



Polyvagal Theory: Why This Changes Everything



A Webinar Session with
Ruth Buczynski, PhD
and Stephen Porges, PhD



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Contents

Heart Rate Variability and Self-Regulation: What’s the Relationship?	3
The Organizing Principles of Polyvagal Theory	4
How We Use Others To Feel Safe.	5
Three Hierarchical Systems for How We Respond to the World	8
How The Vagus Nerve Is a Paradox	9
The Vagus: A Conduit of Motor and Sensory Pathways	11
The Connection between Trauma and Social Engagement	13
How Music Cues Vagal Regulation	14
Social Engagement Signals: Self-Regulating vs. Being Clueless	17
Recruiting Neural Regulation	19
How Attachment Theory Connects to Adaptive Function	20
Making Hospitals More Psychologically Safe	21
TalkBack Segment with Rick Hanson, PhD and Bill O’Hanlon, LMFT	23
About the Speakers	28

A complete transcript of a Webinar Session
featuring Stephen Porges, PhD and conducted by Ruth Buczynski, PhD of NICABM

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Dr. Buczynski: Hello everyone. We hear how our unconscious functions - heart rate, respiration - are vaguely related to social relationships such as trust and intimacy. If they are, they would have a huge impact on treatment - our treatment of anxiety, depression, trauma, and even our treatment of autism.

I'm Dr. Ruth Buczynski, a licensed psychologist and president of *The National Institute for Clinical Applications of Behavioral Medicine* and my guest tonight is Dr. Stephen Porges.

We're going to be talking about the Polyvagal Theory. I'm sure that you've heard about this before, and if you haven't, I'm sure that you'll be hearing a lot more about this going forward.

But as I was talking about unconscious functions and whether someone's heart rate affects their sense of trust and intimacy, it's not just how the nervous system influences our interaction with others, but the reverse is also true - our interactions with others influence the nervous system.

The person who discovered all this and put it together and can help us to understand the subsystems that go beneath that and support this is Dr. Stephen Porges. Stephen, thanks for being here and welcome.

Dr. Porges: Thank you, Ruth. It's a pleasure to be here and to deconstruct the complex ideas associated with Polyvagal Theory into usual constructs that clinicians may find useful.

Dr. Buczynski: Yes, and just to give you all just a little more background on Stephen, he is the author of *The Polyvagal Theory*, and I'm going to say that he is the inventor, or discoverer, of it as well.

The subtitle of his book is *Neurophysiological Foundations of Emotions, Attachment, Communication, and Self-Regulation*. He is currently professor and director of the Brain Body Center in the Department of Psychiatry at the University of Illinois in Chicago.

We've a huge call planned, so let's jump right in. We spoke about your theory last year and let's review the basics, and then we'll get much more deeply into it.

Heart Rate Variability and Self-Regulation: What's the Relationship?

Heart rate variability: you've observed that people who have some stability in their heart rate and people who are more able to self-regulate seem to be different, in terms of how they respond to trauma and other experiences, than people who don't have stability in their heart rate and can't self-regulate it. Can I switch over to you now and let you put that into your terms?

Dr. Porges: Sure. The ability to observe heart rate patterns is literally a portal to watching how our nervous system is regulating our bodies. When the pattern of heart rate is showing nice periodic oscillations, it's basically saying that we're in a good state; it's reflecting a homeostatic system that is regulating well.

“The ability to observe heart rate patterns is... a portal to watching how our nervous system is regulating our bodies.”

When this system gets challenged, the neural feedback - from the periphery, from our viscera, from our heart - to our brain, changes, and the portal, this vagal-regulation of the heart, reflects this change. It reflects this by modulating periodic changes in beat-to-beat heart rate, which is also known as heart rate variability.

I want to change the theme of how we conceptualize the relation between our bodily process and our psychological experiences. Rather than discussing this relationship as a correlation, think of the measurable heart rate pattern more as a portal that enables us to measure how our nervous system is adjusting to various challenges and how our body is reflecting those adjustments.

The Organizing Principles of Polyvagal Theory

Dr. Buczynski: Your theory provides the organizing principles behind the observation, and I would say that you are tying together some pretty disparate fields, scientific fields and treatment fields. What are your thoughts on that?

“...our nervous system responds to challenges in a very adaptive way.”

Dr. Porges: From my perspective this has been my lifelong journey to integrate knowledge to further explain features of the human experience. It's very paradoxical in a sense, but also a wonderful experience if you can use your research and your profession and avocation as well as your vocation to explore ideas about how our nervous system functions - really how we function in a complex environment.

The concepts underlying the Polyvagal Theory are relatively basic, but they had been elusive for decades if not centuries. The clue to the framing of the Polyvagal Theory was to understand and appreciate that our nervous system responds to challenges in a very adaptive way.

That adaptive way follows a predictable strategy defined by our phylogenetic history. Our reactions to challenges follow how the nervous system shifted during evolution- at least how the neural-regulation of our autonomic nervous system shifted - as mammals emerged from reptiles.

Dr. Buczynski: This evolution is not just the biological evolution, but the genetic evolution.

Dr. Porges: Right, the systems changed, and as they changed they provided the mammal, which we are, with various adaptive functions. So the first point needed to understand the Polyvagal Theory is to realize that humans, being mammals, need others to interact with in order to survive.

The important aspect is that mammals require opportunities to reciprocally interact. The reciprocal behavioral interactions serve a function in regulating each other's physiological state. Basically, we create relationships to feel safe and to maintain our health by facilitating the regulation of our physiology.

If we see this as a theme through human development, then concepts like attachment start to make sense, as do concepts like intimacy, love, and friendship.

“...mammals require opportunities to reciprocally interact...we create relationships to feel safe and to maintain health by regulating our physiology.”

But then again, concepts like bullying and concepts like having problems with individuals or spousal conflict also start to make sense. Oppositional behavior in the classroom starts making sense. Basically, our nervous system craves reciprocal interaction to enable state regulation to feel safe and when this is lacking we have behavioral problems.

“Polyvagal Theory emphasizes that neural pathways of social support and behavior are shared with neural pathways that support health, growth, and restoration.”

Now, that being said, both the positive and negative consequences of behavioral interactions have been primarily interpreted from a behavioral and not physiological perspective.

However, the Polyvagal Theory emphasizes the physiological aspects of these reciprocal interactions, and documents that the neural pathways of social support and social behavior are shared with the neural pathways that support health, growth, and restoration.

Mind and body responses during reciprocal interactions are not correlations; they’re the same thing from different perspectives.

Dr. Buczynski: I want to get you to repeat that: the neural pathways are shared. Just give us that one more time.

Dr. Porges: There are neural pathways of social support. Again within areas of social psychology and behavioral medicine, scientists are interested in how friendships or social interactions enhance health or the progression of recovery from injury and disease.

Science has operationalized this issue as “giving” people social support. That is not the real issue. The real issue is whether the social interactions are appropriate for the physiological state of the individual and whether acts of social interaction are actually using the same neural pathways that support health, growth, and restoration. For example, if a sick person does not feel safe in the environment, then the “implementation” of social support as a treatment might be harmful, not helpful.

“...the human nervous system...is on a quest for safety and we use others to help us feel safe.”

So, the real message is that we need to understand that the human nervous system, like the nervous systems of other mammalian species, is on a quest, and the quest is for safety and we use others to help us feel safe.

How We Use Others To Feel Safe

Dr. Buczynski: You remind me, and I hadn’t intended for us to talk about this, but there is some research - maybe three or four years ago. They were looking at failing practice physicians and they recruited a whole bunch of people who were sick and randomly assigned them. Half got a warm connection and empathic listening to their symptoms; the other half got this sort of status quo medical treatment with no warmth and kindness. They actually found that the people who got the warmth and kindness recovered from the flu faster.

