



Polyvagal Theory and How To Regulate The Nervous System

Guest: Dr. Stephen Porges

Alex Howard: Welcome everyone to this interview, I'm particularly excited for this interview. Dr. Porges' work has had a significant impact on the work that I do and the teams do at the Optimum Health Clinic. I think it's also a really important bridge between a number of the different perspectives that we have as parts of this event. So, firstly, Dr. Porges thank you so much for joining me I really appreciate it.

Dr. Stephen Porges: Well, thank you very much for inviting me to participate in this Summit. Thank you.

Alex Howard: Thank you. So before we dive in, let me just give people your professional bio, I'm sure many people be aware of you and your work but just for those that aren't:

Dr. Porges is a distinguished university scientist at Indiana University, where he is the founding director of the Traumatic Stress Research Consortium and is a professor of psychiatry at the University of North Carolina. He is the originator of the Polyvagal Theory, a theory that emphasizes the importance of physiological state in the expression of behavioral, mental and health problems related to traumatic experiences.

He's the author of *The Polyvagal Theory*, which is really the foundation of a lot of this, it's a technical book, but really worth bearing with. And then the much more accessible for the kind of lay person book *The Pocket Guide to Polyvagal Theory: The Transformative Power of Feeling Safe* and co-editor of clinical applications of the Polyvagal Theory.

So, Dr. Porges before we jump in to Polyvagal Theory and the enormously important contribution it makes to the field of trauma. I'd love just to hear a bit about you and for people to know a little bit about how you came to this work. Because I think a lot of people that have come to this work have come from a psycho-emotional perspective. And you are coming for a much more biological origin, which I think is part of how you discover things that others weren't seeing.

Dr. Stephen Porges: Well, it's an interesting story and of course when asked that question it gives me a series of choice points of how I tell the story. But the true story is I was working on a major clinical problem, and that is, can you predict with human newborns which ones are going to go into distress? Are they going to have apnea and bradycardia meaning they stop breathing and their heart rate get too slow to support oxygenation of the blood to the brain. Those are called bradycardias and apneas. So I was working basically in both obstetrics and neonatology as a researcher, but I was doing my clinical work there and I was stuck with this paradox.

I had written a paper that was really saying that vagal regulation of the heart was really a protective feature in infants and that high risk babies, pre-term babies didn't have that same vagal protection. And I was getting that insight from heart rate variability. So I was really proposing that the monitoring of heart rate variability and especially a component called respiratory sinus arrhythmia, which is a rhythmic component of the heart rate, that heart rate increases with inflation and decreases with exhalation, was a reflection of how that vagal system was literally protecting the newborn and even the fetus.

And I published this paper and I was very proud of this paper and I got a letter, and I always make this statement. The letter. I didn't get e-mail. It was before e-mail. This was in the early 1990s. And it was from an neonatologist and he said to me, I really enjoyed your paper, but when I was in medical school, I learned that the vagus could kill you. Perhaps too much of a good thing is bad. And what he was referring to was the vagal influence that causes the heart rate to slow down and literally to stop and to inhibit breathing.

So he was talking from a clinical neonatologists perspective, and I was talking about a different vagal component, which was a protective component. And I didn't buy the idea that too much of a good thing was bad, had to be two different things. And I was, in a sense, carrying this letter in my briefcase for a couple of years. And I was working on trying to solve what I called was the vagal paradox, which was how can the vagus be protective? It's really marketed through the world as the health, growth and restoration pathway, and how can it also kill you? And the answer is where do the fibers within that nerve come from that enable it to do those different things?

And I was really perplexed and I was working very hard to try to figure out where this came from. And so I was reading at the time all things vagal. I was going everywhere, reading everything because the nervous system has predictable patterns if we understand what to look for. And I found the clues in studying an area called comparative neuroanatomy.

