sounds, or sights that are related to what was perceived at the time of the memory’s formation. These types of memories are generally quite intense and can be either pleasant or unpleasant.

Lab 4 - Biology of Stress 5: Healing our Human Predicament

Fight - a stress response from the sympathetic nervous system. When we feel threatened, we may feel a strong need to hit, push, bite, kick, etc., in order to protect ourselves or others. This comes from the mobilizing fight response. Qualities can include increased heart and breath rate, muscular tension, feelings of anger, a sense of increased energy in the system, and need to mobilize.

Lab 1 - Biology of Stress 1: Autonomic Nervous System 101

Flight - a stress response from the sympathetic nervous system. When we feel threatened, we may need to move, leave or run away; this comes from the mobilizing flight response. Qualities can include increased heart and breath rate, muscular tension, feelings of fear, a sense of increased energy in the system, and need to mobilize.

Lab 1 – Biology of Stress 1: Autonomic Nervous System 101

Freeze - a stress response that emerges through parasympathetic activation while under threat, that is meant as a last-resort response once fight and/or flight have failed. Specifically, the high tone dorsal vagal complex is at work in this survival response. Qualities can include feelings of being stuck or frozen, terrified, decreased heart rate, decreased breath rate, numbness, immobility, spacey, derealization/depersonalization, low energy, etc.

We still have a high sympathetic charge underneath the freeze response so, depending on how close we are in time to that sympathetic response being mobilized, our experience of freeze can change. In the first moments of freeze turning on during an acute survival situation, we may feel what is commonly described as shock - frozen with fear, the deer in the headlights moment.

Then, as time passes and the threat remains, we will generally move into collapse and true shutdown, which supports the numbness, dissociation, and other protective measures meant to protect an animal from the pain of being eaten, which is the context in which this survival response evolved.

The experience of freeze can be very different when it is stuck in the system as a chronic, unresolved survival state due to past trauma vs how it is experienced in a real-time survival situation. This is covered under Functional Freeze.

Lab 1 – Biology of Stress 1: Autonomic Nervous System 101

Functional Freeze - the most common representation that we see in our society of an unresolved, embedded freeze and/or shutdown response is what we call functional freeze. This means it has become normalized and doesn't necessarily show up in dramatic ways. Functional freeze can actually show up as the ability to accomplish TONS of work and achieve a lot, especially in Type A personalities. There are many successful business people and incredible athletes who are living with functional freeze. They are only able to be such high performers by not fully feeling their bodies (which often includes not feeling much emotion) and what is happening inside. Generally, they don't know they are doing this, they just know they prefer to always be on the go. Always doing, producing, moving is often the only way they

feel anything at all. In first responders, for instance, this is very common. The ‘rush’ of constantly being in a crisis is the only way for them to feel their bodies.

Functional freeze can also show up in less functional ways that are still not quite in the realm of chronic health issues: fear of speaking up, not having boundaries, always giving in to others, lethargy, a feeling of no purpose in life, or no drive to accomplish anything. These are all manifestations of trying to stay as small and quiet as possible. In other words, to remain frozen and shut down.

It can also show up completely physically. Parts of the body may be numb and have little sensation, or when someone tunes in to feel what’s happening on the inside, there may just be a sense of void, nothing going on. Or it may show up as poor digestion and immune function, and an inability to get a restful night’s sleep, because when we sleep or are deeply resting we are supposed to be in a more nuanced and healthy zone for the Dorsal Vagal branch — which is the low-tone state.

This low-tone Dorsal Vagal state supports digestion, barrier-keeping in the guts, cell repair, physical growth, and immune function. So, if we are living with functional freeze, there may be a tendency when we sleep to dip fully into that shutdown response (high-tone Dorsal Vagal) such that we don’t have access to a healthier, low-tone state.

When a person has been living with functional freeze for a long time, there often comes a point of collapse, usually following a highly stressful event which tips the system past the point of being able to contain the old survival stress, and that is when chronic symptoms emerge. Think of a high-power CEO always on the go, achieving constantly, highly successful, and then they get in a car accident, or a divorce, or there is a death in the family, etc., and their system crashes - autoimmune problems erupt, chronic fatigue, even cancers can emerge. This kind of scenario is quite common.