Dr. Porges: All this makes physiological sense, and this quest to connect with others is often missing from the vocabulary of several health-related disciplines.

Dr. Buczynski: Why does it make physiological sense? That's the piece that you've put together and contributed, so that's the piece that we want to hone in on. Why does it make sense?

Dr. Porges: It makes sense because of the degree of social behavior. The cues from the safe individual enable the sick or compromised person not to be in defensive states. When we are in a defensive state, then we are using our metabolic resources to defend. It's not merely that we can't be creative or loving when we're scared, we can't heal.

So, it's the same pathways. To be even more succinct, it is a vagal pathway. All the interest in the vagus nerve is really interest in the information that the nerve is conveying. It's conveying information, from the brain to the periphery, to calm down - you're safe.

"...the vagus nerve conveys information from the brain to the periphery - to calm down and you're safe."

If the higher order parts of our nervous system detect risk, or danger, then this vagal calming response is retracted, and we immediately move to a physiological state that supports fight or flight behaviors. The neural circuit that supports fight or flight behaviors is an older phylogenetic circuit that enables defense to occur through increases in mobilization.

Polyvagal Theory describes a wonderful neural circuit that is available when you're in safe environments. It enables the face to work, to articulate, to be expressive. It also enables our voice to be prosodic and calming to others. Without awareness, we express safety cues to others and detect cues of safety from others. We detect cues from the upper part of the face; we pick up cues from the acoustic properties of vocalizations; we even pick up cues from head gestures and even hand gestures.

Our temporal cortex reads this information. It reads to detect the intentionality of biological movement. If you put a hand over the back of the head of a strange dog, what will happen? The dog will bite you. If you put your hand down in front of the dog, the dog will sniff the hand and see this as a neural exploratory behavior and not get defensive.

The temporal cortex detects facial expressivity, intonation and gesture, and makes a decision, which is not cognitive, whether the features of the engagement are safe or dangerous.

Dr. Buczynski: Now, what about people who don't have the ability to read those?

Dr. Porges: Ok, now I want to make one other point, and then we're going to get to that. The other point is why the Polyvagal Theory even evolved.

People understood that there are fight-flight systems, and they understood that there are calming systems, but they didn't understand that the calming system, this new mammalian vagus, was linked to the face. That's an important contribution from the Polyvagal Theory,

"...the temporal cortex detects facial expressivity, intonation and gesture, and makes a non-cognitive decision whether the engagement is safe or dangerous."

and it's also important in the sense of understanding that there was a hierarchy, that the vagal system could dampen the sympathetic nervous system.

But what was missing, totally missing, or written out of the literature, was an ancient and old defensive system of shutting down - the death feigning, the mouse in the jaws of the cat.

We have been structured through education and socialization to believe that there is only one form of defense, and that is fight-flight. We have been so structured to believe that there is only one aspect of defense: to mobilize. And we have associated words like stress to be consistent with this view of mobilization and defense. Even in response to trauma, clinical diagnoses incorporate the term stress - post traumatic stress disorder.

But there is a different defense system not associated with mobilization and not accurately described by "stress." If you are stressed, you have high heart rate; you have an increase in muscle tone. But if you talk to people who have experienced trauma and abuse, you find out that their experiences are experiences of shutting down, losing muscle tone, losing consciousness, and dissociating.

"...people who have experienced severe abuse often are panicked when they have difficulties explaining their experiences..."

When victims of trauma and abuse try to explain these features to many clinicians there is a disconnect between the personal experience and the clinicians' expectations. Functionally, the clinicians, with the model that trauma and abuse provoke a state of stress, aren't listening.

This is why people who have experienced severe abuse, physical trauma, often are at a loss. They are really panicked when they have difficulties explaining their experiences, because the clinical world did not have the vocabulary to describe immobilization as a defensive system.

When I talk about psycho-biological treatments for trauma and abuse, or when I talk about models of stress and fear, I am often asked, "Are you studying fear?" I say, "Do you mean fear as in when we run away? Or fear as in when we pass out?"

We use psychological constructs, and those psychological constructs often do not map well into the biological adaptive responses. The reason that we are having this discussion is that several clinicians and researchers, people within the trauma field, use the Polyvagal Theory to explain many of the important attributes of their clients; attributes that they had no way of explaining without the concepts and constructs described in the Polyvagal Theory.

I was totally shocked, that by giving talks about what I observed in my research - even examples of infants reacting with bradycardia and apnea - that my research findings could be translated into the human experiences associated with trauma and abuse.

"...Polyvagal Theory explains client attributes that clinicians have had no way of explaining..."

I am pleased that the clinical world is incorporating it into their perspective and using it to enable clients to develop a valid interpersonal narrative of how their body responds to life threat in a heroic manner - explaining bodily responses to trauma and abuse as an adaptive strategy that enabled them to survive.

Three Hierarchical Systems for How We Respond to the World

The major contribution of the Polyvagal Theory is, in my view, the articulation that there are three hierarchical systems which we use to respond to the world.

When we are in safe environments, picking up cues and processing facial expressivity of gesture and also when we are in enclosed environments like we are now – you are in a room with four walls and doors and I’m in a room with four walls and doors - neither one of us is looking too much behind us. If we were conducting this interview in an open area, our nervous system would constantly want to look behind us; we would want to identify risk.

But there is no risk here. We have created within our society environments that are defined as safe,

“... face to face interactions are often very helpful in resolving conflict.”

because they have a certain amount of structure. We know that our nervous system wants this; we know that if we can use face to face interactions, we can diffuse many misinterpretations of events. So, face to face interactions are often very helpful in dampening and resolving conflict.

We also know that our sympathetic nervous system is really not a bad thing - it’s good in that it enables us to mobilize. But if it is used solely as our sole defense system, we’re a dangerous organism. We’re mobilized, and we’re, in a sense, skittish. We’ll hit people, and we’ll misinterpret other people’s cues. The Polyvagal Theory enables us to understand that the sympathetic nervous system provides the neural platform for these asocial and defensive behaviors.

But there is another defense system, and that system is the shutdown system, and the shutdown system has many adaptive functions. It raises pain thresholds. It enables an individual to experience horrendous exposure to abuse, while reducing the physical pain and sensations, and thus, to survive.

But there are a lot of consequences when this adaptive defense system is recruited for survival. Although mammals evolved to rapidly shift between social engagement and mobilization behaviors, we did not evolve to shift between this shutting down system and mobilization or between shutting down and social engagement.

“Mammals... did not evolve to shift between this shutting down system and mobilization.”

If you think in terms of people who have been abused, the defense that they may use is to mobilize to get out of the dangerous environment and flail out aggressively at people who might hurt them.

So, the issue is to think in terms of a hierarchy with each circuit having adaptive function - each circuit being good for something.

But there is a problem. If we use the immobilization circuit as a defense, then our nervous system doesn’t have easy access to the neural pathways to get out of it. That’s why so many people are in therapy - because they can’t get out of that circuit.

How the Vagus Nerve Is a Paradox

Dr. Buczynski: Now where does the vagus nerve come in? How did you discover its connection to this?

Dr. Porges: The vagus nerve is involved in the shutting down response, but it is also involved in social engagement and calming down. Actually, the vagus nerve is a paradox when we try to understand its functional roles related to behavior and psychological experience.

“The vagus nerve is a paradox... involved in both the shutting down and in social engagement...”

The Polyvagal Theory was the product of trying to resolve this paradox. If I go back to the history, I was pleased with my research program.