Comparative neuroanatomy is when people study different species and they study the neuroanatomy. In this case, the neuroanatomy of the autonomic nervous system in different species to get an inference about evolutionary patterns. So we can't study evolution really, but we can study how different species evolved in different trajectories. And when I did that, in a sense, the book opened, the world open because what I was able to see was there was a major transition between those ancient extinct reptiles and the ancient mammals, and today the modern mammal. And that is, with the mammalian autonomic nervous system you had two different vagal pathways. In the reptile you only had one, but the reptile vagal pathway when challenged, would put into states of defense, shut the animal down. So reptiles immobilize, they stop breathing, they could hold their breath for a couple hours.

And what I started to realize was that, the pre-term baby came into the world with a reptilian autonomic nervous system. And so the apneas and bradycardias were really these adaptive reactions to the stressors that foetus or that pre-term was experiencing. And what I learned - and this is where it became much more relevant to the world of psychology and psychiatry - is that as these two systems evolved, one which was this protective system, one became myelinated, which meant they could respond very rapidly and it focused on organs above the diaphragm. And the other one remained our heritage and had primary fibers below the diaphragm.

And so now you start seeing that the defensive reactions of immobilization that are seen are resulting in like diarrhea or urotopine syndrome, and you start seeing that as common stress effects. So that sub-diaphragmatic when that system is now being used in defense. And reptiles, when they are challenged, they will defecate. They will clear their intestines before they immobilize because keeping food in the gut is metabolically costly. So it's an adaptive reaction.

And of course, we see irritable bowel is one of those symptoms of modern day society. But the main point here is that mammals start to get this newer myelinated system. But the most interesting part of it is that the system that was myelinated in the brainstem was now interacting and talking to the structures that controlled the facial muscles. So that we were now able literally to project our heart, our visceral state in our voice and in our facial expressivity. And we were also able to change it, like through breathing patterns, through chanting and through co-regulating with others. So we could see that the neural regulation of our heart really enabled us to co-regulate with other people. That was how Polyvagal Theory evolved.

Alex Howard: And I think part of what's so important about this is, I think as human beings, we like to think that we are in control of our mind and our emotions. And of course, the way a lot of how modern psychology works is, there's such a strong emphasis towards that. I think that really determines our experience.

But of course, part of what's so important with your discoveries is the physiological state, the state that our nervous system is, it actually trumps what's happening in our mind and our emotions.

Dr. Stephen Porges: Yes, that's absolutely true. What happens is that as we shift states from being, let's say, calm state, to more of a mobilized defensive state, our perspective of the world changes to support our mobilization.

So if we become mobilized and in a state of a threat, we perceive the world as being dangerous and we become less accessible, so we become vulnerable, we become defensive. But if the neural regulation of that myelinated vagus is working, we have facial expressivity, the intonation of our voice is much calmer and inviting and we become accessible to others. So we're on this continuum of vulnerability to accessibility.

But when we shift physiological states, even though we do not carry with us an intentionality to be vulnerable or to be accessible, we can be quite mindful of what state we're in. We can feel it within our own body or see it as a reflector from other people's facial expressions. The important point is, actually there's another construct within Polyvagal Theory, which is what I call neuroception. And that is our nervous systems ability to rapidly evaluate risk in the environment without conscious awareness. And this is what shifts our physiological state and biases our perception of others as being threatening or being safe to come to.

So we have to understand that, although we may not be aware of the triggers that shift our physiological state, we can be very aware of our physiological state. So that when our bodies feel antsy or a little bit jittery, be aware that if you're feeling that way, what are you projecting to others? So if you're feeling anxious, what are you projecting to others? And

don't blame others if they appear anxious to you, because you may be the one that's generating it.

So part of the intentionality shifts to an understanding, having an intention to be aware of our body. And if our body's in states of defense, we have a responsibility to our body to try to mitigate those reactions. Either put ourselves in safer places, quiet places, safer people around us, but understand that our body is screaming to be calmed down. And during this period of time that we're in now, our bodies around the world are really screaming to be held, to be interacted with and to be reassured that everything's okay.