Lab 2 – Biology of Stress 2: Africa Safari Time

Hyper-arousal - when our sympathetic arousal state surpasses our window of tolerance and leads to a hyper-active stress response, such as panic, anxiety, hypervigilance, overwhelm, racing thoughts, flooding, uncontrolled rage, etc.

Hypo-arousal - when our parasympathetic arousal rate surpasses our window of tolerance and leads to hypo-active stress response, such as freeze, shutdown, withdrawal, numbness, dissociation, disorientation, depression, exhaustion, lack of motivation, etc.

Impulses - an internal cue to do, act, move, choose, etc. in various situations. (See also Biological Impulse.)

Harmful impulses - habits and patterns that are often rooted in managing the symptoms of unresolved trauma, such as: eating all the cookies to numb out, going shopping to fill a feeling of emptiness or disturbance, using our phones constantly to get dopamine hits and avoid our deeper feelings. They can shift with time and practice.

Helpful Impulses - an innate sense or internal message to do something for ourselves that supports our overall health, regulation, flow, coherence, or sense of meaning. When we are attuned to our healthy impulses, we can be aware of our needs and what is helpful for us. This may mean anything from knowing exactly what our body is craving for dinner, to drinking water when we are thirsty and peeing when we need to. Or it may be a more subtle experience like following that inner knowing that tells us to walk a certain route, which may then take us away from a potentially dangerous situation, or lead us to encounter an old friend. The ability to hear and follow helpful impulses is something that can grow and become more refined with time and practice.

Training Call #1

Implicit Memory - memories that can arise as a collage of sensations, emotions, and behaviours and which are often outside of our conscious awareness. They are primarily associated with either emotions, or skills.

Emotional implicit memories function as a sort of internal flag, or bookmark, that tells our system to note the moment and store it as a form of reference which may come in useful later on when we encounter a similar situation - and these bookmarks may tell us to avoid certain situations, or to move towards certain situations. These signals are usually far below the level of conscious thought, and are instead experienced in the body as physical sensations. These implicit emotional memories often interact with the skill-based implicit memories.

These skill-based memories are also called procedural memories - things that the body has learned to do automatically, such as riding a bike or tying our shoes. These procedural memories may also be associated with instinctive self-protective responses, such as the automatic reaction that can jerk our foot out of the way if we drop a knife, or with the fight/flight/freeze survival responses and the even deeper approach/avoid instinct which guides us towards things that will benefit us, and away from things that are toxic to us.

When a system is in good health and coherence, these two kinds of implicit memory can work together in a beautiful dance of emotion, impulse and behaviour that guides us towards enriching experiences and away from harmful ones. However, when trauma has occurred, these systems can become confused and associated with the survival responses in ways that can be quite harmful, or at least, not helpful.

For example - we are walking in a park and we catch a glimpse of someone that seems familiar, yet we have no conscious memory of knowing them. Yet, our heart starts to race and our mouth is flooded with the bitter taste of adrenaline. Our muscles tense and we feel first nauseous and then become very frightened - again, this is the implicit memory, however it is tied to a survival response due to past trauma. We immediately flee the park - the emotional memory triggering a procedural response, in this case the flight response, and in our haste and panic we trip over a curb, hit our head, and wake up in the hospital. Only then do we realize that the person we saw was wearing a sweater identical to one often worn by our childhood abuser.

Or... we are walking in the park and we catch a glimpse of someone that seems familiar, yet we have no conscious memory of knowing them. Yet, we feel a warmth in our body and an instinct to move towards them - this is the implicit memory of this person's energy and effect on us as a child which may have been triggered by their gait, face, body contour, or simply their unique presence. We follow this impulse - the emotional memory triggering a procedural response, and upon getting closer they turn to us and we realize that this is our long-lost friend from childhood who we were very close to for a time, someone who was our closest confidant, but who moved away when we were still very young, yet we are able to recognize them because of the strong emotional implicit memory.

Lab 4 - Biology of Stress 5: Healing our Human Predicament

Integrate (integration) - the dictionary definition states “to combine (one thing) with another so that they become a whole.”

In this world of nervous system healing, we can integrate our new education, awareness, practice, and nervous system language into our everyday life. Experiencing our new awareness is not just for when we are deliberately practicing in class, with a practitioner, or doing homework, but when we are simply living life. Integration means learning to apply our somatic knowledge and interventions accurately and intuitively in real time as needed.