I was showing that heart rate variability, which I assumed reflected vagal regulation of heart rate, was very protective. Heart rate variability was related to all kinds of wonderful attributes. If you had low heart rate variability, then you were at risk for a variety of things.

Low heart rate variability was related to risk and disease. It was not specific and was linked to anxiety, depression, diabetes, and heart disease. I was continuing to explore how heart rate variability was related to health risk when I received a letter from a neonatologist, who read one of my papers describing the positive attributes of infants with high heart rate variability. In his letter he stated that when he was in medical school, he had learned that the vagus could kill you, and he said perhaps too much of a good thing is bad.

This statement provided a conflict in my thinking and now I had to deal with this paradox. My research was demonstrating that there was a vagal influence that is protective. And, the neonatologist reminded me that there was a vagal influence that can kill you - causing massive slowing of heart rate and a cessation of breathing resulting in a state similar to passing out or vasovagal syncope.

How do you reconcile those two contradictory influences? The neonatologist reconciled it as “too much of a good thing is bad.” From my perspective this could not be the answer. My reason was based on my observations of infants. Infants only had bradycardia when heart rate variability was low. When heart rate variability was high, there were no apnea and no bradycardia. This suggested that heart rate variability was a protective pattern that could inhibit the mechanisms producing bradycardia.

“...science is really wonderful, not because of what people know, but because of what they *don't* know.”

Without the heart rate variability patterns, then bradycardia occurred. These observations sent me into an intellectual black hole. In a sense, science is really wonderful, not because of what people know, but because of what they don't know.

If the question could be structured, then an explanation of the mechanisms could be discovered. The solution emerged while studying the evolutionary changes in the neural regulation of the autonomic nervous system. Specifically, the answer became clear as I studied the phylogenetic changes of the vagus in vertebrates and especially how vagal pathways changed in the phylogenetic transition from reptiles to mammals.

It became an interesting story, and the story is still evolving. It's really quite exciting. One might think the study of neural systems would put someone to sleep, but really, it's quite exciting especially when we investigate the transition from reptiles to mammals. Our ancient common ancestor was a tortoise, and what was the tortoise's defense system? Shutting down and even, retracting the head!

We still have that system. It's in our nervous system. We inherited that neural circuit. We don't use it often, and, in a sense, we're not really supposed to use it, because it has too many risks. Because we are mammals, we need lots of oxygen, so slowing our heart rate and stopping our breathing is not a good thing. However, if mobilization doesn't get us out of danger, our nervous system may automatically switch to this system.

“... physiological circuits or states are not voluntarily selected.”

The issue, again, is to understand that the physiological circuits or states are not voluntarily selected. Our nervous system is evaluating this on some unconscious level, and I use the term neuroception to respect and acknowledge that our nervous system, without awareness, is evaluating features of risk in the environment.

If you start feeling comfortable with me and I start using good prosodic features - my gestures are fine, I'm not in a sense yelling at you, I'm not talking in a deep tone of voice, I'm not pushing information - you're going to start listening better, and you're going to calm down. If I talk like most university professors, your eyes will start rolling up and you'll lose interest and say, “You made a good choice to become a clinical psychologist and not a professor!”

We understand that when we start dealing with ideas and objects, and not with people, the way we relate becomes different, and I want to bridge those two thoughts in a moment. But the real important point is that the Polyvagal Theory uses evolution as an organizing principle to decipher these neural-physiological circuits and how they work.

“... Polyvagal Theory uses evolution as an organizing principle to decipher these neural-physiological circuits and how they work.”

Early in vertebrate evolution, neural regulation of the heart is mediated by an unmyelinated, which is a less efficient, vagus. This neural system provides an ability to defend by immobilizing, which meant reducing metabolic demands, reducing oxygen demands, reducing food demands, and surviving.

As vertebrates evolved, they start to get a spinal sympathetic nervous system, which emerges in boney fish. Bony fish can coordinate movements among groups, schools of fish; they can use mobility as a defensive system. As a defensive system, mobilization with its dependence on the sympathetic nervous system inhibits the immobilization circuit.

As mammals evolved, something special happens to the vagus. Mammals have a new vagus that dampens the sympathetic and the adrenal circuits to enable mammals to engage socially, and to optimize metabolic resources. This is one of the main points of the Polyvagal Theory: when we are social and are engaged, we're reducing metabolic demands to facilitate health, growth, and restoration.

Now, there's another important issue here. When this wonderful vagus emerges in mammals, the area of the brain stem that regulates this newer myelinated vagus is linked to the brain areas that control

the striated muscles of the face. This area of the brainstem controls our ability to listen through middle-ear muscles, our ability to articulate through the laryngeal-pharyngeal muscles, and our ability to express through the face.

And now, since you told me that you're a licensed clinical psychologist, when you look at people's faces and listen to their voices, you are actually assessing your client's physiological state because the face and the heart are wired together in the brain stem.

Again, the real important issue for many individuals, especially those who have experienced trauma, is that the upper part of the face is flat and the intonation of voice lacks prosody. Another, often neglected feature of those who have experienced trauma, are reported difficulties in understanding human voice in background sound while being hypersensitive to background noises. This difficulty is due to a deficit in the neural tone to the middle ear muscles.

“When we listen to the intonation - prosodic features of voice - we are reading in the other person their physiological state.”

Now one final point: how do we know if a fossil is a mammal or a reptile? We can identify the mammal by having detached middle ear bones. Detached middle ear bones are the smallest bones in the body. They're regulated by the two smallest muscles in the body, which are regulated by nerves that go to the area of that brain stem that regulates the vagal control of the heart.

When we listen to intonation - prosodic features of voice - we are reading in the other person their physiological state.

If their physiological state is calm, it calms us down. Another way of thinking about this point is to acknowledge that in mammals, long before there was syntax or language, there were vocalizations, and vocalizations were an important component of social interactions. Vocalizations convey to the conspecifics – members of the same species - whether that individual is safe to come close to.

The Vagus: A Conduit of Motor and Sensory Pathways

Dr. Buczynski: Now, I want to back up just enough to give a little bit more foundation, especially because not everyone on the call has exposure to this. So, is the vagus nerve a family of nerves or neural pathways that originates in several areas of the brain stem?

Dr. Porges: There are different ways of looking at this. You can ask the question: What's in the nerve? You can ask the question: Where does the nerve come from? You can ask: Where in the brain does it go or to where in the periphery?

Think of the vagus as a conduit, a cable with lots of fibers in it, and you did a good job of describing it the way you did. The vagus is not merely a motor nerve, meaning that it comes from the brain stem to the viscera; it's also a sensory nerve, going from the viscera up to the brain.

“Eighty percent of the fibers in the vagus are sensory.”

Now you have the mind-body, body-mind, or brain-body, body-brain relationship. Eighty percent of the fibers in the vagus are sensory. Only a few of the motor are myelinated, and they are profoundly important in regulating areas above the diaphragm. Most of the unmyelinated vagal pathways are actually regulating areas below the diaphragm.

Now I want you to think for a moment, what are the clinical features or problems of any of your clients? They have gut problems, gastric problems, and that is because the unmyelinated vagus is now being recruited as this immobilization defense system, or when people are in states of highly mobilized, as a defense strategy, they are dampening the ability of the old vagus to function in a homeostatic way.

So we have the different areas of the brain stem that are both the source area of the motor fibers going down and also the locus of where the sensory fibers are coming.

“If confronted with a challenge, the first part of your nervous system will negotiate by using the face, vocalization, and language.”