Because there's one other important attribute of our nervous system. Our nervous system interprets predictability as safety, and we are not in a predictable environment now. So these uncertainties trigger physiological states that shift our autonomic nervous system into states of visceral defense. That's why gut problems and all these others will occur and what we want - and this really should be our agenda in life - is to be aware of our autonomic nervous system. And when it shifts into states of defense and we need to take a responsibility, that the clues that we're getting about our physiological shifts, we need to mitigate those. We need to create environments of safety and trust.

Alex Howard: I think in a minute I'd like to break down a little bit more the different stages that we go through. But I think just before we do that, I just want to pick up on something that you said, that in a sense, when we're in these states of threat that we misread, or at least we don't perceive clearly the cues in the environment. And so actually there's a self-perpetuating nature to these states.

Dr. Stephen Porges: Yeah. Well, that self-perpetuating nature is a product of being a smart species. Because we're trying to make sense out of our lives. And so we create what I call personal narratives, other people use the term 'meaning'. What we're doing is trying to justify our experience, what we're doing.

So if we're feeling bad, it's a lot easier to say you're the one making me feel bad. Or let's say the case of the Covid-19, if the Covid-19 were solved today, I'd be just a happy camper. Probably not, because that's what we're directing it at, today. But we still have basic issues, we're just creating narratives. And part of the narrative we have to create is a very optimistic, positive one in which we are worthwhile people, and that if we take defenses away, then the beauty of who we are can express itself.

And I think so much of what we do with our time in our psychological and intellectual energies is to create wrappers over our body, covering up who we really are. And what that really means is, we miss all the wonderful opportunities of being accessible and co-regulating with others in trusting relationships.

Alex Howard: Yes, and of course, part of the reason why people do that is that they've learned that it's not safe to be who they are. That they didn't have those cues and that reassurance when they were developing their ego structures and their personality as a child, that wasn't necessarily the holding and the safety for that.

Dr. Stephen Porges: Absolutely. If we think in terms of what the institutions do, let's talk about education. Education is evaluative. Evaluative means our body will be in states of defense. What's our religious perspective? Religious perspectives are evaluative. And so we're not in a sense praised about being smart or being loving or being good. The discussion is about, there's a bad part of you, you've got to keep it restrained, there's an evil thing. It's like as opposed to seeing the beautiful core inside of you, we say, we have to cover it up because the core isn't so good.

But what we learnt in this world is, really, people are really loving, their natural state is to be benevolent, it is to be connected. And this is in a sense is part of what Polyvagal Theory does teach us. It teaches us that the survival of mammals, from the very beginning, was based not on being more aggressive, but by being cooperative. And that message has been lost. We misunderstand Darwinian's survival of the fittest, we think survival of the fittest is physical strength, it's larger bombs, it's bigger armies. When the actual history of the evolution of mammals was that that was through cooperation.

Alex Howard: It's interesting you say that in the context of what's happening globally at the moment. I should say if people are watching this, we're recording this in late March. So it's sort of three months before people may be viewing it. But just two days ago here in the UK, the government put out a request for volunteers to help support those that are being shielded and at the extremes of self-isolation. And within 48 hours, half a million people so one percent of the UK population volunteered to be that, to help and support others. The vast majority of the population in the UK, and where you are in America, have made decisions which are significantly limiting to their own personal lives, financially and practically in supporting care of others. So it's a powerful example of how we can act selflessly for the support and care of others.

Dr. Stephen Porges: I think it's really remarkable about even social distancing for a social species. This is not our natural state and this is why people feel very uncomfortable. They want to engage, they want to hug, they want to talk to people. But they are making an effort because they understand that they can be a vehicle of infecting others and this notion: it's not just me, it's how I impact on others. And I think it's really quite remarkable.

And we're watching different things occur within the United States and there's always political overtones of what's going on. But what's happened is that the federal government is not taking the lead. It's actually the States, the States which are really responsible to the constituency are reacting and responding. So the governors of the states, doesn't matter what political party they're in, they are concerned about their people and I think that's a beautiful aspect. And even where I'm living now in the northern part of Florida, two weeks ago they started to close all public systems, schools and everything. And that was long before the state made any true mandate, even at the state level, let alone a national one.