Integration of this work also means being able to process any new potentially traumatic experiences organically as they arise so that such stressful events no longer cause dysregulation.

Interoception - the ability to listen to the internal landscape of our body. This includes things like emotions, sensations, needs (hunger/thirst), fatigue, posture, breath, impulses, etc. Interoception is necessary for Biological Embodiment and listening to our Impulses.

Multi-Tasking Awareness - bringing in multiple streams of awareness and self-awareness into the same moment, such as being aware of our breath, feeling the surface under us, noticing our posture, and orienting with our 5 senses, all at once.

Lab 1 – Basic Orienting

Nervous System Dysregulation (stored survival stress) - fundamentally, this is when there is an imbalance between the sympathetic and parasympathetic branches of our autonomic nervous system. Instead of a smooth ebb and flow between the sympathetic and parasympathetic branches, we have chaotic patterns of differing stress responses (fight/flight and freeze) being STUCK ON and perhaps ping-ponging back and forth.

It can happen after a single event and/or be built up over time from shock, chronic forms of traumatic stress, and early developmental trauma.

Over time our autonomic systems begin to suffer (digestion, sleep, repair, etc.) and our psyche can break down too.

*Minor discussion - **Lab 1– Biology of Stress 1: Autonomic Nervous System 101***

Lab 3 - Biology of Stress 4: Toxic And Accumulated Stress

Neuroception - the ability of our senses to perceive and communicate signals of safety or danger to our nervous system. The neurological perception of the world around us.

From Dr. Stephen Porges: “Neuroception describes how neural circuits distinguish whether situations or people are dangerous, safe or life threatening. A dynamic and interactive process whereby we respond to cues about safety and threat while simultaneously transmitting similar cues in our social interactions. Interoception and exteroception help form neuroception.”

Training Call #4

Training Call #5

Neuroplasticity - is the capacity for the body, brain and nervous system to change, shift, repattern, grow and heal. It is responsible for all of the habits we have, both helpful and harmful ones.

Training Call #8 & #9, 5 Stages of Neuroplastic Healing eBook

Neuroplastic Healing Sequencing - this means moving through the five stages of neuroplastic healing in the way that is most supportive for our system. This will vary from person to person, but generally speaking, most people will need to start with the foundations. The five stages are:

1. Correction of general functions of the neurons and glia (cellular housekeeping)
2. Neurostimulation
3. Neuromodulation
4. Neurorelaxation
5. Neurodifferentiation / learning

Training Call #8 & #9, 5 Stages of Neuroplastic Healing eBook

Neurosensory Exercises - practical lessons that explore our senses, sensations, emotions, a variety of bodily systems, impulses, movement, and the outside world. They are informed by a variety of modalities that help us explore our physiology, our environment, and how these two

things are informed by each other. These are the primary educational tools for helping our students discover what, and how, their system is holding, and also supports them in learning different options for processing that material.

Orienting (Biological Instinct) - orienting comes from being a mammal. It is the primary way mammals attune to their environment with their senses. We orient with our eyes (visual), ears (auditory), nose (olfactory), taste (gustatory) and touch (tactile) senses. There can also be a more subtle form of orienting facilitated by our impulses (this would be what is referred to as our 'sixth sense') - see Impulses.

We can orient in an exploratory or defensive way.

With **exploratory** orienting, we are curiously taking in our external environment in a calm and enjoyable way.

With **defensive** orienting, we are responding to cues in our environment from a place of survival in order to identify, protect, defend or flee. We need both forms of orienting, yet for nervous system health, we require flexibility to shift between both as needed, depending on the circumstance.

Why is this relevant? Our orienting response can get stuck in defensive mode as a result of trauma/nervous system dysregulation. It becomes our baseline. We might feel everything in our environment is dangerous as a result. Conversely, we may lose connection to our defensive orienting response and miss helpful cues of danger. We want our nervous system to effectively respond to defensive cues (like an ambulance siren or loud noise) and then come back down to baseline quickly and smoothly.

Lab 1 – Basic Orienting

Orienting (Practice) - the practice of consciously attuning to our environment and body with curiosity and interest. This builds our interoceptive and exteroceptive abilities. Continued practice helps to shift and rewire fear about connecting to our body and the environment. Over time, a curious and enjoyable connection to the body and environment can become organic again, as can the ability to naturally switch between exploratory and defensive orienting as appropriate to each situation.