Mammals have sensory fibers and two types of motor fibers - some from this old unmyelinated vagus going primarily to below the diaphragm and others from the new myelinated vagus going to the heart. Mammals have two types of vagal motor going from the brainstem to the viscera and sensory fibers going from the viscera to the brainstem mapping our visceral experience and communicating it to the brain.

Dr. Buczynski: Polyvagal hierarchy states that there are different zones of arousal affected by trauma. Is that correct?

Dr. Porges: What the theory states functionally, is that if you are confronted with a challenge, the first part of your nervous system will try to negotiate by using the face, using vocalization, using language. If that doesn't work, there's going to be a retraction of the *new* social engagement system to promote mobilization. If that doesn't work, then you're really going to gear up the sympathetic nervous system for fight-flight.

If you can't escape, and you can't fight, and this is similar to the scenarios described by individuals with trauma histories, especially small children, or individuals confronted by larger and stronger individuals, or experiences in an environment where someone has a weapon; then in these situations, increasing sympathetic nervous system activity is not adaptive since mobilization will not be an effective defense. Under these circumstances the nervous system seems to evaluate the risk of life threat and will trigger a shutdown response.

I'll try to give you a short example illustrating this response. On CNN they were showing an airplane having great difficulty in landing. The wings were tipping back and forth and it was uncertain whether the airplane would land safely. It landed and a reporter interviewed the passengers.

The interviewer went up to one woman and said, “How did you feel?” and the expectation was that the woman would say, “I was really scared. I was ready to jump out of my skin.” But her comment wasn't that - she said, “Feel? I passed out.”

“If you can't escape and you can't fight... the nervous system evaluates the risk of life threat and triggers a shutdown response.”

“An individual’s response to the event is the *critical* feature.”

Now, was the woman’s passing out a voluntary escape? No, her nervous system detected features of risk. The point I really want to make is our neuroception, our nervous system’s evaluation of risk without awareness, is functionally unpredictable. We don’t know how our nervous system will respond.

If that plane hit the ground and went up into flames, her transition from life to death would have been without pain. However, many of the people in exactly the same environment were screaming, and I’m sure that there were others that were relatively calm. So here we have an example of the same physical risk event being translated by different nervous systems in different ways.

This leads to the real problem when we start dealing with trauma, where the clinical world is obsessed on the event and not on understanding that an individual’s response to the event is the critical feature.

The Connection Between Trauma and Social Engagement

Dr. Buczynski: Can we start tying that knot to social engagement - trauma and social engagement? What’s critical there?

Dr. Porges: What’s critical here is if people go into this state of immobilization with fear - where they are utilizing this very ancient neural circuit - the nervous system doesn’t provide them with an easy way to get out. And by getting out, I mean getting back to a normal system where social engagement processes are easily recruited.

For most people, the trauma experience results in the development of a complex narrative of why they don’t want to socially interact: they don’t trust people... basically they have visceral physiological feelings. They’re exhausted, their nervous system is detecting risk when there is no real risk, and they are trying to negotiate this very complex world. The narrative they’re building is an attempt to support the physiological experience.

“The first thing the client needs to do in any environment is to navigate in space to *ensure* safety.”

But, the real question is how to get a person out of that state?

How do you recruit the wonderful social engagement system to inhibit the sympathetic mobilization and to move out of the dangerous immobilization state?

This is where some ideas from the Polyvagal Theory are slowly creeping into the clinical world.

The first thing that the client needs to do in any environment is to navigate in space to ensure safety. Pat Ogden is truly a master in understanding this feature. In her clinical settings, she empowers the client to move and even position the therapist to insure that the client experiences a sense of safety.

Often feeling safe has a lot to do with the proximity to the therapist. In a sense, the therapist, as another human being, is dangerous to a client who has been traumatized. To reduce these features of danger, Pat empowers the client to navigate in the space of her office to feel safe.

“Once there is a feeling of safety, there’s a shift in physiological state... tone of voice and facial expression change.”

Once there is a feeling of safety, there’s a shift in physiological state. When there is that shift in physiological state, then spontaneous engagement behaviors occur: the tone of the voice changes and facial expression changes. If the therapist is reciprocal and responds with engagement behaviors characterized by prosodic voice and positive facial affect, the social engagement system of the client is stimulated.

Based on the Polyvagal Theory, I have two hints for clinicians: one, negotiate safety, and two, understand that our nervous system responds to the features of others differently in safe environments than in dangerous situations or even in noisy places.

Because noisy, low frequency sounds are triggers to our nervous system of predator, I suggest that the first thing we should do to a clinical setting is make it quiet. Get rid of the low frequency sounds.

Many people with a trauma history don’t want to go to restaurants; they don’t want to go to movie theaters; they don’t want to be in shopping malls because the escalators bother them - the vibrations and the low frequency activity. Since we know this, why don’t we create environments where they will feel *safer*?

“Listening to vocal music, the prosodic features of sound, even without another person, can make us feel safer.”

Once our nervous system feels safer, then the therapeutic strategy is: can you trigger the neural regulation of the social engagement system? How would we do that? This is where listening to vocal music, the prosodic features of sound even without another person, can have the effect of making us feel safer.

How Music Cues Vagal Regulation

Several years ago, I developed the listening project to stimulate social engagement behaviors in autistic individuals. The intervention was an attempt to exercise the neural regulation of the middle ear muscles by exaggerating the processing intonation of voice. When the neural regulation of the middle ear muscles is increased it provides a cue to a nervous system that the person is in a safe place and the autonomic nervous system responds by increasing the vagal regulation of the heart.

Dr. Buczynski: What do you do in the music project?

“...the listening project was developed to stimulate social engagement behaviors in autistic individuals.”

Dr. Porges: What do I do in it? I present computer-altered vocal music. Vocal music, especially female vocal music provides prosodic vocalizations without low frequencies. However, by processing the vocal tracks, the modulation of acoustic frequencies that characterize the vocalizations can be exaggerated and trigger the neural circuit controlling the middle ear muscles more efficiently.

That’s what we were doing. The idea behind this strategy is relatively simple - if we can get the brain to pick up the information – the prosody, the intonation, the feedback – then that will increase the

neural tone to the muscles in the ear to dampen background sounds, and that would link into the vagal regulation of the heart and calm people down.

For the fifteen years, I was walking around with that as a plausible theory. On December of this year, my colleague, Greg Lewis and I, filed a patent on a device that actually measures the transfer function to middle ear structures. It was a concept that was missing from speech and hearing sciences.

“...if we can get the brain to pick up the prosody, the intonation, then that will increase the neural tone to the ear muscles, dampen background sounds, link into the vagal regulation of the heart, and calm people down.”

Now we are able to demonstrate whether or not a person is absorbing human voice or reflecting it, and whether they're absorbing low frequency predator sounds or reflecting that from the eardrum. Visualize the eardrum as a kettle drum. As we tighten the kettle drum, the pitch goes up. As the middle ear muscle tone increases the eardrum absorbs higher frequency sounds and lower frequency are reflected. With the increased middle muscle tone, the frequencies associated with human speech are more likely to be absorbed and we are better able to understand the speech of others. However, at the same time we are better able to understand speech we decrease our ability to detect the low frequency sounds associated with predator.

We use this device to evaluate middle ear function in people with auditory hyper-sensitivities. Many of the participants in our studies have been autistic, but we also include individuals with other diagnoses. Of interest to the treatment of trauma is the observation that many individuals with a history of trauma frequently report auditory hyper-sensitivities.

We were able to document in our patent application that in individuals with auditory hypersensitivities the absorption in the frequency band of the human voice was diminished at the second and third harmonics of human speech. In people with auditory hypersensitivities, these harmonics, which are necessary to detect the consonants in speech, were not getting into the inner ear and to the brain. They were absorbing more of the low frequencies that were associated with danger and predator.