So I think the people are speaking and they're saying, "we want to help out." The real problem that I see is, really, like the problem that was being mitigated by the volunteers. How do you get resources to those who are self-quarantined? How do you get food? How do you get other services? And for some of us we have food for a couple of weeks, but then what happens?

Alex Howard: Yeah. And I think it's a powerful example of us as a social and as a species that don't want to be in isolation, that survive and thrive via our collective support.

Dr. Stephen Porges: Right. And what I've also noticed in what we're doing with my friends, is we're having virtual cocktail parties on Zoom. It's kind of remarkable. People are reaching out and they want to have these meetings basically on a weekly level, because we know we're going to be in this for a while. I have a two and half year old granddaughter who only lives two hours away, but we can't see her. But yesterday I started to read stories over the Internet and we're gonna try to do that every day so there's a predictability for our nervous system, there's a connection with others, there's a sharing of moments, and there's really a sense of presence.

You see, we are being isolated, which for a mammal is really a very horrible situation. So if you think about penile systems, where solitary confinement, that's the worst thing. If you think in terms of the rodent research, of what are the major stressors that result in a retuning of their autonomic nervous system, it is solitary confinement, it is isolation. So we have to, with our smart brain, understand that we can mitigate some of those effects of isolation through video chatting. And video chatting, at least we have facial expressivity, we have reciprocal gestures, the timing isn't too bad so there's not much of a delay so we feel we're present. And we have voice, texting and email doesn't quite do the same because we need the facial expressivity and we need the intonation. Because our nervous system evolved to extract those cues as cues of safety and connectedness.

Alex Howard: Yes. And I think this would be a good point to just say a little bit about the three main stages that the nervous system goes through.

Dr. Stephen Porges: So when Polyvagal Theory evolved and came up with their two different vagal circuits, it also came up with the idea - or it co-opted or used an existing idea - that is that the clues of how we react to challenges is really through evolution. It's evolution in reverse and the word is called dissolution.

And this was a concept that was around in the early nineteenth hundreds to discuss or to interpret how brain damage and brain illness disinhibited older circuits. So that when we had cortical problems, the more primitive reactive aspects of our brain expressed itself.

So this became a hierarchical model of how we react to challenges. Polyvagal Theory through this understanding of the evolutionary stages that the vertebrate autonomic nervous system went through, came up with a hierarchy to fit this model. And so what we have is this newer circuit, which is a social engagement circuit. It uses our face, our voice, we listen to intonation and in the brain stem is linked to that myelinated vagal control for heart. But it does more, it dampens or controls the range in which the sympathetic nervous system can react. So it keeps it within range and it also send signals to the sub-diaphragmatic area, it tells that to do your homeostatic job, don't worry about going into states of defense.

So when you get from clients, issues about gut problems, the signal didn't get to their enteric nervous system, to the sub-diaphragmatic organs. But if that social engagement

system goes off line, this is what we have to be very careful about, because threat results in a retraction of that for the adaptive support of fight-or-flight behavior.

So we take away this calming and restraint, which functions like a break and we say, okay you're now free to be defensive. Now, what that means is, that you're turning off your homeostatic systems to recruit as much energy as you can, to mobilize for short periods of time. This is fine for short periods of time but as it goes for more chronic ones, we start getting disease states because that reaction, that dampening of homeostatic function is not good for a visceral organ. So we start manifesting disease on an organ level and that in itself, the mobilization also has some other adaptive functions. Not only does it enable us to fight or flee, it also downregulates our shutting down response.

So as long as we keep our sympathetic system fired up, we don't disappear, we don't dissociate, we don't pass out, we don't shut down. And the issue is when people experience severe trauma, many of them have had histories of shutting down and dissociating. So the adaptive function for them would be to keep moving and to do often high-risk behaviors and many people with trauma histories end up doing that. But now we're in a chronic state of stressors with people with trauma histories saying I have to move or going to shut down again. And we have to now create opportunities for them to co-regulate with other people, with trusting other people. And at the moment, if they're not sequestered with someone they trust, they'd better, in a sense, get a buddy. It's like a penpal, someone that they can interact with through video chatting and smile back and forth and kind of be reciprocal with, to help mitigate that need to keep moving.