Lab 1 – Basic Orienting

Pain - pain is generally useful information, especially as we understand it in the context of somatic trauma work. Pain is your body talking to you and it's important to befriend the experience of pain as part of this work.

Befriending pain means getting curious about the pain we feel, and asking what it might want to say, do, express, etc.

Types

Acute Pain - if we cut ourselves or burn ourselves on a stove, this would be acute pain. When this happens, we learn to take care of it and become careful around things that can hurt us. The practice of befriending one's pain is less relevant in this context, but responding calmly and accurately is important.

Chronic Pain - constant tense pain that may be the result of a dysregulated nervous system. Why is the pain not healing itself? This is often the result of trapped sensations and emotions.

Psychosomatic Pain - this is where the brain creates the pain first and then the body follows. Our psyche has the ability to ramp up a stress response and/or uncomfortable sensations with thinking.

Emotional Pain - the type of discomfort that we experience when a loved one dies, or when we suffer some other kind of loss, or experience highly upsetting situations. Difficult or uncomfortable emotions.

Mental Pain - out of control, intrusive and/or unwanted thoughts. Unacknowledged or unprocessed emotional and/or physical pain is often at the root of this experience.

Learning to befriend and process the physical and/or emotional pain that we will inevitably encounter as a result of doing this work, and really as just part of being alive, is very important. People with unresolved trauma may find themselves on a merry-go-round of one specialist after the other, trying to resolve mysterious experiences of pain, which could be resolved relatively easily by learning how to befriend and listen to the pain, and then to follow one's impulses to process that pain.

It's also important to note that pain can sometimes be an indicator that you **MUST** seek out medical attention, and has nothing to do with past trauma. Learning to discern the difference is important.

Parasympathetic Nervous System - the part of the autonomic nervous system responsible for regulating many of the body's automatic actions, maintaining a state of rest and digest, supporting downregulation via social connection (including connection to self), and providing the shutdown survival response. It is broken down into the ventral vagal portion and dorsal vagal portion (and the function of the dorsal vagal portion is determined by whether it is in a high-tone, or low-tone state - see Dorsal Vagal). It's often referred to as our "brake", as it slows us down.

Lab 1 – Biology of Stress 1: Autonomic Nervous System 101

Pendulation - the practice of moving our awareness between one thing and another, different thing. This could mean bringing our awareness (attention) to something that feels neutral, good or less painful, then switching it towards our pain, discomfort and place of challenge. Or it could mean switching between an internal experience and an external object or setting. Or it could mean moving our attention between a sensation we experience, and an internal image of that sensation.

We can 'pendulate' our attention back and forth in many different ways. This helps us explore what is uncomfortable without overwhelming ourselves, which helps us to stay within our true window of tolerance.

Peripheral Nervous System - the part of your nervous system that lies outside your brain and spinal cord. It plays a key role in both sending information from different areas of your body back to your brain, as well as carrying out commands from your brain to various parts of your body.

Some of those signals, like the ones to your heart and gut, are automatic. Others, like the ones that control movement, are under your control. It gives us reflexes, sensation and motor actions, and governs all autonomic functions.

Training Call #5

Polyvagal Theory - the theory developed by Dr. Stephen Porges to explain nuance and intricacies of the autonomic nervous system.

Simply, our **PARASYMPATHETIC** Nervous System (PNS) is broken down into *several branches*:

1) Ventral Vagal branch of the PNS (**organs above the diaphragm: social engagement**)

2) Dorsal Vagal branch of the PNS (**organs below the diaphragm**)

2A) Low-Tone Dorsal branch (**rest/digest**)

2B) High-Tone Dorsal branch (**freeze/shut down**)

The Parasympathetic Nervous System IS the VAGUS NERVE.

Hence, **THE POLYVAGAL THEORY** - 'poly' meaning 'many', 'vagal' meaning vagus nerve = many branches of the vagus nerve.

One of the most significant contributions of Polyvagal Theory to somatic trauma work is the understanding that many branches of our nervous system can be 'ON' simultaneously. It used to be thought that the autonomic nervous system was binary and reciprocal - that we were either sympathetically dominant, or we were parasympathetically dominant. Polyvagal Theory helps us to understand the more nuanced reality that is at the root of so many chronic health problems that result from unresolved trauma - i.e. - the gas and brake can both be on at the same time.