“Our work is demonstrating that auditory hypersensitivities are modifiable for many and ‘listening’ is part of the social engagement system.”

If they participated in the listening project, we were able to rehabilitate the neural regulation and change the absorption curve. Our work is demonstrating that auditory hypersensitivities are modifiable for many and demonstrating that “listening” is part of the social engagement system.

Dr. Buczynski: In listening to all of this, are most of the participants (you are working with) autistic children? Or have you started to include people who have experienced trauma, or perhaps returning soldiers?

Dr. Porges: For about a decade, we were applying this intervention to solely autistic individuals. However, given the complexity of the autism diagnosis, I decided to expand the research question from autism to auditory hypersensitivities.

I changed research strategies, because I wanted to demonstrate that auditory hypersensitivities could be remediated, and when they were remediated there would be improvements in state regulation and social engagement behaviors.

Also, I did not want to be accused of trying to cure autism, since the clinical diagnosis assumes that autism is a lifelong disorder. My goal was not to cure a controversial clinical diagnosis, but to change features of the behavior to enable the individual to adapt better to the world they were living in.

“When hypersensitivities could be remediated, there were improvements in state regulation and social engagement...”

To your question regarding PTSD or trauma, we have not done any randomized clinical trials. We’ve completed one with autism, and the effects were quite good. In our study, if the autistic individuals had auditory hyper-sensitivities, more than sixty percent of them no longer had it following the intervention.

If they no longer had hyper-auditory sensitivities after the intervention, most had improved social engagement behaviors. The reduced auditory hyper-sensitivities reflect a neural-physiological state that supports social engagement behaviors. If the intervention changed the neurophysiological state, then the individual is in a neural platform that dampens defensive behaviors and facilitates spontaneous social engagement behaviors.

Dr. Buczynski: How about music therapy? Does that have any (effect)?

Dr. Porges: Yes, music therapy might be helpful. The issue with music therapy is that as an intervention the underlying mechanisms are not understood. Even though there are published reports and clinical observations of improved behaviors, there is no strong theory of why it would work that has been empirically tested.

However, the Polyvagal Theory with its link to the middle-ear muscles and link to laryngeal and pharyngeal muscles, which are involved in singing, could be used to explain how music therapy might be helpful.

“...singing controls breath... expanding the duration of exhalation and increasing the vagal efferent influence of the myelinated vagus on the heart’s pacemaker.”

First, we will discuss singing and then we’ll move to my favorite form of music therapy, wind instruments. With singing, we control breath. Primarily, we expand the duration of exhalation, which increases the vagal efferent influence of the myelinated vagus on the heart’s pacemaker. The myelinated vagus, is the vagus of the social engagement system and the expanded exhalation associated with singing increases the functional impact of the vagus on the heart.

What do you do when you sing? You exhale. What else do you do when you sing? You listen with your middle ear muscles. What else do you do? You utilize the neural regulation of your laryngeal and pharyngeal muscles. What else do you do? You utilize the muscles of the mouth, exerting more control of the facial muscles.

If you sing with a group, then you are also social referencing - you're engaging others. Singing, especially singing in a group, is an amazing neural exercise of the social engagement system.

“Music therapy, especially singing in a group, is an amazing neural exercise of the social engagement system.”

The experience of playing a wind instrument shares many of the behavioral and neurophysiological features of singing. Similar to singing, there are processes of listening, exhaling, and engaging whoever is running or conducting the music. From an entirely different perspective, the behaviors and neurophysiological “exercises” of singing and playing a wind instrument share features with pranayama yoga. Pranayama yoga, functionally, is yoga of the social engagement system - yoga of breath and of the striated muscles of the face and head.

Social Engagement Signals: Self-Regulation vs. Being Clueless

Dr. Buczynski: Interesting. Awhile back... we were talking about why some people need those social engagement signals and other people just have no clue - as if it's a foreign language and they've just immigrated to a foreign country.

Dr. Porges: And that's why you're a licensed clinical psychologist and I'm a laboratory scientist. We have both learned that we need to interact with people, but in different venues. I want to tie this together and give you a plausible explanation. So let's start off with forgetting that we have all these complex diagnostic categories and all these terms.

Dr. Buczynski: Glad to do that.

Dr. Porges: Then we end up saying that there is comorbidity and use other kinds of terms, and that doesn't help because the diagnostic terms don't get at the underlying mechanisms causing or mediating the disorder.

Let's create a very simple model of human behavior. Let's place the ability of individuals to regulate their biobehavioral states with other individuals along a continuum. This is really what you're saying: some people don't have a clue about other people's features and this informs you that their ability to regulate their physiological state is not good with other people.

“In this new world of social communication - social networking... by using computers and texting, we're stripping the *human interaction* from human interactions.”

Now, let's take another dimension and let's ask about people who regulate their state with objects? Remember that we're in a world in which social communication is being redefined by people who are challenged in their own abilities to regulate physiological state with others.

This new world of social communication is what is called social networking. We're using computers and we're texting. In a sense, we are stripping the *human interaction* from human interactions.

We're going from a synchronous interactive mode, to an asynchronous mode. Now we leave messages and read message and form interactions that do not involve synchronous interactions. We are allowing the world to be organized based upon principles of individuals who have difficulty regulating in the presence of others, but regulate very well with objects.

"...many clinical disorders involve people who have difficulties regulating their state with others, and they gravitate to regulating with objects."

From a clinical perspective, many of the clinical disorders that are being treated are really about people who have difficulties regulating their state with others and gravitate to regulating with objects.

It doesn't matter whether we label these people with diagnoses such as autism or social anxiety. It doesn't really matter what we call it. What we know is that their nervous systems do not enable reciprocal social interaction – they have difficulties *feeling safe* and experiencing the beneficial physiological states that enable positive social behavior to be parallel to health, growth, and restoration. For them, social behavior is not calming but is disruptive.

Individuals get pushed into these two different domains to regulation state, either interacting with others or with objects. The problem is that our society, including our educational system, is emphasizing interactions with objects and not with people.

"Changes in education are moving away from face-to-face interactions."

Changes in education are moving away from face-to-face interactions. Schools are putting iPads in the hands of preschoolers and elementary school children. I was watching a recent newscast of a school where the administrators and teachers were so proud that in their first grade classroom, all of their students had iPads. As the camera captured the classroom, the kids were looking at the iPads, and were not looking at each other or the teacher.

What is the consequence of this trend? This trend results in the nervous system not having appropriate opportunities to exercise the neural regulatory circuits associated with social engagement behaviors. If the nervous system does not have these opportunities, then the nervous system will not develop the strength and resilience to self-regulate and regulate with others, especially when challenged.

If schools continue on this trajectory of "technological advancement," the children will not get the appropriate neural exercises to develop an efficient neural platform to support social behavior and to facilitate state regulation.

Another important point is what happens to the school systems? Under the pressure of our cognitive-centric, cortical-centric society, we seem intent on force feeding everyone with more information without understanding that our nervous system needs to be in a specific physiological state to promote bold ideas, creativity, and positive social behavior.

"If schools continue on this trajectory of 'technological advancement,' children will not get neural exercises to support...social behavior and state regulation."

Rather than enabling opportunities for music and play with others such as team sports - all opportunities to exercise the social engagement system - we treat these as “extra” curriculum activity that would distract from cognitive activities with a goal of enforcing children to sit longer in the classroom.

“Rather than enabling opportunities for music and play...we treat these as ‘extra’ curriculum activity that distract from cognitive activities...”