Alex Howard: Yes. And of course touching back to what we said a little bit earlier. Part of the challenge here can be is that if someone's had traumatic or difficult experiences around relationship historically, then they're meeting relationship from that defensive place, they're often making poor choices in relationship. They're often having repetitive patterns of being in damaging relationships because of how their nervous system is responding.

Dr. Stephen Porges: Well, we can even cast that within a Polyvagal lens by saying, when they are meeting those people, they're not in a safe place to begin with. So their neuroception is distorted and they're basically taking, perhaps, verbal cues. They might say well, the person is wealthy or the person has a different type of resource or is physically attractive, but not really taking the attributes of do I trust this person? Am I connected? Can I be truly successful? Can I give up my defenses and feel comfortable in that person's arms? I often like to say, our goal in life is to feel comfortable in the arms of an appropriate mammal.

Alex Howard: I like that.

Dr. Stephen Porges: Because you know why? Because some people, because of their history, can't feel comfortable with another human, but they're not bad with their dogs. Because they feel the dog is unconditional in terms of its trust in the relationship.

Alex Howard: There are many different types of traumas that people can experience. And of course, sometimes the less easily seen traumas are those developmental traumas where it's not any single event. It's just the sort of not getting one's emotional needs seen and held in the way that one needs.

Can you say a bit about how that affects and changes the wiring of the nervous system?

Dr. Stephen Porges: Well, let's start off by saying that trauma's not an event. In Polyvagal terminology, trauma is a response. And even though events are important to document, they are not necessarily causal. So certain people of course, can have a lot of adverse events and do very well. And some people, the events aren't even that adverse and they can't handle it. So we have to be more understanding of what's in-between, meaning the organism, its state and neurophysiology, because that's going to tell us if they can react or respond to different challenges. So you're going to have to review the specific question.

Alex Howard: Well, I suppose what I'm saying is that certain people's nervous systems have been conditioned and have been wired in certain ways. And perhaps, just say a little bit about how that - and we've touched on this in different ways already - but how that tunes and changes their nervous system?

Dr. Stephen Porges: First of all, Polyvagal Theory gives us an optimistic picture. So if we start thinking in terms of being locked into different physiological states as opposed to a rewiring, we have a much more optimistic view of who we are. We're less in a sense of self-blame or blaming others and we're saying, if we can get our bodies into states or contexts that are safe and we get the cues of safety, our body will become accessible and the wrappers are taken off.

And I like that model as opposed to saying we have a model in which adversity has rewired our nervous system and now we are destined to be this fragile or reactive organism. So I have my bias, and my bias is that you can trigger the nervous system to be safe and that's how all successful therapies work. They get those moments and then they expand the moments because those moments are feeling safe and the expanding of them are neural exercises of recruiting that myelinated ventral vagus circuit, which is part of a social engagement system.

So if you look at it from the trauma world - and this is a world that I wouldn't say I reluctantly entered, I would say was welcomed into. But it was not a world that I initially went to, the trauma world found me when Polyvagal Theory started to be developed. Actually, they found me in late the 1990s and to my shock, I realized that the experiences of those who had survived trauma were mapped out in Polyvagal Theory. And the trauma therapists when they saw that, they went to me and they wanted to bring me to their meetings. And over the next couple of decades, I was basically educated into the worlds of traumatology and I think I've been exposed to thousands of therapists and thousands of clients now. Although I'm not a therapist, but I think I have a good understanding of their experience from that neurophysiological perspective.

Because the theory provides an understanding for the individual survivor that takes away shame and blame, which is again that natural reaction of when something is wrong or something bad has happened. And it has a lot to do with how our culture has conditioned us. And this is the part that you're bringing in. I think there's a lot of conditioning that goes into our personal narratives and I think there's a lot of almost Pavlovian or classical conditioning going into the sub-diaphragmatic, visceral reacting, which is really this life threat response, where we get into our gut.