Lab 2 - Biology of Stress 3: Vagus Nerve 101

Pre-frontal Cortex - it is the front part of the brain, often referred to as our higher brain. It is associated with complex cognitive behaviors such as decision-making, problem-solving, social interaction, personal expression, and emotional regulation. It plays a crucial role in executive functions, including time management, attention, impulse control, and moderating social behavior. The pre-frontal cortex is essential for reasoning, focusing thoughts, and predicting the consequences of actions.

Why is this important to trauma healing? Because we have a pre-frontal cortex, we are the only mammal that can override its impulses or biological needs, causing us to keep survival energies stuck in our system. And, because we have a pre-frontal cortex, we can learn to engage creatively with those stuck survival energies in our system. As we move out of living in survival mode, we gain greater access to the prefrontal cortex.

Lab 1 – Biology of Stress 1: Autonomic Nervous System 101

Pre-Verbal Trauma - trauma that occurs before a little human can talk, which is BEFORE declarative memories are set or any language skills have been formed. Experiences are felt very somatically (in the body). There are no thoughts, emotions, context or memories that relate. It's a deep, visceral experience of survival energy with no ability to understand the experience. As such, when we experience pre-verbal trauma we can get wired to default to survival responses in times of stress as our normal way of being.

Lab 4 - Biology of Stress 5: Healing our Human Predicament

Resource - a resource is anything that we can go to that helps keep us from becoming overwhelmed. They are generally divided into two camps - coping strategies and healthy resources.

The difference between a coping mechanism and a healthy resource can be blurry, as sometimes a thing is both. If we are to make a distinction it would be this: a coping mechanism is used to keep one from going into overwhelm or to manage habitual stress, while a healthy resource is something that helps us **be with** the overwhelm and stress in a way that genuinely moves us towards greater health and healing.

That being said, if a coping mechanism is what we have, that in itself is a form of resource, because it IS helping us maintain our sense of well-being, even if it isn't healthy in a holistic sense. A coping mechanism is typically something we use in order to deal with life. It could be a behaviour, substance we consume, thought pattern, avoidance or distraction when we get stressed, or even a bodily posture we unconsciously adopt. Coping mechanisms generally aid one in checking out, numbing out, managing, or otherwise avoiding what's happening, and are often detrimental to health.

BUT! They are still an important part of staying sane and feeling safe on the way to developing internal resources and learning to hear our healthy biological impulses, so in that sense they do contribute to the healing process, as long as we are learning and working to develop different options, and not only staying fixated on our existing behaviours. Also, sometimes they can be fairly benign. For example, a child may read a lot of science fiction and fantasy as a kid as a way to escape from their environment, and experience no adverse effects, so while this is a coping mechanism, it is benign.

To be clear again - a coping mechanism should never be seen as 'bad'; they helped us survive and get to this point. It's better to have coping mechanisms, and better yet to be aware of what they are, than to not have any or to be unaware of what we are doing to manage our stress. And again, if coping mechanisms are all we have at this point – that is a form of resource.

A resource that doesn't involve coping or management is something that helps us be with the stress without suppressing it, and then enables us to come down from that activation in a natural way, so we can move forward in our healing.

Sometimes though, things that people think are healthy resources are actually coping mechanisms in disguise. For example, someone could say that their meditation practice, yoga routine, or exercise regimen is a resource, and that may be, if they are not rigidly habitual about the practice, and if they are trauma informed, tuned in, and know how to work with the material that may get triggered by these activities. But more often than not in our culture, these practices are actually glorified coping mechanisms that simply look nicer than drugs, booze, or compulsive shopping.

A truly positive resource is often internal, meaning it is some quality or ability we have within ourselves, and for trauma survivors these are generally the things that are lacking and need to be learned the most (which is what this work is all about!).

Internal resources can be things like being able to tap into one's own innate sense of safety or personal power, having the capacity to allow difficult emotions and sensations to move through the body, being able to pendulate our attention, or orient when needed, or having awareness of what fight/flight activation (that sympathetic nervous system) feels like, and how to come down through activating the parasympathetic in different ways. Internal resources

may mean being able to tap into our biological impulses, such as organically allowing sounds or movements to come through as part of processing old survival stress, or simply feeling the kind of tea we want to have, or which way to go on a walk.