Dr. Buczynski: And get more information.

Dr. Porges: Get more information, and of course, the information is not getting in, and oppositional behaviors are popping up. So, it’s a naïve view of the educational process and human development.

I think, based on your interests, you might want to ask questions about early experience, the consequences of those early experiences, and how they lead to other risk factors. We could discuss these questions from a neural, developmental, and even an exercise model; if we don’t utilize the neural regulation of certain systems, they just will not develop well. It doesn’t mean that we are so pessimistic that we can’t recruit them later; it means that because we haven’t recruited them early, there are going to be consequences.

Recruiting Neural Regulation

Dr. Buczynski: How do we help someone who hasn’t recruited them learn how to recruit them?

Dr. Porges: The first thing, of course, is the context of safety. I was going to say depending upon the age of the client, but actually, I would go back and say that the first thing to do is to convey that the client, whether a child or an adult, did not do anything wrong. As soon as we attempt to modify a person’s behavior, we tend to overwhelm the client with so much negative feedback emphasizing that the behavior or feelings should be changed, that the client responds defensively as if they did something wrong.

\This changes their physiological state and makes the circuit for social engagement behaviors unavailable. So, there’s a total paradox of how we raise our own children, how we teach our own students, and how we function.

“...we can recruit our wonderful brain with creative cognitive functions to develop a narrative, treating atypical behaviors - not as bad - but as understandable in terms of adaptive and heroic.”

If we want individuals to feel safe, we should not accuse them of doing something wrong or bad. We need to explain to them how their body responded, how this response was adaptive, how we need to appreciate the adaptive features of these responses, and understand that this adaptive feature can change in different contexts.

Then we can recruit our wonderful big brain with creative cognitive functions to develop a narrative that treats our atypical behaviors not as bad, but as understandable in terms of adaptive function, and often heroic.

How Attachment Theory Connects to Adaptive Function

○ **Dr. Buczynski:** I suppose this would be a good place to just go into the whole attachment theory or how attachment connects to this theory.

Dr. Porges: It's a frequently asked question and part of it is linked to the fact that my wife, Sue Carter, discovered the relationship between oxytocin and social bonding. For many years, I've said that this was her research - social bonding and attachment type issues. She developed her idea based on the prairie vole, a small rodent that has very interesting social behavior, including pair-bonding for life and fathers and siblings acting as caregivers. The vole is quite an amazing animal.

The prairie voles have a high level of oxytocin. During the past few years, Sue and I have been collaborating and measuring vagal regulation of the heart in the vole. This little animal has vagal regulation of the heart very similar to humans; a pattern that is atypical for rodents and other small mammals. This convergence among features of high levels of oxytocin, high vagal tone to the heart, social monogamy, and alloparenting makes the vole a very interesting and a much more relevant model for social behavior than laboratory mice or rats.

Since I started to collaborate with Sue, I could cross the line into the research area of attachment. Before we collaborated, there was a division between our research areas: My research emphasized engagement, safety, and proximity or negotiation, and her researched emphasized social bonding and reproductive behavior.

○ As we started to collaborate, I started to cross the line, and when I crossed the line, I realized that there was a sequence involved here that was missing in the attachment literature. The attachment literature focused on the theoretical models of John Bowlby and Mary Ainsworth.

Missing from these theoretical models was what I call the preamble to attachment – signals of safety are the preamble to attachment. I felt that one couldn't even discuss issues of attachment without discussing features of social engagement and I started to propose that social engagement provides the neural platform upon which attachment processes can occur. It's a hierarchy.

“...signals of safety are the preamble to a hierarchy of attachment...social engagement provides the neural platform upon which attachment processes can

Sue and I were working together on a concept, which we called the *love code*, and the love code really had two parts, phase one was social engagement, which dealt with the engagement behaviors of psychological distance - negotiation of proximity, and phase two had to deal with physical contact and intimacy. To articulate this as a code, it meant that if it was done in the proper order, healthy attachment and bonding would occur and if the order were shifted the outcome could be disastrous.

○ From a clinical perspective, people who get bonded to each other without feeling safe with each other may be an important driving force for many couples who come into therapy. From my perspective, attachment should not be discussed on any level, whether it is theoretical or observational, without first a thorough understanding of the contextual setting to determine whether the conditions support safety and social engagement.

Making Hospitals More Psychologically Safe

Dr. Buczynski: We don't have a lot of time, but I have a note here that I wanted to ask you about hospitals and making hospitals more psychologically safe. That is a time when we would hope that our facilities and the way we organize them would enhance or recruit people's best – their immune system functioning... But I'm not sure that we are the best at that because we're focusing so much on other things...

"...we can't wait to get out of the hospital because the hospital is not safe."

Dr. Porges: I think this is very important question, and unfortunately the answer is that very little effort has gone into this. Those of us who have been hospitalized can tell you that after being awakened every hour and being chronically disturbed by noise and staff, we can't wait to get out of the hospital because the hospital is not safe.

The issue has a lot to do with who organizes the services delivered in hospitals - why are they there? Many of the staff perform services to protect the hospital from malpractice suits. Surveillance becomes important, and cleanliness becomes important. Other issues regarding the quality of human interactions tend not to be important, and this is tragic.

When people go into a hospital, they are saying, "I'm going into a physical situation where I cannot protect myself. I want to be assured that I'm in safe, loving hands." And this is just not happening.

I think it is really tragic because there are so many well trained and loving clinicians and practitioners in the allied health areas that could create a different type of clinical setting for patients in hospitals.

Rather than being overwhelmed with documents to sign that are releasing hospitals of all the responsibilities – because you can't get the medical service unless you sign - why not have someone who is like a concierge for your body, and lead you through all these tasks? This person could escort you to the hospital and take the burden of hyper-vigilance from you. This would enable your body to work with medicine, or work with treatment - to become a collaborator in the process of healing as opposed to being frightened.

"...a hospital concierge would enable your body to work with the treatment - to become a collaborator in the process of healing as opposed to being frightened."

The issue, as we discussed very early in the interview, is that if you're frightened and if you're scared, you're not going to heal. If we know this, why don't we do whatever we can to make people feel safe?

Dr. Buczynski: One thing that comes to mind - I had abdominal surgery 20 years ago and in the last couple of years, a colonoscopy, and in both cases, I'd negotiated ahead of time to have my glasses on so that as I was coming out of the procedure, I would be able to see. Not being able to see, since I'm legally blind without my glasses, would have left me vulnerable. I wanted to get the information I needed to orient and protect myself.

Dr. Porges: That's a perfect example...if you can't see, you're disoriented. If you're disoriented, there's uncertainty. If there's uncertainty, you're in a state of danger. What if someone that you had discussed

this with had held your hand and said, in a nice voice, “Ruth, everything’s fine. It will be a little disorienting for a few minutes, but don’t worry; I’m here.”

“...as human beings, we require reciprocity and context to feel safe.”

Often, while you’re waking up, you’re pushed onto a gurney and shoved into a room. It’s manualized; even in all the treatment models, where they talk about evidence-based practice, it’s really a way of justifying manualized treatment. What we need to realize is that we’re human beings and that human beings require, not just need, but require reciprocity and context to feel safe.

Dr. Buczynski: Next time we talk we can talk a little more about your thoughts on low frequency sounds in hospitals, but before we close, I just wanted to ask you, Stephen, what’s next for you?

Dr. Porges: Well, I think of myself as a mature scientist who’s done some interesting things, and I intend to do many more new interesting things. My wife, Sue Carter, and I will be moving from the University of Illinois to Research Triangle Institute International in North Carolina. We’ll be there July 1st, where we’re creating a new center, a new program, and the program is called the Translational Research in Neural Medicine.