And the way that we get away from our gut initially, the reaction that people have is to keep moving. But the sophisticated model is to develop relationships, go through different forms of neural exercises, such as play and social interaction, which recruit the myelinated vagus, which basically choreographs everything else in the autonomic nervous system, contains, constraints, choreographs, optimizes, makes us both healthy mentally, socially and physiologically.

Alex Howard: I'm gonna go slightly off-piste here, you mentioned around therapeutic work and the importance of that. I'm wondering from your perspective, what do you think is the invisible magic that sometimes happens in therapeutic work between client and practitioner? Which is what allows that shift to happen in one's nervous system? How do you conceive of and how do you know?

Dr. Stephen Porges: So we're going to get into circularity here, because that moment is when two bodies, two nervous systems feel safe with each other. So people use words like attunement or synchrony, but what it really is saying that the cues of safety come from you are accepted by me and I sent back to you cues of safety, which create this reciprocity. And I call that a neural exercise. We do that when we play, it starts off with the mother and the baby doing peek-a-boo, which is scaring and then resolving the threat. Scary, resolving the threat. And humor has a lot of uncertainty that is resolved through connection.

So our nervous system likes disruption in a predictable way, and we call that humor. It does not like disruption in a way that results in hurtful behaviors of others. So that moment is a moment of when physiologically, or we see it behaviorally, or we can say - not just only in therapeutic lens - but when you meet your spouse or your significant other. Those are the moments that people start feeling comfortable and they come up with all kinds of language, like all the sound around us disappeared. Well, that's exactly what happens when the social engagement system starts to work because it changes how you extract human voice from background sound. It tenses the middle ear muscles, which dampens the lower frequency sounds of predators and now you focus on voice.

And now we flip this into what about children from, let's say, unsafe environments? They have learning and language disabilities because they can't recruit that system, they're always in a state of hyper-vigilance. So we know that when our bodies feel safe, we allow the other person to help us co-regulate, and that is those magic moments in therapy. And a good therapist is a person who can really structure those events, even when a person doesn't have a history or much of a history of positive experiences. The therapeutic problems that I would see - and this is one that's really very interesting, in and that it's with foster children.

So foster children become a very high-risk population for all kinds of anti-social behaviors, early pregnancies and even representation on death row, or in prisons. And I have friends who are working with these populations and the question I always have is, how do you work with them if they have no memories of anything positive in their life? So this now goes at the moments. Most people have a few memories, crystallized memories. It could be with a parent or could it be with a loved one or could even be with a pet where their bodies felt totally attuned and safe. And if they bring that image into their mind, they have to smile.

And this is what a lot of therapists are working with, because, again, taking the Polyvagal Theory, which talks about a hierarchy if you can get that moment of smile, a moment of comfort, a moment of safety, it functionally will inhibit and dampen the defensive reactions. So they monopolize or they leverage those moments of being together and being safe. So an astute therapist is doing this intuitively to say we have this moment, now let's expand it, let's elaborate it and if the person starts to sense, get anxious, they may say, let's go back to that moment again. Let's see how you are when you think about that.

Alex Howard: And how about strategies outside of the therapy room. So things like mindfulness practices, breathing practices. What do you see as the relevance of those to this?

Dr. Stephen Porges: It's a very good and important point because we're talking about what resources can the individual use by themselves. And we know that if we exhale slowly, we recruit that myelinated vagus, we calm ourselves down. So slow exhalations, which have historically been part of the repertoire, what people used to calm themselves, whether they call it Pranayama yoga or they call it singing, which is the same thing, or playing a wind instrument is all slow exhalations. And during the exhalation is when the myelinated vagus can work, during the inhalations you're turning it off. So it means that if you huff and puff and only do that, you work yourself up, you get highly mobilized. But if you extend the duration of your phrases, you are really exhaling over longer periods of time.