Healthy resources can also be external, for instance, social engagement with safe people or even pets, or immersing oneself in water or music, or orienting to the safety in the external environment, are all natural ways to feel into our experience and to bring down activation.

Lab 1: Lesson 1

Self Awareness - is being present to our inner experiences and being able to “scan” and “track” what is going on inside. This helps us learn the signs of stress, ease or neutrality in our own bodies, as the physiological stress response is a more accurate gauge of our nervous system state than our observed behavior or words.

That being said, self awareness can also mean learning to become aware of the behaviours, thought patterns, and speech we tend to adopt in times of stress, as often these more overt signals are easier to notice at first than the underlying physiological state.

Self-Regulation - our ability to consciously bring regulation and settling to our nervous system and thus, state of mind, being, and emotions. Usually, we do this with interoceptive practices (neurosensory exercises), through deliberate co-regulation with others, or by using our healthy resources.

Somatic Self - our embodied sense of who, how, where we are, with what we are experiencing and needing at any given moment.

Stress - a physical, mental, or emotional response to external pressures or challenges, known as stressors. When large enough, it triggers the body's fight-or-flight or freeze/shutdown response, preparing the body to face or escape the perceived threat.

Stress can be acute (short-term) or chronic (long-term), and while it can be motivating and helpful in small amounts, excessive or prolonged stress tends to lead to nervous system dysregulation and all its many and varied symptomatic expressions.

Stress can either exist within our window of tolerance, to the edge of it, or surpass it. A healthy amount of stress is a natural part of the ebb and flow of life. Too little of it can lead the body to experience a sense of dullness or lethargy, and too much of it, especially accumulated over time, can become overwhelming and toxic.

Lab 1 – Biology of Stress 1: Autonomic Nervous System 101

Sympathetic Nervous System - one branch of our autonomic nervous system that provides mobilization, activity, stimulus, and alertness to the body as needed. It regulates many of the body's unconscious actions, including heart rate, our fight/flight response, breath rate, etc. It's like the gas pedal of our nervous system.

Lab 1 – Biology of Stress 1: Autonomic Nervous System 101

Syndromes - specific to Peter Levine, these refer to most of the chronic troubles we have with our health: PTSD, generalized anxiety, panic attacks, endogenous depression, chronic pain, fibromyalgia, autoimmune issues of all kinds, OCD, chronic fatigue syndrome, etc. With syndromes, the system is constantly in survival mode and the parasympathetic and sympathetic nervous systems are competing.

Lab 3 - Biology of Stress 4: Toxic and Accumulated Stress

Titration - from organic chemistry, it involves slowly adding one solution of a known concentration (titrate) to a known volume of another solution, but at an unknown concentration, until the reaction neutralizes.

In the nervous system healing context, we want to be able to go slow, bit by bit (titration) as we do this work. We don't want to overwhelm ourselves when working with stored traumatic stress, so this idea of going slowly, drop by drop, until we notice a change, and then stopping, can be very useful when applied to somatic interventions.

From Peter Levine: "We use titration to create increasing stability, resilience and organization in the nervous system in a gradual step by step way. Slowly touching into the smallest drop of survival based arousal to prevent re-traumatization."

If you are doing some of the basic exercises taught in the course and you notice it might take a long time (a day or many days) to 'settle' afterwards, this is often a signal to titrate more. Do the exercises for less time or less often. Go slow and see if anything changes. Further, if you notice certain symptoms of pain, chronic illnesses, and syndromes increase when you begin this work, it might mean that taking things more slowly is worth considering.

[YouTube video](#)

[Article](#)

Trauma - is nervous system dysregulation. It's stored survival stress. (See also Nervous System Dysregulation.)

Trauma is not an overwhelming event, it is what happens in the body and nervous system in response to an overwhelming event. Living with unresolved trauma can disconnect us from our body, our environment, and the ability to be present to our experience in a curious, relaxed way.

Trauma can be broken down into various types including chronic traumatic stress, shock trauma, and early trauma.

Chronic traumatic stress - we can also call it societal stress. Most people in the Western world live this way experiencing a high level of "go go go" action where we ignore emotions and push through biological signals. We don't take breaks or rest enough, nor release tension as it builds.