You can get some hints about what that really means. Rather than thinking that medicine or medical treatment is just surgical or it’s going to be pharmaceutical, what we are going to develop are models in which you can trigger the nervous system to recruit circuits that will support health, growth, and restoration.

“Rather than medicine just being surgical or pharmaceutical, we’ll develop models...that trigger the nervous system to recruit circuits that support health, growth, and restoration.”

Dr. Buczynski: Fascinating. I’m so sorry that we’re out of time. We actually went over just a little bit, but it’s all so fascinating - all the work that you’ve done so far. I just want to say thank you, Stephen, for giving us your time today and for your life’s work - all the pioneering efforts you have made and how much you are opening up our understanding of what it is to be a human being. Thank you.

Dr. Porges: Thank you, Ruth, and I wanted to thank you for the opportunity of reaching out into the clinical world, because my passion is not merely a passion of discovery, it’s a passion of translation.

Dr. Buczynski: Yes, ours too, actually, and that’s a good way to put it. Thank you, and good night.

Dr. Porges: Yes, good night.

Definitions:

Bradycardia: a resting heart rate of under 60 beats per minute, which can cause cardiac arrest in some people.

Apnea: suspension of breathing.

Syncope: fainting or loss of consciousness

TalkBack Segment with Rick Hanson, PhD and Bill O’Hanlon, LMFT

Ruth: That was a great call! I *love* talking with Stephen Porges – and I also love talking to Rick and Bill in my Talkback Segments here! I am joined once again by my two colleagues. Dr. Rick Hanson is a neuropsychologist and author of *Buddha’s Brain: The Practical Neuroscience of Happiness, Love and Wisdom* and Bill O’Hanlon has written many books, one of which is *The Change Your Life Book*.

So, what did you think of the call tonight? What stood out to you?

Rick: There were a couple of points, as an overview. The first was the idea of physiology as the target and point of intervention and as the measure of success for an intervention. Of course, we never know physiology directly; all we know is the higher level tip-of-the-iceberg in terms of conscious experiences.

Still, as therapists, to appreciate that we are regulating and dysregulating our client’s physiology continually is very powerful for me - to think of the body as a target, including its underlying deep architecture of systems.

“...think of the body as a target, including its underlying deep architecture of systems.”

The second thing that struck me was that the vagus nerve establishes an ongoing baseline, based on the parasympathetic nervous system, of calm.

When the brain detects a threat or an opportunity, it disturbs away from that resting state into pursuit of an opportunity, fighting, fleeing from or freezing around some kind of threat. But the resting state, the home base, is a place of inner peace.

I find that helpful with clients – to really stand with them, knowing in our *own* bones of a conviction that underneath this freaked-out top layer of awareness is always a fundamental place that is the home base of calm, happiness and love. It is not a matter of *building* the home base, but *returning* to it, which is a lot easier to do.

“It is not a matter of *building* the home base, but *returning* to it, which is a lot easier to do.”

At a deep level, Mother Nature is on your side and that is reassuring for a lot of people.

Ruth: How about you, Bill?

Bill: What stood out for me was the *physical environment*. In “therapy land,” we tend to center our attention on the *inside* of people, where the problem and solution are. We sometimes

forget the resources *beyond* people.

I was trained as a family therapist to think in systems, but even beyond systems is the physical environment – what are the chairs like in your office, how close are you sitting to the client and when do they feel safe?

My friend Steve Gilligan had a funny case with a woman who had been traumatized; he was sitting at the normal distance you would from a patient or client and she said, “You’re sitting too close to me. I feel really freaked out.” And he said, “Okay, I’m going to back up till you feel safe.” He was halfway out the door of his office when she finally said she felt safe.

We tend to *forget* that physical environment and I thought what Steve Porges said was so powerful; when we are outside, we are constantly vigilant because we could be attacked, which is very deep and primitive.

“In ‘therapyland,’ we tend to center our attention on the *inside* of people... we sometimes forget the resources *beyond* people.”

You held up my latest book, but I just finished my next one, which is about writing: studying the habits of writers and what helps them write. There was a writer who found

she had to be in a corner of her room with furniture all around her and her back to the room so she’d feel contained and safe enough to be able to write.

“We need to think about the physical environment and what might create safety for your client or patient.”

We need to think about the physical environment and what might create safety for your client or patient. To tell you the truth, I haven’t asked any of my clients that – but I’m going to now.

Ruth: Interesting. Rick, how would you apply polyvagal theory to treatment in practical terms?

Rick: There are a lot of different ways; I couldn’t give an exhaustive answer here, but a couple of things struck me. One is Stephen’s notion of hierarchy; first we seek to regulate ourselves through social contact, then through activated sympathetic nervous system-based fighting or fleeing. If all else fails, the most ancient and primitive system – the freezing response – takes over. Helping people “move up that ladder” is a helpful way to think about it.

I also find that helping people have an internalized sense of others who care about them – which also showed up in Belleruth’s discussion about imagery –is deeply important, as well.

The last thing I was struck by was implicit in much of what Stephen had to say, which is this: whether content is present in the vagus nerve because it came from the outside or whether it arose from the inside, it is still content in the vagus nerve. Specifically, if we receive soothing prosody – the intonation of the voice – or we receive soothing facial expressions, that material is going into the vagus nerve, which is great.

But also, if we are soothing to others – for example, taking care of little kids or pets and treating them well - that is a great way to activate positive vagal nerve processes.

“...if we are soothing to others...that is a great way to activate positive vagal nerve processes.”

It reminds me of research that has been done on animals who have been severely traumatized when they were young. These animals can partially recover well-being – as best as one can tell with animals – and normal stress chemistry by taking care of younger animals, even of a different species. Traumatized chimpanzee infants, for example, can repair some of that by taking care of puppies or kittens when they are adults.

That gives us the opportunity to look for ways that our clients can give support, soothing and nurturing to others *and* internalize some of it themselves.

“...our clients can give support, soothing and nurturing to others and internalize some of it themselves.”

Ruth: Thank you. Bill, Stephen said that we are social creatures and many of us need others to feel safe – yet we know that can break down during trauma. What are your thoughts on rebuilding broken social networks?

Bill: He talked about myelination and the un-myelinated parts of the vagus nerve; I actually know about that because when my son, who is now twenty-six, was an infant, we were feeding him skimmed milk because that’s healthy.

The pediatrician found out and said that we needed to feed him whole milk because he needed to *myelinate*, which is the development of the covering around nerves that help to regulate the electrical impulses that go through. It’s like the rubber that goes around wire so you don’t get a shock.

I think there’s a social myelination process that happens if you are in a safe environment and rhythmically in tune. Let me give you a couple of examples. When I first started teaching at medical school, I had a colleague who also used hypnosis and worked in a hospital with infants that failed to thrive.

They were taking in food, but they weren’t growing and there was usually some sort of trauma involved. He taught parents to stroke the babies in time with their breathing and it seemed to calm the parent, as well as the child. It started the social myelination process and the babies started to gain weight and thrive.

“...there’s a social myelination process that happens if you are in a safe environment and rhythmically in tune...”

There is something about that connective social experience when it is *not* threatening. There was a study of people who went through a big earthquake, like the Haiti earthquake or the earthquake in Armenia years ago, and they found that people who were with other people developed post-traumatic stress at lower levels than people who were alone. Of course, this is when you are with other people who are not traumatizing, abusing or dysregulating you.

Judy Beck did research and showed that people recover from post-traumatic stress in group therapy at higher rates and more quickly than in individual therapy. If you have other people that are in tune with you, who have been traumatized, saying, “I know what you mean. I felt that, too,” there is an attunement.