So what you're talking about is, can you empower the client with a tool kit? That when they are mindful of their body shifting state that they can do something? And initially you can move your body to a safer place, but you might not have that opportunity. But you can do some breathing, you can do some slower exhalations, or if you feel comfortable enough, you can go sing. And that often makes people feel more comfortable.

There is a physiological part involved in that. Also, listening to vocal music has some of the same effects too. So if we listen to vocal music, the intonation of that vocal music is a pattern that our nervous system has great difficulty in rejecting. So it has to do with the frequency range. So a female voice who has a modulated voice is a mother's lullaby and mother's lullabies are very effective in calming. If you think about pets, how do you talk to your dog? You talk like you would talk to a baby. Now, if you talk with a lower monotonic voice, the dog's going to not like that. So the dog has a frequency band of sensitivity to modulation of intonation, very similar to a human. This is neuroception, you can practice your voice with your dog and you will see what happens. The dog understands intonation. The dog may understand a few words, but the dog will universally respond to intonation.

Alex Howard: It's a great piece of homework for people there. One of things I've noticed both in myself and also working with my patients is that your work provides a very helpful map in terms of being able to track and see where one is in their immediate experience. And particularly one of the pieces that I think is helpful is when one goes into a shutdown response and there's an emotional numbness, there's an absence of feeling. Being able to track and see that and be aware that's happened in of itself is helpful, because then one can start to see what is needed to shift that.

So I wonder if you could say a bit about self-awareness and one's own ability to see where they are in their experience and use that as a way to guide themselves back to a safe and social place?

Dr. Stephen Porges: Again, I think this is really a good insight. And a colleague of mine Deb Dana who wrote a book on clinical applications. Deb also has done a couple of books, actually one book, the new book is coming out on using Polyvagal Theory in the clinic and that's her treatment model. The treatment model is not to focus on any event, but basically give people exercises and skill sets of mapping where they are physiologically. And if you do that, you can move up and down what she calls the Polyvagal Ladder.

But really, what we're saying is we can move states and we can see how we react to similar things in different states. So we start understanding the range of what our body will do, we start giving it respect for that and we start losing our pedantic view that things are only about what people say. And we start to realize that what has to do with who we are at the moment, that people have said things to us.

Alex Howard: One of things that I found very helpful working with patients with that model. I really like that ladder model. Is that somehow there's a re-assurance and a comfort that comes from going, oh, I can see I'm here and actually I know this place and I know I've been before and actually it somehow takes the terror and the fear for people out of those experiences.

Dr. Stephen Porges: So, I actually when you brought up the question a moment ago, I was going to say another thing. And that is, when you deal in the world of trauma, you start to acknowledge that many people are numb to their own body feelings. So part of the therapeutic model is to allow the person to be re-embodied, to become in their body again, to do these feelings. So those become exercises and you have to again respect the fact that why the numbness is there, what was the advantage of the numbness? The advantages of the numbness or adaptive function was they didn't feel that visceral pain of being separated or being injured by those whom they may have trusted.

So now they're able to experience this physiological state within a therapeutic setting and it's not so bad. As long as they know a way to get out of that so that you move into it. And so when people learn these exercises of moving up and down the ladder, they're gaining a resource that enables them to move into different states. And they're becoming more familiar with it, even though their familiarity may have been associated with violations of trust. So the part that I want to mention right now is, that for people who have survived trauma, often cues of safety are triggers of trauma because they were violated. It was a violation of trust of a person that they were close to, which resulted in their trauma.

And so, when the body then goes into the state of feeling safe, they become accessible for a moment. That visceral feeling then becomes a trigger of saying, "been there, back on state there" and they will become defensive. But through these exercises a person is moving in and out of it saying go there for a moment and then you can come out, keep going in and out. And pretty soon you can live in a space of feeling safe. I think that's how therapy works.

Alex Howard: Yes. And I think that feeling of feeling safe when someone hasn't felt that for many, many years. It can feel like a miracle, it can feel like a rebirth for people that they're suddenly feeling themselves and able to be themselves in a way that's not been there for them.