Over time this way of living becomes our normal and thus we forget what it feels like to be regulated. Our normal is tense and stressed, but we may not identify it as dysregulation. This can lead to burnout. Burnout is the body breaking down with too much SNS activation (gas on) and PNS activation (brake on) competing.

Shock trauma - this tends to be the result of a single, overwhelming event that caused our system to go into survival mode and, due to a variety of possible conditions, to stay stuck there. Shock trauma tends to result from the types of events most people see as 'trauma' - being assaulted, in a war, a car accident or natural disaster, a severe injury, though again, the trauma is in the nervous system, not the event itself. Generally speaking, shock trauma tends to result in stuck sympathetic (fight/flight) activation. However, multiple shock traumas or

shock trauma coupled with chronic traumatic stress over time can also result in the freeze response becoming recruited as well.

Early trauma - happens in the early developmental stages of life, before we have a fully functioning nervous system on board. It can be pre-verbal, which would be BEFORE declarative memories are set (see pre-verbal trauma), or at a later state of development during which we have memories and language, but the system is still developing its foundations. Early trauma is generally considered to happen from in utero to age 6.

Early trauma does not have to mean overt abuse or neglect. It could be that our primary caregivers simply could not attune to us well enough due to their own stress, unresolved trauma, chronic stress, health problems, etc., causing us to have a tough time self-regulating, self-soothing, or feeling safe. This can create a situation where our Ventral Vagal nerve is not well myelinated, and thus we don't have good access to its downregulating function. The system will tend to learn to default to survival strategies at a very early age in such cases.

Early Trauma can also result from in utero stress, the medicalization of birth, early surgery, chronic stress in our environment, and a host of other toxic experiences that have become normalized in our society. As a result Early Trauma tends to be the most common kind of trauma in western civilization.

Lab 3 - Biology of Stress 4: Toxic and Accumulated Stress

Lab 2 - Biology of Stress 3: Vagus Nerve 101

Vagal Brake - a mechanism in the autonomic nervous system, regulated by the vagus nerve, that helps control the heart rate by smoothly slowing it down during periods of rest and safety. The vagal brake allows the body to quickly shift from a state of action or alertness to one of rest and recovery, supporting social engagement and emotional regulation. It is tied to our breath. It releases or "lifts off" (when we inhale) to speed up the heart rate and allows the sympathetic nervous system to increase without stress chemicals (not a stress/threat response). It re-engages (when we exhale) to slow the heart rate.

When functioning optimally, it helps prevent excessive stress responses and supports resilience by maintaining a balance between sympathetic and parasympathetic activity.

When we don't have good regulation and nervous system health, we may move into a stress response when doing basic tasks that require some SNS activation because the ventral vagal engagement (and vagal brake) is not working smoothly, i.e. - we get lightheaded and dizzy simply from standing up.

Lab 2 - Biology of Stress 3: Vagus Nerve 101

Vagal Paradox - a phenomenon in which the vagus nerve, often associated with calming and regulating bodily functions, can also contribute to dysfunctional or maladaptive responses under stress (shutdown). The paradox arises when an individual experiences a sudden drop in heart rate or other physiological changes due to an overactivation of the vagus nerve in unsafe or high-stress situations.

In some cases, this results from early/developmental trauma when the developing system learned to "default to freeze" when encountering stress, resulting in the body "freezing" instead of engaging in a fight-or-flight response. This paradox is key to understanding trauma responses and regulation difficulties in the autonomic nervous system.

Lab 2 - Biology of Stress 3: Vagus Nerve 101

Ventral Vagal (Ventral Vagus Nerve) (Social Engagement System) - the most evolved portion of our ANS, it's part of the parasympathetic branch of our nervous system. Its myelinated nerves come out of the brain stem and wander to the front of the body, connecting to the ears, face, throat (the larynx and pharynx), heart, and lungs - all the organs above the diaphragm.

This portion is unique to mammals and helps us engage with others and our environment. It supports the ability to feel a sense of love and connection. It's important for learning and higher brain usage, vocal prosody, play, etc.

We find true physiological safety through the ventral vagus nerve as well. When well regulated, we experience the world largely through our ventral vagus nerve with the low-tone dorsal (rest/digest) and a small amount of sympathetic stimulation being recruited as needed.

Lab 1 – Biology of Stress 1: Autonomic Nervous System 101