The social myelination process stood out throughout Stephen Porges’s talk; we as therapists *can* support the person socially – that’s not the only cure, but it helps them myelinate socially so they can heal internally.

“...people recover from post-traumatic stress in group therapy at higher rates and more quickly than in individual therapy.”

Ruth: This is the last webinar in this series. As we look back over all six calls as a whole, what stands out to you?

Rick: For me, there were two things. The first one is respect for individual differences – whether it is the difference between military culture and civilian culture, or the fact that

some people are going to find re-regulation primarily in the social sphere and others are going to find it

in their own relationship with their bodies through relaxation practices, or an engagement with the object world, like gardening or going for walks in the wood.

The other thing that popped out for me was– I’m getting a little emotional about it – that there was an *extremely* inspiring sense of resourcefulness - of never giving up, of feeling down deep, from beginning to end, that there is always something you can do.

We can do so much by accessing a wide range of different tools in the toolbox and demonstrating to our clients our own profound commitment to their well-being over time; our clients have a willingness to keep trying something else, if we need to.

To me, that is *such* an important part of working with trauma; the embodiment of *efficacy* is the antithesis of the word *helplessness*. It is this fundamental stance that there is *always* something you can do. You know, taking our stand with Captain Kirk and rejecting the Kobayashi Maru scenario.

“...there was an *extremely* inspiring sense of resourcefulness - never giving up - feeling that there is always something you can do.”

Ruth: Rick, that’s interesting. It makes me think of how proud I am of how much our field is growing and how many new discoveries are coming out.

Twenty years ago, maybe even five or ten years ago, we didn’t even *know* a lot of the things we have talked about in this series and that makes me think about how much more we will know next year. It is exactly the way you put it - this whole idea of never giving up.

Thankfully, there are *many* pioneers working to *build* our knowledge about how trauma affects people, how it affects the brain and the different in-roads we can make.

Bill, what are your thoughts?

“...there are *many* pioneers working to *build* our knowledge about how trauma affects people...”

Bill: I am probably preaching to the choir here because almost everybody who has been listening to this – in addition to you two and everybody that you have interviewed – knows there is no separation between mind and body neurology – and also spirit, I would say. It is all embodied together; it is human, social and environmental.

You have been doing this for many years, Ruth, and you have organized many mind-body conferences. What came across is that we tend to *silo* things, but human beings live in a multi-connected and multi-influenced world.

This is the good news and the bad news because you can be affected traumatically in any of those ways – neurologically, physiologically, interpersonally, environmentally, bodily and muscularly. But that also means that there are multiple ways into healing as well. As Rick said, that is the hopeful message.

I really can’t separate these because I have watched all of your Brain Series, Rick has written about this and I am learning *so* much more. The bad news about trauma and the brain is that trauma gets grooved neurologically and brain-wise; we tend to get grooved and if nothing moves us out of these grooves, we tend to stay in them, which are sometimes dysfunctional and not workable.

The good news is that human beings can develop through our *whole* lifetime – this is the idea of brain plasticity – you can always change those grooves. *That* is the message of hope that I heard throughout this whole series: “Here is some understanding. If you can use this understanding, you can help people move out of their deep groove. It’s not easy all the time – but it is doable.”

“The good news is that human beings can develop through a whole lifetime. That is the message of hope that I heard throughout this whole series...”

Ruth: Fascinating. Again, I am afraid we have to stop – but I have a few things to say, especially because this is wrapping up. First of all, please go to the Comment Board and tell us how *you* are going to use what you heard today and what stood out to you. When you do, please put your first and last name, your city, state or country, and your profession.

You’ll find that you will see other people’s ideas; you will get ideas from them and they will get ideas from you. This is an important resource – as we have been talking about resources tonight.

“...you will see other people’s ideas; you will get ideas from them and they will get ideas from you.”

I want to let you know that our researchers do their best to go through the transcripts to make sure that all the names referenced in the interviews are correct. If you had trouble hearing specific names in the audio, you’ll find them in the transcript.

We will be talking about dissociation and how important it is in trauma; we will also be talking about secondary trauma and how so many of us who spend a lot of our time working with patients who have experienced trauma are vulnerable to experiencing it ourselves just from hearing about it over and over again. It is the same with first responders – police and firefighters and all of our brothers and sisters who are in the military. Those will be coming up in the bonus calls next week.

One last thing I need to tell you is that the price for the Gold Membership goes up Monday, so be sure to get it right now. You can click on our link right below and you will be able to sign up right away and get all of that. You also help NICABM make these interviews free and available to people all over the world.

We don’t have the count for Trauma yet, but there were over seventy countries represented in the Brain Series that we finished a few months ago; many folks there come from countries where they earn substantially less – just a few dollars a week – and this helps make those calls available for free to those people, as long as they are listening at the time of broadcast.

Please go to the link that is below and sign up for a Gold Membership.

Thanks very much – and thanks to both of you, Rick and Bill, for being part of this series. You have added *so much*. It was nice meeting with you, hearing your ideas and bouncing our ideas off of one another. Thanks very much for being a part of it.

Everyone, take good care. Bye now.

About The Speaker:



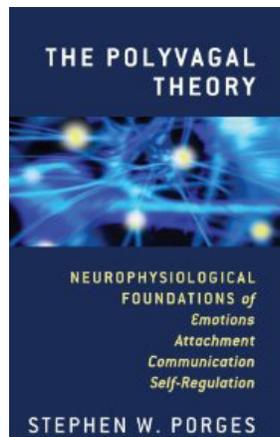
Stephen Porges is currently a Professor in the Department of Psychiatry and the Director of the Brain-Body Center in the College of Medicine at the University of Illinois at Chicago and holds appointments in the Departments of Psychology, BioEngineering, and Anatomy and Cell Biology.

He is a former President of the Society for Psychophysiological Research and has been President of the Federation of Behavioral, Psychological and Cognitive Sciences.

Stephen Porges is married to C. Sue Carter, PhD, who is a biologist and behavioral neurobiologist.

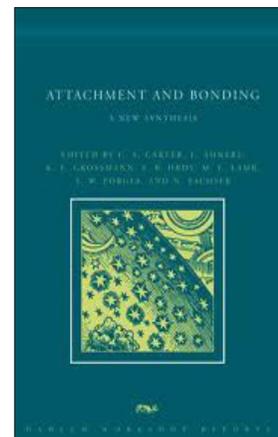
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About The TalkBack Speakers:



Rick Hanson, Ph.D., is a neuropsychologist, author, and teacher as well as founder of the Wellspring Institute for Neuroscience and Contemplative Wisdom. He teaches at meditation centers in Europe, Australia, and North America. His work has been featured on the BBC and in *Consumer Reports Health*, *U.S. News and World Report*, and other major magazines.

Rick is currently a trustee of Saybrook University. He also served on the board of Spirit Rock Meditation Center for nine years, and was President of the Board of FamilyWorks, a community agency. He is trained in several meditation traditions and leads a weekly meditation gathering in San Rafael, CA.



Bill O'Hanlon, LMFT, is a dynamic, inspirational speaker and prolific author (over 30 books so far) who helps motivate people and organizations to determine what they are meant to be doing and to remove the barriers to succeeding at those goals.

Originally trained as a psychotherapist, Bill has become known for his collaborative and respectful approach, irreverent humor, storytelling, clear and accessible presentation style, and his infectious enthusiasm for whatever he is doing. He teaches seminars, leads trainings, writes books, coaches people and offers websites, podcasts, blogs, web-based courses, teleclasses and audio and video programs.