Dr. Stephen Porges: So I developed this acoustic stimulation which is really computer amplified shifts and prosody, so remember when people sing, these intonations shift. But this takes vocal music and puts on additional filters in such a way that the nervous system cannot say no to it. Some of the responses have been felt like "I was coming home," which is this notion. But I will also say that people with trauma history, this type of acoustic stimulation has to be used with great caution, with the trauma informed therapists. Because it has to be acknowledged that feeling safe is a point of vulnerability for a person with a trauma history. When you respect that and when the client has an understanding of that, they're basically sticking their toe into the experience and they can pull it out.

Alex Howard: Yes. There's many things that I'd like to ask you, but I want to be mindful of time. But one thing I was particularly curious about is, what for you is your curious edge at the moment? Where is your thinking energy in terms of evolution and understanding of this work?

Dr. Stephen Porges: That's again, we're all complex human beings, and part of what I'm doing now is creating something that I call the Polyvagal Institute, which is a way in which people can take ideas and grow with them. So it's going to be an educational model that will deliver resources, but it will also be a certification model. So it's certified training programs and materials and products as being Polyvagal informed, because Polyvagal is now becoming generic and we want to make sure that it has a meaning to it. And so that's going on on one side.

Another part of me is involved with, can I take this Polyvagal treatment model and can we move it into addiction treatment? Can we create an environment which is totally Polyvagal informed from the receptionists to the maids? Can they all be Polyvagal informed to support the safety of the clients and can we utilize physiological monitoring and then a psycho-educational component of that to study one's own sleep architecture, and one's physiological responses literally to become more embodied.

So we're dealing with people who are addicts who don't want to be in their body. And what we will be doing is enabling them to come into their body and giving them resources. So that's some of them.

I'm also involved in product development. So we're dealing with the development of something that I call a Physio Camp, which is kind of like a webcam that measures heart rate patterns from a distance. So you can measure vagal regulation in a clinical setting and hopefully on the Internet. So that's in its prototype state and that's actually a UK company called Neural Solution. And then I am working on algorithms to change physiological monitoring devices that people can use for biofeedback and meditation that are really going to be Polyvagal monitors. So they measure the different vagal components and sympathetic nervous system, so people can actually see their profile as it changes with neural exercises.

So I have all these little things going on and I also am studying in a sense, a whole array of the impact of trauma and also functionally the life histories of trauma therapists. So when we create this traumatic stress research consortium, the first thing was to find out who were the trauma therapists. And we're learning a lot. We're learning about their trauma histories and we're learning what they have selected or elected to use, what treatments they think work. And interestingly, in the world of trauma, the ones that the trauma therapists are seeing as being more effective tend to be somatic-oriented.

Alex Howard: Yes.

Dr. Stephen Porges: And now we're trying to get a thousand therapists, we're on our way to get that, and then we want to get ten thousand clients. So we can start seeing again trauma history and vulnerabilities. So you can see that I kind of, like, have this Rubik's Cube of information and ideas that are still percolating. So I'm still keeping busy is the bottom line.

Alex Howard: That's to put it mildly, Dr. Porges, people that want to find out more about you and your work, what would be the best place for people to go to do that?

Dr. Stephen Porges: The simplest thing is to go to my web page, which is stephenporges.com. And there's articles and YouTube clips that people get. There are also several YouTube clips if people go online to search on YouTube, they'll get a lot of my talks.

Alex Howard: Fantastic. Thank you so much for both your time, but also your enormous contribution to this field, it's impacted a lot of people's lives. Thank you very much. I really appreciate that.

Dr. Stephen Porges: Well, thank you for the opportunity, because you can have ideas, but the ideas have to affect humanity. They have to be moved and for an academic the greatest frustration for an academic is to have ideas that go nowhere. So this part of me is really feeling a great sense of gratitude of reaching out and connecting with the world through webinars like the one we're doing today. So thank you for inviting me.

Alex Howard: It's my pleasure. Thank you for being here. Thank you.

Dr. Stephen Porges: Thank you.